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WELCOME TO ICENS 2017

On behalf of the organizing committee, we are pleased to announce that the 3rd International Conference on Engineering and Natural Sciences (ICENS 2017) will be held from May 3 to 7, 2017 in Budapest, Hungary. ICENS 2017 provides an ideal academic platform for researchers to present the latest research findings and describe emerging technologies, and directions in Engineering and Natural Sciences issues. The conference seeks to contribute to presenting novel research results in all aspects of Engineering and Natural Sciences.

The conference aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results about all aspects of Engineering and Natural Sciences. It also provides the premier interdisciplinary forum for scientists, engineers, and practitioners to present their latest research results, ideas, developments, and applications in all areas of Engineering and Natural Sciences. The conference will bring together leading academic scientists, researchers and scholars in the domain of interest from around the world.

The scientific program will focus on current advances in the research, production and use of Engineering and Natural Sciences with particular focus on their role in maintaining academic level in Engineering and Applied Sciences and elevating the science level.

The conference's goal will to provide a scientific forum for all international prestige scholars around the world and enable the interactive exchange of state-of-the-art knowledge. The conference will focus on evidence-based benefits proven in clinical trials and scientific experiments.

Best regards,

Prof. Dr.Özer ÇINAR

CONTENT

ORAL PRESENTATIONS

3.5/5GHz Dual Band Microstrip Branch Line Coupler Design

Bilge Senel[a], Elif Merve Kucukoner[a*]

[a]Suleyman Demirel University

*elifkucukoner@sdu.edu.tr

Abstract:

The dual-band transceiver buildings which have power amplifiers, low noise amplifiers, power detectors, couplers in their structure have attracted great interest in RF/microwave communication systems in recent years. The dual-band architectures can simultaneously support multiple frequency bands for consumers to meet their requirement of multi-task and multi-function operations in modern wireless communication systems. The passive microwave circuits such as directional couplers, transmission lines, power dividers, filters, phase shifters, duplexers, baluns are vital components for radio frequency (RF) transceiver systems. Specially couplers are critical and major components in communications systems, commonly used to isolate receivers from transmitters. They could be used in power splitting applications or monitoring incoming and reflected power levels. There are many studies in literature concentrating on dual-band couplers and there has been increasing interest in a dual-band branch-line coupler, which is useful in microwave circuits, such as balanced amplifiers, balanced mixers, phase shifters and data modulators. Designed branch-line coupler in this study has been aimed to use in microwave transmitter systems for equal dividing input power levels. A 3.5/5GHz dual band branch line coupler simulation and mesaurement has performed in this study. Branch line coupler has been fabricated on FR4 substrate material with 4.3 εr and 1.6mm substrate thickness. S-parameters simulations and optimization of branch line coupler's transmission line dimensions have been held in ADS. Transmission coefficient(S21), input return loss(S11), coupling(S31) and isolation(S41) are important performance parameters of a directional coupler. In this study S21, S11,S31 and S41 parameters of 3.5/5GHz dual band directional coupler have been simulated and mesaured and results have been compared. S11 is about -10dB, S21 and S31 are -3dB, S41 is -12dB at 3.5/5GHz frequencies according to simulation and measurement results. Measurement and simulation results are correspond to each other. S-parameters of coupler has a flat response in 3.5-5GHz frequency range.

Keywords: dual-band,3.5/5GHz,branch-line coupler,Advanced Desing System

4 bit Flash Analog to Digital Converter

Nisa Nacar Cikan[a*], Murat Aksoy[a]

[a]Cukurova University

*ncikan@cu.edu.tr

Abstract:

Digital Signal Processing has advantages over analog processing. Improving technology has provided the most of the signal processing work can be done in digital domain. Analog to digital converters(ADCs) convert analog signals to digital processing. Flash Analog to digital converter is a type of ADCs that may able to make conversion of analog to digital process very fast. In this paper, a design of a four bit Flash Analog to Digital Converter using 180 nm CMOS is studied. It has been simulated for different speeds starting from 10 Gs/s up to 40 Gs/s. Simulation results of a 4-bit ADC for 10 Gs/s is demonstrated the best performance.

Keywords: Analog to digital converter, Flash, CMOS

A CFD Based Thermo-Hydraulic Performance Analyses of Different Spherical Capsules Using in Ice Thermal Storage System

Dogan Erdemir[a*], Necdet Altuntop[a], Ali Jasim Mohammed Al-Bayati[a]

[a]Erciyes University

*erdemir@erciyes.edu.tr

Abstract:

Cooling of buildings currently represents a considerable fraction of the total energy consumption in the world. Global and local climate change in combination with the projected population increase and economic development is expected to increase tremendously the future cooling energy demand of buildings and make it the dominant energy component. Cooling load can be shifted by thermal energy storage systems to off peak times. Encapsulated ice thermal energy storage (ITES) system is very common in commercial building cooling applications. Although there are many different capsule geometries, spherical capsules are widely used because of its heat transfer characteristics and pressure drop features. Heat transfer characteristic of the spherical capsules can be enhanced with making some geometrical changes. The ultimate aim of the present study is to investigate numerically the effect of five different capsule shapes on thermal performance. The capsule models are prepared in SolidWORKS. Geometries are divided into a number of finite volume by using Mesh tool in ANSYS Workbench. Last, numerical analyses are performed by Fluent. Analyses are performed for charging period. Among the investigated capsule models, there are some commercial capsule shapes. Results of the study are presented in term of charging time.

Keywords: Ice thermal storage system, ITES, Encapsulated, Peak load, Cooling demand

A Comparison Between Simulation And A Reference Data For Solar Plant

Riza Buyukzeren[a*], Ali Kahraman[a]

[a]Necmettin Erbakan University

*rbuyukzeren@konya.edu.tr

Abstract:

Photovoltaic plays an important role in the history of clean energy development. The aim of this paper is to explore the relationship between the simulation with software and real data of solar plant. The current study contributes to our knowledge by addressing three important issues. First, the study explores technical, environmental and financial feasibilities of photovoltaic power plant. Second, the reference data of plant is evaluated and last, contrasting simulation and reference data to substantiate the accuracy of software. The solar plant is located in Isparta, Turkey and the power capacity of the plant is 1144kW. Selected collector has 260W power, %15.7 efficiency and the invertor is 30kW capacity, %98 efficiency. Annual electricity production of the plant is 1913MW with reference to real data. The simulation has done with RETScreen software and technical, economic and environmental analysis have done on virtual. The annual electricity production is 1924MW with RETScreen which is nearly the exact result with real data. In despite of the error ratio of annual production is 0.5%, monthly error ratio is 15% which is quite inacceptable but on the other hand, the annual value is nearly the same. The maximum differences between simulation and reference data is for January that the error ratio of this month is 56.3% but December has very acceptable result which is 4.6% from software in contrast with January The software also produce that annual greenhouse gas emission as 884.5 tCO2 annually and the payback period is 5,4 years. To sum up, although RETScreen has very acceptable results for annual analysis, the monthly analysis is not as good as annual analysis. Also the environmental and economic analysis results are also acceptable.

Keywords: Renewable energy, Photovoltaic, Feasibilit

A comparison of tree-based algorithms for a hybrid indoor positioning dataset

Sinem Bozkurt Keser[a], Ahmet Yazici[a], Serkan Gunal[a]

[a]Eskisehir Osmangazi University

*sbozkurt@ogu.edu.tr

Abstract:

Positioning systems have gained great importance with the recent advances of location-based services. Outdoor positioning can be solved with Global Positioning System whereas the research in the indoor positioning field still continues. There are various localization algorithms have been proposed for indoor positioning problem. And, several kinds of technologies such as Ultrasonic, Ultra-Wide Band, Bluetooth, WiFi, magnetic field, and hybrid solutions are utilized in these algorithms. In this paper, tree-based algorithms such as decision tree, logistic model trees, random tree, and random forest are compared for an indoor positioning system. The selected algorithms are tested for a hybrid indoor positioning dataset that integrates WiFi and magnetic field sensor values. RFKON database which is publicly accessible in the literature is used in the experiments. The results are compared in terms of accuracy and training time.

Keywords: Indoor Positioning, WiFi, magnetic field, fingerprint-based positioning

A Developed Closed-Cycle GT Using Transcritical CO2 for WHR in a Typical MSW Power Plant

Alperen Tozlu[a], Emrah Ozahi[b*], Aysegul Abusoglu[b]

[a]Bayburt University
[b]University Of Gaziantep

*ozahi@gantep.edu.tr

Abstract:

This paper presents energy and exergy analyses of a closed-cycle gas turbine using transcritical CO2 (T-CO2). The gas turbine (GT) system is developed in order to decrease the temperature of the exhaust gas at 567 oC in Gaziantep Municipal Solid Waste (MSW) Power Plant and also produce additional power from the plant. In this designed model, whole cycle is composed of a closed-cycle GT using supercritical CO2 (S-CO2), an organic Rankine cycle and a closed-cycle GT using T-CO2. The isentropic efficiencies of turbine and compressor, and the effectiveness of heat exchangers of the closed-cycle gas turbine using T-CO2 are assumed as 0.95, 0.90 and 0.85, respectively. The minimum and maximum operating pressures are utilized as 6.916 MPa and 13 MPa, respectively in this combined cycle. In addition to this, in order to maintain the transcritical state, the minimum temperature of the cycle is limited to 28.15 oC. According to the thermodynamic analyses, the highest and the lowest exergy destructions are found to be 467.56 kW for gas turbine heat exchanger and 7.91 kW for the compressor, respectively. Exergetic efficiencies of the turbine and compressor are evaluated as 95.72 % and 91.03 %, respectively. Exergetic efficiencies of the turbine and the precooler are found to be the maximum and minimum among subcomponents of closed-cycle gas turbine using T-CO2. The total power production of the cycle, the energetic and exergetic efficiencies of the combined system are found to be 206.39 kW, 10.61 % and 30.03 %, respectively. The reason of low energetic efficiency can be explained with low inlet temperature of heat source and high effectiveness of gas turbine heat exchanger.

This study is supported by TUBITAK with the project under the grant number of 114M142. The authors would like to thank TUBITAK and CEV (Clean Energy & Vehicles) Energy.

Keywords: Gas turbine, municipal solid waste, power generation, transciritical CO2, supercritical CO2.

A feedback loop model of interaction between soil characteristics and vegetation in afforestation simulator ForestMAS

Damjan Strnad[a*], Stefan Kohek[a], Simon Kolmanic[a], Borut Zalik[a]

[a]University Of Maribor

*damjan.strnad@um.si

Abstract:

The application ForestMAS is a combined simulation/visualization tool that allows the users to foresee landscape changes due to spontaneous afforestation following the abandonment of land cultivation, natural disasters, or clear-cuts. The core mechanism of forest development simulation is the algorithm for interaction among trees competing for resources such as light, water, and nutrients. In this paper we present the extension of existing reference growth model with the sub model of interaction between the plant and the growing site, which reflects the natural process of species communities to adapt to imperfect growth conditions and adjust them by affecting certain properties of the soil such as acidity and nitrogen content. The importance of such feedback loop between a plant and its surroundings is to improve the plant's own chances as well as to suppress those of the competition. In the paper we describe the effects of this mechanism on simulation results with respect to the obtained forest composition. We evaluate the suitability of the extended model by comparing the simulation results to those of the reference model and validating them against long-term historical record data from a forest fire site in northern Slovenia.

Keywords: computer simulation, afforestation simulator, soil-plant interaction, feedback loop

A first principle study of Rh2FeAl and Rh2YA alloys: Electronic structure and phonon properties

Nihat Arikan[a*], Suleyman Demir[b], Ahmet Iyigor[c]

[a]Mathematic And Science Education Department, Education Faculty, Ahi Evran University, Kirsehir, Turkey
[b]Graduate School Of Natural And Applied Science, Ahi Evran University, Kirsehir, Turkey
[c]Central Research And Practice Laboratory (Ahilab), Ahi Evran University, Bagbasi-Kirsehir, Turkey

*nihat.arikan@hotmail.com

Abstract:

The electronic structure, elastic and phonon properties of Rh2FeAl and Rh2YAl alloys are studied using the density functional theory (DFT) within the general gradient approximation (GGA). Elastic constants and specific heat capacity of Rh2FeAl and Rh2YAl are reported for first time. The predict lattice constants are in good agreement with available values. The ductility and brittleness properties of Rh2FeAl and Rh2YAl are determined. Both materials are predicted to be ductile materials. The electronic band structure and phonon frequency curves of Rh2FeAl and Rh2YAl alloys are obtained. The position of the Fermi level and contribution of d electrons to the density of states near EF is studied and discussed in detail. We also used the phonon density of states and quasi harmonic approximation to calculate and predict some thermodynamic properties such as constant-volume specific heat capacity of Rh2FeAl and Rh2YAl. This work has been supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: EGT.E2.17.006

Keywords: DFT, ab initio, elastic, band structure. phonon, Heusler Alloys

A Fuzzy Analytical Hierarchy Process Approach in Facility Location Problem: A Case Study in End-of-Life Vehicles

Selman Karagoz[a*], Nezir Aydin[a]

[a]Yildiz Technical University

*karagozselman@gmail.com

Abstract:

There are many legislations of European Union in automotive industry to incorporate environmental factors into manufacturers' decisions. Recovery of end-of-life vehicles (ELVs) is a quiet important activity to meet these legislative necessities. Furthermore, recovery activity of ELVs consists of several processes such as collecting, dismantling, shredding, recycling and landfilling. In this study, a Fuzzy Analytical Hierarchy Process (FAHP) is applied to a facility location problem for dismantling and shredding facilities. Findings of the study present the priorities of potential facility locations for both dismantling and shredding facilities.

Keywords: ELVs; MCDM; Fuzzy AHP; Recycling

A Fuzzy Multi Objective Mixed Integer Linear Optimization Model for Logistics Activities of End-of-Life Vehicles

Selman Karagoz[a*], Nezir Aydin[a]

[a]Yildiz Technical University

*karagozselman@gmail.com

Abstract:

European Union obligates decision makers conducting many environmental factors in automotive industry. Recovery of end-of-life vehicles (ELVs) is one of these legislatives which is a quiet important activity. Furthermore, this recovery activity consists of several processes like collecting, dismantling, shredding, recycling and landfilling. In this study, a fuzzy multi objective mixed integer linear mathematical model is presented to optimize network design including qualitative and quantitative factors in ELVs recovery system. The results attest the optimal number of facilities to be located and how logistic networks may behave in a fuzzy environment.

Keywords: ELVs, Mathematical model; Multi-Objective optimization; Fuzzy

A High Accurate Positioning and Manipulation Technique for Untethered Microrobots

Anil Demircali[a], Huseyin Uvet[a], Kadir Erkan[a]

[a]Yildiz Technical University

*anildemircali1@gmail.com

Abstract:

In this study, we present a theoric and numeric analysis of an untethered microrobot manipulation technique that can be use in liquid enviroment. The microrobot, which is levitated on a pyrolytic graphite surface, allows us high precise positioning (nano level) and control with lower external magnetic force requirements due to floating manner of its locomation. Floating microrobot is controlled via a single “lifter magnet” as a driving force that is placed on a automatic microstage in order to provide stable-motion. The presented microrobot is designed for the single cell manipulation and transportation operations in different experimental setups as lab-on- a-chips, petri dishes and so on. Here, a new approach to determine an experimental setup of the levitated microrobot, which provides the most effective microrobot control possible, is explained with FEM analysis and required background information. For such untethered microrobot control experiments, determination of the size of the materials used, selection criteria, required magnetic force effect and optimum pyrolytic graphite sizes are dicussed detaily. To do that, our proposed analysis method suggests how to construct such an FEM model parametrically. Before starting the experimental work, the effects of the material and dimensions of each element forming the system on the microrobot are discussed. On this page, the manipulation technique which revealed the theoretical infrastructure is compared with the numerical calculations and the results are proved to be correct.

Keywords: Manipulation, magnetic levitation, Fen analysis

A M2M Platform for Remote Monitoring of Health Status Knowledge

Saadin Oyucu[a], Ahmet Aksoz[a*], Huseyin Polat[a]

[a]Gazi University

*ahmet3aksoz@gmail.com

Abstract:

M2M (Machine to Machine) means that different devices communicate each other via any communication. Many application like as smart home, smart farm or smart hospital can be realized thanks to M2M. Also M2M offers to new possibilities for remote medical applications. Early diagnosis, prevention of diseases and long-term monitoring of health are very essential at these days. In this study a M2M platform is designed aim to providing instant control of patient health status knowledge by healthcare professionals for that purpose. Information collected from the patient is stored in a non-relational database. In this way, retrospective analyzes can be made. It is seen that, when the non-relational database uses, scalability is increased and costs is reduced. Analyzes on the platform have helped to make the right decision. While the platform is developed using European Telecommunications Standards Institute (ETSI) and OneM2M standards. In addition this platform is developed using Platform Web 3.0 standards and Service Oriented Architecture (SOA) approach. Access to methods and data are provided with services that prepared by the web service approach of REST (Representational State Transfer, RestFul Web Services).

Keywords: ETSI, Health Status Knowledge, M2M, OneM2M, REST

A material selection process on the basis of mechanical properties of Al-25Zn-3Cu alloy in different conditions

Hasan Onur Tan[a*], Temel Savaskan[b], Gokhan Ozcelik[a]

[a]Karadeniz Technical University
[b]Halic University

*hasanonur_tan@hotmail.com

Abstract:

Al-25Zn-3Cu alloy has been proven to be superior to some zinc-based ternary alloys as far as their mechanical and tribological properties are concerned. In this study, this alloy was prepared by permanent mold casting and subjected to homogenization and T6 heat treatments. The mechanical properties of it including hardness, tensile and compressive strengths and impact energy were determined by appropriate tests. The main goal of this work is to determine the most appropriate process for obtaining desirable mechanical properties. This case was considered to be a Multi Criteria Decision Making Problem. In this context Al-25Zn-3Cu alloy was evaluated using entropy integrated TOPSIS and PROMETHEE methods according to its mechanical properties obtained in the as-cast and heat treated conditions.

Keywords: Mechanical Properties, Heat Treatment, Aluminium Alloys, Multi-Criteria Decision Making, Material Selection

A measurement model analysis for Impedance Spectroscopy of LiCoO2|C Batteries

Salim Erol[a*]

[a]Department Of Chemical Engineering, Eskisehir Osmangazi University

*esalim@ogu.edu.tr

Abstract:

The impedance behavior at a part of normal operating potential range (from 3.8 V to 4.2 V), during overcharge to 5 V, and during over-discharge to 2.2 V of a single LiCoO2|C coin battery cell were examined. Impedance responses of overcharging and over-discharging were highly larger than those of the normal operating range. After overcharge to 5 V a self-discharge and after over-discharge to 2.2 V a self-charge were observed on the open-circuit potential of the cells. These self-charging and self-discharging continued until the open-circuit potential reaches to the normal range. Furthermore, without any change in the potential, the influence of some elapsed time on the electrochemical impedance spectroscopy of a button cell was investigated. A measurement model analysis was employed to extract physically meaningful parameters, i.e. for our system ohmic and charge transfer resistances. A graphical analysis was used to show that the change in the impedance response with elapsed time was due to a change in the ohmic resistance.

Keywords: Li-ion batteries, impedance spectroscopy, overcharged battery, over-discharged battery, measurement model analysis

A New Empirical Models To Estimate Global Solar Radiation For Turkey

Nurullah Arslanoglu[a*]

[a]Department Of Mechanical Engineering Uludag University

*nurullaharslanoglu@gmail.com

Abstract:

In this study, three different sunshine-based regression models are developed to estimate the monthly average daily global solar radiation on a horizontal surface for provinces in the different regions of Turkey by using the meteorological data from Turkish State Meteorological Services. These models are derived from Angstrom–Prescott linear regression model and its derivatives such as quadratic, cubic. To indicate the performance of the models, the statistical test methods of the coefficient of determination (R2), mean bias error (MBE), mean absolute bias error (MABE), mean percent error (MPE), mean absolute percent error (MAPE), root mean square error (RMSE) and t-statistic method (tsta) are used. Consequently, the empirical models can be used to predict solar energy in Turkey and nearby regions.

Keywords: Global solar radiation, Regression models, Turkey

A new method optimizes failure surface of homogenous finite slopes

Emrullah Sagir[a], Umit Calik[b], Ahmet Kuvat[b*]

[a]Turkey General Directorate Of Highways
[b]Karadeniz Technical University

*ahmet.kuvat@gmail.com

Abstract:

Slope is called as the surface of the soil or rock masses which has an inclination to the horizontal plane. Slope stability is defined as the structural performance that is exhibited against sliding or collapse due to dead and additional loads. Recurrent basic approach in slope stability analysis is to determine the mninimum factor of safety by searching the most critical failure surface .

In this study, a novel method was developed by modifying the Generalized Janbu Method for toe slide of homogeneous finite slopes. The developed method can take into account all possible types (composite) of failure surfaces. The most critical failure surface that provides the minimum factor of safety is determined by using a program developed in MATLAB programming language based on optimization method. Ultimate factor of safety was found for obtained most critical failure surface by doing sequential computations of safety analyses. Then, failure surfaces and factor of safety were obtained for different c,□□□and □□values in homogeneous finite slopes by making slope stability analysis.

From the results of performed analyzes with the developed method, it was seen that the obtained sliding surfaces, which are different from circular surfaces, have composite structures consisting of different types of curves. Lower factors of safety were obtained the method developed in this study compared to the methods based on circular failure surface assumption because of including all failure surface possibilities.

Keywords: Slope Stability, Failure Surface, Factor of Safety, Optimization

A new numerical method for solving fractional Bagley-Torvik equation

Gul Gozde Bicer[a*], Ayse Anapali[a], Yalcin Ozturk[a], Mustafa Gulsu[a]

[a]Mugla Sitki Kocman University

*gulgozdebicer@hotmail.com

Abstract:

In this paper a numerical method is given for the solution of fractional Bagley-Torvik equation under the initial conditions using the truncated fractional Bernoulli series. The aim of this study is to present an efficient numerical procedure for solving fractional Bagley-Torvik equation. This method transforms fractional Bagley-Torvik equations and the given conditions into matrix equation which corresponds to a system of linear algebraic equation. Finally, some experiments and their numerical solutions are given. The results reveal that this method is reliable and efficient.

Keywords: Fractional Bagley-Torvik equation, fractional differantial equation, Bernoulli Collocation method, approximate solution.

A Noval Breaker Kit Design For Continuous Chip Breaking In Turning Operations

Bahattin Yilmaz[a*], Sener Karabulut[b], Abdulkadir Gullu[a]

[a]Gazi Universitesi
[b]Hacettepe Universitesi

*bahattinyilmaz@gazi.edu.tr

Abstract:

Turning operation is one of the most commonly used machining methods. Continuous chip formation is one of the encountered problems in turning operations. Continuous chip formation endangers operator safety, machine safety and surface quality. Hence, continuous chip formation affects the operational efficiency adversely. In this field, there are many studies about chip breaking but such as Inconel 718 super alloy, some material chips could not be broken with existing methods. In this study, a chip breaker kit design was performed. The efficiency of the kit was experimentally investigated with four different cutting speeds, four different feed rates and four different cutting depths. Taguchi L16 experimental setup was used. As a result of the experiments, continuous chipping was successfully broken in all conditions. The effect of the chip breaker on cutting tools was studied. As a consequence of the studies, there was not seen any negative effect of the chip breaker on cutting tools. The chip breaker kit revealed an excellent performance.

Keywords: Chip Breaker, Continuous Chip, Chip Breaker Kit Design, Inconel 718

A Novel Formulation for C Shaped Patch Antenna Resonant Frequency

Muhammed Fahri Unlersen[a*], Muciz Ozcan[a]

[a]Necmettin Erbakan University

*mfunlersen@konya.edu.tr

Abstract:

Microstrip antenna has several advantages like light weight and low profile planar configuration. But for lower frequencies above 1GHz, patch size makes antenna inapplicable. To overcome this restriction, some shape changes on patch have been used like C shaped patch, H shaped patch or Rectangular ring shaped patch. In this study, the approximate resonant frequency calculation of compact rectangular microstrip antennas like C-Shaped is proposed. The investigated C- Shaped antenna has wide and height as 6cm and 4cm respectively. The height of the substrate has been 1.59 mm. The relative permittivity of the material is 2.33. The tan δ is 0.001. The resonant frequency of patch antenna with a notch with various dimensions has been obtained by simulations. An equation estimation has been done to calculate resonant frequency of C shaped patch antenna. The curve fitting methods have been applied to determine the coefficients of proposed equation. So the equation is specified for this C shaped patch antenna. The resonant frequencies obtained from new equation and the simulation results have been compared. The Mean Absolute Percentage Error (MAPE), Root Mean Squared Error (RMSE), Mean Absolute Error (MAE) values have been calculated. The obtained RMSE and MAE values are 0.1079 and 0.0140 respectively. The MAPE value is obtained as 0.4235% and maximum deflection in resonant frequency is 13 MHz when working frequency is about 1 GHz. An improvement in resonant frequency calculation has been obtained for this specific structure.

Keywords: C-Shaped Patch Antenna, Microstrip Antenna

A novel hybrid approach based on Ant Colony Optimization to solve Travelling Salesman Problem

Batuhan Saygin Arslan[a*], Mustafa Servet Kiran[b]

[a]Necmettin Erbakan University
[b]Selcuk University

*bsarslan@konya.edu.tr

Abstract:

Ant Colony Optimization (ACO) is one of the most recently proposed swarm intelligence algorithm for solving optimization problems with discrete-structure solution space. The performance assessment of ACO on the discrete optimization problems show that it is a competitive algorithm for solving this type of problems. However, it has still some issues such as finding local inaccurate solution and running time of the solution. In order to overcome this issues, a novel hybridization is proposed in the present study. The artificial agents in the hybrid algorithm are divided into two groups named as constructor and improver, respectively. While the constructors obtain the feasible solution for the optimization problems dealt with the study (Travelling Salesman Problem - TSP), the other group tries to improve the best solution obtained from the constructors. Therefore, stagnation behaviour in the population originated from the pheromone update mechanism in basic ACO is eliminated and the computation time is reduced by using the proposed mechanism. The proposed hybrid ACO is applied to solve 32 cities in Konya province which is modelled as an example of TSP. Obtained results are compared with the basic version of ACO and the experimental results show that the proposed algorithm is better than the standard version of ACO algorithm.

Keywords: Ant colony optimization (ACO), constructor and improver agents, travelling salesman problem (TSP)

A Novel, Fast and Improved Fox Hunting Optimization Algorithm (FHA) and Blur Kernel Estimation Aplication

Murat Onay[a*]

[a]Erciyes Univercity

*muratonay@erciyes.edu.tr

Abstract:

A Novel, fast and easy population-based search algorithm called the Improved Fox Hunting Algorithm (FHA) is presented here. FHA is a general-purpose algorithm. FHA can be applied to solve almost any optimization problem. There are lots of algorithms which mimic animal and plant behaviors in the literature. But human is the cleverest living creature in the world. The human uses the animals to benefit their superiority for hunting. The FHA algorithm mimics the fox hunting activity which is formed and improved since 16th century by the human. The algorithm performs some neighborhood searches combined with random search. It can be used for both combinatorial optimization and functional optimization. Also, as an application, FHA is applied to calculate the blur kernel of aerial images taken by our unmanned air vehicle.

Keywords: Fox Hunting Algorithm, Functional Optimization, Swarm Intelligence, Blur kernel, Image processing

A Research on Agglomeration of Fine Coal with Different Oils

Selma Duzyol[a], Seher Uzel[a], Hilal Celahir[a]

[a]Selcuk University

*selmad@selcuk.edu.tr

Abstract:

Coal is enriched mostly with gravity methods because of the difference in density with the gangue mineral. A large quantity of fine particles occurs during the preparation for both production and enrichment processes. Unfortunately, it is not possible to recover economically the fine sized coal due to the ineffectiveness of gravity forces occurring on these particles. Therefore, they are mostly discharged as wastes and cause a large amount of economic loss and environmental problems. Despite the oil agglomeration method allows the acquisition of fine and ultrafine mineral particles from the solution, it is not preferred remarkably because of the high prices of oil. In this study, the possibilities of enriching the fine coal with oil agglomeration technique by using different oils were investigated. For this purpose, the agglomeration experiments were performed using kerosene, mineral oil and domestic waste oil and the results were comparatively given. According to these test results, the domestic waste oil has been found to be as successful as the others. It may also be stated that the use of domestic waste oil for this purpose could also generate economic and environmental benefits.

Keywords: coal, oil agglomeration, oil, waste oil.

A Review of Aerodynamic Shape Optimization

Tugrul Oktay[a], Metin Uzun[a*]

[a]Erciyes University, Faculty Of Aeronautics And Astronautics

*m.uzun2010@gmail.com

Abstract:

In this conference article a review of aerodynamic shape optimization is carried out in order to view performance of possible new aerodynamic shape optimization studies. The aim of this conference article is to determine different future aerodynamic shape optimization for improvement of aerodynamic fines cofefficient and flight performance. For this purpose, initially a brief definition and methods of aerodynamic shape optimization is mentioned. Then, different exisiting aerodynamic shape optimization types are cllassified and summarized. After, a brief summary of our previous shape optimization studies are listed. Finally, the results for future perspectives are presented.

Keywords: Aerodynamics, Shape Optimization, Classification of Shapes.

A Review of Emerging Optical Access Solutions for Broadband Access

Nisa Nacar Cikan[a*], Murat Aksoy[a]

[a]Cukurova University

*ncikan@cu.edu.tr

Abstract:

Bandwidth demand for optical access technologies is growing. In this paper, solutions for increasing bandwidth demand is reviewed and Passive Optical Networks is found as a solution for bandwidth hungry applications. Passive Optical Network Types are compared in terms of cost and bandwidth. Wavelength Division Multiplexing Passive Optical Networks(WDM-PONs) allow much higher bandwidth and show promise for future broadband applications. We especially presented WDM-PONs technologies with different aspects.

Keywords: Optical Access Networks, TDM,WDM,PON

A Review of Routing and Spectrum Assignment in Elastic Optical Networks

Suresh Kumar[a*], Deepak Sharma[a]

[a]UIET, M D U ROHTAK

*skvashist_16@yahoo.com

Abstract:

With advancement in optical communication network technology such as WDM networks, bandwidth up to 1Tbps can be exploited from the optical fiber in an efficient manner. But the WDM networks are not found to be efficient when the traffic demand is heterogeneous and of variable rates. In order to serve this huge and heterogeneous volume of traffic in an efficient and scalable manner, there is a need for new generation optical transport networks. The Elastic Optical Networks (EONs) have been recently proposed as a long-term solution for handling the ever increasing data traffic and the diverse demand. In this review paper we have presented the basic concept of the EONs, its properties and a review of various spectrum management techniques for EONs for individual connection requests. This paper also presents various key aspects of Elastic optical networks, which will be helpful for researcher to understand the concept and pursue their work in this field more efficiently.

Keywords: Elastic Optical Networks, Bandwidth variable-wavelength cross-connects (BV-WXC), Orthogonal frequency-division multiplexing (OFD

A Review on Fuzzy Multiobjective Algorithms Used in the Design of Electric Motors

Mumtaz Mutluer[a*]

[a]Necmettin Erbakan University

*mmutluer@konya.edu.tr

Abstract:

One of the electrical engineering problems is the design of electric motors. This process is quite compact. Because electric motors are non-linear structures and solutions of differential equations are required in their designs. Therefore, making a sensitive design is a very time consuming process. However, the use of artificial intelligence methods is a very useful approach by linearizing the design equations of electric motors. These artificial intelligence methods are divided into single and multiple according to objective functions. Known algorithms such as genetic algorithm, differential evolution algorithm and particle swarm algorithm are used in the studies in the singe objective. The works in the multiobjective structure are formed in different shapes. One of them is the fuzzy approaches. In these approaches, while the above algorithms are run in general operations the fuzzy approaches are utilized in the decision making process. With fuzzy approach, different decision making processes are realized. This gives flexibility to the optimization method. In recent years, fuzzy multiobjective motor design optimization studies have been very useful results. Moreover, these algorithms are applied to very different engineering problems, especially electric motors. In this study, an overview of fuzzy multiobjective methods used in design optimization of electric motors is presented.

Keywords: fuzzy, multiobjective optimization, electric motor design

A Roadmap for Data Driven Decision Making to Improve Quality

Onur Dogan[a*]

[a]Istanbul Technical University

*onurdoganmail@gmail.com

Abstract:

Many quality improvement programs including inspection, statistical process control, total quality control, zero defects, kaizen and lean six sigma, which is the most recognized, require collection and analysis of data to solve quality problems. With six sigma as a quality improvement, the errors in the manufacturing are reduced to the error level of 3.4 parts per million and it is aimed to go to zero defect. With lean manufacturing, the lead-time is shortened and quality is improved by determining and eliminating all kinds of waste in the processes. Lean six sigma uses so called define-measure-analyze-improve-control (DMAIC) approach to reach six sigma quality levels, less than 3.4 part per million defectives, by reducing variations and wastes within processes. To achieve the goal depends on collection of data to attack quality problems.

Although many traditional data analysis tools can be used to develop quality of products and processes, now with industry 4.0, massive data sets collected through computerized systems should be mined with powerful data analysis methods. Data mining involves techniques used to produce meaningful results from data stacks. It is possible to make effective and quick decisions by utilizing these techniques in five steps of lean six. The use of data mining at every stage, especially in the measure and analyze stages, has critical importance to make powerful decisions.

The aim of this study is to provide a road map that allows companies that apply lean six sigma to make faster and more reliable decisions with data mining techniques. On the one hand, it will contribute to the manufacturing processes with lean six sigma by reducing the lead-time, producing better quality products; on the other hand, it will aid to make effective decisions using data mining techniques.

Keywords: Data mining, Lean six sigma, Quality improvement, Industry 4.0

A Simple Battery Management System Design for an Electrical Vehicle

Emre Akarslan[a*], Said Mahmut Cinar[a], Fatih Onur Hocaoglu[a], Fatih Serttas[a]

[a]Afyon Kocatepe University

*e.akarslan@gmail.com

Abstract:

Electrical vehicles get more importance day by day due to some reasons such as increased environmental awareness, reduced fossil sources and travelling costs etc. One of the most important components of such kind of vehicles is the battery management system (BMS). In this study a simple battery management system designed for an electrical vehicle is presented. In this design some important parameters of the battery such as currents, voltages and temperatures are measured. These values are collected and evaluated via an Arduino based BMS. System informs the diver continuously about these values. In the electrical car studied, Lead-Acid batteries are used. In case of an imbalance on battery modules, a passive balancing strategy is realized. In this strategy, higher charged battery is discharged via a discharge resistor to equalize the voltage levels of the batteries. The control unit discharges the higher charged battery until a certain level, switches off the discharge resistor and allows the charge procedure to continue normally. The performance of the BMS is presented and discussed.

Keywords: battery management system, passive balancing, Arduino controller

A Small-Sized RF Measurement System

Sebnem Seckin Ugurlu[a*], Ahmet Ozkurt[b]

[a]Dokuz Eylul University, The Graduate School Of Natural And Applied Sciences
[b]Dokuz Eylul University, Department Of Electrical And Electronics Engineering

*sebnem.seckin@deu.edu.tr

Abstract:

The effects of electromagnetic sources on devices and public are a very important topic. The measurements of radiated emission from devices, electromagnetic compatibility (EMC) and electromagnetic interference (EMI) tests for products, shielding effectiveness of materials must be done in accredited laboratories. However, in the evaluation and prototyping processes, these tests are needed to be done several times. In this study, a small-sized, low cost RF measurement system including a portable RF anechoic chamber that can be used between 700 – 3000 MHz is proposed. The radiated emission levels from two different commercial cellular phones at 900 MHz GSM, 1800 MHz GSM, 2100 MHz 3G, 2400 MHz Wi-Fi frequencies are measured with this system as an application example and they are discussed to the International Commission on Non-Ionizing Radiation Protection (ICNRP) Guidelines. In the light of this study, more complex and specific measurements can be carried out.

Keywords: RF measurements, small sized anechoic chambers, cell phone radiation

A Smart Lamp Socket Application for Energy Consumption in Smart Grid via M2M Platform

Saadin Oyucu[a], Ahmet Aksoz[a*]

[a]Gazi University

*ahmet3aksoz@gmail.com

Abstract:

To increase amount of electric energy consumption day by day and depletable energy sources cause to some problems. The most important of these problems is energy ineffectiveness. Efficiently using of electrical energy plays an important role for reducing the effect of these problems. In many of today's electrical networks, transmission of electric is through one direction. In the next generation smart grids, this situation is changed and a two-way communication is realized in the production, transmission, distribution and consumption lines. Thus, the electric energy can be easily monitored at any stage. In this case backward and instant reporting of the actual consumption values and presentation of the estimated consumption values to the consumer for future periods is very important for a saving.

In this study, it is aimed to monitor the energy consumption in the lighting area which consumes the most electricity energy and for the reporting of the consumption values smart lamp socket unit developed. The smart lamp socket unit is able to communicate via a wireless network connection and internet protocol. User interaction, energy consumption tracking, management, and reporting can be done by way of smart lamp socket unit. There is a need for an interface for these operations. For this interface requirement, a Machine to Machine (M2M) platform has been developed. The M2M platform was built to serve multiple smart lamp socket units at the same time. Thus the information technology needed for smart grid technology has eliminated the need for infrastructure. In addition, the development process of smart grid applications has been shortened and expanded. Thanks to the developed smart lamp socket unit and M2M platform, energy consumption in the field of lighting was followed. With the reporting of consumption data, consumers have been directed to save energy either autonomously or manually.

Keywords: Energy Reporting, M2M, Smart Grid, Smart Lamp Socket

A Study on Folate Production by Lactobacillus spp.

Sener Tulumoglu[a], Ergin Kariptas[b*], Ayhan Ozsoy[a]

[a]Doctor Behcet Uz Hospital
[b]Ahi Evran University

*ekariptas@ahievran.edu.tr

Abstract:

Probiotics are live microorganisms that, when administered in adequate amounts, confer a health benefit on the host. Lactobacillus with very important probiotic bacterial strains display a high impact on protection to human health. Among the trillions of bacteria that live in human intestinal tract are those that produce three B vitamins; biotin, folate and vitamin B12. This study aims to investigate the folate production of some strains of lactobacilli. Lactobacillus species used in this research were obtained from the Culture Collection of Clinical Microbiology Laboratory at Doctor Behcet Uz Hospital. The medium of MRS was used to screen lactobacilli. To determine folic acid production 2 ml of the supernatants of the centrifuged strains were taken and later measurements were made at 600 nm with the Abbott Architect i1000 Immunoassay Analyzer. The folate was determined as ng/dl. Results showed that all of the Lactobacillus bacteria used in the research were found to produce folate at different levels. Production of the highest folate (folic acid, vitamin B9) was observed in L. plantarum BU12 (179 ng/dl) and L. plantarum BU15 (160 ng/dl) strains. Folate can be taken directly from the nutrients or through beneficial microorganisms. These results demonstrate that L. plantarum BU12 and L. plantarum BU15 could be an excellent strains for application to functional products.

Keywords: Lactobacillus, Folate, Probiotic

A study on the training of disabled people using voice control with Kinect

Yusuf Uzun[a], Mehmet Bilban[a], Huseyin Arikan[a*]

[a]Necmettin Erbakan University

*harikan@konya.edu.tr

Abstract:

Kinect is a system that can detect human movements and send them to computers. It was developed by Microsoft to play games for the Xbox game console and is being used over time for applications in other areas. Because of the new technology, there is a lack of application and the literature in this field. We can describe the term disability as a person that is restricted by some movements, senses, or functions due to injury, physical or mental discomfort. The obstacle may arise from congenital or acquired diseases or accidents. In this study, have been developed an application for using the training materials by disabled individuals using the Kinect device which is controlled by the sound.

Keywords: kinect, voice control, disabled

A Two-Phase Indoor Positioning Algorithm using the Data of Wi-Fi and Magnetic Field

Ahmet Yazici[a*], Sinem Bozkurt Keser[a], Ugur Bolat[b]

[a]Computer Engineering Department,Eskisehir Osmangazi University
[b]Electrical & Electronics Engineering Department, Eskisehir Osmangazi University

*ayazici@ogu.edu.tr

Abstract:

Indoor positioning systems is an attractive research area. Various systems were proposed in the last decade. In these systems, WiFi-based fingerprinting method is the widely preferred. It is due to the existing WiFi infrastructure and the increasing usage of smart phones with WiFi capabilities. But, WiFi signals have some drawbacks such as multi-path, reflection, and absorption. These cause inaccurate positioning when only the WiFi signals are used. Magnetic field-based fingerprint is another popular solution in the literature. But, the magnetic field data is also not reliable due to the data similarity in different regions in an indoor environment. So, using one of the sensor data alone for an indoor positioning system is not a good solution for all the situations. In this study, a two-phase indoor positioning algorithm that uses both sensor data is proposed. In the first phase, WiFi data is used to estimate the initial position due to higher room-level accuracy. And then, magnetic field data is used to refine the estimation. In both phases, expectation maximization algorithm is used. The proposed approach is tested for publically available RFKON indoor positioning dataset. The test results show that the proposed two-phase algorithm improves the positioning accuracy.

Keywords: Indoor positioning, fingerprinting, WiFi-based positioning, magnetic field-based positioning, expectation maximization

A Vehicle Routing Problem on Evacuation of Akkuyu Nuclear Power Station in Turkey

Sevban Abdullah Tuzcuoglu[a*], Cagri Sel[a]

[a]Karabuk University

*satuzcuoglu@gmail.com

Abstract:

Decreasing underground resources and the petroleum reserve force countries to search for new energy resources. Because of the changes in the ecological balance and the need for long-term energy sources, countries has been focused recently on renewable energy and nuclear energy. Although the nuclear energy meets the need for long-term energy sources, it probably carries some risks. Fukushima nuclear disaster, consecutive to the earthquake and tsunami that hit Japan on Mach 2011, is a recent event of a large disaster. In addition to at least 2 employees died and 40 people hurt in Fukushima, 200 thousand people are evacuated from the disaster areas. Humans and animals have still been affected by the radiation leakage. In this study, we consider the evacuation of people from the disaster areas in case of a radioactive leakage or a possible hazard. A mixed-integer linear programming model is proposed to solve the problem. The implementation of the model to Akkuyu power station, which will be activated in Turkey 2023, is illustrated as a case study.

Keywords: Disaster and Emergency Management, Plan of Evacuation, Logistics, Vehile Routing, Mixed Integer Programming

Ab initio Study of Phonon Dispersion and Elastic Properties of Intermetallic HfFe

Mustafa Ozduran[a*], Nihat Arikan[b], Murat Unsal[c], Ahmet Iyigor[d]

[a]Department Of Physics, Faculty Arts & Science, Ahi Evran University, Bagbasi-Kirsehir, Turkey
[b]Mathematics And Science Education Department, Ahi Evran University, Kirsehir, Turkey
[c]Graduate School Of Natural And Applied Science, Ahi Evran University,Kirsehir, Turkey
[d]Central Research And Practice Laboratory (Ahilab), Ahi Evran University, Bagbasi-Kirsehir, Turkey

*mozduran@Ahievran.Edu.Tr

Abstract:

The ab initio computations have been performed to examine the structural, elastic, electronic and phonon properties of cubic HfFe compound in the B2 phase. The optimized lattice constants, bulk modulus, and elastic constants are evaluated and compared with available data. The brittleness and ductility properties of HfFe are determined. HfFe compound is predicted to be ductile materials. Electronic band structures and total and partial densities of states (DOS) have been derived for HfFe compound. The electronic band structure shows metallic character; the conductivity is mostly governed by d states for this compound. Phonon-dispersion curves have been obtained using the first-principle direct method of the density-functional perturbation theory.

This work has been supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: FEF.E2.17.008.

Keywords: DFT, ab initio, phonon, brittleness and ductility

Accuracy Assesment of Kinematic PPP Using Various Online Services

Salih Alcay[a], Huseyin Zahit Selvi[b*]

[a]Necmettin Erbakan University Geomatic Engineering Department
[b]Necmettin Erbakan University Geomatic Engineering Department Division Of Cartography

*hzselvi@konya.edu.tr

Abstract:

In recent years, in addition to the static mode, online services enhanced the capabilities of Precise Point Positioning (PPP) to provide kinematic mode. In this study, in order to assess the accuracy of the kinematic PPP, The Canadian Spatial Reference System Precise Point Positioning Service (CSRS-PPP) and the Magic Global Navigation Satellite System (MagicGNSS) were used. The raw data were taken from 5 IGS stations, located in different part of the world. Estimated coordinates were tested in terms of both accuracy and precision based on ITRF08 measurement epoch coordinates of the stations. The results indicate that centimeter accuracy and millimeter to centimeter precision can be achieved for horizontal components.

Keywords: CSRS-PPP, IGS, ITRF, Kinematic PPP, MagicGNSS

Adaptive General Relativity Search Algorithm for Global Optimization

Sinem Akyol[a*], Bilal Alatas[b]

[a]Munzur University
[b]Firat University

*sakyol@munzur.edu.tr

Abstract:

Concepts, rules, and events in various field have been considered and modelled as novel efficient search and optimization methods with extremely effective exploration capabilities in many cases, which are able to outperform existing classical and computational intelligence based optimization methods within different types of search spaces. General Relativity Search (GRS) is one of the most current physics based computational intelligence optimization algorithm. GRS is very new and there is only one work about GRS. In this work, Adaptive General Relativity Search Algorithm (AGRSA) has been proposed by dynamically adjusting the parameters of GRS to prevent premature convergence, local solutions, and provide excellent quality of final result for the first time. AGRSA has been tested on unimodal, multimodal benchmark optimization problems and real engineering design optimization problems and promising results have been obtained. The proposed AGRSA in this paper can be used as a new global optimization method in many complex problems.

Keywords: General Relativity Search, Global Optimization, Dynamic Parameter Adjusting

Adhesive-free gas adsorption joining and application for flexible device

Yasunori Taga[a*], Keisuke Nishimura[a], Yuri Hisamatsu[a]

[a]Thin Film Research Center, Chubu Univewrsity

*y-taga@isc.chubu.ac.jp

Abstract:

Gas Adsorption Joining (GAJ) method was developed and applied for sealing of flexible film devices. Water gas molecules absorbed on the surfaces to be joined were decomposed into H and OH by plasma treatment resulting in the formation of OH terminated surfaces. Practical applications of GAJ for joining and sealing are now in progress.

Keywords: Adhesive free joining ,Gas adsorption joining, Ultrathin joining thickness, Interface chemistry

Adverse Effects of Enhanced Carbon dioxide Applications on Anti-oxidative Enzyme Activities of Wheat and Soybean

Gunsu Barisik Kayin[a*], Ismail Cakmak[b], Ali Vahap Katkat[a]

[a]Uludag University
[b]Sabanci University

*gbarisik@uludag.edu.tr

Abstract:

Plant functions, such as photosynthesis, respiration, growth and biomass production, are dependent on the atmospheric carbon dioxide concentration. When essential ingredients of plant growth are stable, increased CO2 content will be a stress factor for plant growth. Several studies have reported that elevated levels of CO2 enhanced photosynthesis, plant growth and agricultural yield, however, diminish the ecosystem balance. Plants elaborate biotic defense systems under elevated levels of CO2 stress to other environmental stresses, including soil salinity, air pollution, high and low air temperatures, through secondary metabolism, hormone-dependent processes and redox regulation. Therefore, the aim of the present study was determine the impact of carbon dioxide on anti-oxidative enzyme activities (namely, Superoxide dismutase-SOD, catalase-CAT, ascorbate peroxidase-APX and glutathione reductase-GR) in leaves and roots of wheat and soybean. The plants were grown under aquaculture and controlled greenhouse conditions with ambient (400 mg kg-1 CO2) and elevated (1200 mg kg-1 CO2) carbon dioxide concentrations. After phrenological observations, analysis were carried out to determine the anti-oxidative enzyme activities of the plants. With elevated CO2 levels enzymatic activity of soybean shoot and roots were increased. The differences in SOD, CAT, APX and GR enzyme activities were significant ($p<0,05$, $p<0,01$). However, for maize shoots and roots the differences between enzyme activities were not significant.

Keywords: Maize, Soybean, Oxidative Stress, Antioxidative enzymes

Aerodynamic Shape Improvement For Fines Maximization Of Tuavs

Tugrul Oktay[a], Metin Uzun[a*]

[a]Erciyes University, Faculty Of Aeronautics And Astronautics

*m.uzun2010@gmail.com

Abstract:

The purpose of this conference article is to progress autonomous flight performance of a tactical unmanned aerial vehicle (i.e. TUAV) via using aerodynamic nosecone and tailcone shapes improvement both experimentally (i.e. using wind tunnel) and computationally (using CFD software). Aerodynamic performance criteria, i.e. maximum fines, of a scaled model of our autonomous aerial robot named as Zanka-III manufactured in Erciyes University Faculty of Aeronautics and Astronautics Model Aircraft Laboratory is first examined in sub-sonic Wind Tunnel. Results found there are validated using a computational fluid dynamics software, i.e. Ansys. Nosecone and tailcone of fuselage is reshaped in order to improve maximum fines of our TUAV Zanka-III by appliyng Ansys. A novel scaled model using best data is then manufacture and placed in Wind Tunnel in order to validate Ansys results with experimental results. By using eventual geometrical data of our aerodynamically improved TUAV, better autonomous flight performance is obtained both in simulation environment (i.e. Matlab) and real time autonomous flights.

Keywords: UAVs, Aerodynamics, Fines, Optimization.

An Alternative Oil Plant: Styrax (Styrax Officinalis L.)

Cuneyt Cesur[a*], Belgin Cosge Senkal[a], Tansu Uskutoglu[a]

[a]Bozok University

*cuneyt.cesur@bozok.edu.tr

Abstract:

Styrax (Styrax Officinalis L.) is deciduous, shrubby perennial plant which is grow Southeastern Anatolia, Mediterranean, Aegean, Marmara region and central black sea in Turkey. Regional name of Styrax is “Tesbi”. Plant can grow in large area of Turkey where is mostly have bad soil structure and also unsuitable for agricultural production. It prefers dry rocky slopes, under the trees of the forest an elevation up to 1,500 metres (4,900 ft) above sea level. Grown under these conditions plant grains contain fatty oil up to %47.04. Different civilizations was used for various purposes such as spice and household appliances but now use for animal feed from tesbi shrubs and utilized as fuel in rural areas. Non-Edible fatty is not suitable for human consumption but it can be assert on industrial uses. Because of ever-growing human population in world, vegetable oil is necessary not only for human consumption but also in industrial uses. Tesbi shrubs can be imagine for unsuitable agriculture areas and its growing cost is too low when compared with other oil plants. If this plant insert on plant pattern, it will bring great benefit such as employment, cheap vegetable crude oil, environmental improvement and prevention for global warming.

Keywords: Oil Plant, Styrax , Tesbi

An Application of Adaptive Neuro-Fuzzy Inference System for Reservoir Operation

Onur Ozcanoglu[a*], Ozlem Terzi[a]

[a]Suleyman Demirel University

*onurozcanoglu@sdu.edu.tr

Abstract:

Being great source of drinking water, irrigation and hydroelectric energy, reservoirs are very important water storage structures. Optimal operation of reservoirs is necessary for efficient use of water resources. In this study, Adaptive Neuro-Fuzzy Inference System (ANFIS) is applied for the estimation of the volume in the reservoir of Altinapa Dam, which is located in Konya, Turkey. A variety of models have been developed using different hydrological data inputs including monthly inflow to reservoir, evaporation and precipitation. Moreover, various type and number of membership functions in ANFIS have been utilized to determine the most appropriate model. The results indicate that ANFIS can be successfully applied for the estimation of reservoir volume and it can be used in reservoir operation studies.

Keywords: ANFIS, reservoir operation, reservoir volume, Altinapa Dam

An Approach to the Design of External Rotor PMSM with Particle Swarm Optimization Algorithm

Mumtaz Mutluer[a*]

[a]Necmettin Erbakan University

*mmutluer@konya.edu.tr

Abstract:

In recent years, the use of permanent magnet synchronous motor (PMSM) has been increasing due to improvements in semiconductor and permanent magnet technology. PMSMs have advantages such as high efficiency and high power density but they are very complex in their design due to their non-linear construction like other electric motors. The use of artificial intelligence algorithms is very common in these engineering problems. These algorithms try to find the most optimal design parameters regardless of initial values of input parameters. The impressive factor here is the chosen objective function. This study aims at optimization of the design of external rotor PMSM. The selected artificial intelligence method is a particle swarm optimization algorithm. The objective function is the efficiency of the motor.

The examined motor has stator slots and pole numbers are 12 and 10 respectively. The winding layout is concentrated winding with double layer. The variables are rotor inner diameter, magnet thickness, air gap length, slot wedge height, stator tooth width, stator slot height, ratio of the slot opening over the slot width. Stator diameter, stack length, pole angle are invariables and their values are 340mm, 120mm, and 126°, respectively. Supply, power and speed of the motor are 340V, 2400W, and 250rpm. The permanent magnets have 1.2T flux density. The algorithm terminates by iteration number and a hundred iterations are run. Copper loss for analytical design is 82.2 watts and iron loss is 44.5 watts. The copper loss for the optimization design is 58.5 watts and the iron loss is 29.5 watts. Analytical and optimization efficiency results are 94.98% and 97.61%. The improvement in motor efficiency is quite striking. This indicates the usefulness of the study and in particular the effectiveness of the algorithm.

Keywords: external rotor, particle swarm optimization algorithm, permanent magnet synchronous motor design

An early detection system for lameness of broilers using image processing

Arda Aydin[a*]

[a]Canakkale Onsekiz Mart University

*araydin@comu.edu.tr

Abstract:

Lameness is one of the most important causes of poor welfare in poultry. Previous studies have documented approximately 30% of the chickens were seriously lame. In this research, a novel technique was developed for early detection of lameness in broilers. For this purpose, a digital camera continuously monitored images of broilers as they walked throughout a test corridor. Then, the image analysis algorithm was applied to detect some feature variables like speed, step frequency and step length of broilers. Afterwards, the relation between these feature variables and gait scores (as a measure of lameness) of broilers was investigated. The results showed a significant correlation between these feature variables detected by the proposed algorithm and gait score level of broilers given by an expert ($P<0.05$). Since strong correlations were found between these variables and gait score level of broilers, the results recommend that this fully-automated detection system has the potential to be used as a real-time monitoring tool for early detection of lameness in broilers starting from GS3. It is very important to detect lameness at an early stage because it allows to farmers and veterinarians to take immediate management actions in time. However, to define lower gait scores than GS3, either new feature variables should be inserted into the proposed system or this system should be combined with other automatic behaviour analysis tools for early detection of lameness in future researches.

Keywords: body oscillation, speed, broilers, gait score, lameness, image analysis

An Environmental Quality Problem: Vandalism

Ozgur Yerli[a*]

[a]Dep. Of Landscape Architecture, Faculty Of Forestry, Duzce University

*ozguryerli@gmail.com

Abstract:

Vandalism can be defined as the act of purposely and willingfully harming a property, vehicle or product belonging to a person or a public entity. When considered from the environmental point of view, people are often confronted with practical reflections of vandalism in everyday life. For example: Names engraved on the surface of a tree or on a bank in the park, broken lighting fittings, writings on the walls, unusable public toilets. In this paper, the urban areas where the problem of vandalism is observed are examined and examples related to them are presented. The problem of vandalism is related to the concepts of environment, locality, belonging, and ownership, and solution proposals are presented.

Keywords: City, Environment, Quality, Vandalism

An Evaluation Of Solid Waste Management In Erzincan Province

Tuba Bayram[a], Dilara Ozturk[a], Erdinc Aladag[a], Ayse Erkus[a*], Fatih Sevki Erkus[a]

[a]Yuzuncu Yil University, Faculty Of Engineering, Department Of Environmental Engineering

*ayseerkus@gmail.com

Abstract:

Waste composition has changed, and the amounts of waste have increased every passing day with technological advances, urbanization, industrialization, improvement of life standards and rapid population growth. The components of waste in Turkey are 68% organic waste, 13% recyclable solid waste and 19% other waste. Solid waste management eliminates or minimizes the adverse impacts on the environment and human health, and provides economic development and improved living conditions/ quality. In Turkey, which targeted the industrial development, because it had the priority for production in 1970s and 1980s, there was a great and speedy increase in industrial solid waste materials in the parallel of production amount and diversity. Although the attempts of the construction and operation of regular depositing areas are being performed, they are considerably low. For the solution of the solid effluent problem in our country by Environment and Forest Ministry, it is seen as the main issue that operating the “Solid Effluent Removing Facilities is of the key role in preservation of the environment and hindering the pollution from domestic uses. Although Erzincan province has many natural beauties, there is a sanitary landfill only in its central district. In district municipalities, solid wastes are collected in hazardous waste storage areas. The leachate produced by the solid waste landfill is collected and then discharged to the receiving environment after being purified in the Erzincan Municipality waste water treatment plant located next to the facility. This study will evaluate practices, problems and solution offers in the solid waste management adaptation and development processes.

Keywords: Landfill, Erzincan, solid waste, solid waste management

An examination on smart grid projects in the World

Fatih Onur Hocaoglu[a*], Emre Akarslan[a]

[a]Afyon Kocatepe University

*fohocaoglu@gmail.com

Abstract:

It is expected that energy will be the most important problem of the word in the near future. Moreover by the increasing demand on energy and reducing fossil fuel sources, energy efficiency is get more attractive issue for researchers. Smart grids became very popular in recent year. Smart grid has more efficiency than the conventional electricity networks. This new structure provides to maximize distributed energy resources integration. Furthermore it allows the consumer's participation in the overall electricity network. With this technology, the integration of renewable energy sources to the network will increase and this will reduce demand on fossil fuels. On the other hand, usage of advanced control strategy will increase reliability and will reduce the leakage losses. In the 2015-2019 strategic plan of energy ministry of republic of Turkey, it is indicated that energy efficiency is an important topic. To achieve a good efficiency, conventional electricity networks should be converted to smart grids. In this study, the smart grid applications of several countries in the world but especially in Europe are investigated. To this end, Portuguese smart distribution system examined and especially InovCity project is analyzed. Smart grid strategies for Salzburg, Austria are investigated and the Smart Grid Model Region Salzburg project which has goal of gathering several smart grid applications in an integrated system is examined. Moreover the Olympic Peninsula Project of American Energy Department and Model City of Mannheim (MOMA) project of Germany is investigated. Finally, the Italian smart grid pilot projects are evaluated. After the investigation of the existing projects, a roadmap to convert the conventional electrical distribution system of Turkey to smart grids is presented.

Keywords: Smart Grid, Plot Projects, Electric Distribution

An Example with Microsoft Kinect: City Modeling with Kinect

Mehmet Bilban[a*], Yusuf Uzun[b], Huseyin Arikan[a]

[a]Necmettin Erbakan University

*mbilban@konya.edu.tr

Abstract:

Kinect is a system that can detect human movements and send them to computers. It was developed by Microsoft to play games for the Xbox game console and is being used over time for applications in other areas. Because of the new technology, there is a lack of application and the literature in this field. In this study, the user's hand movements were detected by Kinect and is done the modeling of the city by drag and drop method by accessing shapes that was designed in the WPF screen.

Keywords: kinect, modelling, WPF screen

An Exergy Analysis Of Solar-Assisted Ejector Cooling System

Fatih Akkurt[a*]

[a]Necmettin Erbakan University

*fakkurt@konya.edu.tr

Abstract:

An exergy analysis of solar-assisted ejector cooling system (SAECS) was experimentally investigated. The SAECS was the combination of two subsystems including solar collector subsystem and ejector cooling subsystem. Exergy analysis was applied independently for each subsystem. Exergy balance diagrams were presented for each subsystem. Exergy destruction rates of each device were shown in the diagrams for different collector areas and ejector configurations. Exergy destruction in the collector is quite large depending on its quality. The use of better quality collector will reduce the proportion of destruction. The most considerable exergy destruction proportion in cooling subsystem was determined in the ejector followed by generator, condenser and evaporator. Exergy destruction proportion of each device was almost the same for different area ratios while the amount of exergy destruction was increased. The difference of ejector area ratio was obtained by changing mixing chamber diameter while nozzle throat diameter was kept constant and the nozzle exit position was kept at 0- location. The change of ejector geometry and nozzle exit position in different ways will cause an effect on both amount and proportion of exergy destruction in ejector.

Keywords: solar energy, exergy analysis ,ejector cooling system

An Experimental Investigation of Air&Solvent Penetration to the Intermediate Fuel Oil (IFO) Which Leads to Cappuccino Effect in Shipping Industry

Yasin Ust[a*], Veysi Bashan[*]

[a]Yildiz Technical University

*yust@yildiz.edu.tr

Abstract:

In maritime and shipping industry the term of bunkering is commonly described as supplying IFO, MGO etc. fuels to tanks. The speed of the ship and the deadweight tonnage which are related with specific fuel-oil consumption determines the capacity and number of bunker tanks. Typical capacities of ship's bunker tank vary from 300 cubic meters to 5000 cubic meters. This means that if ship's main engine power demand increases the fuel-oil consumption will also increase and bunkering will be needed despite the big bunker tank capacities. Thus, ships are occasionally needed to be supplied with fuel. Fuel suppliers complain about 'Cappuccino Effect' which fundamentally can be defined as frothing/bubbling caused by air and/or solvent blown through the fuel transfer pipes. In this study, an experimental investigation of air and solvent penetration to fuel is analyzed and the amount of frothed fuel is calculated by changing the percentages of solvent. Precautions for neutralizing Cappuccino Effect have been discussed and some advices have been given.

Keywords: Cappuccino Effect; Fuel Bunkering; Fuel Frothing; Fuel Bubbling.

An Experimental Investigation on Augmented Thermal Stratification with Obstacles

Necdet Altuntop[a], Dogan Erdemir[a]

[a]Erciyes University

*altuntop@erciyes.edu.tr

Abstract:

Thermal stratification is the most important performance parameter for hot water tanks. Enhanced thermal stratification increases the stored energy, system performance, standby time and system equipment efficiencies. Thermal stratification of the vertical mantled hot water tank can be augmented with placing obstacle inside inner tank. Since the obstacle acts as a thermal and flow barrier, cold water stays bottom of the obstacle. Thus, more hot water is obtained inside the tank. In this study, the effect of placing obstacle inside the tank is investigated experimentally. Two different obstacles are placed inside the tank. These are single obstacle and double obstacle. The cases with single obstacle and double obstacles are compared with ordinary tank (without obstacle). At the end of study, thermal stratification of the there different cases is compared. Experiments are performed under outdoor conditions in Kayseri, Turkey.

Keywords: Thermal stratification, Sensible thermal energy storage, Mantled hot water tank, Obstacle

An Experimental Study regarding the Reuse of Waste Foundry Sand in Geopolymer Concrete Production with Sodium Hydroxide Activator

Neslihan Dogan-Saglamtimur[a*], Ahmet Bilgil[a], Erdem Bilginol[a], Seyma Acar[a], Funda Yolcu[a]

[a]Omer Halisdemir University

*neslihandogansaglamtimur@gmail.com

Abstract:

Solid waste management that has become the principal concerns in the World due to many of industrial by-products and waste materials is one of the major environmental problems of cities. Foundry industries producing tons of by-products not only in the world but also in Turkey, use high quality specific size silica sand. When the sand can no longer be reused in the foundry, it is removed from the industry, so it is termed waste foundry sand (WFS). As a by-product of ferrous and nonferrous metal casting industries, WFS is an important member of the process and a kind of industrial solid waste. In an effort to use this waste in large amounts, researches have been carried out for its possible large-scale utilization of WFS like as an embankment fill material, as an aggregate supplement in asphalt concrete and as an aggregate in controlled low strength material. In this study, regarding the reuse of WFS in geopolymer concrete production by fully replacing an aggregate (regular sand) with WFS, it was aimed to solve waste problem originated from WFS. In the laboratory tests, WFS and sodium hydroxide (chemical binder/activator) will be used. In these experiments (by using related standards) some basic physico-chemical and mechanical properties in WFS (chemical analysis, sieve analysis, compacted unit weight, calculation of efficiency of combustible matter) and in geopolymer concrete (water absorption percentage, porosity, axial compressive strength, unit weight) will be determined. Preliminary experiments show that this waste is suitable for producing geopolymer concrete and reusing it enable to help solving environmental problems. CIMSA, one of the leading companies of Turkish cement industry, supports this study. The authors would like to thank the laboratory possibilities of “Department of Civil Engineering” and “Center of Application and Research for Industrial Raw Material and Building Materials” of Omer Halisdemir University.

Keywords: Building, concrete, construction material, environment, foundry sand, geopolymer, reuse, waste

An Image-based Recommender System Based on Image Annotation

Kemal Ozkan[a*], Zuhal Kurt[a], Erol Seke[a]

[a]Eskisehir Osmangazi University

*kozkan@ogu.edu.tr

Abstract:

Recommender system is a software that analyzes available data to help make recommendations about various products and services to their users that might be interested in that products and services. Providing accurate and dependable recommendations increases user pleasantness that results selling more products and services. Recently, content-based recommender systems have become increasingly popular among image-based recommender systems. In this presented research, we labeled Yahoo! Shoe dataset, with the assistance of 38 students from Eskisehir Osmangazi University, to design a content-based recommender system. Dataset contains a small sample of the Yahoo! Shopping shoe photos within 107 classes, each corresponding to a type and brand. Shoes are labeled for type, color, ornaments, shape and material. We used Bag of Words (BoW) model to design the recommender system, which is an effective method in computer vision. A visual vocabulary is created with commonly used LBP descriptors. A user item rating matrix is used for generating recommendations. There are a number of recommendation approaches based on cosine, Pearson correlation coefficient and mean squared difference similarity measures. We used weighted cosine similarity measure and obtained superior results.

Keywords: recomender system, image annotation, BOW model, feature extraction

An Implementation of DNA based Security Model in Medical Data

Rukiye Karakis[a*], Kali Gurkahraman[b]

[a]Software Engineering, Technology Faculty, Cumhuriyet University
[b]Computer Engineering, Engineering Faculty, Cumhuriyet University

*rkarakis@cumhuriyet.edu.tr

Abstract:

Digital Imaging and Communications in Medicine (DICOM) standard handles, stores, prints, and transmits the medical images. The DICOM file format includes a metadata header that contains image and patient information, modality, acquisition parameters, physician, and health center information etc. Hence, patient information in DICOM file must be secured to prevent tampering, patient privacy leaks, and to illegal copying according to medical health standards. This study aims to increase medical images security with using image steganography techniques. Magnetic resonance (MR) images are used as the cover image. The doctor's comments are combined with information about patient (name, ID, birth date, gender, age, weight, address), study (date, time, ID, modality, description), and acquisition series (date, time, and description) in the file header of MR images to compose message. The similarity gray level values of each pixel is measured by Euclid distance to its 8 neighbors. The message are hidden non-sequentially in the Least Significant Bits (LSBs) of pixels according to the similar values. The message is encoded according to DNA structure, and it is compressed by using Huffman algorithm. After embedding message, the header of DICOM image does not contain any personal information. The quality measurement of stego system is measured by peak signal-to-noise ratio (PSNR), structural similarity measure (SSIM), universal quality index (UQI), and correlation coefficient (R). According to the obtained results, proposed method ensures the confidentiality of the patient information in DICOM images.

Keywords: steganography, medical data security, DNA encoding, Huffman compression, similarity

An in vitro inhibition study for Bovine Testicular Hyaluronidase with 2,4-Dichlorophenoxy acetic acid dimethyl amine salt and Enrofloxacin

Mustafa Oguzhan Kaya[a*]

[a]Siirt University

*m.oguzhankaya@gmail.com

Abstract:

In this study, for the inhibition studies, one antibiotic named as enrofloxacin and one herbicide as 2,4-Dichlorophenoxy acetic acid dimethyl amine salt were used to determine the in vitro effects on bovine testicular hyaluronidase (BTH). Hyaluronidases are present in many tissues and organs (such as kidney, liver, skin, testes and uterus), as well as in venom (bees, wasps or cobra). These enzymes are capable of randomly hydrolysing hyaluronic acid, one of the most abundant constituents of the extracellular matrix. Testicular hyaluronidase is an endo-β-N-acetylhexosaminidase which degrades the glycosaminoglycans hyaluronic acid, chondroitin, chondroitin 4- and 6-sulphates and, to a variable extent, depending on the source, dermatan sulphate. Bovine testicular hyaluronidase, which is commercially available, has been chosen as a model for several studies. For this reason, in this present application, our last novel type affinity chromatography gel (Sepharose-4B-L-tyrosine-m-anisidine) was used for purification of BTH. A critical overview of the effects of enrofloxacin and 2,4-Dichlorophenoxy acetic acid dimethyl amine salt on BTH which associated with many biological functions, including allergic reactions, inflammation, migration of cancer cells, artificial insemination and microvascular permeability has been given in this research. The antibiotic and herbicide inhibited BTH at different millimolar levels. IC50 values of chemicals were calculated as 0.3101 and 0.4276 mM for 2,4-Dichlorophenoxy acetic acid dimethyl amine salt, and enrofloxacin respectively.

Keywords: Bovine Testicular Hyaluronidase, inhibition, antibiotic, herbicide, purification, affinity chromatography

An Investigation of Intelligent and Conventional Maximum Power Point Tracking Techniques for Uniform Atmospheric Conditions

Ekrem Kandemir[a*], Numan Sabit Cetin[b], Selim Borekci[c]

[a]Tubitak National Observatory
[b]Solar Energy Institute, Ege University
[c]Electrical - Electronics Engineering, Akdeniz University

*ekremkdemir@gmail.com

Abstract:

In recent years, power generation from photovoltaic (PV) system has received great attention compared to other renewable sources. Due to nonlinear characteristics of PV cells, the maximum allowable power level from PV panel changes with atmospheric parameters which are solar irradiance and temperature. In this context, maximum power point tracking (MPPT) algorithms are essential to maximize the output power of PV panel for any solar irradiance and temperature values. In the literature, various MPPT techniques have been studied to deliver maximum power from PV systems. Hence, this study discusses intelligent control techniques, which are called fuzzy logic controller (FLC) and neural network controller (NNC), and compares efficiency performance and convergence speed to conventional perturb & observe (P&O) and incremental conductance (Inc. Cond.) tracking techniques for MPPT of PV system.

In this paper, 150W PV panel model is investigated for different atmospheric conditions in MATLAB. Results of simulation show that NNC based and FLC based MPPTs have 4.66% better tracking accuracy than conventional P&O and Inc. Cond. under standard test condition (STC). NNC based MPPT has best iteration response rate among the other MPPTs under uniform atmospheric conditions. Therefore, the NNC based MPPT presents best superior quality in terms of efficiency and convergence speed for PV systems among the other MPPTs.

Keywords: PV Model, Maximum Power Point Tracking, Perturb & Observe, Incremental Conductance, Fuzzy Logic Control, Neural Network Control

An investigation of the effect of mass density of concrete on dynamic behavior of a cantilever retaining wall

Tufan Cakir[a*], Merve Tuzen[a], Kasif Furkan Ozturk[a]

[a]Gumushane University

*cakirtufan@hotmail.com

Abstract:

With the fast development of the computer technology, comprehensive evaluations oriented to the seismic design of large three dimensional backfill-cantilever retaining wall-soil/foundation systems are presented considering nonlinear behaviors and the interaction with the unbounded soil. Especially, the radiation damping which is the most striking feature in an unbounded soil has a significant effect on the dynamic behavior of cantilever wall, and makes the problem more complicated. Thus, a versatile and efficient model is of critical importance to investigate the responses of retaining structures. The main aim of this work is to examine the influence of mass density of concrete wall on dynamic behavior of a cantilever retaining wall subjected to backfill and subsoil interactions through finite element model (FEM). For this purpose, a three dimensional FEM of backfill-cantilever wall-soil/foundation system is developed and implemented in the ANSYS software. Elastic material properties are considered for the cantilever wall. The backfill and foundation soil is modelled as an elastoplastic medium considering the Drucker-Prager yield criterion, and the backfill-wall interface behavior is taken into consideration by using interface elements between the wall and soil to allow for de-bonding. Lysmer-Kuhlemeyer type viscous boundary elements are also used to simulate the wave energy absorption. Nonlinear time history analyses of the interaction system are carried out for three different values of mass density. The response quantities examined include the lateral displacements of the wall relative to the moving base, and the stresses in the wall in all directions. The results show that the variation of mass density of concrete has a negligible effect on seismic behavior of cantilever retaining wall investigated here. This situation can be attributed to the relatively narrow ranges of mass density.

Keywords: mass density, cantilever wall, ANSYS, Drucker-Prager model

An Investigation On The Validity Of Fabric Objective Measurements For Virtual Garment Simulation

Sertac Guney[a*], Ibrahim Ucgul[a]

[a]Suleyman Demirel University

*sertacguney@sdu.edu.tr

Abstract:

Virtual garment simulation received much attention in the past decade, and the fashion industry has been attracted to use this brandnew tool in actual product development process to strengthen the collaboration along the supply chain and optimize the product time for market. But still there is some hesisation for the accuracy of the 3D virtual simulation results. To overcome this disadvantage, the 3D simulation systems should not only predict the garment shapes properly on a 3D fit avatar, but also accurately simulate the fabric behaviours. Nowadays software providers have begun to develope their own measuring devices to obtain the required textile parameter specific to their application. This study aims to analyse the accuracy of fabric objective measurements of commercial 3D virtual garment software's testing kit. Eleven strecth knitted fabric made of polyamide, polyester and cotton including different amounts of elastane fibers were selected from sports garment producers. We carried out tensile tests and bending resistance test under standard laboratory condition and also used the software's testing kit. We compared the extension, shear and bending measurements between objective fabric measurements and the derived parameters for the virtual garment simulation. Results showed that for extensibility, there was a good agreement between the two objective testing systems with the exception of a few specimens. Two testing systems use the same cantilever principle to measure the bending length under the fabrics own weight. But the results showed good agreement for some fabrics but not for all, because of the unsuitable dimensions of testing kit to get the right angle of 41.5˚. Software providers still introduce their own textile testing method to measure the fabric parameter but there should be standardisation and also they should add some important parameters such as friction to approve the accuracy of the 3D virtual simulation results.

Keywords: Virtual simulation, fabric objective measurement, 3D simulation systems, textile parameters

An overview of software reliability, metrics and models

Zuleyha Yiner[a*], Ruya Samli[a]

[a]Istanbul University

*zuleyha.yiner@istanbul.edu.tr

Abstract:

One of the important properties of many computer-based systems is being dependable which points to degree of users' trust. This degree means that users can operate as they expect and system will not fail in normal use. Avaliability, reliability, security, safety, repairability, maintainability, survivability and error tolerance are dimensions of dependability of a system.

Reliability, one of the ISO 9126 quality criteria, is the probability that a system will function without errors for a specific purpose in a particular environment (ANSI definition). The main purpose of the reliability is to ensure that the system works in all conditions and that the average time interval between faults is high. For this purpose, errors are detected in a software, the cause is investigated and corrected. This is achieved by evaluating the design of the software throughout the lifecycle including maintenance, testing and support processes.

Metrics are measurements used to indicate the reliability of a software. These criteria are selected depending on the requirements of the application and the type of system to be used. Software reliability models are the ones developed to detect errors or failures in the software, understand why and how they are performed, and scale the level of reliability.

In this study, we introduce the basic concept of software reliability, measuring models for software reliability, metrics used in measurements. Later, the models developed to measure software reliability were examined as two types of models, dynamic and static.

Keywords: system dependability, software reliability, software reliability metrics and models

Analysis Of A Solar Energy Assisted Desalination System

Osman Kara[a*], Ertac Hurdogan[a], Tuncay Yilmaz[a], Orhan Buyukalaca[a]

[a]Osmaniye Korkut Ata University

*osmankara@osmaniye.edu.tr

Abstract:

Humidification dehumidification desalination (HD) processes require for much of the thermal energy for heating salt water. This thermal energy must be supplied at a comparatively low temperature, between 75 and 110 ° C. Developments in HD desalination technologies are specifically aimed at reducing energy consumption and cost. Furthermore, solar energy is successfully used for the production of fresh water with desalination systems. Solar desalination based on the humidification dehumidification cycle presents the best method of solar desalination due to overall high-energy efficiency. Heat for this system can be provided in the case of using solar energy by solar flat plate or collector according to working conditions. This study deals with a desalination system based on air humidification and dehumidification using solar energy. It was shown from the analysis that the system considered is suitable for obtaining fresh water in Osmaniye weather conditions.

Keywords: Solar Desalination, Humidification and Dehumidification, Solar energy

Analysis of Depth of Different Bodies Using Multi-Scale Wavelet Tomography

Fikret Dogru[a*]

[a]Dokuz Eylul University

*fikretjfm@gmail.com

Abstract:

In this study, the continuous wavelet transform was used for estimation of depths of buried different structures such as sphere, horizontal and vertical cylinder at different depths. Multi-scale wavelet tomography method is based on continuous wavelet transform was applied on theoretical gravity data. All the local maxima points in the result of continuous wavelet transform were combined thorough the line using Least-Squares Fitting method. The location where the lines merged in the new figure under the continuous wavelet transform gives depth of burried structure. The dilation value of wavelet transform turns into the depth values in the new figure. The theoretical anomalies of three different structures at different depths were used for testing the accuracy of this method and the depth values were obtained so close the true values. As a conclusion, this method gives a prior information about depth of buried structure without using inversion tehniques and this prior information could be used as an initial parameter in the other inversion methods.

Keywords: Wavelet transform, tomography, inversion, buried structure

Analysis of Textile and Clothing Trade between Turkey and Major Asian Countries

Seher Kanat[a*], Turan Atilgan[a]

[a]Ege University Department Of Textile Engineering

*seher.kanat@ege.edu.tr

Abstract:

Textile and clothing sector is one of the leading sectors which constitute a basis for development in many developed or developing countries. This situation is also valid for Turkey. The industrialization effort of the sector, which has begun with Sumerbank, is improved and its efficiency is increased in time. Turkish textile and clothing sector, which is a pioneer and competitive sector, has always been placed near the top during 1980s and 1990s. It has played a significant role in export oriented development model, which has begun in 1980s and in customs union with European Union in 1996. Although the sector is one of the Turkey's most competitive sectors, it is faced with intense competition of Asian countries during the recent years. Production costs play a significant role in this competition.

In this study, textile and clothing trade between Turkey and major Asian countries is analyzed and suggestions are made. Also, alternatives are offered in order to preserve and improve the efficiency of the sector, which has significant contributions to Turkish economy, against Asian counties in national and international fields.

Keywords: Asian countries, textile and clothing sector, foreign trade, competitiveness

Analysis Of The Effects Of Axial Dampers On Propulsion System Vibrations of A Naval Vesel Driven By CODAG.

Abdullah Gokturk[a*]

[a]Istanbul Technical University

*abdullahgokturk@hotmail.com

Abstract:

Ship vibrations can lead to huge damages to the related local regions, adversly effect the performance of vital shipboard equipment, increase maintenance costs and greatly increase discomfort or annoyance to passengers and crew. These all are why excessive ship vibrations must be taken under control. The objective of this study is reduce of vibration oscilations on ship propulsion system. Within vibration analysis of the system firstly; phsycal model of the naval ship's propulsion system consist of mass, spring and damping elements developed properly and also the effects of dynamic forces which are consisted of main engine stresses and the hydrodynamic forces which come from water effect are also taken into consideration. Afterwards, equation of motions derived for each mass owing to Newton's second law and consequently by solving these equations, employing matrix approach, natural frequencies and modes of the axial vibration obtained. Finally, a model for propulsion system formed in Matlab/Simulink program. The axial vibrations coused by internal and external forces that excite the system examined and illustrated with graphs how the model respond in the face of undamped and under different axial damping ratios. Then which is also our goal; axial damping ratios that can absorb vibrational motions of the system successfully determined.

Keywords: ship vibration, naval vessel, vibration, damping

Analyzing Ballast Water Treatment System for Commercial Vessels

Tanzer Satir[a*], Neslihan Dogan Saglamtimur[b]

[a]Maritime Faculty, Istanbul Technical University
[b]Environmental Engineering, Omer Halisdemir University

*tsatir@itu.edu.tr

Abstract:

Ballast Water Treatment Systems (BWTSs) have been developed for ships so that marine species (i.e. aquatic invasive species) content should be eliminated with a filtering device. It ensures eco-friendly ballasting and de-ballasting processes. When ships began using seawater as ballast over a century ago it was unlikely that anyone foresaw that the practice would be blamed for spreading alien species around the world's oceans or that ballast would have to be treated to prevent species migration. Several methodologies seeking to remove or render harmless organisms in ballast water while in tanks and on ships are in development or being piloted. These include mechanical treatment (e.g. filter or cyclonic separation), physical treatment (such as ultraviolet, ultrasound or heat treatment), chemical treatment (e.g. the use of disinfectants or biocides), and biological treatment, or a combination of these.

The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM) is a new international convention to prevent the potentially devastating effects of the spread of harmful aquatic organisms carried by ship ballast water has been adopted by the International Maritime Organization (IMO), the United Nations agency responsible for the safety and security of shipping and the prevention of marine pollution from ships on February 9-13, 2004 at IMO's London headquarters. This convention will enter into force on September 17, 2017. In this paper, latest technologies for BWTSs 13 years after the convention are analysed and the effects of these technologies are discussed for shipping sector after entering into force.

Keywords: Ballast, environment, treatment, vessel

Analyzing Health Satisfaction of Turkey in NUTS3 Level by Spatial Regression

Adnan Karaibrahimoglu[a*], Ahmet Suad Toprak[b]

[a]Necmettin Erbakan University
[b]Konya Plain Project Regional Development Administration

*adnankaraibrahim@gmail.com

Abstract:

ILife satisfaction measures what people feel in their life in relation to economical standing, social, cultural, educational, health and family perception. It is an international survey conducted in many countries and disseminated its results biannually. Main and important part of the survey is the health perception which is rated on a scale ranging from 1 to 10 (fully satisfied). The aim of this study is to analyze health satisfaction of Turkey and find the effects of other satisfactions on particular life domains (financial situation, housing, job, happiness, income etc.) taking into account of spatial dependency. The data consisted of life satisfaction survey of 2010 conducted by 1518 people in 66 provinces. There were 40 variables. Each record was assigned to related provinces which were matched with longitude and latitude coordinate values by a shape file in a GIS media. A spatial Poisson regression model was performed considering the health satisfaction rate as dependent variable. Moran's I correlation was evaluated and density map for health satisfaction were plotted. According to the results, AIC=233.1 / BIC=2941.7 and Deviance of GOF=35.3 (p=0.164). Likelihood ratio test results were significant for loneliness, waking-up fresh, cheerfulness and economical standing, but not for housing, marital status, number of children or health services. There was a significant spatial dependency of health satisfaction in internal Aegean See, Mediterranean Sea and Central Anatolia with West Black See regions of Turkey. Discete spatial data can be analyzed by semi- or non-parametric methods as well as continuous data is analyzed easily by spatial lag or spatial error models. It is obvious that the results of this study should be examined carefully by health planners to make more accurate decisions to improve health system.

Keywords: GIS, Poisson spatial regression, health satisfaction, spatial dependency

Antagonistic Effect of Lactobacillus Strains Against Candida Species

Ergin Kariptas[a*], Esin Kiray[a], Sener Tulumoglu[b], Harun Ciftci[a], Cigdem Er[a]

[a]Ahi Evran University
[b]Dr. Behcet Uz Hospital

*ekariptas@ahievran.edu.tr

Abstract:

Lactobacillus strains can produce anti microbial substances with the capacity to inhibit the growth of pathogenic and spoilage microorganisms. The aim of this study was in vitro testing of the potential antagonistic effect of Lactobacillus strains on Candida species by using a standart antimicrobial plate well agar diffusion method. Lactobacillus spp. strains isolated from the stool of 48 patients between the ages of 25 and 50 who resorted to the Kirsehir State Hospital with various complaints without having a problem with their digestive system, A total of 40 Candida species used in this research were obtained from the Culture Collection of Clinical Microbiology Laboratory at Doctor Behcet Uz Hospital for Child Diseases Education and Research. Lactobacillus were investigated by API 50 CHL identification kit system and Candida were identified by Vitek 2 system. Lactobacillus were seen to have anti fungal effects against C. albicans, C. parapsilosis, and C. famata yeasts. However, Lactobacillus had a poor anti fungal effect. This study could be considered the second of its kind in this respect. Results of this study will help to identify to find out new anti fungal agents against resistance problem. Consequently, further and more detailed studies are needed in this field.

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Keywords: Lactobacillus, Candida, Antagonistic Effect

Antiapoptotic and Antiinflammatory Effect of Hypericum perforatum (L.) on Ethanol-induced Gastric Damage in Rats

Ihsan Karaboga[a*], Ayse Handan Dokmeci[a], Mehmet Akif Ovali[b], Mustafa Erboga[a], Ahsen Yilmaz[a]

[a]Namik Kemal University, School Of Health
[b]Canakkale Onsekiz Mart Universiyt, Faculty Of Medicine, Department Of Physiology

*ikaraboga@nku.edu.tr

Abstract:

Hypericum perforatum L. (HP), commonly known as "St. John's wort" is one of the oldest medicinal plants used in traditional medicine of different cultures. This study was conducted to evaluate the antiapoptototic and antiinflammatory effect of HP in the rats induced gastric ulcer by absolute ethanol. Forty male Wistar albino rats were used in this study. Rats were divided four group, randomly. Gastric ulcers were induced by intragastric instillation of absolute ethanol(1mL). Group I (Control, n=10), Group II (Ethanol, n=10, 1 mL ethanol, orally, 90 min), Group III (Olive oil + ethanol, 1 mL olive oil, 120 min; 1 mL ethanol, 90 min, orally) Group IV (HP + ethanol, 1 mL HP, 120 min; 1 mL ethanol, 90 min, orally). Gastric ulcer index score was calculated in gastric mucosa by morphometrically in percent. Immunohistochemical HSP70, PCNA and iNOS staining, apoptotic TUNEL staining, gastric IL-10 and IL-6 expression (ELISA) and SOD, MDA, CAT levels were assessed in gastric tissue. The oral administration of HP showed gastroprotective effect. The Ethanol group (Group II) exhibited severe mucosal damages, exceed HSP70, iNOS, IL-6 expression, elevated TUNEL(+) cell numbers, higher MDA level, decreased CAT and SOD, IL-10, PCNA activity. Pre-treatment of HP and olive oil (group III and IV) significantly attenuated the gastric lesions and other parameters as compared to the group II. These immunohistochemical and biochemical results clearly demonstrate that HP and Olive oil inhibits the formation of ethanol-induced gastric mucosal lesions through prevention of lipid peroxidation, activation of enzymatic radical scavenging and by adjust balanced level of inflammatory cytokines (IL-6 and IL-10).

Keywords: gastric mucosal damage, ethanol, H. perforatum, hsp70, iNOS, IL-6, IL-10

Antibacterial And Antifungal Properties Of Benzaldehyde Derivatives

Metin Konus[a*], Aslihan Kurt Kizildogan[b], Arif Kivrak[c], Can Yilmaz[a]

[a]Department Of Molecular Biology And Genetics, Faculty Of Science, Yuzuncu Yil University
[b]Department Of Agricultural Biotechnology, Faculty Of Agriculture, Ondokuz Mayis University
[c]Department Of Chemistry, Faculty Of Science, Yuzuncu Yil University

*mkonus@yyu.edu.tr

Abstract:

Benzaldehydes are biological compounds. They can show several effects such as anti-inflammatory effect, phospholipase D inhibition, antioxidant and anticancer activity. Nonetheless, they are commonly found in nature, these forms are not structurally stable. Thus, it is important to synthesize structurally stable and biologically effective benzaldehyde derivatives for new drug development. Two different benzaldehyde derivatives, namely 5-bromo-2- (prop-2-yn-1-yloxy) benzaldehyde and 3,5-di-tert-butyl 2-(prop-yloxy)benzaldehyde, were synthesized synthetically. Then, their antimicrobial and antifungal properties were determined both qualitative (Kirby Bauer method) and quantitative (Microdilution method) methods. Three gram-positive bacteria (Staphylococcus aureus ATCC 25923, Bacillus subtilis ATCC 6633 and Enterococcus faecalis ATCC 29212), three gram-negative bacteria (Escherichia coli ATCC25922, Klebsiella pneumoniae ATCC700603 and Pseudomonas aeruginosa ATCC 27853), Candida albicans ATCC10231 and Aspergillus niger ATCC16404 were used as indicator organisms. The data was evaluated according to CLSI standards (CLSI_M100-S24 for bacteria, M38A2 for fungus and M27A for yeast).

According to the disc diffusion assay and minimum inhibitory concentration (MIC) results, both benzaldehyde derivatives exerted weak to intermediate level of antibacterial activity against B. subtilis ATCC 6633 with a MIC value of 64 µg/ml. However, MIC values of 256-512 µg/ml were recorded for other indicator bacteria tested. As for antifungal activity, both benzaldehyde derivatives showed intermediate level (MIC: 32 µg/ml) of antifungal effect on A. niger ATCC16404, while they showed a very low level of inhibitory effect on C. albicans ATCC10231 (MIC: 256 µg/ml).

According to the antimicrobial activity results, both benzaldehyde derivatives exhibited strong antifungal capacity than antibacterial effect.

Keywords: Antimicrobial, Antifungal, Benzaldehyde Derivatives, Drug Development

Antioxidant Activities of Natural Honey Samples from Hakkari and Mus Regions (Turkey)

Tulin Eker[a*], Adnan Bozdogan[a], Zeynep Ulukanli[a]

[a]Osmaniye Korkut Ata University

*tulinsahin@osmaniye.edu.tr

Abstract:

Hakkari and Mus are the reputable regions which contribute the honey production in Turkey. The honey production in both regions is based on the natural habitats. Honey samples obtained from beekeepers from Hakkari and Mus regions of Turkey were analyzed to determine their total phenolic (TPC), flavonoid (TF), ascorbic acid (AAC), carotenoid (TCC) contents as well as their antioxidant activities such as DPPH scavenging activity (2-diphenyl-1-picrylhydrazyl), Reducing Power (RP) and Ferric-Reducing antioxidant power (FRAP).

The present results indicated that there were no significant differences among the total phenolic contents of honey samples. The highest total flavonoid content was found in a honey sample from Mus-2 (9.5 mg of quercetin /100 g of honey). The lowest ascorbic acid content was found in a sample from Mus-2 (0.93 mg/100 g of honey), and two samples from Hakkari-2 (0.99 mg/100 g of honey) and Hakkari-4 (0.81 mg/kg of honey). The highest carotenoid content was found in a honey sample from Hakkari-2 (1.00 β-carotene mg/kg of honey).

Three concentrations ranging from 12.5 to 50 mg/mL of the honey samples from Hakkari and Mus regions were used for antioxidant assays. BHT was used as the synthetic antioxidant to compare results. In the experiments, BHT had the highest DPPH scavenging activity at all concentrations (12.5, 25 and 50 mg/mL). Reducing power and FRAP (0.22 Fe+2 mmol/L) values were the highest in a sample from Mus-2 and Hakkari-3 at the lowest concentration, respectively. A positive significant correlation between reducing power value and total flavonoid content was found (R2=0,793).

Keywords: Hakkari, Mus, honey, antioxidant activity, physicochemical properties, Turkey

Application of linear stochastic models for drought forecasting

Ulker Guner Bacanli[a*]

[a]Pamukkale University

*ugbacanli@pau.edu.tr

Abstract:

Drought is a global phenomenon. Many different measures are used to determine drought. Drought forecasting plays an important role in the planning and management of water resource systems. The models can be used from generating data to planning, design of hydraulic structures.

In this study is the investigation of the meteorological drought in Eskisehir city in Central Anatolian Region in Turkey. In the presented study, the Standard Precipitation Index are investigated. For this purpose, long term precipitation observations of Eskisehir station by The Turkish State Meteorological Service (DMI) are evaluated.

In the presented study, stochastic models are established to forecast the 12 monthly SPI drought index of Eskisehir Station. For establishment of models, flows which were observed between 1966 and 2014. Linear autoregressive [AR(1) and AR(2)] which are mostly used in hydrology were investigated. Autocorrelation function [ACF], minimum residual variance [Min Var(e)], Akaike Information Criterion [AIC], Modified Akaike Information Criterion [AICC] and final prediction error [FPE] for testing the goodness of fit model identification in time series modelling were evaluated.

The 12 monthly SPI drought index of Eskisehir Station showed that the linear autoregressive moving average AR(2) model is the most appropriate model among the competing models.

Keywords: Drought, Standardized Precipitation Index (SPI)Linear Autoregressive Models, Time Series Modeling, Diagnostic Checking.

Application of MPS-FEM Fluid Structure Interaction Model to a Sequential Dam-Break Problem

Ali Ersin Dincer[a*], Abdullah Demir[a]

[a]Middle East Technical University

*aliersin@metu.edu.tr

Abstract:

The present study, a fluid structure interaction model is developed by using moving particle semi-implicit method (MPS) and finite element method (FEM) for fluid and structure, respectively. The developed code is applied to an idealized sequential dam-break problem. The effect of failed upper dam on the lower dam body is investigated in terms of pressure. Besides, behavior of flood in lower reservoir is observed with given free surfaces. Both results can be used to take protective measures.

Keywords: fluid structure interaction, FSI, MPS, contact mechanics, sequential dam-break.

Ardunio Based Vehicle Park Distance Measurement System via Smartphone

Gul Fatma Turker[a*]

[a]Suleyman Demirel University

*gulturker@sdu.edu.tr

Abstract:

With the widespread use of smartphones in the society, mobile software applications are developed and used in many areas. In smart transportation systems applications. Mobile applications are being produced to inform the drivers about the vehicle in intelligent transportation system applications. In this study, it is aimed to remove the problems that the vehicles have experienced while parking. Therefore, an ardunio based vehicle parking distance measurement system is designed via smartphone. Vehicle parking sensors are controlled by arduino and received data is transferred to an Android based smartphone. Thanks to the software developed for android, you can connect Arduino bluetooth module with drivers. Drivers can be connected to the arduino bluetooth module via software developed for android. Thanks to ultrasonic sensors, a system that is more sensitive than other sensors has been developed. In addition, with this system instead of the stimuli coming by voice, the image from the device is monitored instantaneously up to 2 cm distance. The distance information from the sensors placed on the corner and front back points of the vehicle was collected by the ardunio card and communicated with the android device via bluetooth shield and the driver was informed. With Android software, the driver can be warned by measuring distance between 2-400 cm. When the distance is within the specified range, ultrasonic sensors are activated and can be viewed from the android device. Thus, smartphone based park system was established to prevent any accident that may occur while parking.

Keywords: Car parking, ultrasonic sensor, ardunio, android, driver information

Arsenic Contamination in Soil in Emet-Kutahya Basin (Turkey) and Risk Characterization for Human Exposure

Tuna Karatas[a*], Mert Guney[b], Cafer Ozkul[c], Nihat Hakan Akyol[a], Recep Ugur Acar[a]

[a]Kocaeli University, Kocaeli, Turkey (Erasmus Student In Charles University, Czech Republic)
[b]Polytechnique Montréal, Quebec, Canada
[c]Dumlupinar University, Kutahya, Turkey

*tunakaratas@hotmail.com

Abstract:

Humans are exposed to a variety of contaminants ubiquitous on Earth, including potentially toxic elements (PTEs) in soil and water. One of most dangerous PTEs is arsenic (As) which has numerous toxic effects, being classified as a Group 1 carcinogen by World Health Organization (WHO). Serious health disorders (incl. carcinogenic diseases) related to As have already been observed in Emet region, Kutahya, Turkey.

Kutahya is located in the western part of Anatolian peninsula. The Neogene lacustrine sediments which include As minerals unconformably overlying the Pre-Neogene basement complex. Many small epithermal style ore mineralizations, essentially orpiment and realgar association were documented in Neogene sediments. Currently, Borate minerals (colemanite, ulexite, etc.) were documented in Neogene sediments and open-pit mining activities take place for borax deposits in this region. Therefore, would be a concern increasing As mobility due to open-pit mining operations in this region.

The measured As concentrations in collected soil samples were between 22 mg/kg and 770 mg/kg. As is regularly used for various purposes including plant irrigation, and As may further pass into food chain of humans. Residents may exposed As at significant levels which may cause long-term harmful effects. The objective of the present study is to determine As concentrations in soil, plants and groundwater; to assessment As mobilization in soil, and complete risk characterization for human health via different exposure pathways. The results for the characterization of As contamination in the study area will be presented. The exposure assessment and subsequent human health risk characterization part of the present study will be based on mathematical modeling of groundwater flow and pollutant transport, and will be later completed.

This study was supported by Dumlupinar University Scientific Research Projects Unit with project code 2015-37.

Keywords: Arsenic, soil contamination, risk characterization

Assessment of Utilization Effect of Permeability Reducing Admixture on Transport Properties of Mortar Mixture Containing High Range Water Reducing Admixture

Ali Mardani-Aghabaglou[a], Suleyman Ozen[a*], Muhammet Gokhan Altun[b]

[a]Uludag University, Department Of Civil Engineering
[b]Bursa Metropolitan Municipality

*suleymanozen44@gmail.com

Abstract:

In this study, effects of utilization of permeability reducing admixture (PRA) on transport properties of mortar mixture containing high range water reducing admixture (HRWRA) was investigated. For this aim, a CEM I 42.5 R type cement conforming to EN 197-1 standard and a PRA were used. In addition to the control mixture without any PRA, 2 different mixtures were prepared with the use of PRA in two different amount (1 wt% and 2 wt% of cement). In all of the mixtures, water/cement (w/c) ratio, aggregate/binder (a/b) ratio and flow value were kept constant as 0.485, 2.75 (by weight) and 200±10 mm, respectively. Flow values of the fresh mortar were determined in accordance with ASTM C1437. In order to achieve the required flow, a polycarboxylate ether based high-range water reducing admixture was used in the variable range. In addition, the compatibility between cement and admixtures was controlled by the Marsh-funnel flow time and mini-slump tests. For this reason cement paste mixtures having 0.35 W/C ratio were prepared. The compressive strength and ultrasonic pulse velocity (UPV) values of 50 mm cube mortar specimens were obtained at 7 and 28-day ages in accordance with ASTM C109 and ASTM C 597 standards, respectively. The 28-day water absorption of 50 mm cubic specimens were obtained in accordance with the ASTM C642-97 standard. The 28-day sorptivity test was performed on mm prismatic specimens in accordance with ASTM C1585. Test results demonstrated that using of PRA improved transport properties of mortar mixtures compared to the control mixture.

Keywords: permeability reducing admixture, high range water reducing admixture, transport properties

Automation of Failure Modes and Effects Analysis with Failure Data

Halil Ibrahim Ayaz[a*], Murat Caner Testik[b]

[a]Necmettin Erbakan University
[b]Hacettepe University

*hiayaz@konya.edu.tr

Abstract:

Failure modes and effects analysis (FMEA) is a powerful and proactive quality improvement tool for defining, detecting, and identifying the failure modes and their effects. FMEA is applied to many different production and service areas and useful results have been obtained. In spite of the benefits, there are some difficulties in its implementation such as defining the severity, occurrence and detection of failures. This study considers computer servers as an implementation area and deals with the difficulties by considering an approach based on automation. New risk priority metrics are developed instead of subjective severity, occurrence, and detection metrics. New metrics are objective and data-based. Data discretization algorithms and new approaches are used while these metrics are obtained. As a conclusion of this study, a simple guideline is developed for the end user.

Keywords: Data Discretization, FMEA Automation, Risk Priority Number

Autonomous car parking system with various trajectories

Bunyamin Esiyok[a], Anil Can Turkmen[b*], Ozgur Kaplan[b], Cenk Celik[b]

[a]Department Of Electrical And Electronics Engineering, Yeditepe University
[b]Department Of Mechanical Engineering, Kocaeli University

*anilcan.turkmen@hotmail.com

Abstract:

In this study, an algorithm presents a solution to 4-wheel-car parking. This algorithm is suitable for parallel parking between two objects or two cars. New generation cars have serious developments and automobile brands are in competition. Due to this competition, intelligent driver assistance systems are playing a key role while automotive industry is being more automated. Researches show that finding a solution to parallel parking is one of the most needed improvements for drivers. Because parking is a very difficult topic for novice drivers, especially in metropolises which have limited parking areas. The goal of the park assistant system is to help the drivers have more enjoyable and more productive driving experiences. Also another aim is reducing damages during the parking operation. Parking damages have very bad effect on World's economy. Because countries and insurance companies pays money for simple parking damages and also owners of the cars' sell their cars below its value because of damage history.

System needs ultrasonic sensors that located on the corners of the car. The sensors help to make trajectory planning for parking process, furthermore scanning the park area at the same time. Comparing with similar sensors, ultrasonic sensors are more stable but their response is affected by some environmental changes as temperature, humidity etc. Despite these disadvantages ultrasonic sensors are the most suitable sensor for this kind of systems.Firstly the system verifies whether enough space. After finding a suitable space, the system generates logical movements for perfect parking. This parking operation is tested in a simulation environment using MatLab-Simulink. The process is started when driver locates the car near the park slot. The algorithm generates a trajectory for four movements to reach the optimum parking. During simulations, algorithm was tested from 0.57 to 2.262 meters and perfect outcomes were observed.

Keywords: Autonomous vehicle, trajectory, paralel parking, ultrasonic sensor, path planning

Auxiliary Heat and Power Productions in a Sewage Treatment Facility

Aysegul Abusoglu[a*], Emrah Ozahi[a], Alperen Tozlu[b]

[a]University Of Gaziantep
[b]Bayburt University, Department Of Mechanical Engineering, Bayburt, Turkey

*ayabusoglu@gantep.edu.tr

Abstract:

The main function of a sewage treatment is to minimize the harmful effects that the sewage water will give to the natural water environment in which it is discharged. The most energy-consuming process in a sewage treatment is the stabilization of the wastewater sludge. Despite high energy consumption, sewage sludge has the potential to become a renewable energy source at the same time. Biogas produced as a result of the anaerobic digestion process in which the sludge is stabilized in sewage treatment facilities can be used to meet the auxiliary heat and power needs of the facility in a great extent. Thus, the sewage treatment facilities which are in a position where energy can not only be consumed but can also be produced at the same time, have enormous potential due to balancing of energy expenditure and structures compatible with the concept of sustainability.

In this study, an actual municipal sewage treatment facility is assessed in terms of auxiliary heat and power production potentials. The facility consists of six subsytems for treatment purposes: Primary treatment, secondary treatment, flotation and thickening system, anaerobic digestion system, biogas engine driven cogeneration system and sludge dewatering system. The total electricity consumption of these subsytems except cogeneration is found to be 2083.73 kWh. The cogeneration system generates 1600 kWh electricity by two dual-fuel gas engines using biogas obtained from anaerobic sludge digestion process. For further power production to meet the auxiliary power needs of the treatment facility, a scenario is developed based on the combustion of stabilized sludge in an incineration plant. A gas turbine is installed at the exhaust of the incineration plant to produce 1000 kWh electricity, which makes the total production 2600 kWh and meets the all power needs of the auxiliary processes in the facility.

Keywords: Sewage treatment, anaerobic digestion, sludge, biogas, power production, incineration

BaTiO3 Powder Synthesis by Citrate Gel Method

Sinem Aksan[a*], Hasan Gocmez[a], Cihangir Duran[b], Mustafa Tuncer[a], Sait Altun[a]

[a]Dumlupinar University,Materials Science And Engineering
[b]Yildirim Beyazit University, Faculty Of Engineering And Natural Sciences

*sinem.aksan@dpu.edu.tr

Abstract:

In this study, fine grained and impurity-free BaTiO3 powders were produced by citrate gel method. In the first step, TTIP (Titanium (IV) isopropoxide, 98%) was dissolved in Proponol with the magnetic stirrer. Ba(NO3) 2 (Barium nitrate, 99%) was dissolved in water and added to citric acid (citric acid monohydrate, 99.5%, for analysis) solution. Gelling was carried out subsequently mixing at 500 rpm at 80 ° C. Following the burning process the powder was ground in agate mortar. It was calcined at 1000 ° C for 2 hours at a rate of 5 C / min. Phase analysis was performed by X-ray diffraction (XRD).

BaTiO3 powder with tape solution and ethanol were spun for 24 hours. The slip was taken in the beaker and more ethanol was evaporated. The viscosity of slip was checked for tape casting. Then slip was shaped by using tape casting method. The tapes were cut into 2 x2 cm sizes and were dried at 70^{o}C for 4 hours. Then, the two surfaces of 100-layers and 60-layers samples were pressed with 20 MPa for 5 minutes. Densification and dielectric properties will be determined after the sintering process.

Keywords: BaTiO3 ,Citrate Gel, Dielectric

Benchmarking Multi-label SVM based Classification Algorithms in indoor positioning

Serpil Ustebay[a*], Zeynep Turgut[a], Muhammed Ali Aydin[a], Ahmet Sertbas[a]

[a]Istanbul University

*serpil.ustebay@istanbul.edu.tr

Abstract:

Multi-label classification is an approach that is used to machine learning and also confused it with multiclass classification. Multiclass classification is predict instance class within one of N different classes. But the goal of Multi-label classification is to construct a function which, given a new instance, will correctly predict the more than one class to which the new instance is associated. This approach, developed with different methods, is compared with each other such as Hamming Loss, Ranking Loss, Accuracy, One Error and Coverage metrics. Using this approach in indoor positioning can provide information about the predict location of the person in the building and the possible location where it can be found. This information can be used in the next location estimate.

One of the recommended approaches for the linear classification problem is marginal classifiers, which are the most popular Support Vector Machines (SVM) classifiers of these classifiers. In this study, the development of SVM based Multi-Label classification algorithms is investigated. For this, the signal strength level (RSS) received from the Wireless Access Points (WAP) has been utilized. In this technique called fingerprint, the reference points in the building are determined. Signal strength levels and MAC addresses, which can be measured from these points, are recorded and the signal map of the room is obtained. This data set is trained by machine learning algorithms to create a positioning model. In this study; The conventional SVM, Twin Support Vector Machines (TSVM) and Multi Label Twin Support Vector Machines (MLTSVM) algorithms have been chosen as positioning models. Since the classical SVM algorithm is designed for two class problems; The LibSVM library, which can work on problems involving more than one class, is used. A signal map was obtained from a one-floor one-building located at Eskisehir Osmangazi University Techno park is used.

Keywords: SVM, Twin Support Vector Machine (TWSVM), multi-label twin support vector machine (MLTSVM)

Big Data and Methods

Hakan Ozkose[a*], Emin Sertac Ari[b]

[a]Bartin University
[b]Gazi University

*hakan_ozkose@hotmail.com

Abstract:

Big data has taken important place in data analytics. Companies, firms or organizations such as Google, Netflix, EBay, Facebook, etc. have been using big data applications to provide better service to their clients and compete with the others. In this study, respectively, the definitions of big data are given, characteristics of big data (variety, velocity, volume, veracity and value) are clarified, applications of big data are mentioned and some big data methods are explained. In this context, map reduce method is explained in detail. Other methods such as A/B testing, association rule learning, classification, clustering, genetic algorithm, machine learning, natural language processing, neural networks, network analysis, pattern recognition, sentiment analysis, signal processing, statics, simulation and time series analysis are mentioned briefly.

Keywords: Big Data, Big Data Methods, Map Reduce

Biodiversity of Cladocerans in Iskenderun Bay (Northeastern Mediterranean Sea)

Tuba Terbiyik Kurt[a*], Sevim Polat[a], Gurkan Akbulut[a]

[a]Cukurova University, Faculty Of Fisheries

*tterbiyik@cu.edu.tr

Abstract:

Iskenderun Bay is one of the most important areas in the North-eastern Mediterranean due to having a wide continental shelf, making it an important fisheries region. In this respect, the present study aimed to determine the species composition and temporal changes of cladocerans, which are an important component of zooplankton, in the coastal waters of Iskenderun Bay. The study was conducted seasonally at five stations between April 2008 and December 2016. Zooplankton hauls were realised vertically by using a WP-2 zooplankton net with a 200 µm mesh size. Trophic and physiochemical variables were also measured at the same stations. It was found that the contribution of cladocerans to annual mean zooplankton abundance varied from 9.3% (2009) to 39.7% (2011). Moreover, variations of cladoceran abundance were statistically significant ($p<0.01$) only on the seasonal and inter-annual scales. The lowest values of total cladoceran abundance were observed in winter 2014, whereas the highest were seen in spring 2011. During the sampling period, six cladoceran species were recorded: Penilia avirostris, Evadne spinifera, Pseudoevadne tergestina, Pleopis polyphemoides, Pleopis schmackeri and Podon intermedius. Among these species, P. avirostris was dominant in the cladoceran community (except in summer 2016). This species was observed in all years together with E. spinifera and P. tergestina, and they composed at least 86% of total cladocerans Mostly, E. spinifera was the second dominant species in spring, while P. tergestina reached a higher concentration in warm periods. P. schmackeri began to be observed after summer 2012 in the study area and was observed only in summer of the following years. P. intermedius mostly preferred in the spring time; however, P. polyphemoides had irregular seasonal distribution.

In conclusion, cladocerans showed clear seasonal distribution patterns in the area, and environmental variables contributed to these variabilities, especially temperature, salinity, chlorophyll a and phytoplankton abundance.

Keywords: Cladocera, biodiversity, abundance, Iskenderun Bay, Mediterranean Sea

Bioethanol Production From Common Reed (Phragmites Australis)

Ayhan Tozluoglu[a*], Hakan Fidan[a], Umit Buyuksari[a]

[a]Duzce University

*ayhantozluoglu@duzce.edu.tr

Abstract:

In this study, the aim was to examine bioethanol production of common reed using biological and chemical pretreatments. The effectiveness of sodium hydroxide (NaOH), hydrogen peroxide (H2O2), sodium borohydrate (NaBH4), boron oxide (B2O3) and sulfuric acid (H2SO4) for conversion of common reed to ethanol was investigated via chemical pretreatments. The results showed that the NaOH treatment had the highest glucan conversion rates (79.7%), followed by the NaBH4 (74.1%), H2O2 (71.9%), fungal pretreatment (69.4%), B2O3 (65.5%) and H2SO4 (46.1%). The highest ethanol yield (13.2 g/100 g) and the calculated highest theoretical yield (85.3%) from untreated common reed were observed for the NaOH- pretreated samples. The fungal- and NaBH4-pretreated samples yielded 10.6 and 12.3 g/100 g of ethanol (based on untreated common reed), respectively. The results of this study indicated that, because of its economic feasibility and environmental advantages, the fungal pretreatment was more suitable for common reed bioethanol production.

Keywords: Bioethanol, common reed, fungal pretreatment, chemical pretreatment, enzyme.

Biogenic amine formations in wet and spray-dried fish (Equulites klunzingeri) silage prepared with lactic acid bacteria strains

Gulsun Ozyurt[a], Ali Serhat Ozkutuk[a*], Esmeray Kuley Boga[a], Mustafa Durmus[a], Fatih Ozogul[a]

[a]Cukurova University

*aliserhat@cu.edu.tr

Abstract:

Fish silage is an effective method to produce high quality animal food from discard fish. Lactic acid bacteria utilization for the production of fish silages have considerable advantages than the chemical silages because of their positive properties such as organic acids, bacteriocins productions and the enhancement of the flavour. However, fish products may contain biogenic amines because of the action of endogenous and bacterial decarboxylase enzymes activities. It was reported that some lactic acid bacteria (LAB) were able to degrade biogenic amines by means of amino oxidases. In this study, the effects of lactic acid bacteria on biogenic amines in wet and spray-dried fish silages for the duration of the fermentation process were investigated.

The fish (Equulites klunzingeri) silages were prepared with LAB strains (Lactobacillus plantarum, Lactobacillus brevis, Pediococcus acidilactici, Enterococcus gallinarum and Streptococcus spp.) and formic acid as the control group. Acid and fermented silage groups were stored at room temperature (27-28oC) for three weeks. After three weeks, all silage groups were spray-dried using mini spray dryer (Buchi-290,Switzerland). Biogenic amine analysis in wet and dried fish silages was performed using a rapid HPLC method. This project was supported by Scientific and Technological Research Council of Turkey (TOVAG-213O166).

Putrescine, cadaverine, seratonine, tyramine, dopamine and agmatine were the main biogenic amines in all silage groups. The initial putrescine and cadaverine content were found as 1.11 and 1.99 mg/100g, respectively. There were considerable increase in the contents of these biogenic amines at the end of the fermentation process for all groups (4.15 to 13.15mg/100g for putrescine and 8.91 to 41.37mg/100g for cadaverine). After spray-drying, the main biogenic amines were putrescine (1.71-4.06mg/100g), cadaverine (3.45-11.30mg/100g) and tyramine (0.07-1.99mg/100g). The results show that biogenic amine concentrations in wet and spray-dried fish silages prepared with acid and LAB strains had no adverse effects to animal health.

Keywords: Biogenic amines, lactic acid bacteria, Equulites klunzingeri, discard fish, fish silage

Brain Tumor Segmentation of MRI Images with Deep Convolutionel Neural Networks

Hatice Cetin Gorgulu[a*]

[a]Mehmet Akif Ersoy University

*haticecetin@mehmetakif.edu.tr

Abstract:

Brain tumor cases are an important issue. Magnetic Resonance Imaging (MRI) images are used in diagnosis, follow-up and treatment of brain tumor. The evaluation of MRI images by specialists takes time, which leads to the progression of the disease and can even affect the treatment negatively. Therefore, it is important to automatically segment the brain tumor of MRI images. After the diagnosis of the brain tumor, the tumor grows, shrinks or remains in the follow-up phase by following the MRI images. Thus, automatic monitoring at every stage becomes very important. Brain tumors are inconsistent in shape and size, hence it is difficult to segment them. In this respect, deep convolutionel neural networks will be used for segmentation, in that it is thought to be more successful than other methods.

Keywords: Brain tumor segmentation, Deep learning, Convolutional neural networks

Breath Analysis Using Photo-acoustic Sensors

Ismail Bayrakli[a], Yasar Kemal Erdogan[a*]

[a]Biomedical Engineering Department,Technology Faculty, Suleyman Demirel University

*yasarerdogan@sdu.edu.tr

Abstract:

The human breath contains more than volatile organic compounds and some of them are related to diseases. Photo-acoustic spectroscopy can make sensitive and effective measurements, especially in the analysis of gases in ppm and ppb levels. Photo-acoustic sensors are able to perform non-invasive measurements of molecules present in the human breath. With such technique, important information can be obtained for early diagnosis or follow-up for disease by human breath analysis. In the present study, the relationship between diseases and organic components in the human breath using photo-acoustic sensors is reviewed.

Keywords: Breath Analysis, Photo-acoustic Sensor, Non-invasive

Building Integrated Concentrating Photovoltaic/Cooling System Design

Sadik Zuhur[a], Ilhan Ceylan[a], Ali Etem Gurel[b*]

[a]Karabuk University
[b]Duzce University

*etemgurel@gmail.com

Abstract:

Concentrated Photovoltaic (CPV) systems first time entered world agenda after the oil crisis experienced in the 1970s and studies about this subject have shown a significant increase in recent years. The basic principle of the system is to focus high intensity light onto photovoltaic cell using lens and mirror systems cheaper than photovoltaic cells. Investigations started in order to use less of high-tech product photovoltaic cells and now are continuing the components used in the nature of the system. When we look at the studies about this subject, a CPV system consist of a photovoltaic cell or panel, mirror or lens system, cooling system and tracking system. In this study, information is given about the CPV newly began to be studied in Turkey and then Building integrated Concentrated Photovoltaic (BiCPV) system has been mentioned. Building integrated Concentrated Photovoltaic/Cooling (BiCPV/C) system designed at the Karabuk University Energy Systems Engineering Department has been introduced. The system meets the electricity needs of a building and also it serves as a cooling on hot days. BiCPV/C system is different from other studies in literature because of space cooling. Diffusion Absorption Refrigerant (DAR) used in the system is adjusted both temperature of panel and indoor. Since the system is designed to be placed on the roof of the building, it is different from the literature in terms of architecture.

Keywords: Building integrated Concentrating Photovoltaic (BiCPV) System, Solar Energy, Cooling.

Calculation Of Overlap Integrals Over Noninteger Slater Type Orbitals Using One-Range Addition Theorems Of Noninteger Slater Type Orbitals

Nursen Seckin Gorgun[a*]

[a]Trakya University

*nseckingorgun@yahoo.com

Abstract:

In this work, overlap integrals over noninteger n principal quantum number Slater type orbitals (-NISTOs) appearing in the Hartree-Fock-Roothaan (HFR) equations for molecules are calculated. The evaluation of overlap integrals are based on use of the one- and two-center one-range addition theorems of χ-NISTOs introduced by Guseinov with the help of complete orthogonal sets of -Modified self-frictional exponential type orbitals (-MSF ETOs). Here, is the self-frictional quantum number with integer (,) and noninteger ( ). The series expansion coefficients of MSF one-range addition theorems are expressed through the analytical relations for he overlap integrals of -NISTOs. The convergence of series values of series expansion formulae of overlap integrals is tested by calculating certain cases for arbitrary values of parameters of -NISTOs and location of orbitals. Obtained results were found to be consistent with the literature. Several numerical results obtained are presented to demonstrate the improvements in convergence rates.

Keywords: Overlap integrals, One-range addition theorems, Self-friction quantum number, Exponential type orbitals

Calixarene Modified Poly(Methyl Methacrylate (Pmma) Nanofibers: Preparation, Amino Acid And Protein Binding Studies

Bahar Yilmaz[a*], Mukaddes Keskinates[a], Mevlut Bayrakci[a]

[a]Karamaoglu Mehmetbey University

*bahar-1311@hotmail.com

Abstract:

In this present study, poly(methyl methacrylate) (PMMA) nanofibers containing different amount of calixarene ester derivative was prepared and characterized for the possible protein binding efficiency. All of the fiber mat structures were clarified by FTIR, SEM and TGA analyses. From the analyses data, it was obviously seen the presence of the calixarene molecules onto the surface of PMMA nanofiber webs. Furthermore, protein binding studies of newly prepared PMMA nanofiber mats toward green fluorescence protein (GFP) as a model protein was performed by solid-phase extraction process. From the protein binding data it was observed an increase on GFP binding with increasing of calixarene percentage with respect to the polymer support. In addition, amino acid binding studies were also carried out for the clarification of the possible binding mechanism between protein and nanofibers

Keywords: Calixarene ester derivative, GFP, nanofibers

Can we measure the degree of Global Warming?

Mehmet Unver[a], Gokhan Ozcelik[b*]

[a]Ankara University
[b]Karadeniz Technical University

*gozcelik@ktu.edu.tr

Abstract:

Global warming is an international issue and threats all living things on Earth. It is a curiosity about how global warming affects us. The main goal of this study is to measure the effects of the global warming. First of all, this problem is handled a Multi Criteria Decision Making (MCDM) Problem. In the paper, a hybrid model that consists of fuzzy analytic network process and fuzzy measure theory is proposed, and a real application is carried out for Turkey. The results of the global warming such as drought, temperature changes and rainfall changes are considered as criteria and the evaluation of the impacts of global warming in the cities in Turkey is made with fuzzy MCDM techniques.

Keywords: Global Warming, Multi Criteria Decision Making, Fuzzy Measure

Capacitive Power and Torque Estimation for Self-Excited Induction Generator with Elman Neural Network

Haris Calgan[a*], Metin Demirtas[a], Murat Erhan Balci[a]

[a]Balikesir University

*haris.calgan@balikesir.edu.tr

Abstract:

This paper presents an attempt to estimate the excitation capacitive reactive power and torque requirements of Self Excited Induction Generator (SEIG) for maintaining under variable balanced resistive-inductive loading conditions using Elman Neural Network (ENN). Sets of data to train ENN and test data are obtained by using the well-known d-q model of induction machine in MATLAB/Simulink environment. After training, estimated power of the balanced excitation capacitor bank and the mechanical torque applied to the rotor shaft, which should maintain the desired frequency and magnitude of the SEIG's terminal voltage, are tested under various balanced loading conditions. The test results figure out that ENN can successfully be used as a tool for determination of the required excitation capacitor power and rotor shaft torque.

Keywords: Elman neural network, SEIG, Capacitive reactive power

Catalytic upgrading of biofuel by esterification in the presence of modified halloysite nanotubes

Aysenur Yesilyurt[a], Ayse Gul Ture[a], Halit L. Hosgun[a*]

[a]Bursa Technical University, Chemical Engineering

*hlevent.hosgun@btu.edu.tr

Abstract:

The biofuels obtained by the thermochemical transformation of biomass have a complex structure. Due to the oxygen compounds in the structure (carboxylic acids, ketones, aldehydes, alcohols, etc.) there are undesired properties such as high acidity, high viscosity and low heating value. Therefore an upgrading process is necessary. Among the upgrading processes, the most common one is the esterification reactions. In this study; raw and modified halloysite were used as catalysts. Modification was carried out with calcination at different temperatures and treatment with sulphuric acid at different concentrations, time and temperatures. All modified halloysite samples were characterized by N2 adsorption/desorption and XRD method. Esterification reaction of ethyl alcohol and acetic acid was selected as a model reaction for bio-fuel upgrading. Esterification reaction of ethyl alcohol and acetic acid (1:1 molar ratio) was done at 65 °C for 6 hours and under reaction conditions with 500 rpm stirring speed. Halloysite samples were calcined at 400°C, 600°C and 1100°C in first step. Then, raw and calcined halloysite samples were used in esterification reaction. The results showed that the esterification reaction efficiency of calcined halloysite at 600 °C was found to be the highest according to the results. Accordingly, 600 °C calcination temperature was selected as optimum calcination temperature. Calcined halloysite at 600 °C was modified with 0.5M H2SO4, 1M H2SO4 and 2M H2SO4 under various temperatures (50-80 °C) for different times (2-6 hours). Esterification reaction efficiency of samples was examined and it was observed that best results can be obtained for modified halloysite with 1M sulphuric acid at 65 °C temperature for 4 hours.

Keywords: esterification, halloysite, biofuel upgrading

CFD Analyses Of Nanofluid Flow Under Magnetic Effect

Mutlu Tekir[a*], Kamil Arslan[a]

[a]Karabuk University

*mutlutekir@karabuk.edu.tr

Abstract:

Day by day nanofluids have more usage area. It is used in nuclear reactor cooling, electronic chip cooling, and heat exchangers to increase heat transfer conductivity, and efficiency. This study focuses on numerical investigation of nanofluid flow on forced convection heat transfer in the presence of a magnetic field. The flow passes through the rectangular cross-sectioned duct under uniform heat flux. Convective heat transfer coefficient is exeamined for three cases which are distilled water, nanofluid, and nanofluid under magnetic field.

Keywords: CFD, MHD, Nanofluid

CH4 Emissions from Solid Waste in Karabuk Province

Ali Can[a*]

[a]Karabuk University

*drac0312@hotmail.com

Abstract:

The waste disposal sites are one of the important CH4 emission sources according to the Intergovernmental Panel on Climate Change (IPCC) methodology. And decaying of organic compounds by anaerobic bacteria, especially by methanogenesis creates CH4. According to the many research, it can be concluded that the decaying is continuous during 15-20 years and then it is decreasing over the following decades. The monitoring mechanism and techniques have to be developed for collection processes of CH4; because, the collected CH4 can be used as biogas. Therefore the managed landfill sites are important for high efficient recovery of CH4. In many countries, the waste is not defined as garbage and it is evaluated as money. The biogas production from waste disposal sites is also encouraged by UNFCCC. Moreover, it is not necessary to calculate CO2 emission from biogases for UNFCCC submissions of countries. The consumption of this fuel is only emitting CH4 and N20, not CO2 due to the IPCC methodology. It means it gives a great opportunity for countries to tackle with climate change problems, not only by decreasing during recovery process but also using as fuel for clean energy purposes. In this study, the general aim is to determine the potential CH4 emissions from solid waste disposal sites in Karabuk Province. Although the scale is province level, the study is being extended to regional and country scale. Because, the potential of producing biogas from waste disposal sites in Turkey is very high.

Keywords: IPCC methods, CH4 emission, Solid Waste, Biogas

Changes in Weight Loss, Density and Equilibrium Moisture Content of Heat Treated Ash (Fraxinus angustifolia Vahl.) Wood

Halil Ibrahim Sahin[a*], Cengiz Guler[a]

[a]Duzce University

*halilibrahimsahin@duzce.edu.tr

Abstract:

In this study, effect of heat treatment on some physical properties of ash (Fraxinus angustifolia Vahl.) wood was examined. Heat treatment was made in a heat treatment furnace its capacity about 1 m3. The test samples were subjected to heat treatment under atmospheric pressure and water vapor environment at four different temperature (120, 160, 190 and 210°C) and three different time (3, 6 and 9 h). Test samples were remained in furnace at 27 hours (heating, pre-drying and conditioning steps). The results indicated that increasing temperatures and times increased the weight loss of the specimens. Density and equilibrium moisture content also decreased with the increasing the treatment parameters. While the maximum density loss observed was 10.5% at 210 ºC and 9 hour, at these heat-treatment conditions, the equilibrium moisture content approximately decreased 46% and weight loss was 15.4%. The relative weight loss and density reduction include the evaporation of water as well as evaporation of extractives, degradation of wood components especially hemicelluloses and evaporation of degradation products.

Keywords: Ash wood, weight loss, density, equilibrium moisture content, heat treatment

Characterization and antibacterial activity of nitric oxide-releasing copper-loaded natural zeolite

Guler Narin[a*], Cisem Bulut Albayrak[b], Semra Ulku[c]

[a]Usak University
[b]Adnan Menderes University
[c]Izmir Institute Of Technology

*guler.narin@usak.edu.tr

Abstract:

Local zeolitic tuff and its copper-loaded form were tested for their antibacterial activities against Escherichia coli before and after nitric oxide (NO) loading using agar well-diffusion assay. Tuff and its modified forms were characterized using X-ray diffractometry, scanning electron microscopy, inductively coupled plasma spectroscopy, thermal gravimetry and FTIR spectroscopy. NO loading of the zeolites was performed under 20 mL/min NO flow at 30 □C and purging with inert gas (helium) in order to remove the reversibly adsorbed species. Total and irreversible NO adsorption capacities of the zeolites were determined from the adsorption and desorption breakthrough curves, respectively. Successive to the NO loading, the zeolites were heated in situ to 400 □C under helium flow. NO release kinetics in deionized water at 37 □C was also investigated. Effects of the copper and NO loading as well as the thermal treatment on the antibacterial activity and NO release kinetics of the zeolites were discussed. Total NO adsorption capacity of the zeolites was mainly (about 80 %) contributed from the irreversible adsorption. Copper loading resulted in about 6 mol% increase in the total NO adsorption capacity of the tuff. Copper loading increased the antibacterial activity of the tuff, but loading of the copper-loaded zeolite with NO did not affect the antibacterial activity remarkably. NO release kinetics of the copper loaded zeolite was found to be similar to the tuff without copper. Amount of NO released decreased by 70 % after storing the NO-loaded copper-zeolite under dry atmosphere. Considering the results of our previous study [1], it was concluded that the zeolitic tuff is better for storing NO than its copper-loaded form without any drawbacks in antibacterial activity and NO release kinetics.

[1] Narin, G., Albayrak C.B., Ulku S. (2010). Antibacterial and bactericidal activity of nitric oxide-releasing natural zeolite. Applied Clay Science, 50, 560-568.

Keywords: clinoptilolite, natural zeolite, copper sorption, nitric oxide loading, antibacterial activity

Characterization of 3G & 4G Packet Traffic in terms of Self-Similarity

Ali Gezer[a*]

[a]Erciyes University

*aligezerr@hotmail.com

Abstract:

Wireless solutions have become a serious alternative for data communication nowadays. 3G and 4G mobile Technologies are commonly used ones due to their broadbant access possibilities. In this paper, we compare the packet traffic characteristics of two generations in terms of self similarity. Hurst parameter as a degree of self-similarity gives useful information about the congestion level of a network. We compare the self similarity of packet inter-arrival times and packet sizes of two mobile technologies for same traffic load.

Keywords: Packet Traffic Characterization, Self-Similarity, 3G, 4G, Mobile Traffic Load

Characterization Of Cankiri Kalfat Feldspars And Its Utilization In Manufacturing Porcelain Tile

Iskender Isik[a], Sinem Aksan[a*], Sezgin Aksan[a]

[a]Dumlupinar University,Materials Science And Engineering

*sinem.aksan@dpu.edu.tr

Abstract:

The aim of this study is to search the utilization of Cankiri Kalfat's region feldspars as a substitute alternative material for Aydin_Cine Na-feldspars. For that reason, Cankiri-Kalfat region feldspar was utilized in the research instead of Aydin-Cine Na-feldspar with the ratio of 5%, 10%, 15%, 20% and 30% within the porcelain tile (also known as granite tile) prescription. Firstly, density measurement and particle size analysis of the prepared prescriptions were done for green body. In the next step, the dried mud was ground to the 5% moisture content suitable for granite tile production. The granulated powder were shaped in a laboratory press with a pressure of 460 kg/cm². Later, the shaped specimens were fired in porcelain tile production conditions. The shrinkage, compressive strength, water absorption and color values of fired specimens were calculated. Their microstructure analysis were performed by using SEM. In the end of the study, it was detected that as the proportion of the feldspar of Cankiri Kalfat region increases, the particle size of the mud increases (at the same grinding times), the shrinkages of the fired specimens increases, their compressive strength decreases, the water absorption ratios rises and their whiteness colour decreases.

It is concluded that consuming Cankiri Kalfat region feldspars 10% instead of Aydin-Cine region feldspar is suitable in terms of reasonable production cost. In the current manufacturing of porcelain tile, sieve residue over 63 microns must be 1%. Furthermore, it is estimated that utilization of Cankiri Kalfat region feldspars more than 10% in the tile body should be possible if lowering the sieve residue.

Keywords: Na- feldspar,porcelain tile

Charpy Impact Response of Glass Fiber Reinforced Composite with Nano Graphene Enhanced Epoxy RESIN

Ahmet Erklig[a], Nurettin Furkan Dogan[a*], Mehmet Bulut[a]

[a]University Of Gaziantep

*nfurkandogan@gantep.edu.tr

Abstract:

Fiber reinforced polymer composite materials show several superior properties over conventional engineering materials; on the other hand, most of composite materials also have some drawbacks such as brittle behavior of resin. This study is aimed to improve the impact response of composite material by adding nano particle into epoxy resin. For this purpose; an experimental study was conducted to investigate the effect of graphene nano particles inclusion in epoxy resin with glass fiber reinforced composite plate on the Charpy impact response. Glass fiber reinforced (GFR) epoxy composite plates were produced with various nano graphene content such 0, 0.1, 0.25 and 0.5 wt%. Low velocity impact response was investigated by using Charpy impact test method. Impact energy and impact damage results presented in details.

Keywords: Nano graphene, epoxy, glass, composite, impact.

Chassis Displacement Analysis with ADAMS/CAR Based on ISO Lane Change Test

Hasan Serin[a], Mustafa Ozcanli[a], Safak Yildizhan[a*]

[a]Cukurova Universitesi

*yildizhans@cu.edu.tr

Abstract:

In this study, chassis displacement analysis of different driveline configurations(front wheel drive, rear wheel drive and all-wheel drive) of a sedan car model has been evaluated with ADAMS/CAR simulation software based on ISO lane change test (ISO 3888). ISO lane change is generally known as moose test and performed to estimate the stability and handling performance of the vehicles. The simulation study was carried out for different driveline configurations at two different vehicle speeds of 100 km/hr and 50km/hr. The chassis displacements of the model vehicles through longitudinal, lateral and vertical axes were analyzed by comparing the acceleration through these axes and roll, pitch and yaw angles. The variations of these angles with the maneuvers of the vehicle by ISO lane change test procedure were compared in order to determine the vehicle stability and safety characteristics for different driveline configurations. The rear wheel drive and all-wheel drive sedan vehicle models resulted in similar angles and accelerations. Also, the higher speed (100 km/hr) simulations resulted in higher angles and accelerations compared to lower speed (50 km/hr) simulation. The simulation results shows that according to ISO lane change test procedure front wheel drive vehicles shows lower stability and handling performance compared to rear wheel and all-wheel drive vehicles.

Keywords: ADAMS/CAR, Vehicle Dynamics, Vehicle Configuration, ISO Lane Change Test

Chemical and Mineralogical Characterization of Anode Slime

Aydin Rusen[a*], Mehmet Ali Topcu[a]

[a]Karamanoglu Mehmetbey University

*aydinrusen@kmu.edu.tr

Abstract:

During copper production, different types of wastes are formed at each stage. Among these wastes, the copper anode slime which occurs during the electro-purification stage is the most important industrial waste in copper sector. As a secondary source, it has high economic value due to containing a considerable amount of precious metals such as gold, silver, copper, selenium and tellurium. For this reason, anode slime obtained after electro-refining should be carefully analyzed just before the application of recovery process. Therefore, in this study, physical, chemical and mineralogical characterizations of the copper anode slime provided from a company in Turkey were carried out. Firstly, the physical characterization of the anode slime was performed to determine their moisture content, particle size, and bulk density. Then, the sample was analyzed chemically to find out their chemical compositions by using Atomic Absorption Spectrophotometer (AAS) and X-Ray Fluorescence (XRF). At last, the mineralogical characterization of the sample was realized by X-Ray Diffractometer (XRD) and Scanning Electron Microscopy (SEM). The chemical analysis showed that anode slime is composed of 23.1% Cu, 20.5% Sn, 15.4% Pb, 5.87% Ba, 4.11% S, 0.03% Se, 0.02% Te, 2204.9 ppm Ag and 21.9 ppm Au. According to the mineralogical analysis, anode slime was mainly composed of $PbSO_4$, SnO_2, and Cu_2O. Copper is also formed in different structures as $CuSe_2$, and other minor components are detected as $BaSO_4$, $SbAsO_4$, and SiO_2. In the light of the findings, potential metals which are recoverable from the anode slime by leaching process have been revealed, and treatment methods of the valuable metals have been investigated.

ACKNOWLEDGMENT

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Keywords: Anode Slime, Characterization

Chemical Composition And Anticholinesterase Activity Of Essential Oil Of Origanum Brevidens (Bornm.) Dinsm

Sema Carikci[a*], Turgut Kilic[b], Tuncay Dirmenci[a]

[a]Balikesir University

*carikci@balikesir.edu.tr

Abstract:

Lamiaceae (Labiatae) is a widespread and diversified herb family consisting of about 233 genera and 6900 species. The genus Origanum is member of Lamiaceae family and represented 23 species (26 taxa) and 8 hybrids in Turkey. 20 of the species are endemic to Turkey. The species is a perennial shrub and herbaceous plant which grows wild in western and southern Turkey and other Mediterranean countries. Because of their essential oils, most of the Origanum species used as spices or herbal tea mainly. Origanum brevidens (Bornm.) Dinsm belongs to the sect. Brevifilamentum. In the present study, chemical composition and anticholinesterase activity of the essential oil of O. brevidens was investigated. O. brevidens was collected from Osmaniye between Yarpuz and Yaglipinar, southern parts of Anatolia. The dried aerial parts of the plants subjected to hydro distillation for 4 h, using a Clevenger-type apparatus to produce the essential oil. Chemical compositon of the oil was investigated using with Thermo Scientific TSQ GC-MS/MS. For the determine of the anticholinesterase activity of the oil, inhibitory activities of acetyl- and butyryl-cholinesterase (AChE and BChE) were analyzed. Galanthamine was used as a reference compound.

GC/GC-MS analyses of the oil resulted 21 compounds, representing 99.9%. An aromatic monoterpene carvacrol (72.1%) was determined as the main component of the oil. The oil showed good activity against both enzymes. The essential oil inhibited AChE enzyme 48.65 %, BChE enzyme 48.03% while galantamine inhibited 80.74 % and 79.92 %, respectively. The results showed that the essential oil of the O. brevidens can be a good source against Alzheimer disaster.

Acknowledgments

The authors thank to The Scientific and Technological Research Council of Turkey (TUBITAK) for supporting this study as a part of project 113Z225.

Keywords: Lamiaceae (Labiatae), Origanum bargyli Mouterde, Essential Oil, Anticholinesterase activity

Classification According To The Architectural Value Of Traditional Anatolia Turkish House

Fatih Semerci[a*]

[a]Necmettin Erbakan University

*fsemerci@gmail.com

Abstract:

Historic urban sites and traditional houses are the most important evidence of the past life style. The conservation of these traditional values in the context of conservation and revitalization of architectural heritage is in a sense the preservation of culture. The main goal of conservation is to enliven cultural properties by evaluating their architectural, historical, environmental, visual and aesthetic characteristics. These evaluation studies, which are essential in the context of conservation plans, are inevitable phases to determine the principles of the plans. This study is aimed to propose a method for the architectural evaluation phase, which is essential before conservation decisions. The proposed method is based on a gradation system. Sille district in Konya/Turkey is determined as the area to test this gradation method. It is proposed that this method explains the systematic way for evaluating architectural features belonging to historic sites whose conservation plans are to be prepared. In the study, traditional buildings are evaluated from the point of their exterior and interior architectural characteristics and classified as different value groups: A, B, C and D. This grouping will be advantageous to conservation decisions. Different technical teams may be organized to be responsible for these various value groups. As a result, a systematic approach for the determination of specialized teams and required equipment will be achieved. Thus, an accurate determination of required time and cost estimates will be realized.

Keywords: Sille, Historical Environment, Cultural heritage, Heritage conservation, Conservation planning, Traditional dwellings

Coal Dust Explosions In Mining - Causes, Formations And Precautions To Be Taken

Ozer Oren[a], Cem Sensogut[a*]

[a]Dumlupinar University

*sensogut@dpu.edu.tr

Abstract:

There are taking place many work related accidents each year resulting mostly and unfortunately in fatalities due to mining which can be listed as one of the riskiest sector in the world. Coal dust explosion resembles itself as one of the most serious problems encountered in mining. The most catastrophic and deadly mining accident recorded so far in the world occurred in China in 1942 due to gas and coal dust explosions leaving behind a total death of 1549 miners. Additionally, mining accidents took place in Zonguldak which is the only bituminous coal district were mostly caused by the coal dust and methane explosions during the course of mining history in Turkey. In the present work, the causes and the mechanism of coal dust explosions will be given in detail. In addition, the minimization of risk factors or the precautions to tackle the problem of coal dust explosions will be explained in the light of previous works.

Keywords: Coal, Coal Mining, Coal Dust Explosions, Precautions

Comparative Analysis Between Retscreen Modeling And Actual Results For 1 MW Grid Connected Photovoltaic Power Plant In Konya Organized Industrial Zone

Muciz Ozcan[a*], Mustafa Sacid Endiz[a], Furkan Sadikoglu[b]

[a]Necmettin Erbakan Uni.
[b]Konya Organize Sanayi Mudurlugu

*mozcan@konya.edu.tr

Abstract:

This paper examines the comparative analysis between RETScreen simulation scenario and actual results of 1 MW grid connected solar power plant (SPP) in Konya Organized Industrial Zone based on energy production and environmental impact. Konya is one of the most effective and attractive zones of the country with respect to solar energy potential due to the high number of sunny days. The simulation scenario was implemented with the help of the periodic regular weather data for Konya region. According to the RETScreen which is a clean energy management software system for the feasibility analysis of the renewable energy resources as well as dynamic energy performance analysis, approximately 1984.29 MWh/year energy production can be obtained. At the same time avoided emissions potential of CO2 is about 912 tCO2/year in reference to RETScreen. When it comes to actual results the real energy production is 1685.78 MWh/year and the amount of CO2 emission inhibition is 820 tCO2/year. As it can be seen, there are tolerable differences between simulation and actual results due to the non-ideal weather conditions in Konya Organized Industrial Zone. Because of the cloudy weathers and the small number of sunny days during the winter months, energy production level was below the expected value. Similarly the actual amount of CO2 emission inhibition is about 100 tons less than the simulation results from the same reasons. In spite of these differences, the obtained results are close to each other and RETScreen program can be trusted and applied for SPP feasibility studies.

Keywords: Photovoltaic Energy, RETScreen Analysis,CO2 Emission

Comparative Properties Of Polyolefin Fibers In Dyeing With Conventional And Microwave Heating Methods

Burcu Yilmaz Sahinbaskan[a*], Mujgan Nayci Duman[a], Dilara Kocak[a]

[a]Marmara University

*burcuyilmaz@marmara.edu.tr

Abstract:

In this work, 100% isotactic polypropylene (iPP) fibers, 100% linear low-density polyethylene (LLDPE) polymer fibers and polymer blends obtained from different proportions of these polymer fibers with elastomer of ethylene-vinyl acetate (EVA) [80/19/1 % iPP/LLDPE/EVA, 80/19/1 % LLDPE/iPP/EVA, 60/30/10% iPP/LLDPE/EVA and 60/30/10% LLDPE/iPP/EVA] were dyed with conventional and microwave heating methods. The coloristic and mechanical properties of dyed fibers were investigated. The results show that the proportion of up to 10% EVA in polymer blends has good coloristic and mechanical properties for both dyeing methods. Using microwave energy for dyeing has provided a saving in almost 90% of time.

Keywords: polyolefin fibers; polymer blends; microwave energy; ethylene vinyl acetate elastomer

Comparison Of Different Analytical Models Of Infilled Rc Frame

Mehmet Omer Timuragaoglu[a], Adem Dogangun[a*], Ramazan Livaoglu[a]

[a]Uludag Universitesi

*adogangun@uludag.edu.tr

Abstract:

Seismic performance of infilled reinforced concrete (RC) frame has been investigated by several researchers and become one of the most studied topic in the last five decades. However, the effect of infill wall is still not included in calculations because of fast degradation of strength, stiffness and energy dissipation capacity although the contribution of infill walls to initial stiffness, total strength and energy dissipation capacity of frame is expressed by different researchers and emerged in several different academic researches. In the present study, the influence of infill wall is investigated by using a commonly used analytical method; equivalent compressive strut. For this reason, a full scaled, one bay and one storey gas concrete infilled RC frame and a bare frame, representing weak sides of existing buildings widely used in Turkey, is produced and tested experimentally under lateral cyclic loading. Furthermore, in analytical models, three different strut models (one, two and three strut) are used to take into account the effects of wall on the RC frame and to compare the effectiveness of one and multi-strut models. Mander model for confined concrete is used to present stress strain relation of RC, whereas a tetra linear relationship is used in modeling of struts to represent the nonlinear behavior of infill wall. The analytical and experimental results are compared considering strength and stiffness of system. The analytical studies demonstrate that single equivalent strut model is a simple and effective way of representing global behavior of infilled RC frames. Additionally, using multi strut instead of one will only cause small variations in initial stiffness and strength of the system.

Keywords: Equivalent strut, Finite element modeling, Infill wall, RC frame

Comparison of Direct Drive Permanent Magnet Generator Types for Wind Turbines

Hasan Basri Altintas[a*], Mumtaz Mutluer[a]

[a]Necmettin Erbakan University

*hbaltintas@konya.edu.tr

Abstract:

With rapid development of wind power technologies and significant growth of wind power capacity installed worldwide, various wind turbine generators have been developed. The wind energy conversion system is demanded to be more cost-competitive, so that comparisons of different wind generator systems are necessary. In this study, different generator types are compared based on efficiency, the tork density, the energy yield per cost and the cost of energy for wind turbine applications. Moreover The Requirements of Direct Drive(DD) Technology are evaluated for the wind market. Permanent magnet synchronous generators(PMSG) are very important for Direct Drive of wind turbine systems. So That firstly, Direct Drive technology's aims are explained for wind industries. Then, the contemporary direct drive wind turbine generators are investigated with respect to both their designs, control technics. Besides their strengths and weaknesses are discussed. Finally, comparison criterias of direct drive wind generator systems are in details evaluated.

Keywords: Wind Energy, Turbine Generator, Direct Drive, PMSG

Comparison of Electricity Generation Technologies Using Life Cycle Assessment

Gulsah Yilan-Ciftci[a*], Gokcen A. Ciftcioglu[a], M. A. Neset Kadirgan[a]

[a]Marmara University

*gulsah.yilan@marmara.edu.tr

Abstract:

Fossil fuel related environmental impacts draw attention to emerging climate change mitigation problems for the last decades. As a consequence of debates in the United Nations Conference on Climate Change (COP 21, Paris), about 200 countries including Turkey have adopted the ground breaking Paris Agreement to take measures against climate change mitigation by reducing fossil fuel consumption. In order to accomplish this mission, conducting comprehensive analyses and developing down-to-earth plans are crucial in decision making processes for sustainable energy systems. This study aims to indicate the environmental impacts owing to electricity generation in Turkey for year 2014 and also estimate the course of change in impacts with future projections for 2023 and 2030. The computation results are expected to assist decision-makers for building more sustainable energy policies for the future. Life cycle assessment (LCA) methodology is used with the single issue cumulative energy demand (CED) method as well as the mid-point CML 2 baseline 2000 method. Cumulative non-renewable fossil, non-renewable nuclear, non-renewable biomass, renewable biomass, renewable wind, solar, geothermal and renewable water demand impact categories are selected for CED method. Abiotic depletion, acidification, eutrophication, fresh water aquatic ecotoxicity, global warming, human toxicity, marine aquatic ecotoxicity, ozone layer depletion, photochemical oxidation, terrestrial ecotoxicity are selected as the impact categories of CML 2 baseline 2000 method. CED results reveal that minimum energy demands are attained when the share of renewable energy technologies increases. Nevertheless, most impacts remain the same with 2014 if renewable development pathway is put into practice according to the CML 2 baseline 2000 results. The combined results indicate that the environmental impacts are kept under control only if a shift from fossil fuel to renewable energy technologies is employed.

Keywords: electricity generation, life cycle assessment, Turkey

Comparison of Energy Efficiency of Natural Gas Heating System and Solar Assisted Heat Pump System

Selmin Ener Rusen[a*], Mikail Kuru[a]

[a]Karamanoglu Mehmetbey Universitesi

*selmin.enerrusen@gmail.com

Abstract:

Nowadays, a major portion of the energy is consumed by the air conditioning systems of residences, industry, shopping malls, greenhouses, sports facilities and swimming pools. In this study, solar energy assisted closed circuit water source heat pump system, which is totally independent of fossil fuels, was designed as an environmentally friendly system. A poly carbon greenhouse which occupies an area of 300 m² at the campus of Karamanoglu Mehmetbey University was chosen as an example to apply on it. The current energy consumption of the selected greenhouse heated with a central natural gas heating system was calculated by using measured/real data. It was also calculated after application of the newly designed solar energy assisted closed circuit water source heat pump system. The values of the monthly energy consumption for the newly designed system and current natural gas heating system were compared each other. From the results, it was obtained that the energy saving could be considerably improved by means of the new system. According to the calculation, the total investment payback period was found as 4 years. The results are encouraging for the future works to use solar energy assisted closed circuit water source heat pump system.

Keywords: Energy Saving, Solar Energy, Heat Pump System, Greenhouse, Karaman.

Comparison of Feed Quality Parameters of Narbon Vetch (Vicia narbonensis L.) Lines and Cultivars

Mahmut Kaplan[a*], Kagan Kokten[b], Mehmet Fatih Yilmaz[c], Yusuf Murat Kardes[a], Halit Tutar[a]

[a]Erciyes Universitesi
[b]Bingol University
[c]East Mediterranean Transitional Zone Agricultural Research Of Institute

*mahmutkaplan5@hotmail.com

Abstract:

Feed quality parameters of narbon vetch lines and cultivars were investigated in this study under Bingol Provincial conditions during the year 2015. A total of 9 different narbon vetch (Vicia narbonensis L.) lines and cultivars were used as the plant material of the study. Experiments were carried out in randomized blocks design with 3 replications. Effects of genotypes on grain feed quality were found to be highly significant (P<0.01).

Considering the results of experiments, crude protein ratios varied between 27.71-32.80%, crude ash ratios between 2.85-3.65%, acid detergent fiber (ADF) ratios between 11.11-16.12%, neutral detergent fiber (NDF) ratios between 25.27-36.09%. Dry matter digestibility (DMD) varied between 76.34-80.25%, dry matter intake (DMI) between 3.33-4.75% and relative feed value (RFV) between198.90-286.18. The line SEL 2382 was prominent with low ADF and high DDM, line SEL 2470 with low NDF and high DMI, Karakaya cultivar with high crude protein and line 103 2389 with high RFV.

Keywords: Narbon vetch, genotype, crude protein, relative feed value

Comparison Of Geoid Heights Obtained With GPS/Levelling And EGM Models In Istanbul

Mustafa Ulukavak[a*], Mehmet Yilmaz[a]

[a]Harran University

*mulukavak@gmail.com

Abstract:

Satellite measurements are frequently used technique in geodesy. Ellipsoidal height can be determined using this technique. On the other hand, orthometric heights are used in many engineering projects. Because orthometric and ellipsoidal heights are determined according to different surfaces, these two height systems are not collided each other and the difference between the systems are called geoid height or geoid undulation and geoid height is a transformation parameter used between the two systems. Therefore precise geoid determination is a major problem of geodesy. Geoid can be determined many different methods according to used data and models such as GPS/levelling and geopotential model. GPS/levelling model is so popular because ellipsoidal heights can be obtained by satellite measurements easily. EGM96 and EGM2008 are gravity based geoid models accepted around the whole world. In this study, GPS levelling and Geopotential models (EGM96 and EGM2008 geoid determination in over 1000 points in Istanbul, Turkey compared with each other.

Keywords: ellipsoidal height, orthometric height, geoid height, GPS/levelling, EGM

Comparison of Green and Brown Walnut Husks to Produce Dye

Ruhsar Arabacioglu[a], Tugba Civioglu[a], Neslihan Dogan-Saglamtimur[a*], Ersen Turac[a]

[a]Omer Halisdemir University

*neslihandogansaglamtimur@gmail.com

Abstract:

Nowadays, it is observed that there is an increasing approach to the use of natural substances instead of synthetic ones. As the synthetic materials and products are more complex in comparison to natural substances, it will take a long time to complete their natural cycles and return to nature; thus, causing a lot of environmental pollution. Walnuts are widely distributed all over the World and in Turkey and they are not only a valuable crop but also important components of the Mediterranean diet. Walnut's green and brown husks are by-products of the walnut production, having scarce use (especially green husk). Thus, using husks as a source of dye will increase the value of the walnut production, as well as offering utilization for a by-product, which is produced in large quantities. The purpose of this research was to obtain dye and compare the dye production potential of green and brown walnut husks. Before chemical processes, the walnut husks were manually cracked and shelled, and then chopped in a grinding mill. Walnut husks were extracted with ethanol solution using a Soxhlet type apparatus at its boiling point until the final solution was obtained. The dye we produced to use as a sustainable alternative for the dying of leather showed decreasing trend (from the maximum to minimum) from brown to green walnut. We believed that it would be a positive step to meet the need of dye in Turkey and a good example for cleaner production. This research has been supported by Omer Halisdemir University Scientific Research Projects Coordination Unit. Project Number: FEB 2016/04-BAGEP, 2016. The authors would like to thank Chemistry Department of Omer Halisdemir University for laboratory conditions.

Keywords: Environment, reuse, walnut, shell, husk, dye

Comparison of Reliability Based and Distance Based Multi Robot Task Allocation

Ahmet Yazici[a*], Ugur Yayan[a], Muhammed Oguz Tas[a], Didem Ozupek[a]

[a]Eskisehir Osmangazi University

*ayazici@ogu.edu.tr

Abstract:

Autonomous robots are one of the advance technology are under Industry 4.0. Although, many manufacturing industry have already used the robots, considering the new vision, they are becoming more autonomous, flexible, cooperative and working longer without any problem. In this new vision, autonomous task allocation considering new metrics rather than distance and time is very important. For example, considering a fully autonomous multi-robot system, failure a robot during the task or mission is not desired. Therefore, reliability (remaining useful life) of a robot should be considered during the multi robot task allocation. In this study, reliability based and distance based multi robot task allocation are realized for a robot team of three robots to collect objects from 20 different points. Then, the probability of task completion (POTC) are compared for each task assignment. The test results show that in reliability based task assignment, more tasks assigned to the robots with higher reliability values. Considering, the factor like ageing of robots in a factory, the reliability based task allocation is more realistic for the successful completion of the tasks and long time operations of mobile robots.

Keywords: Industry 4.0,Reliability, Task allocation, multi robot system

Comparison of three different wave climate studies along the south western Black Sea coasts

Recep Emre Cakmak[a*], Bilal Bingolbali[a], Halid Jafali[a], Adem Akpinar[a]

[a]Uludag University

*remrecakmak@uludag.edu.tr

Abstract:

Being a country surrounded by seas, Turkey has long shorelines experiencing excessive coastal and marine activities. In the planning and design of coastal and offshore structures, as well as other marine activities, accurate information on wind and wave conditions is needed. Unfortunately for Turkey, there are no real-time wave monitoring stations around its seas and coasts except a few short-term measurements made within some scientific research projects (e.g. NATO TU-WAVES). Therefore, wind and wave climate studies are done with the help of numerical wave hindcast models (e.g. WAM, SWAN etc.) that generate waves using archived wind data (e.g. ERA Interim, MERRA, CFSR etc.). There are a few wind and wave climate studies conducted using different wave models so far developed for the southwestern Black Sea such as Ozhan & Abdalla (1999) and Saracoglu (2011). In the present study, we aim to compare results from both the above mentioned works with the SWAN model's results from our previous study (Akpinar et al., 2015) where the model was forced with the CFSR winds together with a calibrated whitecapping coefficient including the best wind growth and whitecapping combination determined for the southwestern Black Sea. In this regard, the main goal of this study is to reveal differences between these three studies. For this purpose, wave roses, plots of mean wave period (Tm) versus significant wave height (Hs) and extreme value estimates with different return periods at some locations in the southwestern Black Sea are compared and differences at three wind and wave climate studies are assessed. Examination of the degree of consistency in results of the three models is believed to help provide an insight for future studies in the region.

Keywords: SWAN, wave climate, extreme waves, wave rose, Black Sea

Comparison Of Web Based Remote Laboratories For Engineering Education

Kubilay Tasdelen[a*]

[a]Suleyman Demirel University

*kubilaytasdelen@sdu.edu.tr

Abstract:

The increase in speed and ways to access information makes itself visible in the educational field, and web-based training application, which is a distance education model, has started to be developed. Laboratory studies is complementary to and supportive of education, the realization of laboratory studies in engineering fields, raises problems in terms of time, place and costs. To eliminate these problems by using the applications on the computer simulation programs to realizing "virtual laboratories" and students via the Internet by connecting applications to perform real experimental modules that "web-based laboratories" has been developed. In this paper, the traditional laboratories, virtual laboratories and web-based laboratories were examined in terms of facilities provided, based on the findings from this laboratory introduced the advantages and disadvantages for engineering education and web-based laboratory is an example of a microcontroller.

Keywords: Web Based Laboratory, Engineering Education, Microcontroller Laboratory, Comparison of Laboratories

Competitive Adsorption of Heavy Metals in Different Soils

Veli Uygur[a], Mehmet Ali Karaduman[b], Enise Sukusu[a*]

[a]Suleyman Demirel University
[b]Mustafa Kemal University

*enisesukusu@sdu.edu.tr

Abstract:

Natural resources have being polluted by variety of heavy metals due to urbanization, industrialization and excessive fertilizer and pesticide usage. Since heavy metals accumulate in soils, their treats to ecosystem and human health became more serious to the time. On the other hand, at least two or more heavy metals are co-added to the soil environment. Therefore, it should be known competitive adsorption mechanism of heavy metals in soils. Their relations with soil properties can help to develop an efficient way of tackling undesirable effects of such pollution. For this aim, competitive adsorption of Cd, Cu, Ni and Zn in 36 soil samples taken from 7 different cities in Turkey with differing physico-chemical properties was investigated in this study. Scope of 1 g soil samples were equilibrated with 25 mL solutions containing different equivalent amounts of Cd, Cu, Ni, and Zn (10-4, 2.10-4, 4.10-4, 6.10-4, 1.10-3, 2.10-3 and 8.10-3 mole L-1) at 25±2ºC for 24 h by using batch sorption technique. After equilibration Cd, Cu, Ni and Zn contents of liquid phase were determined. The conformation of the data to modified Freundlich and Langmuir models were tested by regression analysis. Results showed that both adsorption isotherms can be successfully used to describe simultaneous adsorption of the heavy metals in all soils except for Cu adsorption. Correlation analysis was made between soil physico-chemical characteristics and the parameters of the adsorption isotherms. Freundlich Kd parameters of Zn, Ni and Cd had significant negative correlation coefficients with soil pH ($p<0.01$). A significant correlation was also found between Kd parameters of Zn and Cd and carbonate content of soils. Consequently, the selectivity order of the heavy metal adsorption was found to be related to physico-chemical characteristics of soils and chemical properties of the adsorbed elements.

Keywords: Heavy metals, adsorption, soil properties, Langmuir isotherm, Freundlich isotherm

Complexation of Phosphonate Calixazacrowns and Cancer Drug Doxorubicin for Controlled Drug Release

Berke Bilgenur Kandemir[a*], Bahar Yilmaz[a], Abdullah Tahir Bayrac[a], Mevlut Bayrakci[a]

[a]Karamanoglu Mehmetbey University

*bilgenurk@gmail.com

Abstract:

Cancer is one of the leading causes of death worldwide. Among cancer therapies, controlled drug release is shown to be an essential factor for cancer treatment. Calixarene derivatives are well-known potential drug carriers with respect to their basket-like 3D shape. In this study, two different water-soluble phosphonate calix[4]arenes (pCLX4) containing crown moieties (Compound 1 and 2) were synthesized according to published procedure. Furthermore, their cancer drug complexation abilities were investigated by spectrophotometric and spectrofluorometric techniques. From the obtained data, it was observed that both Calixazacrowns 1 and 2 have high DOX encapsulation efficiencies (97 %). Additionally, effects of some parameters such as incubation time, temperature and concentration onto the complexation of calixazacrowns and cancer drug Doxorubicin were explored. Data showed that calixazacrown derivatives can be used as potential drug carriers in drug delivery systems for cancer therapy.

Keywords: calixarene, doxorubicin, cancer therapy, drug delivery

Compliance of University websites with modern web standards: The model of top 30 Turkish Universities

Abdurrahman Palali[a*], Ayse Eldem[a], Huseyin Eldem[a]

[a]Karamanoglu Mehmetbey University

*abdpalali@kmu.edu.tr

Abstract:

The Internet and web sites has become a mandatory requirement for universities. With the increased usage of mobile devices and the emergence of new standards such as HTML5, universities changed their web pages. By using the Entrepreneurial and Innovative University Index of TUBITAK, this study compares the web accessibility, the HTML5 and mobile compliance of the University web sites. Also web page performance analyzes were conducted. Based on research results, some suggestions were given.

Keywords: HTML5, Web accessibility, Web standards

Composition Of The Essential Oil Of Salvia Aramiensis Growing In Hatay

Elif Catikkas[a*], Ebru Aydin[b]

[a]Karamanoglu Mehmetbey University, Ermenek Vocational School, Ermenek - Karaman, Turkey
[b]Department Of Chemistry, Faculty Of Arts And Sciences, Mustafa Kemal University, Hatay, Turkey

*eliffcatikkas@gmail.com

Abstract:

The leaves of Salvia are generally used in traditional medicine such as antiseptics, astringents and spasmolytics [1]. Many studies have been reported about antioxidant, antimicrobial and antiviral activities of some Salvia species [2]. The leaves of Salvia are known as 'adacayi' in the Turkey in which they grow and are consumed as a hot tea [3]. Genetic, climatic, seasonal, and environmental factors affect compositions of Salvia species [4]. This study was conducted in order to determine composition of essential oil of Salvia grown in Antakya between the years of 2013 and 2015. In this work, Salvia officinalis L. were collected at the flowering stage from Samandag (sample A) and Antakya (sample B) in Hatay. The samples were dried in a shade at the room temperature and were hydrodistilled for 3 h using a Clevenger-type apparatus to yield essential oils. The oils were analysed by GC–MS using a Hewlett-Packard GCD system. The main constituents of the oil were 1,8-cineole (43,2%), camphor (11.2%), β-pinene (11.9) and borneol (5.2%).

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Keywords: Essential oil, Salvia officinalis L.

Compressive Strength of Fiber Reinforced Concrete with Air-Entrainment Agents

Demet Yavuz[a*], Zehra Funda Turkmenoglu[a], Soner Guler[a], Refik Burak Taymus[a]

[a]Yuzuncu Yil University

*demetyavuz@yyu.edu.tr

Abstract:

From the time of accidently discovery of air entraining agents (AEAs), these admixtures have been widely used in cementitious materials. AEA's most outstanding advantages are to improve freeze-thaw resistance of concrete and in some cases, workability of concrete. In this study, three different type of fibers were used. Air entraining agents were added to the concrete mix eight different volume fractions (0.05%, 0.01%, 0.15%, 0.20%, 0.25%, 0.30%, 0.35% and 0.40%). Compressive strength and ultrasonic pulse velocity of concrete were investigated. Increase of AEAs caused a slight decrease of concretes' compressive strength. The results of ultrasonic pulse velocity (UPV) showed that it is not possible to determine concretes' compressive strength with absolute certainty with using UPV.

Keywords: AEAs, UPV, Fiber reinforced concrete

Compressive strength of steel fiber reinforced concrete

Eylem Guzel[a*], Demet Yavuz[a], Fuat Korkut[a], Soner Guler[a]

[a]Yuzuncu Yil University

*eguzel@yyu.edu.tr

Abstract:

Steel fibers are commonly used in concrete mix to improve ductility and toughness characteristics of concrete. This study presents the results of experimental study on compressive strength of steel fiber reinforced concretes. Two types of two hooked end steel fiber with the length of 30 and 60 mm are used for this study. The fiber volume ratio is kept as 0.25%, 0.75%, and 0.75% in all mixes. The plain concrete compressive strength is 36.2 MPa. The test results clearly show that the increase in compressive strength for steel fiber reinforced concretes is not significant. The greatest increase in compressive strength is % for steel fiber reinforced concretes with 0.75% fiber volume.

Keywords: Steel fiber, fiber volume, compressive strength.

Compressive Strength of Steel, Synthetic and Hybrid Reinforced Concretes

Soner Guler[a*], Demet Yavuz[a], Namik Yaltay[a], Fuat Korkut[a]

[a]Yuzuncu Yil University

*gulersoner@yyu.edu.tr

Abstract:

Concrete is one of the widely-used construction material all over the world. It has been used successfully in many bridges and building applications over the 2000 years. However, concrete has a very low tensile strength despite its high compressive strength. It has been researchers focus to improve this weakness of the concrete with the adding of fibers into concrete mix. It is well-known that the adding of different types of fibers in concrete significantly increase the ductility and toughness capacity of concrete. In this study, the effect of steel, synthetic and hybrid fibers on the compressive strength of concrete was investigated. The fibers were added to the concrete as 0.25%, 0.5% and 0.75% by volume. According to the test results, the contribution of the fibers to the compressive strength of concrete is limited

Keywords: Fiber reinforced concrete, Steel fiber, Synthetic fiber.

Creating A 3D Model on A Human Skeleton Using Kinect

Yusuf Uzun[a*], Mehmet Bilban[a], Huseyin Arikan[a]

[a]Necmettin Erbakan University

*yuzun@konya.edu.tr

Abstract:

Moving 3D modeling is widely used in many areas such as cinema, gaming, robot control and training. Kinect is a system that can detect human movements and send them to computers. It was developed by Microsoft to play games for the Xbox game console and is being used over time for applications in other areas. Because of the new technology, there is a lack of application and the literature in this field. In this study, 3D model will be created on the human skeleton using Kinect and the generated model motion feature will be given.

Keywords: kinect, skeleton, 3d modelling

Cutting Performance of Different Co Content of Tungsten Carbide Cutting Tools for Titanium Alloy Milling

Abdullah Sert[a*], Osman Nuri Celik[a]

[a]Eskisehir Osmangazi University

*asert@ogu.edu.tr

Abstract:

As a commonly used material in aerospace industry, Ti6Al4V alloy is regarded as difficult to machine. This study was investigated to evaluate the effects of different Co ratios and coatings of cemented carbide cutting tools on cutting performance in milling of Ti6Al4V alloy. The cemented carbide end mills were cryogenically treated at -196 °C for 36 hours. The effects of cryogenic treatment were characterized with hardness and fracture toughness tests. Milling tests were conducted at dry cutting conditions. The cutting forces were measured with dynamometer and tool wear types were examined with stereo microscope. According to the results, notch wear and built-up-edge were dominant tool failures. The results showed that the performance of cryogenically treated cemented carbides were improved and uncoated tools can compete with the coated tools.

Keywords: Carbide grain size, Co content, Ti6Al4V, Tool wear, WC-Co

Cyber Crimes and Criminal Investigation

Merve Orakci[a*]

[a]Gazi University

*merveorakci58@gmail.com

Abstract:

As the use of information technology becomes more widespread, cyberspace has become a part of the social life. This situation has caused a lot of negativities. Due to the structure of the cyber environment; It is quite easy to commit a crime and camouflage yourself in these environments. In addition, these crimes have no the geographical boundaries because of their nature. This situation has attracted people's interests who have tendency to commit a crime. Thus, the number of cybercrimes has increased day by day. With the use of information systems as a crime tool, the crimes have become more complex than the traditional ones. Therefore, it is more difficult to solve crimes that have been committed by using information technologies. Digital evidence is one of the most important issues for the investigation of cyber crimes. It is a challenging process to analyse these evidences and to make them admissible in court. This study focuses on cyber crimes and the criminal investigation of such crimes. The computer forensics process which includes acquisition, preservation, examination and reporting of electronic evidence and submission of them to the court is examined.

Keywords: Cyber crimes, cyber investigation, computer forensics.

Daily Ecophysiological Responses Of Beech Trees With Different Social Status

Ali Kemal Ozbayram[a*], Semsettin Kulac[a], Emrah Cicek[a], Tarik Citgez[b]

[a]Silviculture, Department Of Forest Engineering, Faculty Of Forestry, Duzce University
[b]Watershed Management, Department Of Forest Engineering, Faculty Of Forestry, Duzce University

*alikemalozbayram@duzce.edu.tr

Abstract:

The oriental beech (Fagus orientalis Lipsk) is one of the important tree species among the broad-leaved species in Turkey. Tree social status can effect on competition and access to light, and on availability of local environmental resources, including water. The current study was conducted in 32 years old pure oriental beech stand. In May 2016, xylem water potential, soil water content and stomal conductivity were measured at six different time of day at the southern-facing crowns of dominant, intermediate and suppressed trees. The xylem water potential ranged between -0.18 and -1.28 MPa. The water potential was highest in predawn, the lowest in the midday, and then it rises again. While all social classes were similar to predawn water potential, the water potential difference between the dominant and suppressed trees increased towards midday and it decreased in the following hours. The dominant trees had the lowest water potential, while the suppressed trees had the highest. Soil water content decreased all soil layer throughout the day, especially in the top layer. The midday stomatal conductance was highest in the suppressed trees while it was the lowest in dominant trees. As a result, oriental beech trees in different social status could have different eco-physiological responses despite being in similar soil water conditions.

Keywords: oriental beech, stomatal conductance, soil water content, water potential

Data Management Systems in Big Data

Hakan Ozkose[a*], Emin Sertac Ari[b]

[a]Bartin University
[b]Gazi University

*hakan_ozkose@hotmail.com

Abstract:

Data concept has changed in recent years and big data concept has come to the forefront. As it is known, big data concept has five criteria; volume, variety, velocity, variability and value also known as 5V. Findings that have been obtained from datasets have helped organizations to develop themselves. On the other hand, storage and use issues of data bring some problems. Because of the increase in its quantity, data must be effectively managed. Otherwise, it can be very hard to struggle with complexity and storage issues. To cope with these problems, data management systems play an important role. In this study, “database management systems” and “relational database management systems” comcepts are explained in detail. Moreover, classification of Not Only SQL (NoSQL) databases are given and expressed widely. In addition, database management tools such as Oracle, Mysql, Microsoft Sql Server, Simple DB, Redis, Riak, Cassandra, HBase, BigTable, Accumulo, Dynoma DB, Couch DB, Mango DB, Neo4j, InfoGrid, Sones Graph DB, Allegro Graph and Infinite Graph are briefly expressed.

Keywords: Big Data, Data Management Systems, Database, NoSQL Database

Degradation Kinetics Of Anthocyanins In The Salgam Beverage

Adnan Bozdogan[a*], Kurban Yasar[a]

[a]Osmaniye Korkut Ata University

*bozdogan@osmaniye.edu.tr

Abstract:

Salgam beverage, a lactic acid fermentation product, is a red color, cloudy, and sour tasty drink. Coloring matter of anthocyanin that passes through black carrots during fermentation gives the red color to the salgam beverage. Anthocyanins are water-soluble natural coloring compounds that give a variety of fruits, vegetables and flowers color in their own tones of pink, red, blue, and violet. Anthocyanins are significant compounds in terms of both quality and health. The acceptability of a product depends on the color properties expected from that product. The most important factor that causes the anthocyanins to break down is the temperature. The high temperature applied during both the processing and storage of the product causes the anthocyanins to break down. Studies on the degradation kinetics of anthocyanins are required in terms of the application point of view. This investigation was performed to elucidate the effects of temperature on the degradation kinetics of anthocyanins. Salgam beverage was produced according to traditional production method. After production, it was kept at three different temperatures (65ºC, 75ºC, and 85ºC) for 12 hours, and then quantities of anthocyanins were determined. The research revealed that the degradation of the anthocyanins was well described with a first order reaction kinetics model and the R2 values were changed within the range of 9059 and 0.9715. The activation energy of the reaction was determined to be 48537 Joules / mol. The half-lives of the anthocyanins at 65 °C and 75° C, and 85 °C were found to be 138, 136, and 51 respectively. Assessing the half-life periods, anthocyanins were found to be more resistant to temperatures of 65ºC and 75ºC than to 85ºC.

Keywords: Salgam beverage, anthocyanin, kinetic, temperature

Design and implementation of an electronic inclinometer for Mobile Crane Applications

Muciz Ozcan[a*], Muhammet Fahri Unlersen[a]

[a]Necmettin Erbakan Uni.

*mozcan@konya.edu.tr

Abstract:

Devices that measure electrically or mechanically the angle or slope of a subject are called as inclinometer which is also referred to inclinometers or slope indicators.The implemented inclinometer has been applied on the operation of the mobile crane. Inclinometers are used in mobile crane applications when the support legs are brought to the balance and for the detection of the angles in which the moving booms operate with the horizontal axis during the load lifting. The designed inclinometer and its controller system are mounted on the crane and controlled manually by the crane operator. The mounted controller on the crane communicates wirelessly using the HC06 Bluetooth module technology with the operator. The four balance legs mounted on the crane are moved up and down to get the balance. The up and down movement of the balance legs are carried out by changing the flow direction of the hydraulic fluid pressure by means of the related valves mounted in the crane. These valves are controlled by ATMEGA328P microcontroller. The ADIS16201 programmable biaxial sloped indicator is used to get the vehicle stability information. Whether or not the crane is in balance is read via an SPI (serial peripheral interface) interface and this is transmitted to the screen of the control unit in the hands of the crane operator via HC06 Bluetooth module. The data on the crane side is transferred to the controller side also via Bluetooth module. With the help of the inclinometer performed in this study, it is aimed to take precautions by bringing the mobile crane to the pre-balance state before lifting heavy loads and bringing it to the direct position to prevent possible accidents based on the slope changes that may occur during the load lifting cases.

Keywords: Mobil Crane, Inclinometers, Microcontroller, Bluetooth

Design and Implementation of FPGA-Based Relation Matrix Similarity Unit for Color Images

Ismail Koyuncu[a*], Recep Demirci[b], Ferzan Katircioglu[c]

[a]Afyon Kocatepe University
[b]Gazi University
[c]Duzce University

*ismailkoyuncu@aku.edu.tr

Abstract:

The similarity image processing is defined as a two-dimensional gray level image that obtained using three-dimensional color properties. Because of its parallel processing capability, FPGA chips are widely used in the image processing field which requires high processing volume. In this study, a high-speed FPGA-based similarity image unit design based on the relation matrix has been implemented to transform of two-dimensional similarity images of color images. In the present study, firstly, a similarity image has been obtained by using color image on Matlab. Processing time and visual results of the study have been presented. In addition, FPGA-based similarity image unit design in the 32-bit IEEE 754 1985 floating-point number standard has been implemented using the Xilinx ISE simulation program with the VHDL language. Performance results from Matlab and FPGA-based designs have been compared. The maximum operating frequency of the FPGA-based similarity image unit is 90 MHz. The presented FPGA-based unit can produce 42 thousand results in 1 second. In the future studies, FPGA-based high-speed edge detection, filtering, and segmentation can be performed using this study presented.

Acknowledgements

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Keywords: FPGA; Color Image Processing; Similarity Image; Relation Matrix.

Design of an Adaptive Sliding Mode Controller with Optimal Coefficients and without Chattering for Coupled Tanks System

Metin Demirtas[a], Haris Calgan[a*], Erdem Ilten[a]

[a]Balikesir University

*haris.calgan@balikesir.edu.tr

Abstract:

Sliding mode control is a non-linear control method. The method varies the dynamics of a nonlinear system by application of a high-frequency switching control. The structure of the control law changes according to the position of the state trajectory. The aim of this study is to design an adaptive sliding mode controller without chattering for liquid level control of coupled tanks system. Because, chattering problem in sliding mode control is one of the most important arguments in real-time applications. The goal is to obtain a robust adaptive sliding mode controller with respect to parameter variations and external disturbances. The sliding surface slope and the adaptation coefficient of the controller is optimized by using Response Surface Methodology. Chattering of the control input in classical sliding mode control is eliminated by using adaptive control method. The effectiveness of the proposed controller is confirmed by the simulations of the dynamic model of the system by using LabVIEW software. The obtained results indicate that the chattering is eliminated and asymptotic stability.

*This study was supported by Scientific Research Projects Unit of BALIKESIR UNIVERSITY (Project No: BAP 2016/18).

Keywords: Adaptive Sliding Mode Control, Level Control, Response Surface Method, Coupled Tanks System, LabVIEW, Chattering Problem

Design of an artificial intelligence system using artificial neural networks for the diagnosis of Heart disease

Onur Inan[a*], Saban Gulcu[a], Sabri Kocer[a], Mehmet Emin Cifci[a]

[a]Necmettin Erbakan University

*oinan@konya.edu.tr

Abstract:

In this study, a system based on artificial neural networks was proposed to preliminarily determine whether or not a person is really suffering from a heart. The system decides according to the various examination results taken from the patient. The system is very useful in places where the doctors are not accessible. Heart diseases can have important consequences for the human life. Specialist doctors who can diagnose heart diseases may not be employed everywhere. With the proposed system, a structure based on artificial intelligence was established and it diagnosed the cardiac disease by 85.18% ratio. The reliability of the proposed system has been tested by using 10 cross validation methods on the Statlog heart disease dataset taken from a well-known machine learning repository called UCI. The results obtained from the system are promising for the future. The results are also compared with other studies in the literature.

Keywords: Heart diseases, artificial neural networks, artificial intelligence

Design of Automatic Irrigation System for Greenhouse

Yusuf Dilay[a*], Adem Ozkan[a], Seyit Alperen Celtek[a]

[a]Karamanoglu Mehmetbey Universitesi

*ydilay@kmu.edu.tr

Abstract:

There is no doubth that the biggest water consumer ise agriculture (nearly %70 total water consumption). The needed water are increasing continuously every year. The consumption water in agriculture is expected to go up by 2050. This paper proposes on smart irrigation solution which is cost effective and easy set-up. The proposed systems consist of sensors, actuators and control center. The sensors -are replaced to near of the plant root- collect information about soil humidity and transmit the data to control center. The control center compare the sensor data and desired value. If the soil is dry, the control center send open command to the water valves. It is expexted that the proposed automatic system will prevent unnecessary irrigation and will become economic approach for the irrigation in the near future.

Keywords: Automatic Irrigation System, greenhouse, smart greenhouse.

Designing Of Solar Pv System In Rural Areas

Bulent Yaniktepe[a*], Osman Kara[a], Coskun Ozalp[a], Ilyas Aladag[a]

[a]Osmaniye Korkut Ata

*byaniktepe@osmaniye.edu.tr

Abstract:

Turkey has started to invest in solar energy using photovoltaic for the adoption of a renewable energy system. Solar energy has some advantages over the fossil based energy such as safe, effective and economic energy source. There is no air pollution and detrimental effect on environment. Furthermore, it is clean, inexhaustible and immense source. Solar photovoltaic system (PV system) in agriculture sector plays an important role to produce electricity. The main aim of this study is, therefore, to contribute to a better understanding of the potential impact of PV systems on sustainable agriculture and rural development in Osmaniye, TURKEY. The main objective of this study is to determine the characteristic behavior of the water pumping system assisted with PV. In addition to this, this study explores the pumping head in terms of flow rate changes for the solar PV system using solar energy in rural areas. This investigation shows power capacity of the solar PV system with respect to each month.

Keywords: Photovoltaic, Solar Energy, Agriculture

Detection and Sorting of Defective Components using Image Processing Techniques

Merdan Ozkahraman[a*], Yusuf Erkan Gorgulu[a]

[a]Suleyman Demirel University

*merdanozkahraman@sdu.edu.tr

Abstract:

Quality is one of main concerns among other subjects in industrial production. It is important for the producer to release the right and defect-free products into the market not only for commercial standing but also for producer's goodwill. Industrial mechanization is effective at reducing human-related failures during production. It is crucial to detect and sort out defective components as early as possible from production line. Image processing techniques have been widely used in production line control and analysis with advances in technology. In mass production sytems detection of defects on conveyor belts and sorting them out will prevent future problems in final product and also reduce the risk of sending defective products thanks to the analysis techniques applied before packaging. In this study; concerning all mentioned reasons, a sorting mechanism is developed to filter out defective components from conveyor belt as quick as possible and and analyze these parts.

Keywords: image processing, binary classification, automation systens

Detection of dermatologic disease with multi support vector machines

Onur Inan[a*], Orhan Veli Direk[a]

[a]Necmettin Erbakan University

*oinan@konya.edu.tr

Abstract:

In this study, we developed an artificial intelligence based system for detecting dermatology disease using multi support vector machines (SVM). Thanks to the proposed system, the information obtained from the various examination results used for the diagnosis of the dermatology disease is interpreted by the classification system. Thus, it is decided whether the persons are ill or not. In the system, multi support vector machines algorithm is used as a classifier. Disease data were taken from the UCI database for comparison with other articles. 10-fold cross validation has been used to ensure the reliability of the results found by the classifier. The accuracy rate measured in this way was found to be 96.73. Studies done with the dermatology disease data in the literature have been examined. The results have been seen promising.

Keywords: multi support vector machines;dermatology disease;artificial intelligence

Determination Effect of Liquid Glass on Color Changing on Wood Materials Stained by Indigo (Isatis Tinctoria L.) Extracts. Natural Coloration of Wood Materials by Indigo (lsatis tinctoria L.) + liquid Glass Mixtures and Determination Color Stability Under

Osman Goktas[a], Sezil Aliyazicioglu[a], Mehmet Yeniocak[a*], Ertan Ozen[a], Mehmet Colak[a]

[a]Mugla Sitki Kocman University

*myeniocak@mu.edu.tr

Abstract:

The aim of this study is to develop durable natural colorants and liquid glass for the surface of wooden products and determine the color resistance of this stain to UV light irradiation. Natural dyestuff was extracted from Indigo (lsatis tinctoria L.) by ultrasonic-assisted method and mordent with ferrous sulphate, aluminum sulphate, and vinegar mixes. Scots pine (Pinus sylvestris L.), chesnut (Castanea sativa Mill.) and mahogany (Khaya Ivorensis) wood specimen were used for the study. After treatment with stain, wood test samples were exposed to UV irradiation for the time periods of 50, 100 and 150 hours. The results showed that the color change values for all wood specimen stained with Indigo extract and liquid glass dyestuff had a better performance compared to synthetic colorants. However, liquid glass was not precisely effective on color stability on some samples.

Keywords: Indigo, Natural coloration, Liquid glass, UV weathering, Color change

Determination of Appropriate Distribution Functions for The Wind Speed Data Using The R Language

Ismail Kirbas[a*]

[a]Mehmet Akif Ersoy University

*ismailkirbas@mehmetakif.edu.tr

Abstract:

Accurate determination of the proper distribution and parameters of this distribution according to the wind characteristics of the zone is vital for wind energy investment.

In determining a wind energy potential belonging to a region, meteorological wind speed measurements have a great proposition to take place within a certain statistical distribution.

In our study, the wind speed data obtained from the metrology station within 1 year was evaluated and it was determined using the R language, which is an open source statistical programming language, that is better suited to distributions such as weibull, gamma, lognorm.

The Akaike information criterion scores were calculated as the performance parameters of the distributions and the distribution performances were compared graphically. While gamma and lognorm distributions have better results at low wind speeds, weibull distribution achieves higher performance for higher wind speeds.

Keywords: wind speed, statistical distribution, r language, weibull, gamma, lognorm

Determination Of Carbon Footprint For Fuels Used For Domestic Heating in Denizli, Turkey

Sibel Cukurluoglu[a*]

[a]Pamukkale University

*scukurluoglu@pau.edu.tr

Abstract:

Carbon footprint is a measure of the environmental impact of human activities in terms of the amount of greenhouse gas produced, measured in units of carbon dioxide. Carbon dioxide is among the greenhouse gases that cause global warming. The greenhouse gas, which has the largest share among greenhouse gases, is carbon dioxide. Carbon dioxide is formed during the use of fossil fuels. Therefore fossil fuel type and usage amount are important.

In this study, the amounts of carbon dioxide per person and carbon footprints were calculated by taking into account the parameters of natural gas and coal used for domestic heating and personal consumption habits in 2010-2014 period in Denizli province center, Turkey. It has been determined that the amount of carbon dioxide per person sourcing from the use of coal is higher than the amount of carbon dioxide per person originating from the use of natural gas. Although the amount of personal carbon footprint in Denizli is lower than the average in Turkey, it is seen that there is a very high amount of carbon footprint in the world target.

Keywords: carbon footprint, carbon dioxide, fossil fuel, global warming, greenhouse gas

Determination of Cooling Channel Size in Plastic Injection Molds

Mustafa Goktas[a*], Abdulmecit Guldas[a], Omer Bayraktar[a]

[a]Gazi Universty

*mustafagoktas@gazi.edu.tr

Abstract:

In this study, the effect of cooling channel sizes on the cooling process of plastic injection molds was investigated. Effective and homogeneous cooling in plastic injection molds has great importance in terms of plastic parts quality and production costs. For this reason, numerical analyzes have been carried out to determine the dimensions of the cooling channels to provide efficient cooling. Depending on the wall thickness of the plastic part, the effect of the appropriate channel diameter, the distance between the channels, and the distance between the channel and cavity on the surface temperature distribution of the mold was investigated. According to this study, it is determined that while increased channel diameter, reduce cooling time. It has been determined that the distance between the channels and the distance of the channels from the cavity surface are effective on the homogeneity of the temperature distribution.

Keywords: Plastic injection molding, Cooling channels, Temperature distribution, Cooling simulation, Warpage

Determination Of Elements Of Mohair In Ankara Mohair Goats By Plasma Optical Emission Spectrometry (ICP-OES)

Kivanc Irak[a*], Ayse Ozge Demir[b], Handan Mert[c], Nesrullah Aysin[d], Nihat Mert[c]

[a]Siirt University Faculty of Veterinary Medicine Department of Biochemistry, Siirt, Turkey
[b]Yuzuncu Yil University Faculty of Agriculture Department of Animal Science, Van, Turkey
[c]Yuzuncu Yil University Faculty of Veterinary Medicine Department of Biochemistry, Van, Turkey
[d]Hakkari University Vocational School of Health Service, Hakkari, Turkey

*kivancirak@hotmail.com

Abstract:

This study was aimed to determine some of mineral levels in the mohair samples of Angora goat grown in Ankara. The mohair samples were takenfrom 30 healthy Angora goats (average 3 years old) raised intensive conditions. Determination of mineral samples was performed by Thermo Scientific's Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES). In the analysis of the data, statistical package program for SPSS 20.0 (Statistical Package for Social Sciences) was used. Pearson's correlation coefficient was used for correlation analysis. $P<0.05$ value was considered as significant in statistical analyzes. The concentrations of calcium (Ca), cobalt (Co), copper (Cu), iron (Fe), magnesium (Mg), manganese (Mn), sodium (Na), nickel (Ni), lead (Pb), selenium (Se), zinc (Zn)of mohair samples were determined; 0.099±0.017 mg/dl, 0.071±0.018 mg/kg, 2.259±0.266 mg/kg, 32.629±10.471 mg/kg, 138.253±23.921 mg/kg, 10.827±1.394 mg/kg and 0.024±0.005 mg/dl, 0.893±0.440 mg/kg, 0.074±0.041 mg/kg, 4.504±0.879 mg/kg 43.307±5.731 mg/kg, respectively. Positive correlations were determined between Ca and Co-Mg-Na-Mn, Co and Cu-Mg-Mn, Cu and Pb, Mg and Mn-Na, Mn and Na, Ni and Pb;and a negative correlation was only found between Na and Ni.

Keywords: Ankara Goat, Mohair, Elements, ICP-OES

Determination of Noise Pollution in an Urban Park of Bursa

Melike Yalili Kilic[a*], Ilker Kilic[a]

[a]Uludag University

*myalili@uludag.edu.tr

Abstract:

Noise pollution is one of environmental problems in worldwide. Industrialization, transportation, poor urban planning, social events, construction activities and household chores are the main causes of noise pollution in the cities. Noise pollution affects the people in all areas of their life due to increasing number of vehicles in different urban spaces. One of these areas are urban parks, which are significant places for rest, sports, relaxation, games, cultural events, sightseeing and etc. On the other hand, urban parks should be as quiet as possible. This study aims to determine noise pollution level in an urban park that is located in Nilufer District of Bursa, which is one of the big cities of Turkey. A total of 6 points have been determined in the park as points near traffic roads that are sensitive to noise and center of the park where crowded people are located. The measurements have been conducted in the morning, noon and evening time on days when the weather is sunny, cloudy or partly cloudy. The measurements have not been made on windy and rainy days to prevent errors. The results show that noise levels increased to 90.8 dB(A) in point 1 and decreased to 47 dB(A) in point 4. Averagely, the measurements are between 55 dB(A) and 75 dB(A) in the park. The noise levels obtained in the park area are highly exceed according to the limit values given in "Environmental Noise Evaluation and Administrative Regulation" in Turkey. At the end of the study, some proposals have been developed to decrease the level of noise in the park.

Keywords: Bursa, noise pollution, urban park.

Determination Of Occupational Exposure To Ammonia In Winter Season For Workers In Broiler Houses

Ilker Kilic[a*], Melike Yalili Kilic[b]

[a]Biosystems Engineering Department, Agriculture Faculty, Uludag University
[b]Environmental Engineering, Enginering Faculty, Uludag University

*ikilic@uludag.edu.tr

Abstract:

Ammonia (NH3) is an important pollutant gas in broiler houses for animal and worker health due to its concentration level. Main sources of ammonia in broiler houses is litter and microbial degradation of manure. The aim of this study is evaluation of pollutant gas concentrations in terms of worker health. NH3 concentrations in a broiler house barn in Bursa region were measured continuously 24h for four days with multi-gas meter (RAE, MultiRAE Lite Pumped, CA, ABD) for a winter season study period. The measured data was analyzed statistically using JMP 7.1 software. The average mean winter NH3 concentrations in broiler house were 57.63 ppm. For overall study period, maximum NH3 concentration was measured as 93 ppm. The differences between daytime and nighttime concentrations for two pollutants were statistically significant ($P<0.01$). The daytime and nighttime NH3 concentrations were 48 and 66 ppm, respectively. The average NH3 concentration was higher than 25 ppm which is determined as a time weighted average (eight hours) threshold limit by NIOSH and ACGIH. Also, obtained average NH3 concentration also was higher than time weighted average (eight hours) threshold limit with 20 ppm given in “Regulation of Measure of Health and Safety in Works with Chemical” which is issued by Turkish Ministry of Labor and Social Security. Consequently, these results show that the exposure to NH3 for worker in broiler house should be considered and lawful and scientific authorities should be dwelled on it.

Keywords: Ammonia, broiler houses, worker health, ammonia exposure, occupational exposure

Determination Of Organic Acid Concentrations In Wet And Spray-Dried Fish Silage Prepared With Lactic Acid Bacteria

Gulsun Ozyurt[a], Ali Serhat Ozkutuk[a*], Yilmaz Ucar[a], Abdurahman Polat[a], Esmeray Kuley Boga[a]

[a]Cukurova University

*aliserhat@cu.edu.tr

Abstract:

Organic acids formed in fermented products such as fish silage as a result of hydrolysis, biochemical metabolism, and microbial activity. Organic acids such as acetic and propionic acids are the most powerful inhibitors and are used for the prevention of growth of bacteria, yeast and mold. Because of this, for technical, nutritional, sensorial and microbial point of view, it is important to evaluate the quantitative determination of organic acids in fermented foods. In this study, In this study, the fermented fish silages were produced with Lactobacillus plantarum(PL), Pediococcus acidilactici(AC), Enterococcus gallinarum(GL), Lactobacillus brevis(BR) and Streptococcus spp.(ST) and the acid silages were prepared with formic acid (FA, %3). The aim of this study was to determine the organic acid concentrations of acid and fermented, wet and spray-dried fish silages made from gibel carp (Carassius gibelio). This project was supported by Scientific and Technological Research Council of Turkey (TOVAG-213O166). The results showed that although raw gibel carp did not contain propionic acid, it is rich in lactic and acetic acids. In fermented groups of wet silages, propionic acid formed primarily followed by lactic acid. In all the fermented groups, PL group had the richest amount of lactic and propionic acids (1935.43 and 4218.80mg/100g, respectively). In terms of propionic acid production, all the fermented groups showed amounts over 2000mg/100g. After spray drying of all silage groups, other than propionic acid production of BR group (3397.95mg/100g), propionic and lactic acid production in all of the fermented groups showed amounts over 4000 mg/100g. The highest acetic and succinic acid accumulation in fermented groups of spray-dried fish silages was observed in PL group (1939.35 mg/100g, 134.13 mg/100g, respectively). The results of this study showed that fermentation process for the production of fish silages with various lactic acid bacteria species formed considerably rich amounts of organic acids.

Keywords: Organic acids, lactic acid bacteria, spray-drying, fish silage, fermentation

Determination Of Phenolic Compounds And Antioxidant Activity Of Sideritis Pisidica Boiss. & Heldr.

Zuleyha Ozer[a*], Turgut Kilic[a], Sema Carikci[a]

[a]Balikesir University

*zuleyhaozer@balikesir.edu.tr

Abstract:

Plants are used since ancient times by primitive societies due to therapeutic and psychotherapeutic benefits, among other healing properties. Phenolic compounds have several biological effects such as antioxidant, anti-inflammatory and bactericidal properties due to their ability to neutralise free radicals.

As a member of the Lamiaceae (L.) plant family the genus Sideritis is represented by about 150 species in the world. Sideritis species are known by different local names and traditionally used in various regions of Turkey. Infusions of some Sideritis species have been used in the treatment of gastrointestinal disorders, common cold and as a diuretic as well as herbal tea in folk medicine.

Sideritis pisidica Boiss. & Heldr. (Eldiven Cayi) is endemic to Turkey. The aerial parts of this plant were collected from Burdur, Aglasun, Turkey in July 2014. In this study, phenolic contents and antioxidant activity of the S. pisidica extracts and tea were investigated. The dried aerial parts of the plants macerated with hexane (H), acetone (Ac1) and methanol (M1) respectively and directly extracted with acetone (Ac2) and methanol (M2). Two methods were used for prepare of the tea: infusion and decoction. The quantitative amounts of the phenolic compounds were determined by LC/MS-MS. The main compounds determined as follow: penduletin for H, Ac1 and Ac2, chlorogenic acid for M1 and M2, fumaric acid, chlorogenic acid and penduletin for infusion and decoction. The antioxidant activities were determined based on three methods: 2,2-Diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging, β-carotene linoleic acid and cupric ion reducing antioxidant capacity (CUPRAC) assays. All the studied antioxidant activity results showed that the extracts, infusion and decoction of the plant have moderate activity.

Acknowledgments

The authors thank to The Scientific and Technological Research Council of Turkey (TUBITAK) for supporting this study as a part of project 113Z710.

Keywords: Sideritis pisidica, phenolic compounds, antioxidant activity

Determination Of Pozzolanic Activity For Using Natural Zeolite Analcime In Sustainability Additive Cement Products

Yasemin Akgun[a*]

[a]Ordu University

*yakgun@odu.edu.tr

Abstract:

It is known that the cement industry is responsible for 5-8% of world CO2 emissions.and also for intensive energy consumption. Mineral admixtures with pozzolanic property added as partial replacement to traditional clinker enable to additive cement productions due to less clinker content. This situation corresponds to cement and concrete productions improved performance as well as saving energy, reducing world CO2 emissions. For this reason, in recent years, the cement industry has been using natural zeolites extensively as pozzolanic additive materials. In this study, the usability as a pozzolan in sustainable admixture cement productions of analcime which is known as second valuable zeolite mineral after clinoptilolite in zeolite group, has been investigated in comparison with clinoptilolite. Blaine values, unit volume weights, chemical and mineralogical compositions, petrographic structures and pozzolanic activities of clinoptilolite and analcime which is subject of study were determined. According to TS 25, which contains pozzolan relevance criterias, 7-day compressive strength values of lime-pozzolan mixture samples were determined. The data obtained show that, The total content of Si02 + Al2O3 + Fe2O3 was 77.3% for clinoptilolite and 73.16% for analcime. The average compressive strengths of lime-zeolite (pozzolan) blend samples are 9.02 MPa for clinoptilolite and 6.3 MPa for analcime. Accordingly, analcime which is a natural zeolite satisfies to puzolan relevance criterias in TS 25 has the potential to be an alternative to clinoptilolite which is more widely used in cement productions.

Keywords: Zeolite, Analcime, Clinoptilolite, Pozzolanic activity.

Determination of Pre-combustion Chamber Design for a Stratified Charge Natural Gas Engine

Mehmet Cakir[a*], Halil Ibrahim Sonmez[a]

[a]Yildiz Technical University

*mecakir@yildiz.edu.tr

Abstract:

The fuel efficiency of the engine is investigated intensely by researchers. Less fuel consumption for the same engine running hours is wanted by engine users. The engines operate principally as otto or diesel cycles. Although diesel cycle is advantageous at partial loads over otto cycle, it is disadvantageous at full load. Especially, diesel cycle is more efficiency at partial loads than otto. Therefore, otto principle running engines can be run like to diesel cycle at partial loads with stratified charge combustion chamber. The stratified charge in combustion engine means that rich mixture is formed around spark plug, lean mixture is formed other zone.

This study is about a new combustion chamber design for a stratified charge engine. Therefore, a small pre-chamber on the cylinder cover has designed to stratified charge in-cylinder. The engine has three valves. These are exhaust valve, main and auxiliary intake valves. Main and auxiliary valves operate simultaneously. While the rich mixture is taken from the auxiliary valve into pre-chamber, air or lean mixture is taken from main valve. Thus, the stratified charge is formed in-cylinder. This paper aims to announce preliminary designs.

Keywords: Internal combustion engine design, CNG engine, Stratified charge

Determination of Some Heavy Metals and Trace Elements and Total Antioxidant Capacity of Aegopodium podagraria

Sevilay Kablan[a], Aysegul Cebi[b*]

[a]Institute Of Health Sciences
[b]Food Engineering Department, Faculty Of Engineering, Giresun University,

*cebiaysegul@hotmail.com

Abstract:

In this study, heavy metals and trace elements and total antioxidant capacity of Aegopodium podograria plant from Giresun province have been determined. Five different stationary plant samples from different altitudes were collected between March-May 2016. Plant samples were dryed and extracted by ethanol and methanol. The levels of heavy metals and trace elements of plant extracts were measured by ICP-MS. Total antioxidant capacity was detected according to the ferric thiocyanate method (FTC).

The highest value of Cr, Mn, Fe, Ni, Cu, Zn, As and Pb were found as 6.024 ppm at 3rd station, 83.498 ppm at the 5th station, 153.785 ppm at the 5th station, 50,149 ppm at the 5th station, 24.727 ppm at the 3rd station, 105.418 ppm at the 3rd station, 2.208 ppm in the 1st station, 2.568 ppm 1st station, respectively.

Methanol extracts of the plant samples in 1th, 2th, 4th and 5th stations showed high inhibiton at 84th hour, while 3rd station had high inhibition level at 96th hour. However, ethanol extracts of the plants from all stations viewed high inhibition.

Aegopodium podagraria has high total antioxidant capacity. When it is collected some areas far from environmental pollution, it can be confidentially consumed due to the decrease toxic heavy metal levels. Further investigations are needed.

Keywords: Antioxidant capacity, Heavy Metals, Trace Elements, Aegopodium podograria

Determination of Suitable Model to Estimate Global Solar Irradiation in Central Anatolia Region in Turkey

Selmin Ener Rusen[a*]

[a]Karamanoglu Mehmetbey Universitesi

*selmin.enerrusen@gmail.com

Abstract:

The most important parameter for the planning of the systems which work with solar energy is to know the accurate solar irradiation knowledge of that area. Accurately measured data is almost rare for all over the world by the reason of some calibration problems and the insufficient data networks. For those areas which do not have enough measured data, solar irradiation estimation is conducted by using some empiric correlations. In the present study, the daily global solar irradiation reaching on a horizontal surface was estimated and analyzed by using three main approaches for the Central Anatolia Region. The first approach is based on the conventional empiric estimation models (Angstrom and two basic quadratic models). The second one is the HELIOSAT method derived from satellite images. The last approach is the hybrid (coupled) model composed of the usage both ground and satellite data together within. The estimation results obtained from the analyzing were compared with ground measured data. Then, accuracy of the models was studied by using several statistical tests and cumulative frequency analysis for all models. According to the results of this study, yearly average daily global solar irradiation potentials are found as 2280 W/m2 for the Central Anatolia Region of Turkey. When compared to empirical and satellite-based methods, Coupled model has determined as the best performance model for the estimation of the daily global solar irradiation on a horizontal surface.

Keywords: Solar Irradiation, Coupled Model, Satellite Image, HELIOSAT, Central Anatolia.

Determination of the Level of Consciousness of People about Collecting Used Clothes: Bursa Case Study

Melike Yalili Kilic[a*], Ilker Kilic[a]

[a]Uludag University

*myalili@uludag.edu.tr

Abstract:

The wastes that arise with the developing technology, industry and urbanization are serious problems for the environment nowadays. Normally, wastes are cleaned in time in the ecosystem, but it is difficult to remove the increasing wastes day by day. One of these wastes are used clothes that will be a problem for environment, as long as increasing population in the world. In this study, the information about the used clothes/shoes collecting boxes put in various neighborhoods that are located in Osmangazi District of Bursa, which is one of the big cities of Turkey was given. In addition, a survey was conducted to determine the level of consciousness of people about collecting used clothes in Bursa. Questionnaires were directed to people living in Yildirim, Osmangazi and Nilufer, which are the three major central districts of Bursa, by face to face interviews. Questionnaire consisting of personal information and used clothes collection information was applied to a total of 600 people, 200 people randomly selected from each province. It is aimed to determine how used clothes are evaluated and the level of consciousness of people, who are living in three major districts of Bursa, about using the used clothes/shoes collecting boxes and collecting used clothes with this survey. At the end of the survey, the rate of people who are aware of this project's aim in Osmangazi, Nilufer and Yildirim are 17%, 14% and 7%, respectively. The most of people living in Nilufer District do not trust this project and think that their used clothes won't go to the needy people. According to the results the level of consciousness in Yildirim District is low and people don't know much about this project and they aren't interested in such a project.

Keywords: Bursa, used clothes, recycling, used clothes collecting boxes.

Determination of the Performance of Some Nectarine Cultivars Budded on GF 677 Rootstock Under Sanliurfa Province Conditions

Ali Ikinci[a*], Ibrahim Bolat[a]

[a]University Of Harran, Faculty Of Agriculture, Department Of Horticulture

*aliikinci61@hotmail.com

Abstract:

This study was conducted to determine phenological, pomological, and yield of 10 nectarine cultivars (Armking, Crimson Gold, Fairlane, Honeykist, Maria Laura, Orion, Red Gold, Silver of Rome, Stark Red Gold, Summer Super Star) which were grafted on GF 677 rootstock and grown in Sanliurfa ecological conditions, between the years of 2007-2011. Based on the results, the full bloom occurred in the studied varieties between the dates of 16 March - 04 April and harvested on 16 June- 04 September. The average fruit weights of the varieties were determined between 65.84 g (Fairlane) and 143.65 g (Silver Rome), fruit firmness between 2.03 kg cm-2 (Silver of Rome) and 4.65 kg cm-2 (Summer Super Star), the amount of soluble solids between 13.63 % (Stark Red Gold) and 16.97 % (Crimson Gold), and titratable acidity between 0.56 % (Orion) - 1.23 % (Maria Laura). According to the values of the five-years (2007-2011), the highest cumulative yield was determined from Armking as 269.11 kg tree-1) and as 250.25 kg tree-1 from Red Gold. Yield per trunk cross-sectional area at the end of the 8th year was determined as 0.99 kg cm-2 (Silver of Rome) - 2.88 kg cm-2 (Stark Red Gold). On the other hand, the number of double pistil formation of flowers of nectarine cultivars has changed between 11.33% (Crimson Gold) and 27.14% (Armking). As a result, fruit ripening of nectarine varieties that occur between the dates of 15 June to 15 July has been found to be superior in terms of fruit yield and quality in Sanliurfa ecological conditions.

Keywords: Nectarine, Prunus persica var. nucipersica, Phenology, Pomology, Fruit yield, Double pistil formation

Determination of Volatile Constituents and Some Pomological Characteristics of Mondial Gala and Summer Local Apple Genotype Named "Gelin" Grown in Canakkale Region

Engin Gur[a*], Mehmet Ali Gundogdu[b]

[a]Canakkale Onsekiz Mart University, Lapseki Vocational School, Canakkale, Turkey
[b]Canakkale Onsekiz Mart University, Faculty Of Agriculture, Department Of Horticulture, Canakkale, Turkey

*engingur@comu.edu.tr

Abstract:

Canakkale, is the most important production center in the western Marmara region in terms of apple cultivation. The amount of annual apple production in the region is 100.000 tons and "Golden Delicious", "Starking Delicious" and "Granny Smith" are the most produced varieties. "Gala", "Fuji", "Summer Red" and "Jersey Mac" varieties are followed. Volatiles directly affect the sensorial quality and consumer acceptance of fresh fruits. The type and concentration of volatile compounds show great variability in apple in conditions of Turkey. In this experiment some fruit pomological characteristics and aroma potential of local apple genotype named 'Yazlik Elma' and standard apple variety 'Mondial Gala' were evaluated. Fruit length and diameter (mm), fruit weight (g), soluble solid content (% brix), pH, titrable acidity, skin and flesh color (L, hue, chroma) were investigated within scope of pomological characteristics and volatile compositions by using diethyl ether solvent for liquid – liquid extractions. The identification of volatile constituents was performed by Gas Chromatography / Mass Spectrometer (GC/MS) instrument. According to the obtained results, 21 volatile constituents including 10 aldehydes, 6 alcohols, 4 esters and 1 other compound, were detected in 'Gelin' genotype; 8 volatile constituents; including 1 aldehyde, 4 alcohols, 3 esters, were detected in Mondial Gala cultivar.

Keywords: Malus communis L., aromatic compounds, local type, flavor.

Determining Of The Recreational Motivations In Protected Areas With Gap Analyses Method: A Case Study On Uludag National Park

Sertac Kaya[a*], Gamze Kurkut[b], Firat Caglar Yilmaz[a], Haldun Muderrisoglu[a]

[a]Duzce University
[b]Ankara University

*sertackaya88@hotmail.com

Abstract:

Recreation which is the essential requirement of quality life today has diversifying its sources gradually. However, increasing urbanization and industrialization cause recreational preferences to concentrate in natural areas. At this point, protected areas such as National Parks, Nature Parks appear to be most important natural resources for recreation. This study was carried out in Uludag National Park which is one of the most important protected area in Turkey. The aim of the study is to determine the recreational motivations that affect the users. In this respect, the effects of motivations on general field satisfaction are investigated. In addition, there has been identified the relationship with user characteristics to explain motivations . Within the scope of this study 23 criteria are assessed to determine the effect of motivation on involvement. Factor Analysis has been used to explain this criterias. As a result of the analysis, criterias seperate to factor groups. Along with these determined motivational factors, motivation criterias without experience the field and after the experiment have been assesed by the users. Moreover the effects of motivations that have a significant difference between them to the general satisfaction have been examined. As a result of the study, a significant relationship between the expectations before the field experience and the case of later the field experience has been determined.

Keywords: GAP Analyses, motivation, protected area, recreation, satisfaction

Determining Optimal Structure for Multilayer Feedforward Artificial Neural Networks Using Genetic Algorithm

Vahit Tongur[a*], Mehmet Hacibeyoglu[a], Mohammed H. Ibrahim[a]

[a]Necmettin Erbakan University

*vtongur@konya.edu.tr

Abstract:

Multilayer feedforward artificial neural networks (MLFNN) are frequently used in many fields such as human and computer interaction, health information systems, image recognition and speech recognition. The structure of MLFNN affect the performance of the computer based system. Generally, real world problems are solved with a static MLFNN where the number of hidden layers and neurons are predefined by user. The MLFNN perform a limited processing capacity due to the lack of hidden layers and neurons. Otherwise, if the number of hidden layers and neurons are more than necessary, MLFNN's learning process increases. For these reasons, to design the structure of MLFNN is an important problem. In this study, we determined the optimum structure of MLFNN using Genetic Algorithm (GA). In the experiments, we used several datasets from UCI repository. According to the experiments results, it was seen that the MLFNN constructed with GA gave better results.

Keywords: Feedforward artificial neural networks, Genetic Algorithm, Optimization problem

Development Of An Early Detection System To Identify The Dead Broilers Using Thermal Imaging

Arda Aydin[a], Anil Cay[a*]

[a]Canakkale Onsekiz Mart University

*anilcay@comu.edu.tr

Abstract:

It is important to detect dead birds at an early stage to avoid a negative impact on the health and welfare of the flock and the production of broilers. Unfortunately, current scientific approaches to welfare assessment in broilers are based on individual sampling that can be time consuming under field conditions. On the other hand, farmers conduct routine checks based on walks through the house to screen birds' health condition and to find the dead birds. Nevertheless, it is not easy to find a dead bird between 100.000 broilers by manually.

Therefore, this paper introduces an automated method to detect dead birds in a broiler house using thermal camera and image analysis software. In an experiment with Ross 308 broilers conducted in the laboratory with 10 animals, a top-view thermal camera was mounted at a 1.5 m height and continuously monitored broilers. Dead birds are known to be related and affected to health, welfare and the production of flock. Thus, the final objective was to develop a system that could detect the dead birds in a broiler house to the farmer in real-time. Based on these data, a linear real-time model was developed and tested to detect the dead birds in relation to body temperature. Using this model, body temperature of the birds in a broiler house could be automatically monitored and predicted in real-time. Comparing these predicted body temperature values with the real-time measurements makes it possible to detect the dead birds. Results showed that this method could detect 91% of events in real-time, demonstrating a high potential of using thermal camera to automatically monitor the health, welfare and the production of broilers over a complete growing period.

Keywords: broiler, thermal imaging, automatic detection

Development Of LHRH Receptor Targeted Polymeric Micelle System As A Cisplatin Nanocarrier For Ovarian Cancer Treatment

Guliz Ak[a*], Hatice Yesim Karasulu[a], Irfan Akartas[a], Yeliz Yildirim[a], Ercument Karasulu[a], Senay Sanlie[a]

[a]Ege University, Turkey

*gulizak@gmail.com

Abstract:

Ovarian cancer is the most leading of cause of death in women with gynecological cancer. Cisplatin is a platinum based anticancer agent and one of the most commonly used chemotherapeutic agent. Cisplatin is chosen as first stage drug in ovarian cancer therapy, however during the treatment besides gastrointestinal, hematologic, urinary, otologic, physhoneurologic side effects, adverse effects in liver and cardiovascular system could be occured. Moreover cisplatin could be rapidly cleared from the systemic circulation through glomerular excretion. Targeted drug delivery provides accumulation of drug at disease site and reduces side effects in healthy tissue. Polymeric micellar systems are one of the convenient cariers for drug delivery. The aim of this study is preparation of targeted and cisplatin loaded micellar formulation for ovarian cancer treatment. Luteinizing-hormone-releasing hormone (LHRH) receptor which is overexpressed by ovarian cancer cells, was selected as target for polymeric micelle system. In order to prepare this nanocarrier poly(glutamic acid) (PGA), poly (ethylene glycol)- poly (lactic-co-glycolic acid) (PEG-PLGA) were chosen as biocompatible polymers. Firstly cisplatin was conjugated to PGA with 90% binding efficiency. PEG-PLGA diblock polymer was conjugated to PGA-cisplatin in 0.1 M phosphate buffer via amide bond using EDC/NHS chemistry. LHRH analog decapeptide, [D-Lys6]LHRH was used as ligand. ε-NH2 group of ligand was bound to carboxyl group of triblock polymer by means of amide bond. Polymeric structures were characterized and confirmed with FTIR, HPLC, TGA, zeta sizer and platinium amount was determined with ICP-MS. Critical micelle concentration of triblock polymer was analyzed at different media and micelle system was optimized. According to the data LHRH receptor targeted cisplatin nanocarrier has a potential for further analysis (in vitro, in vivo, ex vivo) and ovarian cancer treatment.

Acknowledgement: We would like to thank for financial support received from The Scientific and Technological Research Council of Turkey (TUBITAK) (Project ID: 214S292).

Keywords: Cisplatin, LHRH receptor, triblock copolymer, micelle, ovarian cancer.

Dielectric Liquids and Loadability Effects on Transformers

Yunus Bicen[a*], Yusuf Cilliyuz[b], Faruk Aras[c], Guzide Aydugan[a]

[a]Duzce University
[b]Department Of Electric And Energy - Bilecik Seyh Edebali University
[c]Faculty Of Aeronautics And Astronautics - Kocaeli University

*yunusbicen@duzce.edu.tr

Abstract:

The main structure of the transformers has not changed since the past. However, auxiliary equipment and materials have diversified in order to improve service life and system security. Dielectric liquids are the most important among them. Mineral oils and synthetic esters are widely preferred in this industry. Also, natural esters have become popular in recent years. However, the diversity of oils and esters can directly affect transformer service life and loadability. The main reason for this is the physical and chemical properties of the electrical insulating liquids. In this study, it has been investigated how these insulating liquids affect the loadability of the transformer. Experimental studies were carried out on three equivalent transformers (50kVA, 20/0.4kV, Uk=5%) for three insulating liquids (Midel 7131, Nynas Lyra X, FR3). Thermal measurements were carried out using fiber optic temperature sensors since it is sensitive. Measurements were repeated under different loading conditions up to twice the nominal load. Winding hot-spot temperature levels were different from each other for the same load factors. Temperature deviation ranges between high voltage and low voltage windings were different as well. Therefore, it can be said that the type of liquid insulation is important factor on loadability of transformers. As a result of the study, loading factors and service life rates have been given comparatively.

Keywords: Transformer, loadability, dielectric liquid, oil, ester

Diterpenoids From Five Sideritis Species Endemic To Turkey

Sema Carikci[a*], Turgut Kilic[a], Zuleyha Ozer[a], Sinem Dereli[a], Demet Acar[a]

[a]Balikesir University

*carikci@balikesir.edu.tr

Abstract:

Terpenes occur in all living organisms but attain their greatest structural and functional diversity in plants. Terpenes and their derivatives are large and a broad class of hydrocarbons (more than 4000 have been isolated and identified). The term “terpenes” refers generally to pure hydrocarbons, whereas the compounds collectively called as “terpenoids” bear one or more oxygen-containing functional groups, such as hydroxyl, carbonyl, and carboxylic acid groups. Terpenoids have been found to be useful in the prevention and therapy of several diseases, including cancer, and also to have antifungal, antimicrobial, antiparasitic, antiviral, anti-allergenic, antispasmodic, antihyperglycemic, anti-inflammatory, and immunomodulatory properties. They also act as natural insecticides and can be of use as protective substances in storing agriculture products. Sideritis L. belongs to the family of Lamiaceae (Labiatae), one of the most common and diverse plants of the world, is mainly found in the Mediterranean area especially Spain and Turkey. There are 46 Sideritis species (55 taxa) in Turkey and, endemism rate of this genus is high (almost 80%). Sideritis species have been popularly used for centuries for their anti-inflammatory, anti-ulcerogenic, digestive and antimicrobial properties. Therefore, chemical composition of these species investigated by different studies.

The aim of the present study was to isolate and identify the diterpenoids of the five endemic Sideritis species: Sideritis pisidica Boiss&Heldr apud Bentham, S. phrygia Bornm, S. brevibracteata P.H. Davis, S. bilgerana P.H. Davis, S. hispida P.H. Davis. For this purposes, the shade-dried powdered plant was extracted with hexane, acetone and methanol. The diterpenoids isolated from these extracts via chromotographic methods such as coloumn chromatography, thin layer chromatography. The structure of the compounds identified using NMR (1H-NMR, 13C-NMR, COSY). Totally ten known diterpenoids isolated and identified from the five species.

Acknowledgments

The authors thank TUBITAK for supporting this study as a part of the project 113Z710.

Keywords: Diterpenoids, Sideritis pisidica, S. phrygia, S. brevibracteata, S. bilgerana, S. hispida.

Dragonfly algorithm for constrained engineering design optimization problems

Sinem Akyol[a*], Bilal Alatas[b]

[a]Munzur University
[b]Firat University

*sakyol@munzur.edu.tr

Abstract:

Metaheuristics algorithms can give optimal solutions for large dimensional optimization problems in acceptable time. In recent years, it has been getting stronger and getting more popular every day. The dragonfly algorithm is one of the most current computational intelligence algorithms based on swarm intelligence. It has been inspired by the dynamic and static swarming behaviors of the dragonfly's in nature. In static swarm, the dragonflies create small groups and fly back and forth in a small field to hunt other flying prey, while in dynamic swarm a massive number of dragonflies create swarm to migrate long distances in one direction. The algorithm has five parameters to control cohesion, attraction (towards food sources), separation, alignment, and distraction (outwards enemies) of individuals in the swarm. In this paper, dragonfly algorithm is introduced and performance is tested for constrained real engineering optimization problems. Experimental results show that the performance of this new algorithm is promising. Algorithm can be successfully applied in many complex real world search and optimization problems.

Keywords: Dragonfly algorithm, swarm intelligence, metaheuristic algorithms, global optimization

Drying Kinetics of Diospyros lotus L.fruitin a Tunnel Dryer

Mithat Akgun[a*], Ahmet Aygun[a], Mete Avci[a]

[a]Ordu University

*makgun@odu.edu.tr

Abstract:

Cold storage for fruits, increasing labor enterprise and energy costs, the storage of dried fruits reduces these costs dramatically. Black Sea Region is more than fruit harvest period due to rainfall and air humidity drying of fruits with addition a energy is required. Therefore, the importance of low energy cost and dried fruits as soon as possible. Diospyros lotus L. persimmon (Diospyros kaki L.) varieties besides being a full-grown fruits are used for various purposes. In study, selected plant product (D. Lotus) was taken genotype which grows by itself in Ordu. The harvested fruits were dried with constant airspeed (2m/s) and (55 oC) temperature without being subject to any pre-processing. Four types of fruit drying geometry studied. The first type, fruits are divided in to two on a table. The second type, fruits are placed on the table as a whole. The third type, fruits are hanged on a rope from stalks at certain intervals. The fourth type, fruits are hanged on a rope through the middle of the fruit at certain intervals. From these four different type of drying geometry, the fast drying process realized in the III. and IV. type.

Keywords: Drying Kinetics, Tunnel Dryer, Diospyros lotus L.

Dual Hesitant Fuzzy Topsis Method

Kezban Bulut[a*]

[a]Kirikkale University

*kezbanbulut@yahoo.com

Abstract:

In real life problems there are many situations with high degree of uncertainty, and decision makers is not very sure about a value for any criteria. Hesitant fuzzy sets are an extension of ordinary fuzzy sets and it handles with this situations. Dual Hesitant Fuzzy sets are the extension of hesitant fuzzy sets whose membership degrees and non-membership degrees are presented by a set. Fuzzy sets are widely used for many decision making problems and there are many different methods for multi criteria decision making literature. In this paper Dual Hesitant Fuzzy Topsis method is developed and a numerical example is done for a real life problem.

Keywords: Dual Hesitant Fuzzy Sets, Fuzzy Topsis Method.

Dynamical and mechanical properties of V3Au in the A15-phase

Mustafa Ozduran[a*], Abdullah Candan[b], Ahmet Iyigor[b]

[a]Department Of Physics, Faculty Of Arts And Sciences, Ahi Evran University, Kirsehir, Turkey
[b]Central Research And Practice Laboratory (Ahilab), Ahi Evran University, Kirsehir, Turkey

*mozduran@ahievran.edu.tr

Abstract:

We have calculated the structural, elastic, electronic, thermodynamic and vibration properties of V3Au compound in the A15 (Cr3Si) structure. We compared our structural results with available literature data. The brittleness and ductility properties of V3Au are determined by Poisson's ratio σ criterion and Pugh's criterion. The electronic structure, total and partial densities of states of V3Au are computed in comparison with the existing findings. The electronic band structures of V3Au show that at the Fermi level, a major part of the contribution comes from V-d states. The V3Au compound is mechanical stable according to Born stability criteria. The phonon dispersion of V3Au in the A15-phase are calculated using the density functional theory and direct method with 2 x 2 x 2 supercell.

This work has been supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: FEF.E2.17.008.

Keywords: Dynamical properties, mechanical properties, DFT, V3Au

Early Diagnosis Of Breast Cancer Using Data Mining And Machine Learning Methods

Esra Sogut[a*], O. Ayhan Erdem[a]

[a]University Of Gazi

*esrasogut@gazi.edu.tr

Abstract:

Breast cancer is the leading cancer type among women. Breast cancer, which has a very high incidence in the world, can also be seen in men. It is a cancer that develops from the cells of the breast tissue and can originate from any part of the tissue. Every year thousands of patients lose their lives from breast cancer.

As in other types of cancer, early detection is also considered the best preventive method in breast cancer. If cancer is detected early before it spreads, the patient's chances of survival can be significantly increased. Patient biopsy is done for early diagnosis and definite diagnosis in breast cancer. Biopsy; It is a process to recognize and certify whether a suspicious area or tissue on the breast is cancerous and is also used to diagnose various diseases.

In this study, data mining and machine learning methods were used for breast cancer detection. With these methods, it is aimed to be able to diagnose disease according to biopsy results. Breast-Cancer-Wisconsin data provided by the UCI Machine Learning Repository was used in the study. The dataset donated by Olvi Mangasarian includes 699 patient information and contains 9 features and 2 class features. The data set was trained using the C4.5 decision tree algorithm with an accuracy of 97.4955%. This training resulted in a classification of 98.5714% accuracy. The resulting data show that the values indicated are a crucial guide in the diagnosis of breast cancer.

Keywords: Breast Cancer, Data Mining, Machine Learning, Dataset

Effect of Aggregate Grain Size Distribution On Compressive Strength and Drying Shrinkage of Concrete Mixture

Ali Mardani Aghabaglou[a], Fethi Sermet[b*], Semsi Yazici[b]

[a]Uludag University
[b]Ege University

*fethi.sermet@gmail.com

Abstract:

In this study, influence of aggregate grain size distribution on fresh properties, compressive strength and drying shrinkage of concrete mixture was investigated. For this purpose, 0-5 mm and 5-15 mm limestone aggregates were used as fine and coarse aggregate, respectively for preparing of concrete mixtures. CEMI 42.5R type cement was used as binder. 5 concrete mixture having different aggregate grain size distribution were prepared. These mentioned mixtures were denominated as A, B, C, D and E. In the A and E mixtures 100% coarse and fine aggregate were used, respectively. In the B, C and D concrete mixtures fine aggregate was used as 25%, 50% and 75 wt% of total aggregate. In all concrete mixtures, water/cement ratio, cement content and slump values were kept constant as 0.45, 350 kg/m3 and 180±20 mm, respectively. In order to provide desired slump values a polycarboxylate ether-based high range water reducing admixture was used. The Slump value, air content, fresh and hardened unit weights of concrete mixtures were measured in accordance with EN 12350-2, ASTM C 231, EN 12350-6 and EN 12390-7 standards, respectively. The 1,3,7 and 28-day compressive strength of concrete mixtures were performed on 100 mm cube specimens. Unrestrained uniaxial drying shrinkage of mortar mixtures was determined on 25x25x285 mm prisms in accordance with ASTM C157/C157M Standard. The test was conducted after a water-curing period of 28-days and then the specimens were kept at 50±5% RH and 23±2°C for air-drying. According to the test results, by increasing of fine aggregate content, unit weight of concrete mixtures and water reducing admixture demand for providing desired slump value increased. Maximum compressive strength was observed in concrete mixture containing 25% coarse and 75% fine aggregates. 100% fine aggregate-bearing concrete mixture showed maximum drying-shrinkage compared to the other concrete mixtures.

Keywords: Grain size distribution of aggregate, compressive strength, drying shrinkage

Effect of Aging Process on Wear Performance, Hardness Behavior and Residual Stress of Al-Cu-Fe Heusler Alloys

Fazil Husem[a], Fatma Meydaneri Tezel[a], Yasin Akgul[a*]

[a]Karabuk University

*yasinakgul@karabuk.edu.tr

Abstract:

Although many parameters for metallic alloy systems can be obtained in the literature, there are limited studies about the relationship between residual stress and wear performance of the heusler alloy systems. In this study, residual stress measurement was performed by straingauge method (with cutting) to investigate on residual stress. Also, hardness and wear behavior of Al-Cu-Fe Heusler alloys were studied before and after aging process. Wear tests were carried out using three different loads (10N, 20N and 30N) in dry sliding conditions. Results show that aging time effects hardness and wear performance of heusler alloys. Also, best wear resistance is belonging to the aged samples under load of 20N.

Keywords: Heusler Alloys, Wear Performance, Residual Stress, Aging Process

Effect of Bondline Thickness on Adhesive Bonding of Laser Treated Carbon Fiber Reinforced Composites

Erhan Akman[a,d*], Yalcin Erdogan[b], M. Ozgur Bora[a], Onur Coban[a], Belgin Genc Oztoprak[a,d,] Arif Demir[c,d]

[a]Aircraft Material Research and Development Laboratory, Faculty of Aeronautics and Astronautics, Kocaeli University, Kocaeli, Turkey

[b]Electro Optic System Engineering. Kocaeli University, Kocaeli, Turkey

[c]Department of Physics, Kocaeli University, Kocaeli, Turkey

[d]BEAM Ar-Ge Optics, Laser and Spectroscopy, KOU Technopark, Kocaeli, 41275, Turkey

*eakman29@gmail.com

Abstract:

Many industries such as automotive, aerospace and maritime showing a growing interest in carbon fiber reinforced polymer (CFRP) composites due to their advantages such as; excellent mechanical and chemical durability and relatively high specific strength. But the traditional joining methods for instance rivets or bolts do not allow to exhibit the advantages properly. So it seems that adhesive bonding is the most promising method for joining the CFRP composite structures. In adhesive bonding there are lots of parameters affecting the strength of the joint such as surface energy, curing cycle and so the thickness of the adhesive layer. In this study effect of the bondline thickness on the adhesion strength of CO2 laser ablated CFRP composite structures have been investigated by single lap shear tests. Surface treatments have been realized without damaging the load-carrying fibers. Surface treated CFRP samples have been adhesive bonded with the bondline thicknesses ranging between 50-500µm. Bondline thicknesses have been observed by optic microscopy. Single lap shear tests have been performed according to ASTM D5868-01 with 60 kN DARTEC universal test machine.

Keywords: CFRP, Laser Treatment, Adhesive Bonding, Bondline Thickness,

Effect of Concentrated Windings on Permanent Magnet Machines

Hasan Basri Altintas[a*]

[a]Necmettin Erbakan University

*hbaltintas@konya.edu.tr

Abstract:

Electric drive systems, which include electric machines and power electronics, are a key enabling technology for advanced vehicle propulsion systems that reduce the petroleum dependence of the ground transportation sector. Nowadays Permanent Magnet Motors (PMM) are used for different vehicle propulsion systems. Therefore, PMM designs need to be improved to achieve higher performance. If we expect better performance from this machines, improvement of back-electromotive-force waveforms and obtaining of low cogging torque are very important. For this reason the effect of designing the machine's stator windings on these parameters are presented. So in order to achieve higher performance from PMM, The effect of concentrated and distributed windings are investigated.

Keywords: PMM, Concentrated Windings, Cogging Tork, Back EMF

Effect of Different Minerals Used in Ceramic Art on Different Shaping Methods

Seda Dilay[a*]

[a]Karamanoglu Mehmetbey Universitesi

*sdilay@kmu.edu.tr

Abstract:

The use of ceramics began with the human being finding fire. It can be said that the ceramics were born due to the necessity of making vessels to transport and store water. For centuries, depending on their needs, they made pottery from ceramic. The first raw material of the ceramics is a very fine grained mud, which is defined as clay. In the past, the production of ceramic pots, more successful results were obtained by solubilizing the mud with the less coarse soil and river sand mixed with the shore. The first known sludge forming method is manual free forming. It was then turned by hand and turned by a foot. The next stage was the brick molds in box form. The clay that forms the raw material of the ceramic mud is usually formed by the disintegration of the rocks under external influences. When the kiln is cooked at high temperature, kaolen, etc. come into the form. In this respect, it is known among people as terracotta based material. For example, glass, brick, tile, stone, concrete, cement, abrasive powder, porcelain and refractory materials enter this group. After the clay has undergone a certain production process, it becomes a hard and deformable material which is not easily affected by external influences other than certain special factors. In the production of ceramic materials, certain materials are added to the clay slurry and it is possible to bring the desired quality to the ceramics material by means of various shaping methods and cooking in accordance with the used sludge. In its composition, various types of silicates, aluminates, and some metal oxides and alkali and alkaline earth compounds are materials. Today, according to the raw materials, ceramic products are classified as traditional, artistic, industrial and advanced technology products, each with different shaping methods.

Keywords: Ceramics, raw materials, shaping methods.

Effect of Different Tomato Rootstocks and EC Levels on The Nutrient Content of Tomatoes

Selcuk Soylemez[a*], Ayse Yildiz Pakyurek[a]

[a]Harran University

*ssoylemez@harran.edu.tr

Abstract:

This study was conducted to determine the effects of different tomato rootstocks and high EC levels in order to increase the mineral content of tomatoes, one of the most consumed vegetables in the world. The research was carried out in perlite medium in a non-heated polycarbonate covered greenhouse the in spring production period during 2-years. In the study, 5 different EC levels were applied, 2, 3, 5, 7 and 9 dS m-1. In the research, Newton F1 tomato variety was grafted onto 11 different commercial tomato rootstock also, for control purposes, ungrafted and self-grafted plants were used. The P, K, Ca, Mg, Fe, B, Mn and Zn contents of fruit samples taken from the experiment were determined according to the dry burning method. The P, K, Ca, Mg, Fe, Mn and Zn contents of fresh fruit increased with increasing EC levels, according to the two year average results of the study. The effects of the used rootstocks on the nutritional content of the fruit were found to be statistically nonsignificant. According to the results of the study it was determined that the mineral content of tomato fruit could be increased by changing the concentration of the nutrient solution.

Keywords: Solanum lycopersicon, grafting, electrical conductivity (EC), mineral content

Effect Of Drought Stress On Antioxidant Enzyme Activities In Some Wheat Genotypes

Numan Eczacioglu[a*], Begum Terzi[a], Ozlem Ates Sonmezoglu[a], Yakup Ulusu[a]

[a]Karamanoglu Mehmetbey University

*numaneczacioglu@gmail.com

Abstract:

Abiotic environmental stress factors such as drought and salinity are at the beginning of the most important constraints for plant development and crop productivity. Plant genotype, stage of development, severity and duration of stress, physiological steps in plant development, gene expression, and regulation in respiratory activity, photosynthesis mechanism and environmental factors can influence responses of plants to drought stress. As a result of salt and drought stress, antioxidant amounts and antioxidant enzyme activities, which convert ROS into harmless components, are the most important mechanisms of resistance of plants to oxidative stress. Enzymes such as polyphenol oxidase, peroxidase, ascorbate peroxidase, catalase are among the most effective anti-oxidative enzymes. In this study, different types of wheat were grown during 40 days and then subjected to drought stress for 10 days and the changes that occurred in some antioxidant enzyme activities during this period were examined. The reason why the wheat genotype is selected that having a large share in cereal crops and a basic nutrient both in human nutrition and in animal feeding.

After the surface sterilization of selected wheat genotypes have been done, they were germinated on petri plates. The seedlings were taken in pots and grown in for 40 days. After the 40th day, irrigation was left in the application groups and drought stress was applied. Then the tissue samples were collected from wheat plants and stored -80 °C deep freezer.Catalase, peroxidase, ascorbate peroxidase and polyphenol oxidase enzyme activities were examined by homogenization from tissue samples. Characterization of all enzymes were performed as spectrophotometrically. All characterization operations were performed in triplicate. Characterization measurement showed that, polyphenol oxidase activity increased until the sixth day, and then decreased. There was no change in peroxidase activity when ascorbate peroxidase and catalase activities were generally increased.

Keywords: Drought and Salinity, Wheat, Polyphenol oxidase, Peroxidase, Ascorbate peroxidase, Catalase

Effect Of Feeding On Sensory Properties Of Caciocavallo Di Castelfranco Cheese

Pinar Uzun[a], Felicia Masucci[a], Hilal Yildiz[b], Francesco Serrapica[c], Antonio Di Francia[c]

[a]Dipartimento Di Agraria, Università Degli Studi Di Napoli Federico Ii, Portici (Na), Italy
[b]Faculty Of Engineering And Architecture, Nevsehir Haci Bektas Veli University, Nevsehir, Turkey
[c]Scuola Di Scienze Agrarie, Forestali, Università Degli Studi Della Basilicata, Potenza, Italy

masucci@unina.it

Abstract:

Ensiling is a forage preservation method increasingly widespread, but is not still clear its influence on sensory properties of cheese. This is of importance for traditional products for which feeding plays a key role in the relationship between geographic origin and special quality. Therefore, a study was undertaken in order to investigate the effects of feeding hay or silage on sensory properties of Caciocavallo di Castelfranco, an Italian cheese labeled as Traditional Food Product. Forty-four lactating Holstein–Friesian cows were divided into two homogenous groups, that were fed two diets containing 50%DM of sorghum preserved as hay or silage. Three batches of caciocavallo were produced for each group and left to ripen for 30, 60, 90 days. At each ripening time, cheese were subjected to quantitative–descriptive sensory analysis. Statistical analyses was performed by ANOVA testing the effects of diet, ageing time and the interaction of diet*ageing. No defects (i.e. blowing, poor taste or odor) were recorded in any type of cheese. Except of overall and milk flavors, all attributes were influenced by feeding and ripening time. Significant interactions diet*ripening were observed, indicating a mutual influence between the milk molecules and the new compounds in cheese. The yellow attribute was remarkably higher in Silage cheese, due to the higher presence in milk of carotenes compounds directly coming from the forage. Silage cheese at 30 d of ripening presented higher intensity for almost all odor/flavor proprieties, due to the higher content of volatile compounds in silage compared to hay. Taste attributes (salty, sour, bitter, umami) were lower for Hay cheese. Salty, bitter and umami tastes increased with ripening, whereas sour taste decreased. Silage cheese showed higher levels of tenderness and oiliness, and both attributes decreased as increasing the ripening time.

Keywords: Silage, Hay, sensory properties, Caciocavallo cheese,

Effect Of Inflation On Food And Producer Prices

Osman Yildiz[a*]

[a]Karabuk University

*osmanyildiz@karabuk.edu.tr

Abstract:

Inflation has showing the change in the prices of goods and services for consumption of the dwellings over time period. While inflation has showing the state of the country's economy, there is an important economic indicator that shows how citizens are influenced by buying time, what money in the pocket can take and what not to buy over time. Therefore the buying power of the money is important as much as infilation.

There are many factors that affect price change. Food prices that are indispensable for society and change in producer prices is also important in terms of direct impact on inflation. The change in the prices of agricultural products and industrial products within the scope of producer prices should be monitored at what scale it is reflected in consumer prices.

Price indices, which are mathematical calculations, show the actual price changes as well as the artificial price changes due to the weight of the items in the basket. In particular, the food prices, which are of total spending groups and have an average 24.86% weight in the basket, variying with years is affecting inflation either positively or negatively. Nevertheless, it is observed that the price changes of producer agricultural products and industrial products are different from the consumer prices from time to time.

Structural problems in the producer and consumer chains disrupt the relationship between producer prices and consumer prices and increase the size of fluctuations in prices.

Keywords: Inflation, Index, Producer prices, Consumer prices,

Effect of Molasses, Barley, Oak Tannins Extracts or Previously Fermented Juice Addition on Characteristics of Grass Silage

Cavit Arslan[a], Tuncay Tufan[b*]

[a]Department Of Animal Nutrition And Nutritional Disease, Faculty Of Veterinary Medicine, Selcuk University

[b]Department Of Animal Nutrition And Nutritional Disease, Faculty Of Veterinary Medicine, Siirt University

*tuncay-tufan@hotmail.com

Abstract:

This study was carried to evaluate the effect of different levels of sugar beet molasses (SBM), ground barley (B), oak tannins extracts (OTE) or previously fermented juice (PFC) addition to characteristics of grass silage. For this purpose 9 different silage sorts, which are ten replicate in plastic jars, were made as follows: 1. No additive sole pasture grass silage, 2. Pasture grass silage mixed with 2.5 % SBM, 3. Pasture grass silage mixed with 5.0 % SBM, 4. Pasture grass silage mixed with 2.5 % B, 5. Pasture grass silage mixed with 5.0 % B, 6. Pasture grass silage mixed with 2.5 % OTE, 7. Pasture grass silage mixed with 5.0 % OTE, 8. Pasture grass silage mixed with 0.75 % PFC, 9. Pasture grass silage mixed with 1.5 % PFJ. The silages were stored in a dark room at room temperature for 150 d. Both sorts of additives (A) and additives levels (L) significantly affected dry matter contents of the silages, but not A X L. The organic matter and crude protein contents of the silages were significantly affected from the A, but not L and A X L. The NDF and ADF contents of the silages were not affected from the A, L, and A X L. The pH and lactic acid concentrations of the silages were significantly affected from the A, L and A X L. Both the A and L significantly affected the acetic acid concentration of the silages, but not A X L. As a result of this study, it was determined that 5% sugar beet molasses, ground barley and oak tannins extract addition to pasture silage improved silage quality.

Keywords: Gras silage, molasses, barley, oak tannins extracts, previously fermented juice

Effect of Surface Texturing on Tribological Performance of Ultra-High Molecular Weight Polyethylene

Dogan Acar[a], Hasan Onur Tan[a*], Omer Necati Cora[a]

[a]Karadeniz Technical University

*hasanonur_tan@hotmail.com

Abstract:

Ultra-High-Molecular-Weight-Polyethylene (UHMWPE) has been exploited by several industries including machinery, equipment, food, pharmaceutics, medical, etc. due to its high wear and impact resistance, self-lubrication and hence low coefficient friction properties. It has been also found applications in hip, knee, femuar and backbone orthopedic implant bearing components as it reduces the wear rate of contacting surfaces. In addition, its machining as easy as woods. This study aimed to further improve the frictional properties of UHMWPE by means of producing micro-features (e.g. lubricant pockets) on its surface. The pockets were realized through micromachining. First, test specimens were machined to the dimensions of 10x15x26 mm using two drill bits in 0.3 and 0.5 mm in diameter. 40 lubricant pockets with different diameters (0.3 and 0.5 mm) were machined on the surfaces of the specimens. Then, samples were subjected to tribological tests using a pin-on-disk type of test system against SAE 1045 rotating disk. Different contact pressure and sliding speed parameters were studied with a constant lubrication flow rate.. Effect of lubricant-pocket size, contact pressure and sliding speed were investigated on the coefficient of friction and wear performance of the material. It was observed that coefficient of friction reduced and stabilized after certain test duration.

Keywords: UHMWPE, surface texturing, lubricant pocket, friction coefficient

Effect of the Coulomb Thermal Conduction on the Gyroviscous Magnetorotational Instability

Ebru Devlen[a*], Ahmet Devlen[a]

[a]University Of Ege

*ahmet.devlen@ege.edu.tr

Abstract:

In this study, the physical instability defining the expected turbulence in Radiatively Inefficient Accretion Flows (RIAFs) around the supermassive black holes (e.g., Sagittarius A* in the center of our Galaxy) is discussed. These flows, with a high probability, include weakly collisional hot, optically thin and dilute plasmas. Within these flows, gravitational potential energy brought about by turbulent stresses is trapped as heat energy. Thus, in order accretion to be realized, outward transport of heat as well as angular momentum is required. This outward heat transport may reduce the mass inflow rate on black hole. MHD equations including tensor structure of Coulombic thermal conductivity coefficient in the heat flux term in the conservation of energy equation are solved. A result of the linear stability analysis, the dispersion relation is derived and the growth rates of instability are estimated. According to the various values of temperature gradient, the status of the gyroviscous magnetorotational instability is discussed.

Keywords: accretion disk/flow, instability, MHD, black holes

Effect Of Thinning Intensity On The Diameter Growth Distribution Along The Stem Of Narrow-Leaved Ash Plantation In Turkey

Ali Kemal Ozbayram[a*], Emrah Cicek[a]

[a]Duzce University

*alikemalozbayram@duzce.edu.tr

Abstract:

Narrow-leaved ash (NLA; Fraxinus angustifolia Vahl.) which is fast growing and producing valuable merchantable wood has a wide natural distribution in ecologically different regions of Turkey. Most of the nature stands dominated by NLA have been converted to pure ash plantations for the past fifty years in Turkey. Low thinning treatments, one of the silvikulturel practices, have been applied at weak intensity in NLA plantations. Therefore, we established thinning experiment in 2005 with three intensities (control, moderate and heavy) in NLA plantations in Sakarya. The aim of this study was to determined seven-year effect of thinning intensity on the diameter growth along the stem of NLA. A total of 27 sample trees which represented the mean basal area tree and 100 largest trees were harvested and stem cross-sectional samples were taken for stem analysis. All disks samples were brought to the laboratory, and annual ring counting and measurements were carried out on them. Mean diameter increment of stem was increased with increasing cross-sectional height and thinning intensity. However, the interaction of thinning intensity and the cross section height did not effect on the mean stem diameter increase. Diameter increases of each section height at the 100 largest trees were greater than that of the mean basal area trees. As a result, thinning treatments could be influence diameter increment differently at varied cross section heights of NLA stem.

Keywords: Cross-section, diameter increment, narrow-leaved ash, thinning

Effect of Ultrasonic Melt Treatment on the Hardness of AA7075 Aluminum Alloy

Fahri Vatansever[a], Alpay Tamer Erturk[a*], Ersin Asim Guven[a], Sedat Karabay[a]

[a]Kocaeli University

*tamererturk@gmail.com

Abstract:

Ultrasonic melt treatment is an environmental friendly method for grain refinement which provides increment of mechanical properties of metals. Ultrasonic melt treatment can be simply defined as transferring ultrasonic energy to molten metal. In this paper the effect of ultrasonic melt treatment on hardness of AA7075 aluminum alloy has been investigated. For this purpose an ultrasonic generator, a piezoelectric transducer which converts electrical energy to mechanical energy as ultrasonic vibration and a sonotrode which transmits ultrasonic vibration to molten alloy were used. When applying ultrasonic vibration firstly the alloy was melted in a graphite crucible in an electric furnace by the temperature of 700 °C. After then the sonotrode was dipped by 20 mm into the molten alloy and ultrasonic vibration was applied with a frequency of 19.8 kHz for 5 minutes. Lastly molten alloy was poured into a steel mold. Obtained specimens were grinded with various SiC paper up to 2400 grid. Specimens were subjected to fine polishing by using 1 µm diamond paste. Hardness measurement was carried out with Brinell test method. The results show that hardness value of AA7075 alloy is increased by 10% from 123.33 to 136 HB with the help of ultrasonic melt treatment.

Keywords: Ultrasonic vibration, AA7075, Grain refinement, Hardness

Effect to Optic and Dielectric Properties of Heat Treatment and Doped Ag, Co and Li Elements to ZnO Thin Film

Fatma Meydaneri Tezel[a], I. Afsin Kariper[a], Satiye Korkmaz[a], Neslihan Atalay[a*]

[a]Karabuk University

*neslihanatalay12@gmail.com

Abstract:

0.01 mol of zinc isopropyl oxide 20 mL was added to a beaker and 2 mL of pure concentrated H2O2 was added. For the doped studies, 0.0001 mol of LiCl, CoNO3, AgCl were added to the other baths. The glass slide was immersed in the beaker and the bath was heated at 50 ?C for 4 hours. The films were annealed at 400 ?C for 4 hours in a high temperature furnace. The effect to optic and dielectric properties of heat treatment and doped Ag, Co and Li elements to ZnO thin films were investigated by XRD, UV-VIS and AFM measurement. The XRD pattern results confirmed that the pure ZnO, Ag: ZnO, Co: ZnO and Li: ZnO thin films were amorphous after annealing. Optical properties such as transmission, reflectance, absorbance, refractive index and dielectric constant were determined using the absorbance and transmission measurement from Hach Lange 500 spectrophotometer at normal incidence of light in the wavelength range of 300-700 nm. The optical transmission (T %), reflectivity (R %), absorption, refraction index (nr), extinction coefficient (k), real and imaginal dielectric constant (ε) of the pure ZnO, Ag: ZnO, Co: ZnO and Li: ZnO thin films were obtained as 96.61%, 98.98%, 80.75%, 54.61%; 1.078%, 0.259%, 5.767%, 15.96%; 0,014, 0.006, 0.098, 0.263; 1.22, 1.13, 1.64, 2.31; 0.00104, 0.000389, 0.00672, 0.0191; 0.0649, 0.0240, 0.2477, 0.8610 and 0.0015, 0.0015, 0.0073, 0.03327, respectively.

Keywords: Chemical Bath Deposition, ZnO Thin Film, absorbance, refractive index, dielectric constant.

Effects Of Antochyanins Extracted From Prunus Avium On Dna Damage

Ahmet Ali Berber[a*], Nurcan Berber[a], Merve Ayse Doganci[b], Taki Demir[b], Huseyin Aksoy[b]

[a]Canakkale Onsekiz Mart University
[b]Sakarya University

*aberber@comu.edu.tr

Abstract:

Cherries (Prunus avium) are rich in flavonoids such as anthocyanins that are beneficial for the immune system. The aim was to investigate in vitro antigenotoxicity of antochyanins extracted from Prunus avium (PAE). In this investigation, antigenotoxic effects of total anthocyaninsextracted from Prunus avium (PAE) have been evaluated in human peripheral blood lymphocytes by using Single Cell Gel Electrophoresis assay (Comet) in vitro. In this assay Hydrogen peroxide (H2O2,3.4 µg/mL) plus 50, 100, 200 and 400 µg/mL concentrations of PAE were used to detect potential antigenotoxicity. PAE significantly decreased tail intensity, tail moment and tail length frequency in all concentrations. In conclusion, PAE have shown antigenotoxic effect against H2O2 induced DNA damage.

Keywords: Prunus Avium, Anthocyanins, Comet Assay, Antigenotoxicity

Effects Of Diesel-Butanol And Biodiesel-Butanol Blends Over Diesel Engine Performance And Emissions

Safak Yildizhan[a*], Erdi Tosun[a], Erinc Uludamar[b], Hasan Serin[a]

[a]Cukurova Universitesi
[b]Adana Science and Technology University

*yildizhans@cu.edu.tr

Abstract:

In this study, fuel properties, engine performance and emission characteristics of diesel, canola biodiesel, and their blends with butanol have been evaluated. Experimental fuels that used in this study were diesel-butanol (90% diesel-10% butanol and 80% diesel – 20% butanol by volume) and biodiesel-butanol (90% biodiesel-10% butanol and 80% biodiesel – 20% butanol by volume). Experiments were carried out with a direct injection, four cylinders, four stroke diesel engine equipped with a hydraulic dynamometer under full load condition. Experiments showed that, engine power and torque values were decreased by the use of canola biodiesel instead of diesel fuel. Addition of butanol into diesel and biodiesel further decreased the engine performance. Alcohol addition into conventional diesel and biodiesel fuel improved nitrogen oxide (NOx) emissions. Addition of alcohol decreased carbon monoxide (CO) emission when added into diesel and increased it when added into biodiesel. There was a contrary relationship between carbon monoxide and carbon dioxide (CO2) emissions. It means that, addition of alcohol increased carbon dioxide emission when added to diesel and decreased it when added to biodiesel. Also, increment of oxides of nitrogen emission that caused by biodiesel was compensate with butanol. Increasing butanol ratio resulted in further decrement of oxides of nitrogen emissions.

Keywords: Butanol, Canola biodiesel, Diesel engine, Emissions, Engine performance

Effects Of Organic Matter Contents And Seedling Density For Growing 1+0 Bare-Root Narrow-Leaved Ash (Fraxinus Angustifolia Vahl.) Saplings

Cemal Fidan[a*], Hazin Cemal Gultekin[a], Hulya Tamyuksel[a]

[a]Poplar And Fast Growing Forest Trees Research Institute

*cemalf4@gmail.com

Abstract:

This study was conducted to determine the effect of organic matter (OM) contents and seedling density (SD) on achieving the maximum number of qualified 1+0 bare-root of narrow-leaved ash (Fraxinus angustifolia Vahl.) seedling from certain unite area of seedbed. Seedlings which higher or equal to 75cm and thicker or equal to 0,8cm at root collar diameter were accepted as qualified seedlings. Factorial experimentation was applied in split plot design. Three doses of OM (2m3, 1m3, and 0m3 added to the length of 150m seedbed unit) were used and taken as main treatment. Four levels of SD (105, 75, 50, and 25 seedlings per square meter) were applied on to OM treatment plots. Evaluation has shown that the level of OM and SD have significant effect on obtaining the number of qualified seedling (QS) from certain unit area. Maximum number of QS was obtained from the highest (2m3) OM treatment plots. The number of QS obtained from the densities of 75, 105, 50, and 25 were found; 38, 38, 33, and 17 respectively. Obtained QS from 75, 105, and 50 were found significant and got in same group. There was not significant effect for the treatment plots of 1 and 0m3 OM doses and all densities were taken within same group. It was seen that, while the productivity of seedbed increased, achieving number of QS also increased. It means that SD level must have been adjusted according to productivity of seedbed. It can be said that to grow seedling in lower densities are more feasible and economic. That is why the SD of 50 for the 2m3 dose of OM; 25 SD for the 1 and 0m3 doses of OM can be suitable and applicable.

Keywords: Narrow-leaved ash, organic matter, seedling density, qualified seedling

Effects of Osmotic Stress on Germination of Seeds of Different European Hophornbeam (Ostrya Carpinifolia Scop.) Populations

Semsettin Kulac[a*], Ali Kemal Ozbayram[a], Ertugrul Filiz[a], Pinar Donmez[a]

[a]Duzce Universty

*semsettin61@msn.com

Abstract:

European hophornbeam (Ostrya carpinifolia Scop.) is a broadleaved species with high genetic significance. The European Forest Genetic Resources Programme (EUFORGEN) has identified it as a priority species. European hophornbeam seed is known to have an embryo dormancy and requires stratification at low temperatures. Seed germination behavior under water stress may vary by origin. In this study, effect of osmotic stress on the germination of European hophornbeam seeds collected from eight different populations in Turkey was investigated. . Six different osmotic stress levels including the control (0, -0.5, -1, -2, -3 and -4 bars) were applied using Polyethylene glycol (PEG 6000). 15/5 °C germination temperature regime with 8h day/16h night period was used in the study. The effects of osmotic stress, population and ambient temperature on the germination percentage were tested using analysis of variance (ANOVA), and means were separated using the Duncan's MST. The Adana and Akseki populations demonstrated the greatest germination rate. In terms of osmotic stress, the greatest germination rate occurred in the control experiment followed by the -0.5- and -1-bar applications, respectively. The lowest rates of germination occurred in the treatments of -3 and -4 bars, respectively.

Keywords: European hophornbeam, seed germination, water stress

Effects Of Oxidative Stress On Mitotic Arrest In Saccharomyces Cerevisiae

Pinar Buket Atalay[a*], Oyku Asci[b]

[a]Maltepe University Faculty Of Medicine, Department Of Medical Biology And Genetics, Maltepe University
[b]Graduate School Of Health Sciences, Maltepe University

*pbd6d@virginia.edu

Abstract:

Cancer is a group of diseases characterized by uncontrolled cell proliferation due to mutations in the genetic material. Aneuploidy is a hallmark of cancer cells. One of the major factors leading to aneuploidy is unequal chromosome segregation in mitosis. Each sister kinetochore has to bind spindle microtubules emanating from opposing poles of the mitotic spindle (bipolar attachment) to ensure accurate chromosome segregation in mitosis. The state of kinetochore-microtubule attachments is monitored by an evolutionarily conserved surveillance mechanism, called the spindle assembly checkpoint (SAC). In the presence of incorrectly attached/unattached chromosomes the SAC gets activated and prevents chromosome segregation until the attachment error has been corrected, thus prevents aneuploidy in daughter cells. Oxidative stress is another factor that is associated with aneuploidy. Oxidative stress induced-DNA damage may lead to mutations and aneuploidy leading to carcinogenesis. Additionally, cancer cells are known to produce abnormally high levels of reactive oxygen species (ROS). However, almost nothing is known about the effects of elevated ROS levels (oxidative stress) on the SAC activity. In this study, we examined the effects of H202-induced oxidative stress on both SAC-dependent and SAC-independent mitotic arrest in S.cerevisiae cells. First, we examined the effects of different H202 concentrations (0.2mM, 1mM, 3mM, 10mM, 200mM) on intracellular ROS production (H2DCFDA assay) and viability (spotting assay) of yeast cells. Next, we examined the effects of different H202 concentrations on SAC-dependent (induced by nocodazole) and SAC-independent (induced by cdc23 mutation) mitotic arrest biochemically by western blot analysis and morphologically by DAPI staining. Our data showed that H202 induced oxidative stress prolongs mitotic arrest in a dose dependent manner and the effect of oxidative stress on mitotically arrested cells is independent of the SAC activity, it is instead a result of cells being in the mitosis phase of the cell cycle.

Keywords: Cancer, Oxidative Stress, Spindle Assembly checkpoint, Mitotic arrest, Saccharomyces cerevisiae

Effects Of Paraffine Application, Heat Treatment, And Densification Process On Some Physical And Biological Properties Of Scotch Pine Wood

Mesut Yalcin[a*], Halil Ibrahim Sahin[b], Huseyin Pelit[a], Caglar Akcay[a]

[a]Duzce University, Department Of Forest Industrial Engineering
[b]Duzce University, Faculty Of Technology, Department Of Wood Products Industrial Engineering

*mesutyal@hotmail.com

Abstract:

The aim of this study was to determine on the some physical and biological properties of paraffin applicated, heat treated, and densification process. In the study, three different process were applied: heat treatment at 1800C, hot paraffin application and densification at hot press temperatures. At the end of procedures, the physical properties such as anti-shrinkage efficiency and water absorption, as well as activity against Coriolus versicolor and Coniophora puteana wood destroying fungi were determined. The results shown that, while the anti-shrinkage efficiency was carried out higher than 80% until water immersion for 8 hours in paraffine applications, It was obtained lower than after this time. It can be seen that heat treatment and densification in paraffin-free specimens gave effective results on both fungal species. However, with paraffin application, efficacy against fungi has been variable. With the heat treatment application at 1800C, the weight loss was increased compared to the control samples, while the weight loss was the lowest value in densification samples with hot press.

Keywords: Heat treatment, Densification, Paraffine aplication, Fungal activitiy, Water absorption

Effects of Promalin (GA_{4+7} + BA) Applications on Yield and some Nut Quality Characteristics of Pistachio

Izzet Acar[a*], Niyazi Sogut[b], Bekir Erol AK[a]

[a]Harran University Faculty Of Agriculture
[b]Harran University, Institute Of Natural And Applied Sciences

*izzetacar@harran.edu.tr

Abstract:

Pistachio cultivation is more concentrated in the Southeastern Anatolia Region in our country. Pistachio production is increasing in Turkey from 30 thousand tons in 2001, increased to 144 thousand tons in 2015. Fruit size and yield are influenced by genetic factors, cultural practices and environmental factors. These factors are primarily affect cell number and cell size directly or indirectly. Gibberellins and auxins are controlling cell division and thus starting fruit size by affecting cell division. Promalin containing gibberellins and cytokinin promotes both cell division and cell enlargement. The aim of this study is to determine the effects of different doses of promalin (GA4+7+BA) on yield and quality characteristics of Kirmizi pistachio cultivar which widely grown in Turkey. For this purpose, promalin had been sprayed to pistachio trees at the small fruit stage and beginning of kernel development stage, and its effects were determined on yield and quality of pistachio.

Finally, 25 ppm Promalin treatment had the highest fruit weight and yield value in Kirmizi cultivar. The highest fruit number in cluster and the lowest blank nut rate were obtained from 100 ppm while the best yield obtained from 50 ppm Promalin.

Keywords: pistachio, fruit quality, promalin, yield

Effects Of SiO2/Water Nanofluid Flow In A Square Cross-Sectioned Curved Duct

Recep Ekiciler[a], Kamil Arslan[a*]

[a]Karabuk University

*kamilarslan@karabuk.edu.tr

Abstract:

Forced convection SiO2/water nanofluid flow and heat transfer was numerically performed in 180 degree three-dimensional curved duct with square cross section under steady and laminar flow conditions in this investigation. Dean number was changed from 102 to 898. All surface of curved duct was exposed to uniform and constant heat flux of 15000 W/m2. Nanoparticle volume fractions was ranged 1.0%-4.0%. The average Nusselt number and average Darcy friction factor were determined for each nanoparticle volume fractions. Velocity and temperature profiles and secondary flows were analyzed in detail. In addition, numerical study results are expressed with engineering correlations as changing average Nusselt number and average Darcy friction factor with Dean number and nanoparticle volume fraction.

Keywords: Laminar flow, Dean number, SiO2/water nanofluid, Nanoparticle, Square cross-sectioned curved duct, Forced convection

Effects of Some Proteases upon Yersinia pestis Polymeric Protein Caf1

Yakup Ulusu[a], Numan Eczacioglu[a*], Helen Waller[b], Jeremy H. Lakey[b]

[a]Karamanoglu Mehmetbey University, Tr
[b]Newcastle University, Uk

*numaneczacioglu@gmail.com

Abstract:

Yersinia pestis, the causative agent of plague, expresses a capsule-like antigen, fraction 1 (F1), at 37°C. F1 is a surface polymer composed of a protein subunit, Caf1, with a molecular mass of 15.5 kDa.F1 has been implicated to be involved in the ability of Y. pestis to prevent uptake by macrophages.Caf1 polymers lengths can achieve more than 1 µm. Molecular weight of monomeric part of Caf1 polymer is approximately ~15 kDa.The subunits polymerize through donor strand exchange, where each subunit donates its N-terminal β-strand to complete the immunoglobulin-like fold of the next subunit in the chain. This makes Caf1 polymers highly thermostable with reported melting temperature (Tm) values of 76.2°C and 85.5°C for engineered Caf1 monomers, and 83°C for recombinantly expressed Caf1 polymers. Because of its thermostability properties and its ability to form hydrogels, Caf1 polymeric protein possesses many potential applications in the field of molecular biology and cell biology. Particularly in studies of cell culture as a 3-dimensional biodegradable scaffold have recently gained pace and it is a strong candidate to be a biomaterial for this purpose by the addition of different CIMs (cell interaction motifs) through protein engineering applications or the addition of protease cleavage sites secreted by mammalian cells such as MMP.Bacterial recombinant expression of Caf1 polymer was carried out in Escherichia coli BL23 DE3 strain with pGEM-T Caf 1 plasmid. Purification process was performed via size exclusion chromatography using Superdex 200 16/60 column at FPLC. Eluted fractions were collected as 1 ml aliquots.After the purification we have tested a range of X proteases (Pepsin, Subtilisin, Protease K, Thermolysine, Trypsin, Chymotrypsin, Enterokinase, Elastase, Thrombin) on the Caf1 polymer.Only pepsin, at low pH and subtilisin group enzymes such as protease K degrade the folded polymer whilst all of them degrade the unfolded polypeptide.

Keywords: Polymeric protein Caf1, Proteases, Bacterial recombinant expression

Effects of Sowing Time on Herbage Yield and Quality of Black Chickpea

Kagan Kokten[a], Mahmut Kaplan[a], Hava Seyma Yilmaz[b], Mevlut Akcura[c], Halit Tutar[d*]

[a]Department Of Field Crops, Faculty Of Agriculture, University Of Bingol, Bingol, Turkey
[b]Department Of Field Crops, Faculty Of Agriculture, University Of Erciyes, Kayseri, Turkey
[c]Department Of Horticulture, Faculty Of Agriculture, University Of Kahramanmaras Sutcu Imam, Kahramanmaras, Turkey
[d]Field Crops Department, Agricultural Faculty, Onsekiz Mart University, Canakkale, Turkey

*halittutar1@gmail.com

Abstract:

The present study was conducted to investigate the effects of different sowing times on herbage yield and quality characteristics of black chickpeas in terms of animal feeding. For this purpose, experiments were conducted for two years in 2014-2015 with four different sowing dates (1 April, 15 April, 1 May and 15 May) in randomized blocks design with three replications. Effects of sowing date on herbage yield, hay yield, crude protein yield, plant high, crude protein and crude ash of black chickpeas were found to be highly significant ($P<0.01$). But acid detergent fiber (ADF), neutral detergent fiber (NDF), dry matter digestibility (DMD), dry matter intake (DMI) and relative feed value (RFV) of black chickpeas were not found significant ($P>0.05$).

Considering the results of two-year experiments, plant heights varied between 28.23-32.65 cm, green herbage yield between 56.10-375.89 kg/da, dry herbage yield between 11.62-98.40 kg/da, crude protein ratio between 1.80-13.67 kg/da, crude protein ratio between 13.64-16.31%, crude ash between 9.33-11.34%. Considering the yield and quality values, the first sowing was considered as the best sowing date for black chickpeas.

Keywords: black chickpeas, sowing date, yield, chemical composition, relative feed value

Effects of Sowing Time on Herbage Yield and Quality of Lupine

Kagan Kokten[a], Mahmut Kaplan[b], Ersel Tal[b], Halit Tutar[a*], Mevlut Akcura[a]

[a]Department Of Field Crops, Faculty Of Agriculture, University Of Bingol, Bingol, Turkey
[b]Department Of Field Crops, Faculty Of Agriculture, University Of Erciyes, Kayseri, Turkey

*halittutar1@gmail.com

Abstract:

The present study was conducted to investigate the effects of different sowing times on herbage yield and quality of lupine. Experiments were conducted for two years in 2014-2015 with four different sowing dates (1 April, 15 April, 1 May and 15 May) in randomized blocks design with three replications. Effects of sowing date on herbage yield and quality of lupine were found to be highly significant ($P<0.01$). While the years did not have significant effects on green and dry herbage yields, effects of years on plant height were found to be significant ($P<0.05$), and the effects on chemical composition were found to be highly significant ($P<0.01$).

The greatest plant height, crude protein yield, green herbage yield, dry herbage yield and crude ash contents were observed in the first sowing date and the lowest values of the same parameters were observed in the fourth sowing date. The greatest crude protein content was observed in the fourth sowing date and the lowest value was seen in the first sowing date. The greatest ADF and NDF ratios were seen in the third sowing date and the lowest values were observed in the fourth sowing date. The greatest digestible dry matter, dry matter intake and relative feed value were observed in the fourth sowing date and the lowest values were seen in the third sowing date. Considering the yield and quality values, the first sowing was considered as the best sowing date for lupine.

Keywords: Lupine, sowing time, yield, quality, relative feed value

Effects Of The Top Parts Of Sports Sock's Parameters On Pressure Along Wearing Time

Sertac Guney[a*], Ibrahim Ucgul[a]

[a]Suleyman Demirel University

*sertacguney@sdu.edu.tr

Abstract:

In this study, the relation between the top parts of sports sock's parameters and the pressure along wearing time was investigated to design and develop socks that provide wearing comfort. Body skin strain is an important factor affecting pressure comfort. There are three essential components required in meeting the skin strain: garment fit, garment slip and fabric strecth. Garment fit and slip are affected by the ratio of garment size to body size by the garment design, by the fabric friction coefficient, whether a garment stretch during wear depends upon the balance of the tensile forces and frictional forces of the fabrics against the skin. This study aims to investigate the effects of structural mechanics of knitted fabrics on the amount of pressure generated on lower leg. Five sports sock (three high-calf socks and two mid-calf socks) made of polyamide, polyester and cotton including different amounts of elastane fibers and having different knits on lower leg section were selected from the market. We carried out friction and tensile tests on top parts of sports socks. When the top of socks are stretched to a certain extension, this induces stress relaxation and the pressure changes depending on wearing the socks. So we also measured the sock pressure along wearing time generated on lower leg by pressure sensors. We recorded the pressure data directly after wearing the sock and also until a certain stable pressure value along wearing time. Results show that the sock specimens having high tensions exerted high pressure values on lower leg but the fabric weight and friction coefficient are also important for the pressure applied on lower leg. We also investigated the pressure change along wearing time. This objective analysis of sports sock pressure is expected to help designing socks for better wearing comfort.

Keywords: Pressure comfort, sports socks, wearing time, fabric structure.

Efficiency Of Lactic Acid Bacteria Strains To Bind Aflatoxin M1(Afm1)

Mustafa Yucel[a], Cisem Bulut Albayrak[a*]

[a]Adnan Menderes Universitesi

*cisem.bulut@adu.edu.tr

Abstract:

Aflatoxins are the secondary metabolites of Aspergillus species and they can present various tpes of foods such as cereals, spices, dried fruits and milk. Aflatoxin M1 (AFM1) is a highly toxic compund in milk and stable during milk processing. The use of microorganisms offers one of the alternatives for control of aflatoxins in foodstuffs. The purpose of the current study is to screen binding abilities of 22 of reference strains of lactic acid bacteria belongs to Lactobacillus genus and one type strain belongs to Lactococcus . Additionally E. coli and B.cereus were also used for comparison purposes. For this aim, overnight cultures were grown in appropriate liquid medim at 37 °C for 24 hours. Cells were precipated by centrifugation and washed two times with phosphate buffered saline (PBS) solution then suspended in this solution. Bacterial cell densities were adjusted to McFacland 0.5 and AFM1 was added to obtain desired concentration. Studied initial AFM1 concentrations were 0.05 ppb and 0.1 ppb. Binding experiments were conducted 37 °C for 1 hour and AFM1 amount in supernatant was analysed by High pressure Liquid Chromatography-Froeransce detecter system (HPLC-FLD). Additionally, heat killed (100 °C,1 h)organisms were tested for their binding capacities. The strains exhibited different degrees of aflatoxin binding percentages (mean:30.4% ±17.7) of the avalibale aflatoxin (0.05 ppb). Among bacteria tested, E.coli showed the lowest binding property as 3% and it was the only bacterial strain that has Gram negative property in the study. Stabilities of bacterial-aflatoxin complex were determined by repeated washings using acetonitrile and PBS. Binding was to a limited degree reversible for PBS and highly reversible for acetonitrile application.Experiment results indicated that physical adsorption can be suggested for binding mechanism.Selection of suitable strains with high AFM1 removal efficiency, will help to find best solution for AFM1 decontamination.

Keywords: aflatoxin, lactic acid bacteria, decontamination,binding

Electronic structure and phonon properties of Hafnium-based alloy Hf3Rh: A first principle study

Ahmet Iyigor[a*], Mustafa Ozduran[b], Nihat Arikan[c]

[a]Central Research And Practice Laboratory (Ahilab), Ahi Evran University, Bagbasi-Kirsehir, Turkey
[b]Department Of Physics, Faculty Of Science, Ahi Evran University, Kirsehir, Turkey
[c]Mathematic And Science Education Department, Education Faculty, Ahi Evran University, Kirsehir, Turkey

*ahmetiyigor@ahievran.edu.tr

Abstract:

Self-consistent band calculations on Hf3Rh alloy in the D03 structure are presented. The structural, elastic, electronic and phonon properties of Hf3Rh alloy within density functional theory have been investigated. The calculated lattice constants for this alloy is in good agreement with the available values. These calculated elastic constants satisfy the mechanical stability criterion of Hf3Rh in the D03 structure is predicted by Pugh's criterion for first time. The band structure and density of states, and phonon dispersion curves have been obtained. We have studied and discussed the position of Fermi level for the Hf3Rh in the D03 structure. The present band structure calculations predict that the D03–Hf3Rh alloy is metal.

This work has been supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: AHILAB.E2.17.002.

Keywords: Electronic structure, phonon properties, DFT

Electronic, Elastic And Phonon Properties Of Ceni5: A Density Functional Theory Study

Osman Ornek[a*], Nihat Arikan[a], Abdullah Candan[a], Mustafa Ozduran[a], Ahmet Iyigor[a]

[a]Ahi Evran University

*osmanornek@ahievran.edu.tr

Abstract:

The studies of the structural, electronic, elastic and phonon calculations for CeNi5 are reported by means of a generalized gradient approximation. The obtained equilibrium lattice constant of CeNi5 is in good agreement with available experimental and theoretical data in the literature. CeNi5 has a hexagonal structure, having six independent single crystal elastic constants Cll, C12, C13, C33, C44, and C66. We have calculated elastic constants in hexagonal structure for CeNi5 using stress-strain method. The electronic band structure, total and partial density of states for this compound has been investigated within density functional theory using the plane-wave pseudopotential method implemented in MedeA-VASP code. From band structure, total and partial density of states, we have observed metallic characters of CeNi5 compound. The electronic calculations indicate that the predominant contributions of the density of states at Fermi level come from the Ni 3d states. The vibrational properties have been obtained using a direct method. For the compound, the results show that the hexagonal structure is stable since the phonon calculations have not imagine modes.

This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: MMF.E2.17.002.

Keywords: DFT, Phonon, eletronic band, elestic constans

Elimination Of Harmonics With Using Passive Filters In Power System

Mustafa Yagci[a*], Orhun Dos[b]

[a]Necmettin Erbakan University Department Of Electrical And Electronics Engineering
[b]Necmettin Erbakan University Institute Of Science

*myagci@konya.edu.tr

Abstract:

The current and voltage should be 50 Hz and very similar with the sine graph in power systems. The harmonics cause to disruption at the current and voltage forms. Because of this case the quality of the electrical energy decreases and the malfunctions begin.

In this study; a model of the electric systems which includes harmonics has been simulated with MATLAB/SIMULINK. The types of passive filter have applied to this system. The effects of these filters have investigated. The results were analyzed and the most efficient filter type was determined for the designed system

Keywords: Passive filters, harmonics, power systems, matlab/simulink

Energy - Exergy Analyses And Comparison Of Geothermal Energy Cycles

Mutlu Tekir[a*], Hasan Ozcan[a]

[a]Karabuk University

*mutlutekir@karabuk.edu.tr

Abstract:

Geothermal energy is one of the renewable, and clean energy forms. Day by day its usage area expands. In this research 5 case studies examined: Single flash system, double flash system, binary geothermal system, combined geothermal-isobuthane organic rankine cycle, kaline cycle. Energy and exergy analyses of these energy cycles are examined numerically by EES software, furthermore the results are compared, so best and efficient cycle is chosen between these 5 case studies.

Keywords: Geothermal Energy, ORC, R600a, Flash System

Energy and Exergy Analyses of a Gas Turbine Developed for Heat Recovery in a MSW Power Plant

Alperen Tozlu[a], Emrah Ozahi[b*], Aysegul Abusoglu[b]

[a]Bayburt University
[b]University Of Gaziantep

*ozahi@gantep.edu.tr

Abstract:

Closed cycle gas turbine power generation systems have a significant potential to produce power. They have lost their first-time popularity when compared with more efficient open cycle gas turbines, which is related to higher firing temperature. Nevertheless in the recent past, closed cycle gas turbines become popular again as an alternative energy conversion method because of the recent developments in working fluid technologies. In this study, a closed cycle gas turbine is modeled for electricity production from the exhaust gas in Gaziantep Municipal Solid Waste (MSW) Power Plant in the frame of heat recovery.

In this system, the supercritical CO2 (S-CO2) was used, which has the values of Pcrit=73.8 bar and Tcrit=30.98 oC. Engineering equation solver (EES) was used for modeling the closed cycle gas turbine using the energy and exergy equations. The total power production is found to be 1286.9 kW as a result of the thermodynamic analyses. The overall energy and exergy efficiencies are evaluated as 47.16 % and 61.83 %, respectively. When energy and exergy efficiencies of the system are compared to other gas turbine cycles which exist in the open literature, it is seen that the results are shown to be acceptable within the system ranges.

Acknowledgements

This study is supported by TUBITAK (The Scientific and Technological Research Council of Turkey) with the project under the grant number of 114M142. The authors would like to thank TUBITAK and CEV (Clean Energy & Vehicles) Energy.

Keywords: Gas turbine, municipal solid waste, power plant, heat recovery, thermodynamic analysis.

Entropy Analyses Of The Twisted Tape In A Tube Using Tio2 Nanofluid

Toygun Dagdevir[a*], Orhan Keklikcioglu[a], Veysel Ozceyhan[a]

[a]Erciyes University

*toygun@erciyes.edu.tr

Abstract:

This study presents the entropy analyse of using twisted tape and TiO2 nanoparticles through a horizontal tube. Entropy analyse is considered for many heat transfer mechanisms to evaluate the secondary law efficient. For this purpose; thermal, frictional and total entropy generation rates are investigated with getting from CFD analyse. The investigated volume fractions of TiO2 are in range from 0.2% to 2.0%. The CFD analyses are carried out with Reynolds number of in range from 7860 to 15860, and constant heat flux is applied to wall of the tube. In order to simulate turbulent nanofluid flow k-ω standard turbulent model is applied for all cases. TiO2 particles with diameter of 10 nm dispersed in water with volume fraction of 0.2 - 2.0 are used as the working fluid. In order to generate swirl flow and enhance heat transfer, the twisted tape (constant twist ratio is y/W=3.0) is used in this study. As a result, inserting twisted tape to the smooth tube increases the frictional entropy generation rather than thermal entropy generation. However; adding nanoparticle to water increases the thermal entropy generation rather than frictional entropy generation. As a conclusion using twisted tape and nanofluid increases total entropy generation because of increasing irreversibilities.

Keywords: Entropy generation, CFD, nanofluid, twisted tape

Entropy Generation Analysis for a Tube with Equilateral Triangle Cross Sectioned Coiled-Wire Inserts Installed with a Separation from The Tube Wall

Orhan Keklikcioglu[a*], Toygun Dagdevir[a], Veysel Ozceyhan[a]

[a]Erciyes University

*keklikcioglu@erciyes.edu.tr

Abstract:

This paper presents an experimental investigation on the entropy generation induced by turbulent forced convection in a circular tube with coiled-wire inserts. The wire inserts are manufactured with an equilateral triangular cross-section to destruct the boundary layer effectively. The triangle side length of e=6 mm was chosen for the experiment. The coiled-wire inserts installed with 1 and 2 mm separation from the inner tube wall and coiled with three different pitch-to-diameter ratios: P/D= 1, P/D= 2 and P/D= 3. A specific method was employed to coil the wires so that an edge of the triangle was oriented to face the incoming air flow. A uniform heat flux was applied to the outer surface of the tube. Experiments were performed for a range of Reynolds numbers from 3429 to 26,663. The experimental results indicated that the coiled-wire inserts led to a significant increase in both the heat transfer rate and friction factor over the smooth tube based on coil pitches and clearance. The reduction of entropy generation rates were obtained with using coiled-wire at low Reynolds numbers.

Keywords: Entropy generation, heat transfer, pressure drop, coiled wire

Environmental Applications and Impact of Nanotechnology

Sakine Ugurlu Karaagac[a*]

[a]Karabuk University

*sakineugurlu@karabuk.edu.tr

Abstract:

Environmental pollution caused by different sources is becoming a serious problem throughout the world in todays. To solve this problem different technologies can be used in environmental science. One of these technologies is nanotechnology in recent years. Nanotechnology is a field of applied science, focused on the design, synthesis, characterization and application of materials and devices on the nanoscale in different areas. It plays an important role in the development of innovative methods to produce new products and to reformulate of new materials and chemicals with improved performance resulting in less consumption of energy and materials. Thus, reduced harm are provided for the environment. There are great potentials for environmental engineering application and cleaner energy generation. We can use nanotechnology in environmental applications, such as ultrafiltration in most membrane separation processes, wastewater treatment and desalination via reverse osmosis, removal of organic pollutants from industrial waste water, nanosensors to detect toxic gas leaks at extremely low concentrations and filtration techniques in buildings to purify indoor air volumes, etc. Environmental applications of nanotechnology can provide the development of solutions to the existing environmental problems and preventive measures for future problems. The environmental impact of nanotechnology is some possible effects on the environment. It can be divided into two aspects: the potential for nanotechnological innovations to help improve the environment, and the possibly novel type of pollution that nanotechnological materials might cause if released into the environment.

Keywords: Nanotechnology, environment, application, environmental impact

Environmental Impact Assessment of Sewage Sludge Use in Energy Recovery

Aysegul Abusoglu[a*], Emrah Ozahi[a], Alperen Tozlu[b]

[a]University Of Gaziantep
[b]Bayburt University, Department Of Mechanical Engineering, Bayburt, Turkey

*ayabusoglu@gantep.edu.tr

Abstract:

In this study, two interconnected systems using biogas and stabilized sewage sludge, which are important by-products of an actual municipal wastewater treatment system, are compared in terms of environmental impacts. In the first system, biogas produced from sewage sludge by anaerobic digestion is burned in an internal combustion gas engine driven cogeneration system to generate electricity. In the second system, the stabilized sludge taken from wastewater treatment plant is burned in a fluidized bed combustion system for elimination purposes. In this context, sludge stabilization and its disposal are the most complicated environmental problems faced by researchers and managements working in this area. The utilization of novel solutions or different application methodologies are brought to agenda for the management and beneficial use of sewage sludge.

The environmental impact assessment is performed using the life cycle analysis (LCA) method. Life cycle analysis is a novel approach which comprehensively evaluates the potential impacts of a production or a process that causes environmental effects and compares these effects with other similar productions or processes. The environmental impact assessments of interconnected systems presented in this study are calculated and compared in three main impact categories: Climate change, acidification and eutrophication. According to the results obtained; (i) the impact value of climate change category per unit time for the biogas engine driven cogeneration system is 0.324 kg CO2-equivalent while it is 0.247 kg CO2-equivalent for the fluidized bed sewage sludge combustion system, (ii) the impact value of acidification category per unit time is found to be 0.000491 kg SO2 -equivalent for cogeneration system and 0.000228 kg SO2 -equivalent for fluidized bed combustion system, (iii) the impact values of eutrophication category per unit time for cogeneration and fluidized bed combustion systems are calculated to be 0.000124 kg NOx -equivalent and 0.0000436 kg NOx -equivalent, respectively.

Keywords: Sewage sludge, biogas, LCA, cogeneration, fluidized bed combustion, environmental impact

Environmental Impact Of A Phase Change Material Wall Covered With Novel Triple Glass

Yusuf Ali Kara[a*], Aslihan Kurnuc Seyhan[b]

[a]Bursa Technical University
[b]Erzincan University

*yusufali.kara@btu.edu.tr

Abstract:

Solar thermal energy can be effectively stored in walls of a building by incorporating phase change materials (PCMs) within them. Plasterboards containing PCM can be used to absorb and store solar heat gains during daytime and release stored heat during nighttime. A wall fitted with plasterboards containing PCM is usually called a PCM wall. In this study, south facade of a test room was constructed using PCM walls covered with novel triple glass for heating the test room by means of solar thermal energy. Solar heat gains and environmental impact of the PCM wall were evaluated. The PCM wall reduced CO2 emission from the test room. The reduction in CO2 on a monthly basis varied in the range of 70% to %4 from October to March, and was 14% on an annual basis.

Keywords: Phase change material (PCM), Greenhouse emissions, PCM wall

Essential Oil Composition Of The Turpentine Tree (Pistacia Terebinthus L.) Fruits Growing In Mut, Turkey

Elif Catikkas[a*], Alime Ebru Aydin[b]

[a]Karamanoglu Mehmetbey University, Ermenek Vocational School
[b]Department Of Chemistry, Faculty Of Arts And Sciences, Mustafa Kemal University, Hatay, Turkey

*eliffcatikkas@gmail.com

Abstract:

Pistacia terebinthus is evergreen tree from Anacardiaceae family in western regions of Morocco, Portugal to Greece, western and southeast Turkey [1] It is called ‘‘menengic” in Turkish [2]. These fruits have been used as an appetizer in Southern Turkey for several thousand years, and have been used as a traditional medicine. For example, the fruits have been used as a diuretic and for urinary inflammations, stomachache [3], antiseptic, and for headache [4]. Turpentine tree fruits were collected from plants growing in Mersin province (Sakiz and Tugrul village/Mut) of Turkey in August 2015. In this study, the samples were air-dried at the room temperature and then extracted using hydro-distillation method for 4 h in Clevenger type apparatus. Next, the essential oil was analyzed by GC–MS method. The major components were determined as α-pinene (38.6%) limonene (37.6 %), myrcene (8.7 %), β-pinene (5.7 %) from plants growing in Sakiz village, while α-pinene (39.2 %), limonene (32.7 %), myrcene (8,9%), β-pinene (5,2 %) were determined as major compounds from plants growing in Tugrul village.

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Keywords: Pistacia terebinthus, Essential oil

Estimation of Obesity with Machine Learning Approaches Based on Socio-Demographic Data

Tuba Gokhan[a], Aydin Cetin[a*]

[a]Gazi University

*aydincetin@gmail.com

Abstract:

Obesity is an important health problem that can lead to various health disorders and even deaths by affecting all the organs and systems of the body such as cardiovascular and endocrine system. Obesity is considered among the top ten the riskiest diseases by the WHO and according to a research conducted by the WHO recently, is also closely related to cancer. Obesity is caused by the fact that there are more than normal amounts of fat it should be in the body and medical treatment is required. There are many factors are involved in the obesity. In this study, it was aimed to classify obesity according to socio-demographic criteria by data mining and machine learning algorithms to determine both the effects of these factors on probability of being obesity. The dataset was generated with use of a questionnaire having 11 questions applied between November 15th and December 15th, 2016 to 205 different age and sex groups. In the questionnaire, the most important risk factors of obesity were related to questions about decreased physical activity, eating habits, age, gender, education level, marriage. Body mass indexes were determined according to the obtained anthropometric measurements. In the study, comparative analysis was carried out using 11 different classification algorithms. The highest learning rate (80%) obtained with C4.5 decision tree algorithm.

Keywords: obesity, classification, decision treee

Estimation of projection matrices from a sparse set of feature points for 3D tree reconstruction from multiple images

Stefan Kohek[a*], Damjan Strnad[a], Borut Zalik[a], Simon Kolmanic[a]

[a]University Of Maribor

*stefan.kohek@um.si

Abstract:

3D reconstruction of trees is an important task for tree analysis but the most affordable approach to capture real objects is with a camera. Although, there already exist methods for 3D reconstruction of trees from multiple photographs, they mostly handle only self-standing trees captured at narrow angles. In fact, dense feature detection and matching is in most cases the first step of the reconstruction, which requires a large set of features and high similarity between the individual pictures. Capturing trees in the orchard is in most cases possible only at wider angles between the individual pictures and with overlapping branches from other trees, which prevents reliable feature matching. We introduce a new approach for estimating projection matrices to produce 3D point clouds of trees from multiple photographs. By manually relating a smaller number of points on images to reference objects, we substitute the missing dense set of features. We assign to each image a projection matrix and minimize the projection error between the images and reference objects using simulated annealing. Thereby, we produce correct projection matrices for further steps in 3D reconstruction. Our approach is tested on a simple application for 3D reconstruction of trees to produce a 3D point cloud. We analyze convergence rates of the optimization and show that the proposed approach can produce feasible projection matrices from a sufficiently large set of feature points. In the future, this approach will be a part of a complete system for tree reconstruction and analysis.

Keywords: 3D reconstruction, simulated annealing, projection matrix

Estimation of Short-Term Measured Solar Radiation Potential by ANN Method

Bulent Yaniktepe[a*], Sakir Tasdemir[b], A.Burak Guher[a]

[a]Osmaniye Korkut Ata
[b]Sselcuk University, Technology Faculty, Computer Engineering, Konya, Turkiye

*byaniktepe@osmaniye.edu.tr

Abstract:

In recent years, the trend towards renewable energy sources, which are defined as friendly people in the world, is rapidly increasing. This increase significantly affects the investments and work done in the field of renewable energy. Because of our natural energy source, the sun is in an important position within these resources. Before installing a solar power plant in a district, it is absolutely necessary to calculate the solar radiation potential at that site. However, there are many geographic and meteorological parameters affecting the potential of sunlight radiation. In this study, it is aimed to estimate the solar potential in March using artificial neural network (ANN) method using daily sunshine data and daily solar radiation data observed from the meteorological station at Osmaniye Korkut Ata University. In the method, 1 input, 1 output and 2 hidden layers Multilayer Feedforward Backpropagation Network is used and S / S0 value is given as input to the network for estimating H / H0 value. Estimated results were statistically compared with the calculated results, and the correlation coefficient for March was successfully estimated with R2 = 0.91 and mean square error MSE = 0.0011.

Keywords: Ann, Solar Energy, Renewable Energy

Estimation of Total Catch for Pikeperch (Sander lucioperca) and Common Carp (Cyprinus carpio) in Seyhan Dam Lake and Comparison with the Turkish Statistical Institute Data

Caner Enver Ozyurt[a*], Volkan Baris Kiyaga[a], Meltem Manasirli[a], Dursun Avsar[a]

[a]Cukurova University

*cozyurt@cu.edu.tr

Abstract:

The academic community claimed that the fisheries statistics of Turkish Statistical Institute (TUIK) did not reflect the actual production. However, this suspicion is often based on individual observations. So far, there is no qualitative data on this. In this study, the total amount of pikeperch and common carp caught in Seyhan Dam Lake in 2007 and 2008 was estimated and the data obtained were compared with those of TUIK's statistics. Therefore, the accuracy of the concerns of the fisheries scientists has been tested. In order to calculate the required data, the amount of fish caught by 20 fishing boats in a fishing season was used. The amount of fish caught by fishing boats in subsample was obtained from the merchants. Results showed that the amount of pikeperch caught from this lake in 2007 and 2008 was 62 and 37 tons, respectively. The amount of carp caught in the same years was 88 and 180 tons, respectively. This shows that the amount of pikeperch caught in lake has reduced by almost half in a year. On the contrary, the amount of carp caught doubled in a year. As a result, significant similarities were found between the data obtained in this study and the TUIK statistics.

Keywords: Common carp, pikeperch, total catch, TUIK, statistics

Estimation Of Turkey's Electricity Consumption For 2023 By Using Support Vector Machines Regression Algorithm

Semiha Durgun[a], Ali Osman Ozkan[a*]

[a]Necmettin Erbakan Universitesi

*alozkan@konya.edu.tr

Abstract:

In this study, the demand for 2023 Turkey's electrical energy consumption has been estimated by using the support vector machine sequential minimal optimization algorithm. For this aim, various variable such as Gross Domestic Product (GDP) between the years of 1980-2015, population and meteorological data were used in the prediction model. By using the model, Turkey's electrical energy consumption between the years of 2016-2023 was estimated.

Keywords: Support Vector Machines (SVM), Electrical energy consumption, Sequential Minimal Optimization (SMO) regression

Evaluation Multi Fingertip Contact Points for Multi-fingered Robot Hands with Linear Optimization

Izzat A. Al-Darraji[a], Ali Kilic[a*], Sadettin Kapucu[a]

[a]Mechanical Engineering Department, Engineering Faculty, Gaziantep University

*akilic@gantep.edu.tr

Abstract:

During robotic hand grasp planning, multi contacts exist between the fingers and the grasped object. These points are important for grasped object-fingertips interaction since it will allow determining if the hand will grasp or not the object in stable way. Obtaining optimal contact forces is an essential aim to get a stable grasp. In this study, Linear Programming (LP) method with multi-fingered hands is introduced based as an optimization procedure. That is to determine the best values which achieve the boundary of friction cone constraints. The procedure is suggested which generalizes internal contact force evaluation to get up a simple way in which varied friction constraints and contacts are Potential. The algorithm determines a solution for an arrangement of soft and hard friction contacts for different number of fingers with a straightforward implementation.

ACKNOWLEDGEMENTS

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The authors would like to thank Scientific Research Projects Governing Units of University of Gaziantep for their financial supports.

Keywords: Fingertip Grasping, Contact Models, Grasp Map, Linear Programming

Evaluation Of Antioxidant Activity And Total Phenolic Content Of Some Hericium Spp.

Funda Atila[a*]

[a]Ahi Evran University

*fundacavuslar@hotmail.com

Abstract:

Total phenolic contents and antioxidant capasity occurring in methanolic extracts of dried fruitbodies of eight Hericium isolates (six isolates of Hericium erinaceus, one isolate of Hericium coralloides and one isolate of Hericium americanum) have been evaluated by the Folin–Ciocalteau method and by Ferric Reducing Antioksidant Power (FRAP) method, respectively. Generally, the assayed isolates contained between 10.5 ±0.58 and 17.06±0.68 µmol TE antioxidant capability per gram of dried mushroom, while the total flavonoid content ranged between 230.8±1.3 and 326.9±1.1 mg GAE per 100 gram of dried matter. Hericium erinaceus-TA found to have the highest antioxidant activity. Total phenolic content of Hericium coralloides was the superior to the other isolates. On the other hand, the lowest antioxidant capability was determined in Hericium erinaceus-Denizli extract, whereas Hericium americanum the species gave lowest reading of total fenolic content. Positive correlations were found between total phenolic content in the mushroom extracts and their antioxidant activities. Based on the results obtained, methanolic extracts from these eight Hericium isolates effective in antioxidant properties.

This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. (Project Number: ZRT .E2.17.013).

Keywords: Hericium erinaceus, Hericium coralloides, Hericium americanum, antioxidant activity, total phenol content

Evaluation Of Anti-Quorum Sensing And Anti-Biofilm Potentials Of Dietary (Poly)Phenolic Compounds

Elif Burcu Bali[a*], Kubra Erkan Turkmen[b], Demet Erdonmez[c], Necdet Saglam[d]

[a]Gazi University, Vocational School Of Health Services, Programme Of Medical Laboratory Tecniques, Golbasi, Ankara, Turkey
[b]Hacettepe University, Faculty Of Sciences Department Of Biology/Biotechnology, Beytepe, Ankara, Turkey
[c]Aksaray University, Faculty Of Science And Letters, Department Of Biology, Aksaray, Turkey.
[d]Hacettepe University, Graduate School Of Science And Engineering,Nanotechnology And Nanomedicine Division, Beytepe, Anka

*e.burcubali@gmail.com

Abstract:

Quorum sensing (QS) or biofim formation is the one of the most important mechanisms which is related to the antibiotic resistance of many pathogens. To prevent recurrent or chronic infections occured by the resistant pathogens, there is a need to seek alternative treatment. Therefore, in the present study, it is aimed to investigate anti-quorum sensing and anti-biofilm potentials of dietary (poly)phenolic compounds including quercetin, curcumin, apigenin, pyrogallol, gallic acid, luteolin and hydroxytyrosol. Anti-quorum sensing activity of the compounds was evaluated qualitatively and quantitatively using the Chromobacterium violaceum ATCC 12472 biosensor system. Inhibition of QS-controlled violacein production in C. violaceum was assayed using the qualitative agar diffusion assay as well as by quantifying violacein inhibition using the compounds ranging from 1.5–0.047 mg/mL. Moreover, anti-biofilm potentials of the compounds were screened for the same concentrations. The results of this study clearly revealed that quercetin, curcumin, apigenin and luteolin had significant anti-QS and anti-biofilm potentials in the subinhibitory concentrations [(1/16–1/2 minimal inhibitory concentration (MIC)] of 1.5, 0.75, 0.375 and 0.187 mg/mL, while hydroxytyrosol and gallic acid didn't show any inhibition of QS or biofilm. Pyrogallol also had no inhibition of QS and it possessed a weak anti-biofilm potential in these subinhibitory concentrations. Curcumin at a concentration of 0.75 mg/ml significantly inhibited the violacein production to 88.2±0.1% and the biofilm formation to 84.16±0.23% in C. violaceum. Quercetin, apigenin and luteolin showed also powerful anti-QS and/or anti-biofilm activity. As a conclusion, among all of the dietary (poly)phenolic compounds, curcumin, quercetin, apigenin and luteolin could be promising compounds for the treatment of bacteral infections occured by the mechanisms of QS and/or biofilm formation.

The authors thank Scientific Research Projects Unit of GAZI UNIVERSITY (Project No: 21/2015-01) for supporting this study.

Keywords: Dietary (poly)phenolic compounds, curcumin, quercetin, quorum sensing, Chromobacterium violaceum, anti-biofilm

Evaluation of Classification Methods for Early Diagnosis of Chronic Kidney Diseases

Tuba Gokhan[a], Aydin Cetin[a*]

[a]Gazi University

*aydincetin@gmail.com

Abstract:

Chronic Kidney Disease (CKD) is an important public health problem that has become widespread all over the world. When CKD is detected early, it can be frequently prevented, treated or the progression of the disease can be delayed. However, the low rate of early diagnosis of CKD cannot prevent the progression of the disease in many cases. Machine learning methods can be used for improvement of early diagnosis rate so that preventing from the progression of the disease, extending the life span and quality of life of the patients could be possible. In this study, different available machine learning algorithms were evaluated for early diagnosis of CKD. The data set used for evaluation is taken from the UCI machine learning repository. The dataset consists of 25 attributes, with 11 numeric and 14 nominal values belonging to 400 patients in a private hospital. The missing data is completed with the data completion method and included in the data analysis. The Decision Table algorithm has the highest accuracy rate (99.2647%) compared to the other classification algorithms used in early diagnosis. The characteristics of the patients with and without chronic renal failure were compared and the parameters thought to be important for early diagnosis were determined.

Keywords: Kidney Disease, Machine Learning, Decision table

Evaluation of Concrete Waste as Filler Material in Hot Mix Asphalt

Sercan Serin[a*], Nihat Morova[b], Mehmet Saltan[b], Serdal Terzi[b]

[a]Duzce University
[b]Sulayman Demirel Universty

*s.serin33@gmail.com

Abstract:

Nowadays recycling of different waste materials from different industry is a great problem which researchers have been working on. Every year millions tons waste comes out. These waste materials have a major problem of pollution, safe and economic disposal. This study attempts to examine the behavior of Hot Mix Asphalt (HMA) concrete when used concrete waste as filler material. Firstly, for this aim a series of tests were carried out to determine the optimum bitumen content. Asphalt mixture samples were produced using as 4.5%, 5%, 5.5%, 6%, and 6.5% bitumen contents. After, Marshall Stability (MS) test was applied on prepared samples which are used with different ratio of limestone (LS) and/or concrete waste (CW) % filler. Choosing the series of asphalt having 4% filler which has given the highest stability CW was changed with LS filler in the rate of 25%, 50%, 75%, and 100%. After that MS test was conducted on the produced samples and the results were evaluated. As a result, it was observed that CW could be used as mineral filler in HMA.

Keywords: Recycling, Concrete Waste, Hot Mix Asphalt

Evaluation Of Desiccant Cooling Systems With Various Configurations For Budapest, Hungary

Ertac Hurdogan[a*], Osman Kara[a], Orhan Buyukalaca[a], Coskun Ozalp[a]

[a]Osmaniye Korkut Ata University

*ehurdogan@osmaniye.edu.tr

Abstract:

Desiccant cooling systems (DCS) has taken place as an alternative to the conventional air conditioning systems in terms of energy savings, environment and indoor air quality. One of the main reasons for providing the indoor comfort conditions, is that DCS has independent control of dry bulb temperature and relative humidity which varies widely in different climate zones, especially typical hot and humid weather. It is seen that the DCS performs good in hot and humid climatic condition. In this study, performance and the second law analysis of three DCS system with different configuration was evaluated for a cooling season in Budapest Hungary. In the analysis, Engineering Equation Solver (EES) was used. Performance of each system configuration was calculated using performance parameters involving: cooling capacity, COP exergy destruction and exergy efficiency. Performance of the systems were investigated and compared with each other by using exergy analysis and the results were evaluated.

Keywords: Dehumidification, Desiccant, Exergy, COP

Evaluation Of Different Soil Management Strategies Regarding To Pest Population

Burak Polat[a*], Anil Cay[a], Arda Aydin[a]

[a]Canakkale Onsekiz Mart University

*bpolat@comu.edu.tr

Abstract:

Most of the pests have a negative impact on crop growth and yield. Thus, the predators need to be increased or protected in soil to control pest population under economic threshold by using bio-intensive soil management approaches. Using of chemicals as one and only choice for eradication of pest problems has been enormously criticized due to many reasons. For instance, negative impact of these pesticides on non-target organisms including natural predators and parasitoids of different insect pests, their high toxicity to environment and human beings and the rapid development of pesticide resistance in insect pests and disease pathogens are the most peculiar scenarios. Therefore, the first purpose of this study is to share with interested researchers that the non-chemical pest control applications and some examples. The second purpose of this study is to submit of attention to scientists who interested in pest management with non-chemical techniques, which are not used yet in developing countries. Additionally, it was aimed to start discussions on the advantages and disadvantages of these systems whether it can be used for integrated pest management (IPM). The adoption of tillage systems can increase predator diversity and reduce the negative effects of urbanisation and pesticides usage. Moreover, bio-intensive tillage strategies can raise habitat quality by supporting predators' diversity more efficiently. In summary, studies demonstrated that tillage and mulch practices in cropping systems influence beneficial insects and weed-plant competition. However, tillage may not be detrimental to epigeal predator assemblages and that it may take multiple years of practicing conservational tillage in a field for the ecosystem services to manifest. Future work should focus on the role of cover crop species with the long-term different tillage practices to increase beneficial pests in agricultural fields.

Keywords: tillage systems, cover crops, predators, habitat quality, pest management

Evaluation of Neural Network Based Prediction Techniques for Water Quality Assessment for Smart Cities

Gurkan Tuna[a], Dogan Savran[a*], Mehmet Kabakan[b]

[a]Trakya University
[b]Kabakan Muhendislik

*dogan.savran@yahoo.com

Abstract:

Smart cities use information and communication technologies to improve availability, quality, reliability, performance and interactivity of urban services. In addition, smart city technologies help to reduce costs and resource consumption and improve contact between citizens and municipalities/government. There is a great interest towards smart city technologies due to their technological, economic and environmental benefits. Water is essential for life, and on average, each person on Earth needs about 20 litres of clean and safe water a day to meet metabolic, hygienic, and domestic needs. Since the quality of our water is directly linked to the quality of our lives, water quality monitoring which can be defined as the sampling and analysis of water constituents and conditions is an essential process. However, the first step of water quality monitoring is the process of collecting a large number of samples; therefore, it takes time and costs money. Also, obtained results can be difficult to interpret. While developing smart city technologies to improve the quality of life of citizens, at the same time the goal should be to make smart city services and networks more autonomous and more sustainable. Accordingly, in this study, a wireless water quality network-based water quality monitoring system for smart cities is proposed. The proposed system collects water quality parameters at specified time-intervals and transfers them to the server. Then, the server periodically runs an artificial neural network-based estimator to predict groundwater quality. The periodic prediction of groundwater quality enables the authorities to take immediate actions for ensuring water quality. Compared to traditional water quality monitoring systems, the proposed system has the advantage of letting the authorities know the quality of their water resources beforehand. A set of performance evaluation studies presented in this paper proves the efficiency and accuracy of the proposed system.

Keywords: Smart cities, groundwater quality, prediction, artificial neural network, wireless networking, rapid assessment

Evaluation of V2V Communication Systems

Gul Fatma Turker[a], Elif Merve Kucukoner[a*], Yasar Kemal Erdogan[a]

[a]Suleyman Demirel University

*elifkucukoner@sdu.edu.tr

Abstract:

Wireless communication technologies are necessity in all areas of intelligent transport systems (ITS). Communication in intelligent transportation systems is allow safe and effective traffic flow with different communication techniques as Vehicle to Vehicle (V2V), Vehicle to Infrustructure (V2I) and Vehicle to Environment (V2X). Specially, Vehicle to Vehicle communication is come to the forefront in today's research. Because vehicle and environment interactions are already being developed as commercial solutions. While cellular networks are generally preferred for V2I applications, ad hoc networks are used as a practical technology in V2V communications. V2V communication is also supported by many technologies such as roadside beacon, on-board antennas, IR beacons, cellular phones with GPS. In 2003, DSRC (Dedicated Short Communication) technology began to be used for V2I and V2V communications. The DSRC 5.850-5.925 GHz frequency band (5.9 GHz) is used as a standard for public safety and special applications. In this study, vehicle to vehicle communication technologies used in ITS are investigated and classified the performance in instant traffic. DSRC technology that requires cost as infrastructure for V2V communication is also discussed. V2V communication applications produce solutions to many problems as Traffic congestion detection, collision warning, automotive and driver safety, instantaneous sharing of vehicle accident situations with the environment.

Keywords: V2V, V2I, V2X Intelligent Transportation System, DSRC, Traffic

Evaluation of Vibration Spectral Values of a Rolling-Element Bearing Used in a Vehicle Inspection Station

Selman Kulac[a*], Suat Saridemir[a]

[a]Duzce University

*selmankulac@gmail.com

Abstract:

Most of the machines used in the industry have rotating parts. The rotating parts are usually mounted on the machine with the rolling bearing. Bearings have an important and critical role because they are constantly working under loads. Bearings of vehicle brake testers used in vehicle inspection stations are an important example for bearings operating under constantly varying loads. Because vehicles with different weights are subjected to vehicle brake tests. In this study, the vibration characteristics of a specific bearing of a vehicle brake test device were examined at specific time intervals. Vibration measurements were made at intervals of 15 days. It has been observed that the sum of peak values above the determined threshold values of the vehicle brake tester rolling bearing in frequency domain increases depending on time.

Keywords: Rolling-Element Bearing, Vibration Measurements, Frequency Analysis

Evaluation of Yield and Agro-Morphological Traits of Sesame Landraces of Different Countries

Cemal Kurt[a*], Halis Arioglu[a]

[a]Cukurova University

*ckurt@cu.edu.tr

Abstract:

Sesame (Sesamum indicum L.) has been described as one of the oldest oilseed plants used by humans. Sesame was grown during the ancient Harappan, Mesopotamian, and Anatolian areas for its edible seed and its oil but now it is grown in more than 60 countries. Sesame seed contains 50-60% oil and 25% protein with antioxidants lignans such as sesamolin, sesamin and Zn, Fe, Mn, Ca. The aim of this study was to determine agronomical and quality traits of some sesame genotypes from different part of world (India, Pakistan, Afghanistan, Greece, Israel, Egypt, Zaire, Mozambique, Iraq, Iran, USA, Russia) and 2 commercial cultivars (Orhangazi-99 and sarisu). The field experiment was arranged in randomized complete block design with three replications at the research farm of Department of Field Crops, Faculty of Agriculture University of Cukurova in 2016. The results of the study showed that the seed yield values varied from 251 kg/ha to 2536 kg/ha. The highest seed yield obtained from Sarisu (commercial cultivar), while the lowest obtained from Egypt landraces.

Keywords: Sesame, yield, agronomic,landraces

Examination of Logging Residues Laid on Skid Trails in terms of Inorganic Nutrients

Yilmaz Turk[a*], Murat Yildiz[b]

[a]Duzce University
[b]Duzce Forest Management Directorate

*yilmazturk@duzce.edu.tr

Abstract:

Production of wood-based forest products in forestry; it causes damages at different rates in the soil, the stand and the product produced. The negative environmental effects caused by skidding activities on skid trails listed in descending order include the physical detrition of the soil, plant retardation, changes in species diversity and degradation of wildlife habitats and activities caused by organic elements and humification of the soil and nitrogen losses due to denitrification. Furthermore, skid trails break trees and saplings on the path also causing trauma and injury. Stream water quality can be affected by the nutrient cycle and water temperature of riparian zones. This is primarily due to sediment flow into drainage systems caused by skid trails. In this study; the logging residues (chip and slash) to improve the forest soil in the skid trails were examined for inorganic nutrients in the soil. As a result of the study, inorganic nutrients except nitrite, nitrate and sulfate were determined to be more abundant in the plots where logging residues was present than in control plots. Thus, it has been determined that soil degradation in the skid trails is favorable in terms of loss of plant nutrients and sediments by laying logging residues.

Keywords: Skid trails, logging residues, inorganic nutrients

Examination of Matrakci Nasuh's Galata Miniature in terms of Cartography

Huseyin Zahit Selvi[a*], Ilkay Bugdayci[a], Gaye Bekiroglu Keskin[a]

[a]Necmettin Erbakan University Geomatic Engineering Department Division Of Cartography

*hzselvi@konya.edu.tr

Abstract:

The map has become very important role throughout the human life. Even during the Ottoman history, it is possible to encounter many products bearing map quality. In particular, the world map designed by Piri Reis is valuable in terms of quality even today. Although both lived in the same period, researchers had more interest to piri reis' maps than Matrakci Nasuh's miniatures. However, while the maps of Piri Reis in terms of marine cartography is crucial, Matrakci's miniatures are valuable in terms of landscape cartography. In this study, Galata miniature designed by Matrakci Nasuh, who drawn miniatures with his own style, examined in terms of cartography. In this context, landmarks such as mosque, tower, etc. in the miniature were compared with maps and Google Earth images obtained by today's technology. In addition, miniature was examined in terms of its geometric and topological accuracy. Results indicated that although geometrical accuracy of the miniature was poor, topological accuracy was good.The map has become very important role throughout the human life. Even during the Ottoman history, it is possible to encounter many products bearing map quality. In particular, the world map designed by Piri Reis is valuable in terms of quality even today. Although both lived in the same period, researchers had more interest to piri reis' maps than Matrakci Nasuh's miniatures. However, while the maps of Piri Reis in terms of marine cartography is crucial, Matrakci's miniatures are valuable in terms of landscape cartography. In this study, Galata miniature designed by Matrakci Nasuh, who drawn miniatures with his own style, examined in terms of cartography. In this context, landmarks such as mosque, tower, etc. in the miniature were compared with maps and Google Earth images obtained by today's technology. In addition, miniature was examined in terms of its geometric and topological accuracy.

Keywords: Historical Map, Matrakci Nasuh, Geometric Accuracy, Topologic Accuracy

Examination Of Wire Electrical Discharge Machining Of AISI S1 (60wcrv8) Cold Work Tool Steel

Omer Bayraktar[a*], Abdulmecit Guldas[a], Mustafa Goktas[a]

[a]Gazi University

*omerbayraktar@gazi.edu.tr

Abstract:

Wire electro-discharge machining (WEDM) is a competitive machining method for cutting hard and conductive materials with electrical sparks. In WEDM, materials were machined roughly in first cutting operation and finished by one or several cutting operations. However, rough cutting process is used as finishing operation sometimes. Using this process as finishing operation makes very difficult to estimate the surface characteristics. Therefore, the effort in obtaining desired surface properties depends on correct selection of the machining parameters. In this study, the effects of machining parameters, such as pulse on time (TON), pulse off time (TOF), flushing pressure (FP), peak current (IP), and spark voltage on surface roughness (Ra), material removal rate (MRR) and the wear of wire electrode have been evaluated. Based on the result of obtained data, analysis of variance was performed for determining the most effective parameter on MRR and Ra.

Keywords: Wire electrical discharge machining, material removal rate, surface roughness, analysis of variance

Exergy Loss Analysis of a Tube with Coiled Wire Inserts

Orhan Keklikcioglu[a*], Toygun Dagdevir[a], Veysel Ozceyhan[a]

[a]Erciyes University

*keklikcioglu@erciyes.edu.tr

Abstract:

In this study, the effect of coiled wire inserts on exergy loss inside a tube was experimentally investigated. The wire inserts were manufactured with an equilateral triangular cross-section and were coiled using a method so that an edge of the triangle is oriented to face the flow direction. Three different triangle side length of 4, 5 and 6 mm were chosen for the experiment. The coiled-wire inserts installed with 1 separation from the inner tube wall and coiled with three different pitch-to-diameter ratios: P/D= 1, P/D= 2 and P/D= 3. A specific method was employed to coil the wires so that an edge of the triangle was oriented to face the incoming air flow. A uniform heat flux was applied to the outer surface of the tube. Experiments were performed for a range of Reynolds numbers from 2851 to 27,732. The experimental results indicated that the Nusselt number increased and the friction factor decreased with decreasing pitch ratio and increasing Reynolds number and wire thickness. The exergy loss values were obtained with using coiled-wire at low Reynolds numbers. The results of the experiments were compared and presented graphically

Keywords: Exergy loss, heat transfer, pressure drop, coiled wire

Experimental Investigation Of The Effect Of Flexibility On Impact Forces During Slamming Events

Bulent Guzel[a*], Fatih Cuneyt Korkmaz[a]

[a]Yildiz Technical University

*bguzel@yildiz.edu.tr

Abstract:

In harsh sea conditions, ships are exposed to various impact forces due to hull-bottom and bow-flare slamming during sailing. These forces cause fatigue and local damages on structures and as a result, whipping may occur. The impact loads may be calculated analytically only if neglecting viscosity, gravity, surface tension, and assuming rigid structure. However, neglecting the effect of flexibility will lead an incorrect approach in calculation of the impact loads, because flexible bodies can absorb some portion of the impact forces depending on the degree of its flexibility. Higher values of Reynolds and Froude numbers have limited effects on the non-dimensional form of motion equations. Thus, slamming events can be simulated as free fall entry tests. For the purpose of carrying drop tests, an experimental set-up consisting of four aluminum legs, a carriage and a water basin was constructed. Test objects are mounted on the carriage attached to the system that allows the test objects entering onto free water surface vertically. Solid-fluid interaction were observed by a high-speed camera as the objects penetrating into water. Cylinders having three different modulus of elasticity were used in the tests. Strain gauges were installed on the surface of the inner side of the cylinders. Five different heights were chosen to compare the various impact forces. Test results has indicated that cylinders with higher flexibility are experienced maximum strain values. In order to compare the strain readings during impacts, first, strain-force graphs were obtained for each cylinder by applying static known forces on the cylinders. Then, impact forces were calculated using these strain-force relations. The non-dimensional slamming coefficient, Cs was calculated for each cylinder at various entrance velocities. The effect of flexibility is shown by comparing these Cs values. The results showed that the lower impact loads were observed in flexible cylinders.

Keywords: slamming, impact force, flexibility

Experimental investigation of the effects of biofouling on ship drag

Bulent Guzel[a*], Huseyin Elcicek[a]

[a]Yildiz Technical University

*bguzel@yildiz.edu.tr

Abstract:

Biofouling occurs on almost any solid surface that is submerged in seawater and creates significant problems on marine vehicles, underwater construction and in ballast systems in ships. Accumulation of biofoulers like biofilm and barnacles on ship hulls increase drag by 20-60 percent resulting in decreasing ship speed by 10 percent and increasing fuel consumption by 40 percent. Thus, reducing build-up of barnacles on ship hulls helps increase ship performance and reduce fuel costs. Surface modification in favor of antifouling is a non-toxic method and can be done by altering surface topography and roughness via hydrophilic or hydrophobic coatings. Hydrophobic surfaces are more preferable in marine industry because of their low friction ability. Studies show that there is a high correlation between resistance to attachment of larger microorganisms and hydrophobicity.

In order to investigate the effect of biofouling and surface modification on hydrodynamic friction, a cylindrical Couette flow setup consisting of an inner cylinder that rotates with an angular velocity within a stationary concentric larger outer cylinder has been used. The experimental setup consisting of two coaxial rotating cylinders are made of acrylic allowing visualization from any direction. The effect of biofouling is simulated with small semisphere plastic marbles attached onto the surface of the inner cylinder. Increase of drag is measured via a torque meter attached to the inner cylinder. The effects of hydrophobicity is simulated via polymer coating on the inner cylinder. Drag reduction due to hydrophobicity is also measured via torque readings. The experiments were carried in seawater at different Reynolds numbers. In this study, first we present the preliminary results of torque measurements from the inner cylinder. Second, we show how the biofouling increases drag. Finally, we present the results from the torque readings to show at what limits the drag reduction realizes due to hydrophobicity.

Keywords: Biofouling, drag, hydrophobicity

Experimental Investigation on the Ballistic Performance of Functionally Graded Plates

Mevlut Hakan[a*], Recep Gunes[a]

[a]Erciyes University

*mevluthakan@erciyes.edu.tr

Abstract:

Composite armors are increasingly used in defense industry for vehicle, vessel and personal protection against to developing weapon technology. Especially, angled armor systems provide high ballistic protection, compared to right-angled armor systems. The reason is that the projectile path through thickness are increased with angled armor whilst keeping the armor thickness constant. Functionally graded materials which combine the stiffness of the ceramic and toughness of the metal have attracted researchers' attention for ballistic applications because of providing structural integrity by decreasing inter-laminar stresses in ceramic-metal interfaces. Therefore, investigation of deformation and damage states of functionally graded plates as angled armor is important for defense industry. The aim of this study is to investigate experimentally normal and oblique ballistic impact behavior of functionally graded plates composed of Aluminum and Silicon Carbide. Ballistic impact tests were carried out for the FG plates impacted at 0º, 15º, 30º, 45º and 60º obliquity by using 0.30 caliber fragment simulating projectiles with a single-stage gas gun system. Functionally graded plates were manufactured at linear composition (n=1) with powder stacking hot pressing method. The ballistic test results showed that damage on front ceramic layer increased and penetration of projectile decreased with increasing angle of FG plate. It is observed that none of FG plates experienced a complete penetration at approximately projectile velocity of 600 m/s.

Keywords: Functionally graded materials, Oblique impact, Ballistic performance

Experimental study on the biokinetics of 137Cs in biota samples

Hasan Baltas[a*], Murat Sirin[a], Goktug Dalgic[a]

[a]Recep Tayyip Erdogan University

*hasan.baltas@erdogan.edu.tr

Abstract:

In this study, uptake and depuration kinetics of radiocesium by the Mediterranean mussel after contamination via the sea water pathway have been studied in controlled laboratory conditions. The uptake and loss kinetics for mussels were followed for 49 and 59 days, respectively. Radiocesium concentrations of the samples obtained during the experiment have been measured employing a germanium (HPGe) detector with high resolution and purity. The steady state concentration factor (CFss) values of 137Cs in the whole body of the large and small size mussels were found to be 32.49 ± 4.41 and 36.17 ± 5.98, respectively. The loss kinetics of radiocesium was described by a two-component exponential model. Biological half-life values of 137Cs in the whole body of the large and small size mussels were found to be 19.25 and 43.31 days, respectively. Also, experimentally radiocesium transition through the food chain to the sea snail was monitored.

Keywords: Uptake, Depuration, Food chain, Mussel, Sea snail, Cs-137

Acknowledgments

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Exploiting Network Protocols for Steganographic Communication

Ali Ilker Kocatepe[a], Merve Orakci[a*]

[a]Gazi University

*merveorakci58@gmail.com

Abstract:

The transmission of data in a discreet manner in order to make it only noticeable to the sender and the receiver is the subject of steganography. In digital media, steganographic techniques usually embed the data into an ordinary file and use common communication channels to send it to the recipient. Such techniques perform steganography in the application layer of the OSI reference model. Nevertheless, the process of data hiding can be further taken into transport, network and even data link layers. In the case of embedding secret data in a file, the steganographic operation is compromised if the stego-file is accessed and successfully analyzed. In network steganography, however, the secret message is hidden into the continuous flow of data in the seems-to-be regular network traffic. An attempt of steganalysis to detect network steganography would require the whole exchanged network traffic to be obtained and examined. Thus, network steganography techniques are harder to be detected than the file-based applications of steganography. This study focuses on the methods which exploit network protocols to hide secret data. Protocols such as TCP, UDP and RTP in the transport layer; IP and ICMP in the network layer and CSMA/CD in the data link layer are examined for the purpose of steganographic utilization.

Keywords: Data hiding, Network steganography, OSI reference model.

Eye Gaze Tracking Using Computer Vision

Ali Kilic[a*], Sinan Keskin[a], Sadettin Kapucu[a]

[a]Mechanical Engineering Department, Engineering Faculty, Gaziantep University

*akilic@gantep.edu.tr

Abstract:

The localization of eye centers and knowledge of eye movements is becoming important search on human-computer interactions . Getting the knowledge of the small region that the user look on the screen is occasionally a simple and efficient alternative way for use of mouse and touchy things to control the cursor. In addition, this study is specially notable for disabled people that need to use computer. In this study, firstly Viola Jones algorithm is used to obtain eye areas with acquised webcam image on Matlab platform.Then, eye centers are defined using Circular Hough Transform Method. To make the center points more accurate and efficient for an application, A camera calibration algorithm is developed. Finally, Some words are able to type on a virtual screen using eye movements.

ACKNOWLEDGEMENTS

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The authors would like to thank Scientific Research Projects Governing Units of University of Gaziantep for their financial supports.

Keywords: Eye gaze tracking, Human computer interaction

Facile fabrication of Pd monometallic and Pd-Co bimetallic nanoparticles for highly sensitive non-enzymatic hydrogen peroxide sensing

Hilal Celik Kazici[a*], Firat Salman[a], Aykut Caglar[a], Hilal Demir Kivrak[a], Nahit Aktas[a]

[a]Yuzuncu Yil Universtiy

*hcelik@eng.ankara.edu.tr

Abstract:

A new electrocatalyst, Pd and Pd-Co mono and bimetallic nanoparticles decorated multi walled carbon nanotube nanocomposite, was successfully synthesized by a facile, eco-friendly and controllable route. The nanocomposite was immobilized on the surface of glassy carbon (GC) electrode to fabricate a novel and highly sensitive nonenzymatic hydrogen peroxide sensor. The electrochemical behaviors of the prepared sensor were investigated by cyclic voltammetry and differential puls voltammetry. The presence of monometallic and bimetallic NPs in our samples, more available active sites make Pd–Co/MWCNT exhibit better catalytic activity than Pd/MWCNT and one commercially used catalyst. Our technique provides a good platform for designing efficient catalyst materials with different types of active NPs.

Keywords: Non-enzyme, Hydrogen peroxide, Electroreduction, Monometallic, Bimetallic

Failures In Constructed Wetlands (Natural Wastewater Treatment Systems)

Zeki Gokalp[a*], Sedat Karaman[b]

[a]Erciyes Universtiy
[b]Gaziosmanpasa University

*zekigokalp@yahoo.com

Abstract:

Natural treatment systems, so called as “constructed wetlands” are artificial domestic wastewater treatments systems commonly used in rural sections of the country. Constructed wetlands with their low construction, operation and maintenance costs, low energy demands, simple operation and low sludge generation are preferred as an alternative to conventional treatment systems. These systems imitate natural wetlands in specially designed basins including soil, plant and microorganisms to remove the pollutants from wastewaters. These systems are designed and constructed based on various criteria. However, failures are also common in these systems when the design principles were not obeyed fully. Failures are usually observed because of improper site selection, substrate clogging, leakage through the compacted clay liner and sloped sides and various other improper design practices. In present study, common failures in constructed wetlands were assessed and solutions were proposed to overcome such failures.

Keywords: Constructed wetland, water treatment, wastewater, failure, leakage

Fatigue Behavior of RC Beams Strengthened By CFRP Under Simulated Truck Overloading

Houssam Toutanji[a*], Mohammas Al-Qaralleh[b]

[a]Western Michigan University

*houssam.toutanji@wmich.edu

Abstract:

Deteriorated bridges undergo heavy trucks traffic can experience overloading that exceeds its fatigue design limit. The scarcity of research data that investigates the fatigue behavior of reinforced concrete (RC) beams strengthened with externally bonded fiber reinforced polymers (FRP) under overloading motivated this study. The experimental work of this study includes 152.4 × 152.4 × 1500 mm beam specimens strengthened with carbon FRP in the tension face of the beam and tested under simulated truck overloading. The fatigue loading pattern was based on real-life traffic data. However, the induced stress levels were chosen to simulate certain data pulled from literature to evaluate the difference in performance. The available life prediction models in the literature will be discussed and compared with the current experiment results. The deflection and strain results of the specimens will be presented along with overloading effect discussion.

Keywords: FRP, Composites, Fatigue, Overlaoding, Deflection, Bridges, Reinforced Concret

Fault Detection And Pitting Level Classification In Helical Gearbox By Examining Frequency Spectrum

Rafet Can Umutlu[a], Berkan Hizarci[a], Hasan Ozturk[a], Zeki Kiral[a*]

[a]Dokuz Eylul University

*zeki.kiral@deu.edu.tr

Abstract:

The gearboxes are most commonly used equipments in mechanical systems among mechanical power transmission systems, and they provide transfer speed and torque from a rotating power to another device in the desired ratio and at a high efficiency. However, high friction, low lubricant film thickness and high stress of tooth surface generally cause pitting faults on the gear tooth surface which deteriorates the performance of gearboxes. Detection pitting fault and identifying different pittinglevels arechallengingsubjects in gearfault detection. This study aims to propose a method to classify the different levels of pitting fault in helical gearbox. It is known that gear defects illustrate themselves in vibration signal at gear mesh frequency (GMF) and its harmonics. GMF is the rate at which gear teeth mate together in gearbox. In the event of gear defects, the amplitudes of these frequencies increase. Besides, the increases also change with severity of gear defects. Therefore,these increases in frequency spectrum are one of the strongest indicators ofgear defects.In this study, the applied method, frequency component based statistical analysis, calculates the RMS values of the amplitudes of the GMF and its harmonics within a certain bandwidth in order to detect these increases in the frequency spectrum. For this study, experiments were carried out on a helical gearbox and artificial pitting defects were created on five helical gear teeth with different severity. The vibrations of the gearbox are obtainedwith the aid of accelerometer and NI 6036E ADC card.Results of the method show increasing trend from No fault to Fault 3 condition.Consequently, the pitting fault is detected and different pitting levels are classified with this method.The experiments prove that the method is beneficial for detection of pitting failures on helical gearboxes.

Keywords: Helical gear, Pitting detection, Vibration, Spectrum analysis,

Feeding Of Flaccisagitta Enflata (Grassi, 1881) In Coastal Area Of Iskenderun Bay (Northeastern Mediterranean Sea)

Tuba Terbiyik Kurt[a*], Sevim Polat[a], Sinan Mavruk[a], Gurkan Akbulut[a], Haluk Yilmaz[a]

[a]Cukurova University, Faculty Of Fisheries

*tterbiyik@cu.edu.tr

Abstract:

Chaetognaths are generally abundant marine animals and comprise an important proportion of carnivorous zooplankton. Flaccisagitta enflata is one of the most important contributors and is a generally dominant species among chaetognaths in Mediterranean coastal ecosystems. In this study, we aimed to characterize the feeding and diet composition of the most common pelagic chaetognath species, F. enflata. This study was conducted at three coastal stations in the western part of Iskenderun Bay in three periods (October and December 2016 and March 2017). Zooplankton samples were collected using a WP-2 zooplankton net with a 200µm mesh size. Among the total chaetognaths, F. enflata was the most abundant species in all sampling periods and its proportion varied between 42–94%. Younger stages (I and II) of F. enflata dominated the population. In total, 1663 specimens were examined, but only 185 prey was found in their guts. The total of food-containing ratio (FCR) and the number of prey items per chaetognath (NPC) for this species were 0.1 and 11%, respectively. These values varied according to sampling periods and maturity stages. Most food items were unidentified due to digestion process. Copepods were the main food resource (37%) for this species, including the genera Oithona, Microsetella, Centropages, Oncaea, Euterpina, Paracalanus, copepodits, and nauplii. Cannibalism was also observed during the study.

This study is the first description on the feeding of F. enflata in the coastal area of Iskenderun Bay, and results of the present study show that the feeding ratios are within the ranges reported for other regions of the Eastern Mediterranean Sea.

Acknowledgement: The present work was supported in the Cukurova University for Scientific Research Project (project number FBA-2016-7080).

Keywords: Flaccisagitta enflata, copepod, FCR, NPC, Iskenderun Bay

First-principles electronic, magnetic, elastic and vibrational properties of Ru2MnGa alloy

Abdullah Candan[a*], Mustafa Ozduran[a], Salih Akbudak[a], Osman Ornek[a]

[a]Ahia Evran University

*cndn14@gmail.com

Abstract:

Using the first-principles plane-wave pseudopotential method within the generalized gradient approximation framework based on density functional theory, we have investigated the electronic structure, magnetic and elastic properties of the Heusler alloy Ru2MnGa. Band structure and density of states calculations are carried out for Ru2MnGa. The elastic properties were calculated by using the stress-strain method, which shows that the L21 phase of this alloy is mechanically stable. The presented phonon dispersion curves and phonon DOS confirms that this alloy is dynamically stable.

Keywords: Heusler-type alloys, Density functional theory, pseudopotential, phonon

Fixed point results for admissible mappings on quasi metric spaces

Ishak Altun[a*], Murat Olgun[b], Ozlem Acar[c]

[a]Kirikkale University
[b]Ankara University
[c]Mersin University

*ishakaltun@yahoo.com

Abstract:

The purpose of this talk is to present a fixed point theorem for α-admissible mappings for F-contractions on Hausdorff left K-complete quasi metric spaces. We also give the left M-complete version of this result. Finally, we provide some illustrative examples.

Keywords: Fixed point, quasi metric space

Fluid-Solid Interaction On Wind Turbine Blades

Ferit Yildiz[a], Anil Can Turkmen[b*], Cagatay Yildiz[c], Cenk Celik[c], Halil Ibrahim Sarac[c]

[a]Gebze Technical University
[b]Lund University
[c]Kocaeli University

*anilcan.turkmen@hotmail.com

Abstract:

In this study, the blade of a wind turbine is analyzed as a fluid-solid interaction problem. The selected parameters are commonly used in industries; therefore the results of the analyzes will be realistic and concrete. The initial conditions of this study are set according to the weather conditions in Turkey. The location was chosen as a zone where the wind turbines were frequently built. Thus, helps to define real parameters for more realistic results.

One of the most seen problems are breaking of wind turbines. The tension on the blades, which is produced by the wind, has a critical importance for the design. The shape, length, material etc. must be satisfy the applied the forces. At this point, the resistance of the generator in the wind turbine has also a very important impact on the design of the blades. To prevent from breaking, composite materials (CF+GF, GF+Al, CF+AF etc.) were used as blade materials. Combine of such materials will lead to lightness, durability, strength and efficiency.

The Ansys software is used for the analyzes of this fluid-solid interaction problem. The bending stresses seen on the blade will be compared due to the length and material. As mentioned before, selected parameters are commonly used in wind turbine industry. These parameters are selected, so that the results can be drastically seen.

Keywords: Wind turbine durability, structural analysis, CFD, composite materials, fluid-solid interaction

Forced Vibration Analysis of Non-uniform Piezoelectric Rod by Complementary Functions Method

Durmus Yarimpabuc[a], Mehmet Eker[b*], Kerimcan Celebi[c]

[a]Department Of Mathematics, Osmaniye Korkut Ata University
[b]Departmant Of Mechanical Engineering, Osmaniye Korkut Ata University
[c]Adana Science And Technology University

*mehmeteker@osmaniye.edu.tr

Abstract:

Piezoelectric materials, which have fast response and low energy usage features, are widely used in sensors and actuators. Due to active role in their working principle, it is important to know the vibration characteristic of piezoelectric materials. Forced vibration analysis of non-uniform piezoelectric isotropic rod with the consideration of mechanical and electrostatic equations together result in governing equation with variable coefficient. Analytical solution of such equation can not be obtained except for simple cross-section area. Numerical approaches must be perform to solve the problem. Numerical model of the forced longitudinal vibration of non-uniform piezoelectric (PZT-4) fixed-free supported rod are obtained in the Laplace space and then solved numerically by Complementary Functions Method (CFM) for arbitrary cross-section area under load functions. Solutions were transformed from Laplace domain to the time domain by applying modified Durbin's procedure. The technique is validated for simple cross-section area results that can also be solved analytically. Numerical examples are given to show the effect of an arbitrary geometry on the dynamic characteristics of the rod.

Keywords: Forced Vibration, Piezoelectric rod, Laplace transform, Complementary Functions Method

Forging Analysis Of AA2014 Alloy Under Different Conditions By Using Finite Elements Method

Ersin Asim Guven[a*], Eser Yarar[a], Sedat Karabay[a]

[a]Kocaeli University

*asimguven@kocaeli.edu.tr

Abstract:

Aluminum alloys are widely used in many areas such as aviation, aerospace, computers and health. For that reason it is very attractive to investigate forging character of aluminum alloy.

In this study, the forging process was modeled to understand the plastic deformation characteristics of AA2014 alloy by Deform-3D package program. A die model was designed for the forging process and the stress and strain changes were investigated for the different regions of the forged workpiece, in order to determine the suitable forging conditions without forging defects. Also the effect of the temperature on the mechanical properties was evaluated. According to the results, hot forging was observed more suitable for AA2014 alloy under specified conditions, rather than cold forging because of some defects and cracks.

Keywords: AA2014, Forging, Finite element method

Fractional Order Controller Design For a DC Motor

Huseyin Oktay Erkol[a*]

[a]Karabuk University

*oktayerkol@karabuk.edu.tr

Abstract:

In this study, an integer order PID and a fractional order PID controller are designed for achieving high performance and made a performance comparison between them. The controllers are designed as speed controller for a DC motor and simulated by the MATLAB program. The integer order PID is the conventional form of the PID controller and widely used in industry and commercial systems by help of its acceptable performance. On the other hand, a fractional order PID has more degrees of freedom. An integer order PID has three parameters (Kp, Ki, Kd) and a fractional order PID has two additional parameters (mu and delta) that effect the controller characteristic. Fractional order PID has better time and frequency response due to the additional parameters. In addition to this advantage, it has also a disadvantage about the tuning processes. It has five parameters to tune and finding the optimum values is more difficult than the integer order PID with the three parameters. Artificial bee colony algorithm, one of the popular optimization algorithms, is used to overcome this problem. Both of the controllers are tuned identically by Artificial Bee Colony algorithm. The Integral Absolute Error function is used as the objective function. The study shows that the fractional order PID controller has less overshoot and short settling time than the integer order PID controller.

Keywords: Fractional order PID, Artificial Bee Colony, DC motor, speed control

Free Vibration Analysis of Multi-span Timoshenko Beams on Elastic Foundation Using Dynamic Stiffness Method

Baran Bozyigit[a*], Yusuf Yesilce[a]

[A]Dokuz Eylul University

*baran.bozyigit@deu.edu.tr

Abstract:

In this study, the exact first five natural frequencies of three-span Timoshenko beams on Winkler foundation are calculated using dynamic stiffness formulation. Different elastic foundation spring constants and different beam cross-sections are used to reflect their effects on natural frequencies. Moreover, the natural frequencies are also calculated via structural analysis software SAP2000 and tabulated with exact results. It is seen that the influence of elastic foundation spring stiffness in inner span is high in comparison with outer spans. The cross-section of the beam plays an important role on natural frequencies of multi-span Timoshenko beams on Winkler foundation.

Keywords: Dynamic stiffness, free vibration, multi-span Timoshenko beam, Winkler foundation

Freeze Thaw Effects On Consolidation Properties Of Xanthan Gum Treated Kaolin

Irem Bozyigit[a*], Hande Ozenc[a], Taylan Gunay[a], Perviz Ahmedzade[a], Selim Altun[a]

[a]Ege University Civil Engineering Department

*irem.kalipcilar@ege.edu.tr

Abstract:

Nowadays, ground improvement methods are generally used to provide required engineering properties in weak soils. However, some ground improvement methods can be harmful for environment. Hence, eco-friendly ground improvement methods are recommended to prevent from pollution. Biopolymers such as xanthan gum are natural and eco-friendly additives for stabilization. Xanthan gum is a polysaccharide secreted by the bacterium Xanthomonas campestris. In this study, consolidation properties of kaolin with xanthan gum addition were investigated under freezing-thawing. Firstly, index properties and optimum water content of kaolin were determined. Specimens were prepared with 1% xantham gum by dry weight of soil and compacted using standard proctor energy at optimum water content. A dimension of 20x62 mm was selected. After 7 days curing period, specimens are subjected 10 freezing thawing cycle and one freezing- thawing cycle was occurred between -18°C and 21°C. Then, consolidation tests were performed in order to observe alteration of coefficient of consolidation and hydraulic conductivity. Some fractures were determined on the surface of some specimens after the freezing- thawing process. The results showed that the coefficient of consolidation increased with freezing-thawing cycles.

Keywords: Xantham gum, kaolin, eco-friendly ground improvement

FT-IR And Raman Characterization And Theoretical Vibrational Spectroscopic Study Of N,N-Dimethylaniline By Using Dft

Berna Catikkas[a]*

[a]Department Of Physics, Faculty Of Arts And Sciences, Mustafa Kemal University

*agberna@yahoo.com

Abstract:

Vibrational spectroscopic investigation and vibrational parameters of electronic ground stated a monoazo disperse dye have been carried out based on observed and theoretical Density Functional Theory (DFT) calculation results. Molecular structure analysis of a monoazo disperse dye, N,N-dimethylaniline (DMA) molecule was investigated by Arslan et al. [1]. In this study, FT-IR spectra were recorded in the region 350-4000 cm-1 and Raman scattering signals were detected 785nm near infrared diode laser (1200 lines/mm) range from 0 to 2085 cm−1. Infrared and Raman frequencies of the DMA and its fundamental modes were calculated by using the B3LYP/6-31+G(d,p) level. The scaled-quantum mechanical (SQM) [2] calculations have been performed by using anharmonic frequencies and experimental data. The comparison between the experimental and the calculated vibrational bands provide valuable information for the understanding DMA molecule and have a very good fit to the experimental ones.

Acknowledgement: I thank to Zeynel Seferoglu for his support giving permission to use the material, N,N-dimethylaniline. This study was supported by the Research Foundation of Mustafa Kemal University Project No: 15109. I would like to thanks the Gazi University for providing Gaussian 09W Software. The numerical calculations reported in this paper were performed at TUBITAK ULAKBIM, High Performance and Grid Computing Center (TRUBA Resources).

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Keywords: Density Functional Theory, Raman Spectra, Infrared Spectra

Functional Candy Food As A Natural Defender Against Dental Caries For Children

Evren Altiok[a*], Ceyhun Kasapoglu[b]

[a]Giresun University
[b]Gumi Food Company, Main Producer Of Gummy Candy In Turkey, Esenyurt-Istanbul

*evrenaltiok@gmail.com

Abstract:

Despite great improvements in oral health in several countries, oral health problems still persist, particularly among underprivileged groups in most of the countries. Early childhood caries (ECC) is a virulent form of dental caries that can destroy the primary dentition of toddlers and preschool children.

ECC is an infectious disease, and Streptococcus mutans and Candida albicans are the most likely causative pathogenic microorganisms. Primary oral colonization by S. mutans coupled with caries-promoting feeding behaviors results in accumulation of these organisms, which in turn leads to rapid demineralization of tooth structure. Food industry should have role to design and to serve new functional products, having functional and preventive role on ECC, to the children; of course within the consumer preferences and acceptances. Gummy candy is a unique irresistible candy; in manufacturing, flavors, lubricating agents, and shine enhancing agents are added to formulations to achieve desirable and attractive products. In this study, cinnamon oil was preferentially used as a lubricant and shine enhancing agent aiming to achieve natural, functional, and preventive product against ECC. Cinnamon bark oil was extracted by steam distillation. After quantitative characterization of cinnamon oil by GC, antioxidant activity and antimicrobial effectiveness were measured. Minimum inhibition concentration_(MIC) of cinnamon oil was determined against S. mutans and C. albicans. Cinnamon oil incorporated product was analyzed against S. mutans and C. albicans causative plaque in vitro. Finally, sensory evaluation tests were performed with children and their plaudits were determined. GC analyses of cinnamon oil showed that trans-cinnamaldehyde was the main component of the oil(%71.69). It also showed significant antioxidant capacity as 67.96TEAC. MIC concentrations were found as 64 and 32ug/mL against S. mutans and C. albicans, respectively. Final gummy product promoting 7.8 point Hedonic Scale was very successful to prevent plaque formation by inhibiting the pathogenic microorganisms.

Keywords: functional food, cinnamon oil, candy, dental caries

Gap Regeneration Simulation Employing Ellenberg Ecological Values And Realistic Realtime Forest Visualization

Simon Kolmanic[a*], Stefan Kohek[a]

[a]University Of Maribor, Faculty Of Electrical Engineering And Computer Science

*simon.kolmanic@um.si

Abstract:

Gap dynamics is the important part of forests regeneration process. The gaps are generated in the forest canopy when one or more canopy trees die or are removed by the forest managers to induce natural regeneration. The gaps are then slowly closed by younger trees. Gaps involved in forest regeneration are small and their effect on the surrounding is limited. That changes when gaps are created by natural disturbances or the human intervention by clear-cut logging. These gaps are much larger and can considerably influence their surroundings. Therefore it is important to predict the course of gap regeneration or be even in control of it by employing different forest tending actions. This calls for efficient forest management system capable to pass simulation results closer to related ecosystem management specialists such as hydrologists, botanists, and ecologists. Currently forest managers still use decade old or even older forest management systems with limited forest visualisation capabilities. In order to visualize forests and thus efficiently present simulation results to all interested parties stand- alone visualization systems are used together with all their limitations. In this article we present a good alternative to these systems, a simulator ForestMASa, based on Ellenberg ecological values with integrated realistic forest visualization. Ellenberg ecological values give the system the necessary flexibility to include any plant species important for the gap regeneration and thus gap regeneration results true to reality. Beside usual statistical outputs the simulation results in ForestMASa are presented as realistic areal and close-up images. Virtual forest enables a user walk-throughs in real time along with the tree removal and thus interaction with the gap regeneration model. This feature opens the possibility of demonstrating forest tending actions results to wide audience including the policy makers and thus the possibility for more efficient ecosystem and forest management.

Keywords: gap dynamics, forests regeneration, Ellenberg ecological values, simulation, forest visualization

Gap Regeneration Simulation Employing Ellenberg Ecological Values And Realistic Real-Time Forest Visualization

Simon Kolmanic[a*], Stefan Kohek[a]

[a]University Of Maribor, Faculty Of Electrical Engineering And Computer Science

*simon.kolmanic@um.si

Abstract:

Gap dynamics is the important part of forests regeneration process. The gaps are generated in the forest canopy when one or more canopy trees die or are removed by the forest managers to induce natural regeneration. The gaps are then slowly closed by younger trees. Gaps involved in forest regeneration are small and their effect on the surrounding is limited. That changes when gaps are created by natural disturbances or the human intervention by clear-cut logging. These gaps are much larger and can considerably influence their surroundings. Therefore it is important to predict the course of gap regeneration or be even in control of it by employing different forest tending actions. This calls for efficient forest management system capable to pass simulation results closer to related ecosystem management specialists such as hydrologists, botanists, and ecologists. Currently forest managers still use decade old or even older forest management systems with limited forest visualisation capabilities. In order to visualize forests and thus efficiently present simulation results to all interested parties stand- alone visualization systems are used together with all their limitations. In this article we present a good alternative to these systems, a simulator ForestMASa, based on Ellenberg ecological values with integrated realistic forest visualization. Ellenberg ecological values give the system the necessary flexibility to include any plant species important for the gap regeneration and thus gap regeneration results true to reality. Beside usual statistical outputs the simulation results in ForestMASa are presented as realistic areal and close-up images. Virtual forest enables a user walk-throughs in real time along with the tree removal and thus interaction with the gap regeneration model. This feature opens the possibility of demonstrating forest tending actions results to wide audience including the policy makers and thus the possibility for more efficient ecosystem and forest management.

Keywords: gap dynamics, forests regeneration, Ellenberg ecological values, simulation, forest visualization

Generation Of A Multi-Layered Diffusion Coating On An Interstitial-Free Steel

Fikri Erdem Sesen[a*], Omer Serdar Ozgen[a]

[a]Istanbul Technical University

*sesen@itu.edu.tr

Abstract:

Similar to the conventional coating treatments, one diffusion coating treatment can be applied after another one in order to generate multi-layered diffusion coatings, which is the subject of this study. Boronizing (boron diffusion) and titanium diffusion were applied to an interstitial-free steel substrate separately and one after another. Boronizing was carried out in a liquid environment by applying an electric current, but titanium diffusion was performed in a closed chamber containing solid chemicals. The generated single-layered and multi-layered diffusion coatings were characterised by utilising an optical microscope, a scanning electron microscope equipped with an energy dispersive spectrometer, an x rays diffractometer and a Vickers microhardness tester. Some chemical reactions were supposed to occur regarding titanium diffusion process and the standard formation enthalpies of these reactions were calculated by using a database in order to understand the mechanism of titanium diffusion. Microstructural investigations revealed that titanium diffusion was able to be applied after boronizing, causing the formation of a titanium based diffusion layer over the previously generated boride layer. On the other hand, when a titanium diffused substrate was boronized, the titanium based diffusion layer acted as a diffusion barrier to the introduced boron atoms, preventing the formation of a boride layer. However, if boronizing duration and the current density applied during boronizing were increased to a certain degree, boron atoms could surpass this barrier in small quantities and form small discontinuous regions. It was observed that the hardness of a phase which was formed above the boride layer and below the titanium based diffusion layer exceeded 4000 HV in some regions when titanium diffusion was applied after boronizing. The abundance of boron nitride and titanium boride, which were detected in x rays diffraction analyses, was related to this extremely high hardness degree.

Keywords: interstitial-free steel, boronizing, titanium diffusion

Gold Adsorption from Waste Printed Circuit Boards by Modified Orange Peels

Aysun Ozkan[a*], Ece Yapici[a], Zerrin Gunkaya[a], Mufide Banar[a]

[a]Anadolu University Faculty Of Engineering Department Of Environmental Engineering

*aysunozkan@anadolu.edu.tr

Abstract:

In accordance with the continuous development of technology, the products range in electrical-electronic equipment (EEE) sector continues to rise year on year and, and the lifecycle of them is shortened due to the demand of the consumers to the newest and most intelligent devices advocated by powerful systems. As a result of the increase in circulation in the use of EEE, large quantities of waste electrical-electronic equipment (AEEE) mass are formed. Almost every AEEE contain printed circuit board (PCB) as their basic component. They have a significant economic value because of their valuable metal contents such as copper, silver, gold etc. In this study, it was focused on the gold (Au) adsorption from PCB by waste orange peels. In this content, orange peels (OP) were modified by different methods including saponification, hydroxypropylation, acidification and crosslinking in order to increase the adsorption capacity. Firstly, adsorption tests on the Au model solutions were carried out by using the native/modified orange peels to determine the optimum adsorption conditions. Then, PCB was pyrolyzed in a fixed bed stainless steel reactor to remove organic matter in the PCB. After then, metals were leached from the solid product. At the last stage, adsorption studies were realized on leach solution under optimum adsorption conditions. As a result, gold adsorption was obtained from PCB as 70% efficiency with crosslinking modification.

This study was financially supported by the Anadolu University Scientific Research Project Commissions under the Grant no.: 1503F143.

Keywords: adsorption, electronic waste, gold, printed circuit board

Grain Refinement Of AA2014 Aluminum Alloy Using Ultrasonic Vibration

Fahri Vatansever[a*], Ersin Asim Guven[a], Alpay Tamer Erturk[a], Sedat Karabay[a]

[a]Kocaeli University

*fahri.vatansever@kocaeli.edu.tr

Abstract:

In this study influence of ultrasonic vibration on the microstructure of AA2014 aluminum alloy was investigated. In order to determine the effects of ultrasonic vibration on AA2014 an ultrasonic generator, a transducer and a Ti6Al4V sonotrode were used. The ultrasonic generator with the frequency of 19.8 kHz is attached to the sonotrode which is 20 mm diameter and 400 mm length to transmit the vibration to AA2014 alloy melt. AA2014 alloy were melted at 700oC in an electric furnace and ultrasonic vibration was applied to the molten alloy for 5 minutes by dipping the sonotrode into the melt directly in 20 mm depth. Then the molten metal was poured to steel mold and solidified. After solidification, alloy specimens were prepared for microstructure examination. Specimens were also cast and prepared without the effect of ultrasonic vibration to observe the difference between the presence and absence of ultrasonic vibration effect. The microstructure of the cast samples were characterized by an optical microscope. The results show that dendritic microstructure of AA2014 alloy turned into more globular form with the help of ultrasonic effect.

Keywords: Ultrasonic vibration, grain refinement, aluminum alloys, casting

Greenhouse For Mushroom Cultivation

Mustafa Guzel[a*]

[a]Gazi Osman Pasa

*mguzel3838@gmail.com

Abstract:

The result of joining technology and industry to agriculture is; widely using food products are losing naturalness and changing to negative form on human healthy, under economical aim effects. In that the access of information becoming easier and increasing number of conscious consumers, people are directing to choice certain companies and effort to self produce on small agricultural areas such as hobby gardens. No doubt that the culturel mushroom is one of the naturel foods which is rich in terms of protein is taking a place in our meals especially in the last 10 years. But mushroom growing is cannot be done properly because of climate conditions, except Korkuteli / Antalya and Duzce region which has suitable natural air conditions in Turkey. That project targets are; create a greenhouse for mushroom, which has isolated by light and temprature, durability to snow weight and wind with it's aerodynamic outside shape, resistance to corrosion and negative effect of biological factors with plastic construciton system. Also it will be an example and increasing number of greenhouse, therefore new working area may rise and mushroom growing is will be widespread. One of the essential material for mushroom growing, seeds inoculated with spawns, is importing, another one is the growth media compost is providing by certain companies. With the interest of mushroom grows will trigger to produce and spread that necessary materials in Turkey.

Keywords: mushroom , mushroom greenhouse , greenhouse , mushroom farming, natural food.

Growth Characteristics of Lactobacillus plantarum ATCC 8014, Lactobacillus plantarum Lp-115 and Lactobacillus brevis ATCC 8287 in European Cranberrybush Juice added Fermentation Medium

Gizem Ozan[a], F. Yesim Ekinci[a*]

[a]Yeditepe University, Food Engineering Department

*yekinci@gmail.com

Abstract: The effect, on growth of Lactobacillus plantarum ATCC 8014, probiotic Lactobacillus plantarum Lp-115 and Lactobacillus brevis ATCC 8287, of freshly squeezed European cranberrybush (ECB) (Viburnum opulus) juice added to the growth media at different concentration was investigated to understand the growth characteristics of these Lactic acid bacteria (LAB) species in ECB juice containing media. The growth of LAB cultures was monitored at 37 °C during 48 h with automated microplate reader at OD 600 nm in MRS in the absence or presence of different concentrations of (100-50-20-10-5%) ECB juice. Growth patterns and growth kinetic parameters (maximum specific growth rate (μmax), length of lag phase (λ), cell density (ΔOD), doubling time (td)) of all LAB strains were calculated by using modified Gompertz equation. The consumption of the growth-controlling substrate (glucose and fructose) and formation of lactic acid in 5% ECB added cultures was evaluated as a function of time after 0, 4, 8, 10, 24 and 48 h of incubation to understand the relationship between specific growth rate and the concentration of a substrate. ECB juice inhibited the growth of LAB cultures at high concentrations (100-50%). The presence of ECB juice at concentrations 20, 10, and 5% allowed cultures to grow, but did not result significant ($p>0.05$) increase in ΔOD values of all cultures compare to control. However, different than L. plantarum species, L. brevis had higher OD values at logarithmic phase of 5 and 10% ECB added cultures compare to control. Addition of 5-10% ECB juice significantly increased the maximum specific growth rate ($p<0.05$) resulting decrease in lag and doubling time of all cultures. Since the 5% ECB added cultures showed the highest OD values among ECB added cultures and had higher μmax compared to control cultures during fermentation, sugar consumption and subsequent organic acid formation only evaluated for these cultures. The glucose, present in MRS (21.27 mg/ml) and ECB juice (28.59 mg/ml), and fructose from ECB juice (38.74 mg/ml) were consumed simultaneously. Only lactic acid was produced as organic acid and its amounts by cultures of L. plantarum 8014 and Lp-115 were not significantly different between 5% ECB added and control cultures and were found as 42.12 and 40.49 mg/ml for 5% ECB added cultures and 42.10 and 38.28 mg/ml for control cultures, respectively. The addition of 5% ECB juice caused early production of lactic acid (8th h) in L. brevis cultures compare to control cultures (24th h), however, at the end of fermentation, the same amount of lactic acid was produced. The results of this study indicated that all LAB cultures were capable of growing in the presence of ECB juice when low concentrations of ECB juice added into growth medium. Although the addition of 5% ECB juice increased the specific growth rate of the cultures, the sugar consumption and lactic acid production profiles of the cultures remained same. However, the growth mechanism of ECB juice on Lactobacillus strains is still not clear and needs to be studied in future studies.

Keywords: Lactic acid bacteria, European cranberrybush, specific growth rate, lactic acid production

Growth Performance Of Romanov Lambs Raised in Farm Conditions

Memis Bolacali[a*], Mursel Kucuk[b]

[a]Siirt University, Faculty Of Veterinary Medicine, Department Of Animal Breeding And Husbandry, Siirt, Turkey
[b]Yuzuncu Yil University, Faculty Of Veterinary Medicine, Department Of Animal Breeding And Husbandry, Van, Turkey

*bolacali@gmail.com

Abstract:

This research was carried out with 12 lambs at farm conditions. Lambs were weighed and numbered with plastic tags within one day of birth. The lambs were weaned on day 90. After the lambs' birth weights were measured, the lambs were weighed about 30 days up to day 180. To determine LW (live weight), the lambs were left hungry in the evening before the day of weighing. Data on the LW of the lambs on days 30, 60, 90, 120, 150, and 180 were determined through interpolation. Overall, the LWs of all the lambs were 2.73, 7.08, 12.35, 17.98, 22.45, 26.76 and 31.23 kg at days 0, 30, 60, 90, 120, 150 and 180, respectively. The LWs of the male lambs were 3.47, 8.34, 14.34, 20.74, 25.32, 29.40 and 34.14 kg, respectively. The LWs of the female lambs were 2.21, 6.19, 10.93, 16.01, 20.40, 24.87 and 29.15 kg, respectively. It was detected LWs of male lambs to determined higher than female lambs at birth, 90th and 180th days. Additionally, single birth lambs more than twin births. The LWs of birth, 90th and 180th of the single birth lambs higher than twin birth lambs. Consequently, to achieve higher yields should be applied better feeding and management.

Keywords: Romanov, growth performance, lambs

Heat Treatment Application Methods and Effects of Heat Treatment on Some Wood Properties

Halil Ibrahim Sahin[a*]

[a]Duzce University

*halilibrahimsahin@duzce.edu.tr

Abstract:

This study examined the heat treatment methods commonly used in Europe, and changes in some wood properties during heat treatment were investigated. Wood materials can be deteriorated because of many factors, containing fungal activity, insects, and high humidity conditions. For this reason, different methods have been developed to decrease this disadvantage for many years. One of these methods involves thermal treatments. Heat treatment technology is applied commercially using five different methods in Europe. These methods are ThermoWood in Finland, Plato Wood in the Netherlands, Bois Perdure and Rectification in France, and Oil Heat Treatment in Germany. All of the processes use timber and treatment temperatures between 160ºC and 260ºC, but they differ in terms of process conditions, such as the presence of a shielding gas such as nitrogen or steam, humid or dry processes, use of oils, etc. The heat treatment of wood changes its chemical composition by degrading cell wall compounds and extractives. Furthermore, the decrease of equilibrium moisture of wood due to heat treatments leads to an improvement of wood dimensional stability. The swelling decreased between 50% and 80% for beech, poplar, pine, spruce, and birch with treatments at temperatures between 180 to 200ºC in inert gas atmosphere. Although physical properties improve, mechanical properties of wood decrease during thermal treatment at high temperatures. Wood becomes darker, wettability and thermal conductivity decrease, and finishing and the gluing process need special attention.

Keywords: Dimensional stability, heat treatment, methods, thermal conductivity, wettability, wood properties

High Row Spacing Diminish the Yield and some nutrient Uptake of Sunflower Cultivars

Gunsu Barisik Kayin[a*], Hasan Kayin[b], Murat Ali Turan[a]

[a]Uludag University
[b]Bursa Directorate Of Provincial Food Agriculture And Livestock

*gbarisik@uludag.edu.tr

Abstract:

Sunflower (Helianthus annuus L.) is an essential oilseed crop has been grown in Turkey and it has the largest cultivation area among other oilseeds. Row spacing need to be considered for optimum plant growth, nutrition uptake and increase in yield. This study was conducted to determine the effects of row spacing on yield and some nutrients (N, P, K, S, B) uptake of sunflower. Three different row spacing (15 cm, 25 cm, and 35 cm) were constituted with three plant variety (Sanay MR, Oliva CL, and Lg5543 CL). Nutrient contents are significantly decreased with increasing in row spacing. The highest phosphorus content was obtained with Lg5543 CL variety at 15 cm row spacing on the contrary the highest yield was obtained at 25 cm row spacing. It is determined that row spacing has significant effect on yield of sunflower cultivars.

Keywords: sunflower, cultivar, row spacing, some nutrients

Highly Price Micro-Robot Manipulation Tehcniques for Lab-on-a-chip Systems

Huseyin Uvet[a*], Ali Anil Demircali[a], Tunc Kose[a], Yusuf Kahraman[a], Kadir Erkan[a]

[a]Yildiz Technical University

*huvet@yildiz.edu.tr

Abstract:

In this article, we present a micro-robot manipulation technique with high precision positional ability to move in a fluid environment with diamagnetic levitation. Precise (nano) positioning of the levitated micro-robot on the pyrolytic graphite is demonstrated in the liquid. Positioning is achieved by the movement of a "lifter" magnet on the sensitive microstage. Suspended microrobot successfully tracked the identified roots. The surface of the magnet located in the micro robot's body is coated with PDA (Polydopamine) to increase the suitability to the ambient conditions in the liquid for biomedical applications. It is envisaged that the designed micro-robot will be used effectively in high accurate motion required lab-on-a-chip applications. Our study is about controlling micro-robot suspended on pyrolytic graphite with nano-precision via fixed lifting magnets. Purpose of the presented method is to eliminate friction force for between surface of the substrate and micro-robot. Thus, high accuracy motion can be achieved. To observe the movement of the micro-robot, a microscope system was installed in which we can perform 6-axis position adjustment and micro-robot placed on the pyrolytic graphite surface in a liquid container. The micro robot used in the experiment consists of 2 parts as polymer and micro magnet. The polymer portion was produced by UV lithographic methods using negative photoresist film as sacrificial layer -200 microns. Micro-magnet is assembled on the center of the robot after fabrication of polymer body completed. Moreover, Fine and accurate motions were demonstrated by Elliptic, Rectangular and Sinusoidal route which set by the operator successfully

Keywords: Untethered Microrobot, Diamagnetic levitation, Precise magnetic manipulation,

High-Pressure Structural Phase Transformation Of Pbse

Hulya Ozturk[a*], Gozde Gul Arslan[a], Cihan Kurkcu[a]

[a]Ahi Evran University

*hozturk@ahievran.edu.tr

Abstract:

An ab initio constant pressure technique is carried out to explore the behaviour of lead selenide (PbSe) under high pressure. We have studied the structural properties of PbSe using density functional theory (DFT) under pressure up to 200 GPa. For the exchange correlation energy we used the Local Density approximation (LDA) of Ceperley-Alder. PbSe crystallizes in NaCl-type structure with space group Fm-3m under ambient conditions. This structure of this material undergoes a structural phase transformation to CsCl-type structure with space group Pm-3m at 50 GPa. This phase transformation is also studied by total energy and enthalpy calculations.

This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: FEF.E2.17.020

Keywords: PbSe, ab initio, phase transformation

Households' Fuel Consumption Effects on Climate Change Problem in Turkey

Ali Can[a*]

[a]Karabuk University

*drac0312@hotmail.com

Abstract:

The climate system of earth is changing due to high portion anthropogenic greenhouse gases (GHG) emissions from many sources. The sources can be categorized as: energy, industries, solvent and other product use, agriculture and waste. All these sources are continuously emitting emissions and pollute the atmosphere. Approximately 80% of GHG emission is originated from energy consumption. The economy is always showing parallel behavior with energy consumption. Human well-being is also explained by high portion efficient energy usage. Energy is needed for heating, processing, transporting, constructing and so on. Therefore, the energy effects on climate change are unavoidable. The consumption of fuels in households for heating purposes is also emitting considerable GHGs emissions to the atmosphere. In the local consideration of climate change problems, households are one of the main sources that affect the atmosphere. Turkey has started to work on National emission inventories after the ratification of United Nations Framework Convention on Climate Change (UNFCCC) in 2004 and on climate change after the ratification of Kyoto Protocol (KP) in 2009. The effect of climate change in Turkey is an important subject after being Annex I country to the protocol. Although Turkey has not any obligation for the protocol, Turkey has to deal with emission sources and try to decrease their emission levels for national purposes. In this study, the main aim is to determine the direct GHGs emissions from households' fuel consumption and to conclude their effect on climate change. For local studies, these kind of studies are very valuable and helping local authorities to tackle with this important problem.

Keywords: GHG Emissions, IPCC methods, CO2 equivalent, CO2 CH4 and N2O emission

Identification Of Multiple Resistance Gene Sources In Turkish Bean Genotypes To Anthracnose Disease

Harun Bayraktar[a*], Gulsum Palacioglu[a], Vahdettin Ciftci[b], Goksel Ozer[c]

[a]Department Of Plant Protection, Faculty Of Agriculture, Ankara University, Ankara
[b]Department Of Field Crops, Faculty Of Agriculture And Natural Sciences, Abant Izzet Baysal University, Bolu
[c]Department Of Plant Protection, Faculty Of Agriculture And Natural Sciences, Abant Izzet Baysal University, Bolu

*bayraktar@agri.ankara.edu.tr

Abstract:

Anthracnose disease, caused by the fungus Colletotrichum lindemuthianum is an important foliar disease of bean. This pathogen is distributed worldwide and causes important economic losses. Developing host genetic resistance through resistance breeding is the most efficient and cost-effective method to control this disease. The pathogen shows extensive pathogenic variation and gene loci (named Co- gene), conferring resistance to specific races, have been described. Molecular markers are considered as useful tools for determining of different resistance genes and developing of resistance cultivars to the disease. In this study, it was aimed to determine bean genotypes containing multiple resistance genes against this pathogen within bean gene pools in Turkey. Bean genotypes obtained from different studies were examined by molecular markers in terms of multiple or different types of resistance genes. Among bean genotypes tested, eight genotypes have three multiple resistance genes, while two genotypes have four multiple resistance genes. The other genotypes contain only one resistance gene to this pathogen.

This work was supported by TUBITAK-TOVAG Project 115R042 (Turkey)

Keywords: Bean, Anthracnose, Multiple resistance gen, MAS

Immunohistochemical Determination Of Hemopoietic Stem Cells In Experimental Neural Tube Defect

Zeynep Deniz Sahin Inan[a*], Serpil Unver Saraydin[a]

[a]Cumhuriyet University

*zinan@cumhuriyet.edu.tr

Abstract:

Stem cells are cells that begin to appear early in development and play an important role in the development of both nervous and other systems. The anomalies that occur when the neural tube is not closed are known as neural tube defects. The formation of the neural tube defect may depend on many mechanisms and functioning of the gene region from the time the neural tube begins to develop. The incidence of neural tube defects in the world and in our country is very high. For this reason, in order to understand the defect of the neural tube that occurs in humans, generally teratogenic agent is given to experimental animals and necessary information is collected. In our study, CD14 and CD45 hemopoietic stem cell markers were applied to rat embryos where experimental neutral tube defects were formed. Thus, it is aimed to detect these markers during normal and abnormal neural tube formation in embryonic and fetal period. Accordingly, it was observed that CD14 and CD45 increased immunolocalization towards fetal turnover in the control groups. CD14 immunolocalization in the experimental groups with neural tube defects was found to decrease in the embryonic phase in the intensive fetal period compared to the control groups. In experimental groups in which neural tube defects were formed, CD45 localization showed an increase in fetal turnover from the embryonic period to control. These results suggest that the neural tube is normal and utilizes hemopoietic stem cell markers to determine its distribution in the process of defect formation, to understand the proliferation-differentiation mechanisms, and to contribute some to the detection of the pathogenesis of the defect.

Keywords: neural tube defect, hematopoietic stem cells, CD14, CD45, immunohistochemistry

Importance of Apple on Agricultural Development (Karaman Example)

Adem Ozkan[a*], Yusuf Dilay[a], Huseyin Kaya[a], Mesut Kilit[a]

[a]Karamanoglu Mehmetbey Universitesi

*aozkan@kmu.edu.tr

Abstract:

Turkey has an ecology where many fruit species can be grown due to the advantages of the climate zone it is in. The apple, which is one of the temperate climate fruits, is the fruit that is widely cultivated in our country. Apple has been the most talked about fruit species in Turkey in recent years. Turkey is ranked 4th in apple production in the world according to the data of 2016 year. Karaman is located in the terrestrial climate region due to its geographical structure, it is very suitable for apple cultivation. Karaman, on the other hand, is the place where approximately 20% of the hand made in Turkey is produced. Today, even the professions that seem to be the most distant from agriculture adopt apple cultivation. There are many reasons for this. These are the high yields of long walks, the ability to grow easily, and the support of producers by the state. All of this shows that apple is important for the Karaman economy and must be emphasized as an agricultural production factor.

Keywords: Apple, Karaman, Development

Improved GaN Quality by Two Stages Ammonia Flow

Ilkay Demir[a*], Ismail Altuntas[a], Baris Bulut[b], Aliye Alev Kizilbulut[b], Sezai Elagoz[b]

[a]Cumhuriyet University
[b]Ermaksan Optoelectronics

*idemir@cumhuriyet.edu.tr

Abstract:

III Nitride semiconductor alloys or compounds are much attractive since they have excellent chemical and physical properties. Especially Gallium Nitride (GaN) and related ternary and quaternary materials are so important for optoelectronic device applications. Device quality mostly depends on the dislocation density of material which heteroepitaxialy grown on sapphire substrate. Heteroepitaxy of GaN on sapphire substrate brings a lot of problems due to the large lattice mismatch and thermal expansion coefficent difference. Researchers try to improve GaN quality with applying different growth techniques. In this study we have shown the improvement of GaN quality by using two stage Ammonia (NH3) flow.

Keywords: GaN, epitaxial, ammonia

Improving Perimeter Security using Optical Flow and Convolutional Neural Networks

Yusuf Erkan Gorgulu[a], Merdan Ozkahraman[a], Hatice Cetin Gorgulu[b]

[a]Suleyman Demirel University
[b]Mehmet Akif Ersoy University

*yusufgorgulu@sdu.edu.tr

Abstract:

One of the most leading issues among world-wide and especially in our country is to establish a secure perimeter around high priority buildings. There exists closed circuit television (CCTV) surveillance systems and recording facilities which are being operated and monitored by us, humans. An insignificant oversight caused by lack of attention may lead to terrible results. In order to minimize human-related errors and as an early-warning system for the human operators in any movement, computer vision modules can be added to the CCTV surveillance systems. Recently emerging deep learning applications are promising high accuracies in object classification. These applications not only provides binary classification but also they can classify objects in more than one category with some probability percentage; highest being the most likely class. On the other hand, optical-flow methods can be used to detect moving rigid objects among video sequences. In this study, convolutional neural networks (CNN); a subtopic of deep learning, and optical-flow methods are used to develop an assistive computer vision application for the operators to monitor perimeter security. Thus, an assistive software application is developed to detect any movement which may not be noticed by users in multi-monitored systems.

Keywords: Computer vision, CNN, optical flow

Increasing Autonomous Performance Of Unmanned Aerial Vehicle And Decreasing Motion Blur Effect On Aerial Images

Murat Onay[a*], I. Kurtulus Ciklaiblikci[a], Ziya Ozcelik[a], Omer Canga[a], F. Onur Sonmez[a]

[a]Erciyes Univercity

*muratonay@erciyes.edu.tr

Abstract:

In this study, our unmanned aerial vehicle (UAV) flight parameters and position of camera are modified in order to decrease motion blur of aerial images. This modification is made by using “The Bees Algorithm”. In addition, to show the performance of our improvement same trajectory is tried to be tracked via radio control (RC) and blur kernels of aerial images are compared. The blur kernel of images taken by autonomous flight has less vibration than RC flight. This study is gaining more importance with the increasing use of UAVs in the field of Photogrammetry and Remote Sensing.

Keywords: Unmanned air vehicle, autonomous performance improvement, optimisation, bees algorithm, Image deblurring,

Indoor Air Quality Monitoring System Using Raspberry Pi For Energy Efficiency In Classrooms

Deniz Balta[a*], Nesibe Yalcin[b], Ahmet Ozmen[a]

[a]Sakarya University
[b]Bilecik Seyh Edebali University

*ddural@sakarya.edu.tr

Abstract:

Indoor air pollution has become a serious issue for people health. Indoor air quality monitoring system helps to detect unhealthy and low comfort level and improve air quality. This paper discusses a monitoring system that gives real-time information about indoor air quality of classrooms for students' health. The system provides information over the web interface using some components such as CO2 meter, raspberry pi, database and web servers. Air quality parameter like that CO2 concentration, temperature and humidity is gathered from different locations simultaneously and provide them to the raspberry pi which acts as a sink node. The gathered data from the sink nodes is transmitted to the web server and database server. Also the results are displayed on web for clients. The system is developed using open source hardware that has advantage of cost effective, low-power consumption, easy build and maintain.

Keywords: Indoor air quality, monitoring, raspberry pi, web based information system, energy efficiency

Industrial Building Foundation on Problematic Soil: A Case Study

Sedat Sert[a*], Askin Ozocak[a], Ertan Bol[a]

[a]Sakarya University Engineering Faculty Civil Engineering Department

*sert@sakarya.edu.tr

Abstract:

This paper is about the solution of geotechnical problems by using piled foundation and jet grouting technique prior to the construction of an industrial building in Sakarya, Turkey. A one-story factory building was planned to be built and the area covers approximately 8200 m2. After the evaluation of 11 borings (total depth of 220 m) and 5 soundings, it was understood that top layers of the study area consist of high plasticity clays while liquefiable sandy and silty soils, up to 8-10 m, were encountered. Medium or dense sand layer were encountered between the depth of 7.50 m and 12.0 m. Ground water level is at a depth between 1.70 m to 2.00 m below the surface. Soil investigations show that soil improvement was necessary up to 11 m to prevent settlement problems induced by liquefaction. Another option is to use piles under strip foundations. Piles having radius of 60 cm and length of 10 m were calculated to be enough to decrease post-earthquake settlements to acceptable limits. In addition to this problem, because a morphological disorder was observed in the near vicinity of the area just after the 1999 earthquakes, the place of the intended building becomes very important. An exploratory trench, which has a length of 24 m, depth of 2 m and width of 1.50 m, was oriented perpendicular to the disorder to identify the properties of the geomorphological disorder. The difference beyond the trench was determined and the building was decided to be built far enough to the disorder.

After detailed investigation of soils by borings and soundings and observation of the geomorphological disorder, the building was thought to be built safely by determining the foundation place far enough from the disorder and on treated ground improved with high modulus columns.

Keywords: Industrial building foundation, liquefaction, geomorphological disorder, soil improvement, jet-grouting

Influence Maximization In Social Networks: Defining Starting Point Criteria

Aybike Simsek[a*], Resul Kara[a]

[a]Duzce University

*aybikesimsek@duzce.edu.tr

Abstract:

In a social network, influence diffusion is the process of transferring information from one user to another. Maximizing the influence diffusion is an important issue in terms of reaching more users in the network and therefore transmitting the information to the maximum number of users. Some users are more affective in a network than the other and called as influencer users. Influencer users in the network need to be identified so that the influence diffusion can be done effectively. These type of users can influence and guide other users' ideas. Detecting these users can be used in many other areas such as increasing market sales, creating or directing public opinion and conducting research on social behavior. Identification of influencer users is a problem in itself and several criteria have been addressed in the literature for this process. In this study, the criteria in the literature are discussed and the effectiveness of these criteria on the detection of influencer users are summarized. The tips have been given to determine an effective and efficient evaluation metric for social networks.

Keywords: Social Networks, Influence Maximization, Graph Theory

Influence of Aggregate Type on Compressive Strength of Concrete Mixture

Ali Mardani-Aghabaglou[a], Suleyman Ozen[a*], Semsi Yazici[b]

[a]Uludag University
[b]Ege University

*suleymanozen44@gmail.com

Abstract:

In this study, effect of type of aggregate on the compressive strength of concrete mixture was investigated. For this purpose, two type of aggregates as limestone and basalt aggregates were used. CEMI 42.5R type cement was used as binder. The limestone and basalt aggregates were sieved to obtain the same particle size distribution. Three series concrete mixtures were prepared. In the first series mixture, 100% limestone aggregate was used. In the second series mixture, 100% basalt aggregate was used. In the third series mixture, 50% basalt and 50% limestone aggregates were used. In all mixtures, water/cement ratio, cement content, slump and flow values were kept constant as 0.42, 160±20 mm and 450±20 mm, respectively. In order to provide desired slump values a polycarboxylate ether-based high range water reducing admixture was used. The compressive strength of 150 mm cube specimens was obtained at 1, 3, 7 and 28-day ages in accordance with EN 12390-3 standard. In addition, the fresh and hardened unit weights of concrete mixtures were measured in accordance with EN 12350-6 and EN 12390-7 standards, respectively. Test results demonstrated that maximum and minimum compressive strength were observed in the mixtures containing 100% basalt and 100% limestone aggregates, respectively. Similar results were obtained for unit weight values of concrete mixtures.

Keywords: basalt aggregate, limestone aggregate, compressive strength, unit weight

Influence of Different Culture Systems and Hormon Concentrations for In Vitro Mass Microtubers Potato (Solanum Tuberosum L.) Production

Kahraman Kepenek[a*]

[a]Suleyman Demirel University Agriculture Faculty

*kahramankepenek@sdu.edu.tr

Abstract:

In this study, the effect of continuous immersion with supporting net culture systems and aeroponic culture system and, Kinetin and Naphthaleneacetic acid (NAA) concentrations on the induction and development of microtubers number per plant and microtuber number per growing system by in vitro micropropagation was evaluated for Hermes cultivar. The in vitro derived plantlets produced from in vitro plantlets and the plantlets produced from microtubers were cultured on 1/2 Murashige and Skoog (MS) medium supplemented with 2 ppm gibberellic acid, 10 ppm paclobutrazol, 5.0 g/l activated charcoal, 100 g/l sucrose; and as well as Kinetin and NAA in vitro. Liquid medium was distributed to the carrier in vitro continuous immersion with supporting net liquid culture system containing glass wool + filter paper layer as substrate. It was also investigated whether an increase in Kinetin (until 6 ppm) and NAA (1 ppm) concentrations would improve in vitro microtuber propagation and the effect of different doses of Kinetin (2.0, 4.0, 6.0 and 8.0 ppm) and NAA (1.0, 2.0, 3.0 and 4.0 ppm) on in vitro microtuberization. After a 42-day of incubation, on the continuous immersion culture system; the number of microtuber formation was 331.36 and, 5.21 mm diameter of microtuber, 109.36 mg microtuber fresh weight in bioreactor, smaller than <3 mm diameter of microtubers number was 265.05, bigger than >3 mm diameter of microtubers number 192.24 and 7.33 microtuber number per plant at 6.0 ppm Kinetin at in vitro derived plantlets produced from in vitro plantlets. Increasing the NAA supply decreased the microtuber formation number; however, at concentrations of Kinetin higher than 6.0 ppm and NAA higher than 1.0 ppm decreased the number of microtuber formation. Continuous immersion culture system was more suitable and stable for mass propagation of potato microtubers than aeroponic culture system.

Keywords: Aeroponic culture, In vitro tuberization, Immersion culture, Kinetin, Potato, NAA

Influence of Different Long-Term Soil Management Strategies on Some Soil Properties and Sunflower Yield under Semi-arid Conditions

Anil Cay[a*], Sakine Ozpinar[a], Arda Aydin[a]

[a]Canakkale Onsekiz Mart University

*anilcay@comu.edu.tr

Abstract:

The objective of this study was to determine the reaction of three different long-term tillage systems' effects with green manuring on some soil properties and yield at vetch-sunflower rotation under semi-arid north-west Anatolian conditions. Tillage practices in the experimental fields have been carried out since 2001 with winter wheat-vetch rotation following summer maize as secondary crop. Traditional tillage system included mouldboard ploughing following disc harrowing (TTT); the first reduced tillage system (RTT) consisted of rotary tillage and the second reduced tillage system (CTT) was composed with chisel ploughing following disc harrowing. The grain yield was found to be higher in RTT (4.32 Mg ha-1) which was applied near the soil surface comparing with TTT (3.84 Mg ha-1) and CTT (3.31 Mg ha-1). Bulk density determined in 0-10 cm soil depth 1.18, 1.22 and 1.29 for RTT, TTT and CTT respectively. The higher bulk density value was determined at 20-30 cm soil depth in TTT because of side effects of mould board ploughing. Unlike the other systems, penetration resistance values did not exceed 1.6 MPa that is the limit for plant health in RTT. However, saturated hydraulic conductivity value (Ks) was found highest (1.5 cm h-1) at 10-20 cm soil depth in TTT system, RTT system provided the highest Ks in the 20-30 cm soil profile that is very important for the root activity of sunflower. During the 2016 sunflower production period, soil temperature was significantly low in RTT when comparing TTT and CTT systems at 0-30 cm soil profile due to there were more vetch residues near the soil surface in this system. RTT was found as suitable for this semi-arid region in terms of soil properties and grain yield.

Acknownledgement: This work comprise a part of the research project supported by COMU Scientific Research Projects Coordination Unit [FBA -2015-583]

Keywords: Long-term tillage, green manuring, sunflower, soil properties

Influence of Inner Geometry of Pipe Fittings on Pressure Drop in Steady Pipe Flow

Emrah Ozahi[a*], Alperen Tozlu[b], Aysegul Abusoglu[a], Ahmet Ihsan Kutlar[a]

[a]University Of Gaziantep
[b]Bayburt University

*ozahi@gantep.edu.tr

Abstract:

In this study, pressure drop variations through six different pipe fittings for steady pipe flow in Reynolds number range of 1225<Re<9570 were investigated. A pipe fitting is generally used in pipeline systems to connect pipes together, to provide fluid flowing through different sizes and for other purposes, such as regulating or measuring fluid flow. Herein the pipe fittings have different inlet geometries, which connect the exit pipe of the mass flow control (MFC) unit with an inner diameter of 15 mm to the horizontal pipeline with an inner diameter of 26.6 mm. The pipe fittings were basically constructed according to two configurations, based on linearly increase in diameter - straight (with three different fitting lengths) and linearly increase in cross-sectional area - conical (with three different fitting lengths).

It was seen that there was no significant change in pressure drop for using either straight or conical shape pipe fittings at the same fitting length. The considerable variation in pressure drop occurs when the pipe fitting length is changed such that deltaP is 68 Pa and 81 Pa for 53 mm-length and 93 mm-length straight type pipe fittings, respectively at Q=179.83 lt/min. The values of deltaP are 66 Pa and 84 Pa for the 53 mm-length and 93 mm-length conical type (linearly increase in cross-sectional area) pipe fittings, respectively at the same volumetric flow rate. Therefore it can be concluded that the shorter the length possible, the lower the pressure drop occurs independently from the inner geometry for low-diameter pipe installations.

ACKNOWLEDGEMENTS

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Vehicles) energy for their financial supports.

Keywords: Pipe fittings, inner geometry, pressure drop, steady pipe flow.

Influence of Opening Ratio and Position in Infill Wall on Constitutive Law of Equivalent Compression Strut

Onur Ozturkoglu[a*], Taner Ucar[a]

[a]Dokuz Eylul University

*onur.ozturkoglu@deu.edu.tr

Abstract:

Infill walls are widely used in any building to create a separation between spaces intended for different purposes. In general, partial openings exist in infill wall with different opening ratio and position due to architectural considerations, functional needs and aesthetic concerns. In current practice, buildings are considered as bare frames ignoring infills and openings. However, infill walls and partial openings may significantly affect the seismic behavior of structures. Equivalent compression strut model is frequently used in modelling of infill walls for structural analysis. Accordingly, the force-displacement (F-D) relationship of equivalent compression strut is quite important in nonlinear analysis of infilled frames. In particular, opening sizes and position are essential parameters in order to properly constitute F-D relationship of infill wall with openings simulated by means of an equivalent compression strut. In this study, F-D relationship of equivalent compression strut is determined for different opening ratios and positions in infill wall considering three different F-D relationship models available in the literature. The maximum strength of equivalent compression strut and the corresponding displacement, the compression cracking force and the corresponding displacement, the residual strength and the axial compressive stiffness of the strut are compared and discussed for different constitutive F-D laws. It is found that force values of F-D relationships decrease as opening ratio increases. However, displacement values are not effected by opening ratio or position. Furthermore, openings upon the diagonal are more influential on F-D relationships of equivalent compression strut in comparison to other opening positions.

Keywords: Infill wall with openings, opening ratio and position, force-displacement relationship, equivalent compression strut

Influence Of Organic Pva And Inorganic Silica Polymer On Chemical, Thermal And Mechanical Properties Of Microfluidized Nanofibrillated Celllulose Composites

Ayhan Tozluoglu[a*], Bayram Poyraz[a], Zeki Candan[a], Umit Buyuksari[a]

[a]Duzce University

*ayhantozluoglu@duzce.edu.tr

Abstract:

In this study, nanofibrillated cellulose, used in the nanocellulose-based nanocomposite production, was isolated from bleached eucalyptus kraft pulp and then treated with Pulpzyme HC 2500 enzyme prior to high-pressure homogenization in order to lower energy consumption. Afterwards, three nanocomposite films (NC, NC-PVA and NC-Si) have been fabricated using PVA (Polyvinylalcohol) and Silica via the casting method. The chemical characterization and morphology analysis were carried out with FT-IR and Scanning Electron Microscope (SEM). Static mechanical properties were determined with Universal Testing Machine. Thermogravimetric analysis was used to investigate thermal properties.The obtained the FT-IR spectra revealed that some minor shifts were carried out in the nanocomposites. Higher thermal stability was seen in the NC-PVA composite compared to NC-Si by the TGA analysis. The SEM analysis revealed that the NC-PVA composites were much more homogenous and better dispersed because of the compability of the PVA molecules owing to the similar interaction between NC and PVA. Also, crystallinity value of the nanocomposites were decreased after adding the PVA and Silica. The NC-PVA also revealed higher static tensile properties and Young's modulus compared to the NC-Si film. As a result, it was seen that nanocomposites can be easily applied in many industrial area.

Keywords: Nanofibrillated cellulose; PVA; silica; TGA; SEM.

Influence of Tool Pin Profile on Mechanical Properties of 6082-T6 Friction Stir Spot Welds

Hakan Aydin[a], Oguz Tuncel[a*], Mumin Tutar[a], Ali Bayram[a]

[a]Uludag University

*otuncel@uludag.edu.tr

Abstract:

Friction stir spot welding (FSSW) is a recent trend of joining lightweight sheet metals such as aluminum alloys. FSSW is a solid-state welding technique which uses a rotating tool consisting of a shoulder and a pin. The welding tool has two principal functions, which are producing frictional heating and material flow. The welding tool pin profile plays a major role in obtaining desirable weld. Therefore, the present study is performed on AA6082-T6 Al alloy to investigate the effect of pin profile on mechanical properties. In FSSW technique two different tools with the same shoulder diameter and concave shape but different pin profile, which are threaded cylindrical pin and threaded conical pin were used in this study. Also, dwell time was varied to determine the effect of the process parameter on lap-shear separation load. Tensile shear tests were carried out to find the weld static strength. From the experiments, the effects of pin profile and dwell time on FSSW formation and joint strength was determined.

Keywords: FSSW,Pin Profile,6082-T6,Mechanical Properties

Inhibition Mechanisms Of Some Heavy Metal Couples On Gst Activity Of Pine Needles

Can Yilmaz[a*], Ebru Saatci[b], Metin Konus[a], Arif Kivrak[c]

[a]Department Of Molecular Biology And Genetics, Faculty Of Science, Yuzuncu Yil University
[b]Erciyes University, Faculty Of Arts And Science, Department Of Biology, Kayseri, Turkey
[c]Department Of Chemistry, Faculty Of Science, Yuzuncu Yil University

*cyilmaz@yyu.edu.tr

Abstract:

In this study, coupled inhibitory mechanisms of 6 different heavy metal ions on total glutathione S-transferase enzyme activity were examined by needle homogenates of Pinus brutia Ten. (Turkish redpine) which is a pine species specific to Turkey. For three concentrations of CDNB (0,50 mM, 0,75 mM, 1,0 mM), the effects of three mix-combinations (2A+B, A+B, A+2B) of four heavy metal couples (Ni+2-Cd+2, Ni+2-Zn+2, Pb+2-Cu+2, Pb+2-Hg+2) were measured. For Ni+2-Cd+2, Ni+2-Zn+2, Pb+2-Cu+2, Pb+2-Hg+2 couples with the {2A+B/A+B/A+2B} order; {partially uncompetitive (Ki : 69,9 mM) / partially uncompetitive (Ki : 58,7 mM) / fully noncompetitive (Ki : 530,3 mM)}, {partially mixed (Ki : 34,5 mM) / partially mixed (Ki : 23,2 mM) / partially mixed (Ki : 72,3 mM)}, {partially noncompetitive (Ki : 123,9 mM) / fully uncompetitive (Ki : 360,1 mM) / irreversible (Ki : 32,1 mM)}, {fully uncompetitive (Ki : 316,1 mM) / fully competitive (Ki : 117,6 mM) / irreversible (Ki : 8,6 mM)} models were stated, respectively. Coupled effect results, which were the first in the literature, demonstrated that the relationship inbetween the concentrations of the ions were determinative in inhibition model that they created together.

Keywords: Glutathione S-transferase, heavy metal, inhibition mechanism, coupled effect

Interactive Effects Of Salt And Drought Stresses On Photosynthetic Characteristics And Physiology Of Tomato (Lycopersicon Esculentum L.) Seedlings

Selda Ors[a], Melek Ekinci[a*], Ertan Yildirim[a], Atilla Dursun[a], Ustun Sahin[a]

[a]Ataturk University

*ekincim@atauni.edu.tr

Abstract:

Drought and salinity are the most common coexistent abiotic stress factors, which affect crop yield and productivity from the first stages of plant development. Evaluating plant establishment under drought, salt or co-occurring stresses might enable to better management of plant production for stabilizing yield. For this reason, we analyzed salinity and drought stress responses and their interaction together on tomato seedlings with 3 different irrigation waters at different salt doses (S0: 0, S1: 100 and S2:150 ml NaCl). Drought treatments were applied according to 100 % (D0; control), 75 % (D1) and 50 % (D2) of the water required reaching the field capacity. The effects of salt, drought and their interactions on physiological and photosynthetic properties of tomato seedling were statistically significant. The photosynthesis, stomatal conductivity, chlorophyll content, plant dry weight decreased with increased salt and drought treatments. However, plant dry matter, and electrolyte leakage (EL) of the leaves increased with salt and drought. The relative fresh weights of the tomato seedlings were decreased 67% with 150 ml NaCl (S2) and decreased 69% with severe drought at D2 level. However, interactive effects of these two treatments together (S2D2) caused 80% decrease in fresh weight. This results show that salinity and drought effects on tomato seedlings were less detrimental for plant establishment than additive effects of individual stresses.

Keywords: abiotic stress, stomatal conductance, water stress, Lycopersicon esculentum L., chlorophyll

Internet of Things and Intelligent Systems in Digital Learning

Mahir Oner[a], Ceren Oner[a], Onur Dogan[a*]

[a]Istanbul Technical University

*onurdoganmail@gmail.com

Abstract:

Current global competition forces educational institutions to cope with the difficulties such as increasing costs and decreasing number of resources. Thus, educational institutions are prone to focus on value creation based activities and naturally, digital learning should be adopted more commonly in institutions, companies especially improving learning activities. Recently, value creation based education could be reached as the form of tracing, controlling, optimizing and autonomy of activities that is named as, Internet of Things in digital learning, the next generation of education. In this study, opportunities and threats of digital learning are explained within the concept of the relationship between big data analytics, smart platforms and teaching assistants, Internet of Things and cloud systems. Additionally, further improvements are outlined with respect to the developments in information systems.

Keywords: Big data management, Digital learning, Internet of things

Internet of Things for Public Safety: Creating Safe Places to Live in Urban

Hakki Soy[a*], Yuksel Celik[b]

[a]Necmettin Erbakan University
[b]Karabuk University

*hakkisoy@konya.edu.tr

Abstract:

Nowadays, the Internet of Things (IoT) concept has received a greater attention among researchers in academia and industry due to its potential to change daily human life. IoT is used to connect embedded devices to the internet through wired and wireless networks. On the other hand, real-time surveillance of humans in an urban environment is becoming increasingly important in the context of public safety. The advance of the IoT has expanded the scope and capabilities of camera networks, which now can be used as intelligent platforms to provide public safety. In this paper, the aim is to present the interdisciplinary applications at the intersection of IoT and camera networks.

Keywords: Internet of things, camera networks, public safety

Internet-Based Control Of Electric Motors With Arduino

Kubilay Tasdelen[a*], Vusal Ibrahimli[a]

[a]Department Of Electric-Electronics Engineering, Faculty Of Technology, Suleyman Demirel University

*kubilaytasdelen@sdu.edu.tr

Abstract:

The control methods of systems through technology are also developing rapidly. A control that is very difficult in the past is now easier and most important is made much more economical. With the widespread use of the Internet and the increased speed of connection, systems can be controlled and monitored over the Internet. Many people want to remotely control the machines at workplaces using the internet and to monitor their workplaces on the internet at the same time. In this study, step, servo and direct current (DC) motors are controlled via internet. In addition, the operation of these motors has been monitored over the internet. An arduino card was used to control the motors. The user interface was developed using the C # program.System can be controlled and monitored via an online device for 7 days / 24 hours.

Keywords: Arduino, Internet Based Control, Motor Control

Investigation And Identification Of Papillomavirus Infection In Various Cell Lines

Zeynep Akkutay-Yoldar[a*], Tuba Cigdem Oguzoglu[a], Firat Dogan[b], Veysel Soydal Ataseven[b]

[a]Ankara University,Faculty Of Veterinary Medicine, Department Of Virology
[b]Mustafa Kemal University, Faculty Of Veterinary Medicine, Department Of Virology

*akkutay@ankara.edu.tr

Abstract:

The viral agents belongs to family Papillomaviridae, leads to tumoral formations in some animal species and make latent infection. It is known that Bovine Papillomaviruses (BPVs) in this family could cause cross-species infections. Cell cultures are essential for an in vitro research, such as virus isolation, vaccine, tissue engineering and toxicity testing. However, cell line contamination leads to significant problems for several researchers using cultured cells. In this study, possibility of PV as a cell culture contaminant was investigated. For this purpose cell lines of different species were examined for PV DNA by PCR. In one of 27 cell lines was shown to contain PV DNA extracted from equine dermis (ED) cells. This PCR product was purified and sequenced. Partial sequence analysis based on L1 gene showed that this strain was found closely related to BPV-1. This study is the first report on the presence of BPVs as a viral contaminant in cell cultures as we known.

Keywords: BPV, cell culture, contamination

Investigation And Statistical Analysis Of Cutting Force In Machining Of AZ91 Magnesium Alloy

Omer Asal[a*], Hakan Dilipak[a], Faruk Mullaahmetoglu[a]

[a]Gazi University

*omerasal@gazi.edu.tr

Abstract:

Magnesium is a material with a high risk of ignition at high temperatures. In this study performed, AZ91 Magnesium alloy is machined in the CNC lathe with different cutting parameters. The effects on cutting force of cutting parameters are investigated. The experiments were carried out under dry cutting conditions at the constant cutting speed 512 m/min with uncoated tools. Experiments have been performed by chip removing with the three different cutting depths (1, 2 ve 3 mm) and the three different feed rate (0.1 , 0.2 and 0.3 mm/rev) from cylindrical material of ⍰92x300 mm size. The variance analysis was practiced on the test results and the effect ratios of the cutting parameters were determined. Regression analysis was performed to obtain the model. As a result, it was determined that cutting depth is a more effective parameter on the cutting force.

Keywords: AZ91, Magnesium alloys, machinability, cutting force, regression analysis, ANOVA

Investigation And Statistical Analysis Of Surface Roughness In Turning Of Az91 Materials

Omer Asal[a], Hakan Dilipak[a*], Faruk Mullaahmetoglu[a]

[a]Gazi University

*hdilipak@gazi.edu.tr

Abstract:

Magnesium and its alloys have very good machinability. In this work, it have been investigated that affecting of the feed rates and cutting speeds values on the surface roughness. For this purpose, Walter CNMG 120412-NRT WS10 uncoated tools have been used as cutting tools. The experiments were carried out at CNC lathe and under dry cutting conditions. The chip removal were carried out at a constant cutting depth of 2 mm. Three cutting speeds (200, 320 and 512 m / min) and three different feed rate (01, - 0.2 and 0.3 mm / dev) as cutting parameters were specified. For the test results, the variance analysis was performed so that the effect ratios of the parameters were determined. Regression analysis was performed to obtain the model. As a result, it was determined that the feed rate on the surface roughness is the most effective parameter.

Keywords: AZ91, Magnesium alloys, machinability, surface roughness, regression analysis, ANOVA

Investigation Effect of Liquid Glass on Leaching Performance of Wood Materials Stained by Pomegranate skin (Punica garnatum L.) Extracts

Osman Goktas[a], Sevil Yeniocak[a*], Mehmet Yeniocak[a], Mehmet Ugurlu[a], Mehmet Colak[a]

[a]Mugla Sitki Kocman University

*myeniocak@mu.edu.tr

Abstract:

The aim of this study is to develop durable natural colorant and liquid glass for the surface of wooden products and determine their desorption performance by leaching method. For this purpose, natural colorant was extracted from pomegranate skin (Punica garnatum L.) by ultrasonic-assisted method and mordant with ferrous sulfate (Fe2(SO4)3.7H2O), aluminum sulfate (KAl2(SO4)3.18H2O), and vinegar (CH3COOH). Wooden blocks were prepared from chestnut (Castanea sativa Mill.), mahogany (Khaya Ivorensis) and Scots pine (Pinus sylvestris L.). Immersion and ultrasonic assisted methods were utilized for application of the dyestuff on the wood blocks. Leaching test application conditions included temperature (22 °C), pH (3, 7, and 11) and agitating speed (120 rpm). The results showed that the leaching performance of some tested samples increased by % 57,06 due to liquid glass.

Keywords: Natural dye, Pomegranate skin (Punica garnatum L.), Liquid glass, Leaching

Investigation Of Adsorption Characteristics By Activated Sludge Biomass Of Paracetamol Found In Wastewater

Ayse Erkus[a*], Fatih Sevki Erkus[a], Tuba Bayram[a], Mehmet Turkmenoglu[a]

[a]Yuzuncu Yil University,

*ayseerkus@gmail.com

Abstract:

Pharmaceuticals are widely used for human therapeutic and veterinary purposes and constitute a class of environmental pollutants that must be urgently intervened. Paracetamol is a commonly used pharmaceutical active agent with analgesic and anti-inflammatory properties. In this study, the adsorption characteristics of paracetamol by activated sludge biomass was investigated in a batch activated sludge system. In addition, activated sludge biomass concentrations were 2500, 3000, 3500 and 4000 mg/L as an experimental conditions. The initial paracetamol concentration tested in this study were 10 mg/L. The results of the equilibrium experiments were applied to Langmuir and Freundlich isotherm models. Langmuir and Freundlich isotherm models (R=0.98 and R=0.97) and according to those results, were fitted to only Freundlich isotherm model.

Keywords: Activated Sludge, Adsorption isotherms, Paracetamol

Investigation Of An Selected Kilometer Size Neas On The RTT150

Suleyman Kaynar[a*], Irek Khmamitov[a], Rustem Gumerov[b], Ilfan Bikmaev[b], Rustem Gumerov[b]

[a]Tubitak National Observatory
[b]The Academy Of Sciences Of Tataristan

*suleyman.kaynar@tubitak.gov.tr

Abstract:

The main statement and status of selected near-Earth asteroids investigation started in 2016 using optical Russian-Turkish 1.5m telescope RTT150 are presented. Photo-polarimetric results of observations of NEAs (2100, 4953, 5836, 16834, 68950, 87684, 89830, 162209, 164121, 452389) during their close encounter with Earth are discussed.

Keywords: NEA, asteroids, polarimetry, telescope, classification

Investigation Of Cold Work On Recrystallization Temperature Of Cold Worked Pure Copper By Differential Scanning Calorimetry

Bedri Baksan[a], Ibrahim Celikyurek[a], Osman Torun[b]

[a]Eskisehir Osmangazi University
[b]Afyon Kocatepe University

*baksan@ogu.edu.tr

Abstract:

In this study the investigation of recrystallization temperature of pure copper was conducted by differential scanning calorimetry. The transformations in materials are thermodynamic reactions which are releasing or gaining energy, and can be detected by differential scanning calorimetry. The recrystallization temperatures are needed to be accurately determined for optimum heat treatment temperature due to energy concerns, because in industrial applications the recrystallization temperature for cold worked materials are generally high to increase the production rate. In this study various cold deformation rates of 50, 60, and 80% were applied to pure copper homogenized at 675 °C for 36 hours, the recrystallization temperatures detected as 140.8, 138.58, and 134.95 °C respectively. Post cold work homogenization heat treatment was conducted in an Argon filled gas tight steel crucible to prevent from oxidation of copper sample. The samples were cut into pieces for cold work. The deformation procedure was applied by a hydraulic press at room temperature until desired deformation rates were obtained. The microstructure and differential scanning calorimeter samples were taken from the desired deformation rates of 50, 60, and 80%.

Keywords: Recrystallization temperature, differential scanning calorimetry, microstructure, cold work

Investigation Of Existing Coastal Problems Of Bursa Province In The Sea Of Marmara

Adem Akpinar[a*], Recep Emre Cakmak[a]

[a]Uludag University

*ademakpinar@hotmail.com

Abstract:

This study aims to investigate status of the existing coastal structures along the coastline of about 115 km along the Bursa Coast of Marmara Sea. It plans to investigate if there exist any problems associated with the structures, presenting those problems, and possible solutions to solve them. Within this goal, existing coastal structures and usage status of coastal area were examined and it was discovered that some applications put in place without proper planning contributed to some problems in coastal areas. Mainly, four types of coastal problems were determined along the Bursa coast. The first problem being the accumulation of sediments on one side of the structure and erosion on the other due to the structure interrupting longshore sediment transport. This situation can be observed in coastal areas around Karacabey region where two fishing ports are located. The second problem noticed is the filling of shelters constructed without taking into account longshore sediment transport with sediments and therefore reaching a state where the shelters can have no longer function. An example to this would be a shelter area built on the shore of Eskel. The third is interventions to coastal areas without regard to the wave-structure interaction in the coastal zone. This problem was observed at Kucukkumla beach where erosion formed due to concrete block platforms, which cause reflection problems, built on the parallel to the coastline and on the beach. I-shaped groins, which is perpendicular to the coast, formed with concrete blocks removed from these concrete platforms contributed to keeping the sand on the coast from eroding away, however, some of them were observed to be unnecessary. The fourth problem is the capsizing of boats due to agitation in fishing harbors. This is due to the construction of harbors without detailed analysis of the winds and wind generated waves.

Keywords: coastal infrastructure, problems, lack of planning, Bursa coasts

Investigation of Heat Transfer with Laminar Pulsating Flow of Nanofluids in a tube using circular rings

Selma Akcay[a*], Unal Akdag[b]

[a]Aksaray University, Institute Of Science And Technology
[b]Aksaray University, Mechanical Engineering Department

*selma.352@hotmail.com

Abstract:

In this study, the heat transfer characteristics and friction factor of nanofluids under pulsating inlet flow conditions in the tube with circular rings are investigated numerically. In investigations, the governing equations are solved along with boundary conditions using the finite volume approach (FVM) by SIMPLE algorithm. Firstly, the effects on heat transfer performance of different nanofluid types with varying particle volume fractions and Reynolds numbers under steady flow conditions are analyzed. Then, these nanofluids parameters are kept constant and the heat transfer performance under pulsating flow conditions of nanofluids are investigated. The average Nusselt number and friction factor are calculated for different, pulsating frequencies and amplitudes with a constant particle volume fraction of nanofluid and constant Reynolds number. The numerical results indicate that the heat transfer performance enhances with increase in particle volume fraction and Reynolds number in steady regime. It is observed that the heat transfer performance increases with increasing pulsating amplitude in pulsating nanofluid flow, and there is a slightly increase in pressure drop. The numerical results indicated that there is a good potential in promoting the heat transfer enhancement by using the nanoparticles under pulsating flow in the tube with circular rings. The obtained results are given as function of dimensionless parameters

Keywords: Nanofluids, pulsating flow, circular ring, heat transfer, numerical study

Investigation of Optimal Sedimentation of Marble Wastewater

Selma Duzyol[a*], A.Samet Yucel[a], Sadettin Kayhan[a], Yasin Kara[a]

[a]Selcuk University

*selmad@selcuk.edu.tr

Abstract:

Natural stones are the oldest construction materials that can be operated commercially following their extraction from nature. The Turkish natural stone sector has an important place in the world natural stone market. Marble production processes consist of cutting, washing, wiping and polishing steps. As a result of these processes, a large amount of crude process wastewater, especially rich in solid particles, is formed. Physico-chemical methods are widely used in the treatment of these wastewaters. In the present work, the treatment of marble wastewater taken a private company was investigated by using various polymers (1858U as an anionic, N100 as a non-ionic and SPP365 as a cationic). In order to reach the best sedimentation results, the flocculation experiments were carried out with different polymer combinations in order to examine the process parameters such as pH, polymer concentration, stirring speed and time. The results obtained for all type of polymers from the sedimentation tests were found for pH, polymer concentration, stirring speed and time as 6.6, 2 mg/L, 200 rpm and 3 min., respectively. In addition, the different polymer combinations were also evaluated and the best consequent was acquired from the N100 and 1858U dual combination as to be 3.6 nephelometric turbidity unit (NTU).

Keywords: marble wastewater, sedimentation, polymer.

Investigation of Sealant Materials for High Temperature - Dense Perovskite Membranes

Selgin Al[a*]

[a]Ahi Evran Universitesi

*selgin.al@ahievran.edu.tr

Abstract:

High temperature membrane sealants are crucial in order to achieve a gas tight membrane module for high temperature permeation experiments. The common use of silver or gold O-rings do not fulfil the requirement for thermal compatibility in a membrane module due to requiring an external compression force. This compression force can easily damage the membrane because of thermally induced stress. In this study, a variety of sealant materials were prepared by following different recipes and tested at high temperatures (500 °C - 800 °C). Also, different application methods which are equally important as sealant paste were developed. The sealant recipes were adapted based on the type of membrane. The preparation procedure of the sealant paste included using a number of materials such as ceramic powder of the membrane, water glass, pyrex glass and starch in different percentages. It is possible to obtain leak free membrane module by following the correct recipe and the application method.

Keywords: Sealant, ceramic membranes, high temperature membranes

Investigation Of Silica Aerogels Effect On Paints Characteristics

Rana Aksu[a*], Berrin Saygi[a], Bugra Akman[a]

[a]Yildiz Technical University

*ranaaksu@yandex.com

Abstract:

The implementation of innovative materials for energy saving is a main focus in the recent years. Due to their outstanding characteristics such as low thermal conductivity, high surface area and low density, silica aerogels have found potential application for thermal insulating systems. The main goal of this study is to investigate the use of silica aerogel as a paint insulator by using sol-gel method. In the current work, Na2SiO3 and H2O solution were used for synthesis of slica aerogels at different volume ratio. Sulphuric acid, Acetonitrile and Methanol:Hexane solution was used as a catalyst solvent exchanger and surface modifier, respectively. Reaction temperature, Na2SiO3/H2O volume ratio, aging temperature and drying temperature were used process parameters. Depends on the process parameters, three different kinds of aerogels were synthesized (aerogel1(A1), aerogel2(A2) and aerogel3(A3)). Synthesized silica aerogels were added to two different types of paints (water and solvent-based) and properties of these samples, such as viscosity, hydrophobicity and adhesivity were measured. The viscosity measurements showed that the viscosity increase with the increasing amount of aerogel in both types of paint. When compared the hydrophobic properties, best results were obtained with the using of A2 for water-based paint and using of A1 for the solvent-based paint. The adhesivity has an improving effect for all aerogel types for solvent-based paint. For water-based paint, the best results are obtained in A3, and in general, the amount of peeling is reduced when the amount of aerogel increases in all aerogel types. In conclusion, the result of experiments demonstrated that silica aerogels have a positive effect on paint characteristics.

Keywords: Aerogel, Insulation matrials for paints, Energy saving

Investigation Of Structural And Electronic Properties Of HGS

Cihan Kurkcu[a*], Ziya Merdan[b], Hulya Ozturk[a], Sumeyra Yamcicier[a]

[a]Ahi Evran University
[b]Gazi University

*ckurkcu@ahievran.edu.tr

Abstract:

We study the pressure induced phase transition of HgS using a constant pressure ab initio technique. HgS crystallizes under ambient conditions in the cubic zincblend-type structure (space group F-43m). We predict the structural phase transformations from the zincblende structure to the NaCl-type structure (space group Fm-3m) and from this structure to CsCl-type structure (Pm-3m) with the application of hydrostatic pressure. Also we study electronic properties of HgS and some physical properties such as the lattice constants, the bulk modulus, the pressure derivative of the bulk modulus, and equilibrium energies. Furthermore, we study these phase transitions using the total energy and enthalpy calculations. According to these calculations these transformations are obtained at about 20 Gpa and 30 Gpa.

This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: FEF.E2.17.007

Keywords: Phase transition, ab-initio technique, high pressure

Investigation Of Technical Compliance Of A Disabled Lift With Directive 2001/85/EC By Using Finite Element Analysis

Erinc Uludamar[a*]

[a]Adana Science And Technology University

*euludamar@adanabtu.edu.tr

Abstract:

Accessible transport is an important factor to adapt disabled people to fulfil their needs equally with other people. By public and private entities, disabled lifts has a significant effect on barrier-free access for wheelchair users. In order to overcome problems that wheelchair users should tackle with, different kinds of disabled lifts are already in service in some public buses. Tough competition and increasing costumer demands in automotive sector enforces sub-industry of the sector to manufacture an optimum disabled lifts in many ways such as; reliability, ease of usage, weight, and cost. This study presents results of finite element analysis of a cassette type disabled lift which is already in service in many Turkish public buses. Moreover, other technical properties of the lift were examined and evaluated according to directive 2001/85/EC of the European Parliament and of the Council. The examination showed that the system meets the technical specifications such as operation control, dimensions, in the event of failure, and loading conditions that are specified in the directive. The results of finite element analysis showed that the disabled lift is structurally feasible to overcome the loading condition which is described in the directive. However, some improvements should be performed on stress distribution and weight reduction.

Keywords: Disabled lift, Finite element analysis, Accessible transport, Wheelchair

Investigation Of The Criteria Taken Into Account In The Selection Of Subcontracting Workshop Of Apparel Companies

Mahmut Kayar[a*], Oyku Ceren Bulur[a]

[a]Marmara University

*mkayar@marmara.edu.tr

Abstract:

Companies have to develop new methods and techniques to take place, to protect this place and to be able to stand in a competitive environment. Companies have to leave their old habits to survive in these changing expectations and competition area. Previously companies were trying to control all the production process but nowadays they are producing their all or some goods by outsourcing. Outsourcing is making all or a part of production of another company according to main company's priority and principal cause. Outsourcing method is often used in ready to wear sector, like in the all other sectors. Apparel companies take in consideration some factors when deploying business to subcontracting workshops. The most prominent of these factors can be listed as cost, quality and delivery time. In this study; firstly, general information about outsourcing method are explained. After that information which obtains as a result of a survey which was done in apparel companies will be appreciated.

Keywords: Apparel, Outsourcing, subcontracting

Investigation Of The Effect Of Cutting Parameters With Artificial Neural Networks In Machining

Ramazan Cakiroglu[a*], Selcuk Yagmur[a], Adem Acir[a], Yakup Turgut[a], Ulvi Seker[a]

[a]Gazi University

*rcakiroglu@gazi.edu.tr

Abstract:

In this study, a model was developed by using artificial neural networks (ANN) method to reduce the effect of machining parameters on the measurement accuracy of the Al 7075 material under dry cutting conditions. Drilling experiments were carried out using four different cutting speeds (170, 200, 230 and 260 m / min), three different feed amounts (0.1, 0.2 and 0.3 mm / rev) and two different cutting tools (uncoated and TiN / TiAl / TiCN coated). For each cutting tool, 8 pieces of experimental learning data and 4 pieces of testing data were performed in the model with ANN. In ANN model the 2-5-6-1 for the uncoated tool and the 2-4-5-1 for the coated tool were determined as the most suitable network structures. As a result of the study, it is seen that the estimations made with ANN are quite close to the results obtained from the experiments.

Keywords: Al7075, Machining parameters, Drilling, Artificial Neural Networks

Investigation of the Effect of Mono-and Divalent Cation Concentration on A Lab-Scale EBPR System

Mehmet Kilic[a*], Huseyin Yazici[a], Semra Kilic[b], Mustafa Karaboyaci[c], Aziz Sencan[c]

[a]Department Of Environmental Engineering, Suleyman Demirel University
[b]Department Of Biology, Suleyman Demirel University
[c]Department Of Chemical Engineering, Suleyman Demirel University

mehmetkilic@sdu.edu.tr

Abstract:

For a better understanding of a stable operation of an enhanced biological phosphorus removal reactor, it is believed that the effect of the concentration balance need to be combined and evaluated with effects of the other operational conditions. This paper reports on the determining of the effect of concentration balance in the synthetic feeding solution on the performance stability of an enhanced biological phosphorus removal reactor. In the study, two different ratios of the total concentration of monovalent (M) to divalent (D) cations (in milliequivalent per liter, meq/L) (7.6 and 1.5, 30 days of operation for each) was applied in the feeding solution. Experimental results showed that there was a deterioration since the settling performance of the sludge, the MLSS concentration and phosphorus removal efficiency decreased gradually when the M/D ratio was 7.6. During these experiments, SVI increased gradually from an initial value of 125 mL/g to 440 mL/g and MLSS decreased gradually from an initial value 2700 mg/L to 1000 mg/L at the end of the operation period. Phosphorus removal efficiency varied in the range of 39-50%. When the M/D ratio was adjusted to 1.5, the reactor was robustly operated in terms of the activated sludge characteristics (MLSS and SVI) and phosphorus removal. SVI value decreased from an initial value of 130 mL/g to 70 mL/g, phosphorus removal efficiency increased from an initial value of 34 to 81% and MLSS concentration varied in the range of 2950-2750 mg/L during this stage. As a comparison of the obtained results, it can be concluded that phosphorus removal performance and settleability of the reactor sludge decreases when M/D ratio in the feeding solution exceeds a certain value and performance stability of the SBR deteriorates if these unwanted cases become severe.

Keywords: EBPR, monovalent to divalent cations, SBR, phosphorus removal

Investigation of the Mechanism of Cryogenic Treatment on the Microstructural Changes in Tungsten Carbide Tools

Abdullah Sert[a*], Osman Nuri Celik[a], Hakan Gasan[a]

[a]Eskisehir Osmangazi University

*asert@ogu.edu.tr

Abstract:

In the last few decades, cryogenic heat treatment has been extensively studied on cemented carbide cutting tools. The present study was focused on the microstructural behaviors of WC-Co cutting tools after the cryogenic heat treatment. Scanning electron microscopy (SEM), X-ray diffraction (XRD) and Rietveld analyzes were performed before and after cryogenic heat treatment to investigate the changes in the microstructure. It was not observed that any changes appear in the microstructure by SEM analyzes. In order to avoid WC phase diffraction peak interference to Co phase in XRD analyzes, the WC-Co cemented carbide was selective electrolytically etched. The XRD results showed that the martensitic transformation of Co phase (α-Co (FCC) to ε-Co (HCP)) is determined by cryogenic heat treatment. It is considered that the thermal expansion values of WC and Co phases are different, thus there was a stress occurred in the microstructure during cryogenic heat treatment. Therefore Co phase is forced to martensitic transformation. As a result of the mechanism of heat treatment was determined to be the martensitic transformation in the cobalt phase.

Keywords: Cryogenic heat treatment, Martensitic phase transformation, Rietveld analyzes, WC-Co.

Investigation of the Production Parameters for Lead Metal Borates Nanofibers

Aydin Rusen[a*], Adem Sarilmaz[a], Mehmet Ali Topcu[a], Faruk Ozel[a]

[a]Karamanoglu Mehmetbey University

*aydinrusen@kmu.edu.tr

Abstract:

Non-linear optic (NLO) materials with nanostructures has been started to investigate in research laboratories due to their high potential on the optics and photonics fields. Several papers have been focused on synthesizing and properties of lead metal borates in powder form. Nevertheless no scientific work was found to study on its fiber form in the literature. In order to produce polymeric or composite nanofibers, electrospinning technique is a fast and easy method. The network structure of nanofibers produced by electrospinning has a huge potential on the application for membrane technology, textile industry, catalysis in important reactions, or sensor technology as advanced engineering materials due to low cost and simple production methods. Therefore, in the present study, the optimization of various parameters was studied for producing PbMBO4(M: Al, Mn, Fe) nanofibers by electrospinning. The parameters investigated for each metal borate were amount of polymer (PVP: polyvinylpyrrolidone) (0.6-1 g) in solution, feed rate (0.2-1 ml/h) and electric field strength (20-30 kV) for electrospinning stage, and crystallization temperature (500-650 oC), crystallization duration (30-240 min.) and heating rate of the oven (1-25 oC/min) for annealing stage. After several trials, analyzing results indicated that all lead metal borates (PbMBO4; M= Mn,Fe,Al) nanofibers were purely fabricated for the first time at the optimized conditions; 1 g PVP addition under 30 kV electric field strength with 1 ml/h solution feed rate in electrospinning stage, and at 600 oC for 120 min with constant heating rate (25 oC/min) in crystallization stage. These nanofibers can be used in new generation engineering applications as alternative non-linear optic materials

Keywords: Lead Metal Borates, Electrospinning, Nanofiber

Investigation of the relationship between ionospheric TEC anomalies and earthquake depths before the earthquake

Mustafa Ulukavak[a*], Mualla Yalcinkaya[b]

[a]Harran University
[b]Karadeniz Technical University

*mulukavak@gmail.com

Abstract:

Earthquakes are natural phenomena that shake the earth and cause many damage. Since the time of arrival of the earthquakes can not be determined directly, some signs before the earthquake should be examined and interpreted by examining the environmental changes. One of the methods used for this is monitoring the ionospheric total electron content (TEC) changes. GPS satellites have begun to be used as a means of monitoring ionospheric TEC anomalies before earthquakes since they began to be used as sensors around the world. In this study, the depths of 28 earthquakes with a magnitude greater than 7 (Mw) and the percentage changes of TEC anomalies before the earthquake and how many days before the earthquake occurred were investigated. The ionospheric TEC anomalies before the earthquake were determined according to the 15-day running median statistical analysis method. Different solar and geomagnetic indices have been investigated to determine the active space weather conditions and quiet days before and after the earthquake. The TEC anomalies were determined during the quiet days before the earthquake by comparing the ionospheric anomalies that occurred before the earthquake after the determination of quiet days with the indices of the space weather conditions. The relationships of these anomalies to the depths of the earthquakes have been investigated. When the results show that the relationship between earthquake depths and the day when the earthquake precursor with ionospheric TEC anomaly is determined, the earthquake precursor signs appeared earlier as the earthquake focal depths increased. When the relationship between earthquake depths and the percentage of ionospheric TEC anomalies is examined, it is seen that as earthquake focal depth increases, the percentage of ionospheric TEC anomalies decrease.

Keywords: earthquake dept, GPS, space weather condition, total electron content, earthquake precursor

Irreversibility Line In Ybco 358 Superconducting Sample Prepared By Solid State Reaction

Mehmet Basoglu[a*], Ibrahim Duzgun[b]

[a]Gumushane University, Department Of Energy Systems Engineering
[b]Gumushane University, Department Of Physics Engineering

*mehmetbasoglu@gumushane.edu.tr

Abstract:

Irreversibility line is one of the most interesting phenomena in high Tc superconductors. Couple of experimental methods have been used to determine this line or region which separates irreversible and reversible regions in magnetic field-temperature plane. In the current study, the irreversible line of YBCO 358 superconducting material was determined using the field cooling (FC) and zero field cooling (ZFC) lines in a selected magnetic field. Experimental data were discussed with the physical parameters like vortex pinning and its movement, critical current density and AC losses.

Keywords: Irreversibility line, YBCO 358, High Tc Superconductors

Isostatic Effects Of Dam Loads And Earthquakes

Oya Pamukcu[a*]

[a]Dokuz Eylul University Engineering Faculty Department Of Geophysical Engineering

*opamukcu70@gmail.com

Abstract:

It is argued that the occupancy level and the discharge of the dams cause the earthquakes around the dams. The reason is that during these functions of the dam, the gravitational state of the natural medium and its isostatic conditions are affected. Up to now, the mediums which are under this effect are thought to have not caused very high magnitude earthquakes.Therefore, isostatic earthquakes did not come to the forefront much. However, the local seismic triggering function caused by dam loads can speed up the process of the earthquakes occurrence , which would be caused by a strike-slip or vertical-slip fault at the end of the tension. In addition, seismogravitational forces which are occurred in the charge and discharge stages of the dam, mass interaction, pressure induced around the dam, pre-existing pressure interaction and many geological, hydrological source may be one of the reasons for seismicity.The rate of increase in water level affecting gravitational isostasy, duration of the water charging to dam, the maximum water level of the dam can be affected the earthquake frequency. As a result, isostatic earthquakes can not reach big events, but when considered together with the triggering event, they can contribute to major earthquakes. Within the scope of this information, in this study, relations between Seferihisar and Tahtali dams's data in Izmir (Turkey) and earthquakes which were around the dams were investigated. For this purpose, the dam water-month, water filled volume-month and earthquake number-month graphs were established. Depending on the region and coordinates studied, the effects of dams on the isostatic structure, their role in the seismic interaction, and state of gravitational interactions of faults around the dam were examined.

Keywords: dam loads, isostasy,gravity, earthquake

Kinetic Study Of Thermal Decomposition For Municipal Solid Waste Using Thermogravimetric Analysis

Nzioka Antony Mutua[a*], Alunda Benard Ouma[b], Shirley A. Odero[c]

[a]Kyungpook National University
[b]Taita Taveta University
[c]World Food Programme

*manymutua@knu.ac.kr

Abstract:

Thermal conversion of wastes is one of perspective solution to 'municipal solid waste' problem. Thermal conversion process entails thermal decomposition of material with an increase in temperature. This experimental analysis investigated thermal decomposition of municipal solid waste using thermogravimetric technique. The objective of the analysis was to analyze the changes in kinetic characteristics with changes in composition of content in sample waste and temperature. Sample waste analyzed consisted of plant organic waste, paper, plastics, wood and inert substance. Proximate and elemental analyses were determined and calorific values determined experimentally using bomb calorimeter. Thermogravimetric curves were derived using thermogravimetric analyzer (TGA) at different temperature rates. Activation energy and pre-exponential factor were derived using Flynn-Wall-Ozawa, Kissinger-Akahira-Sunose and Kissinger model equations. Additional statistical analyses on variance using ANOVA was conducted for the different sets of composition analyzed. Results showed kinetic parameter values for different model-free models used in analysis as well as the level of variance in activation energies for different composition of waste and temperature rates used.

Keywords: Thermal decomposition, temperature, municipal solid waste, ANOVA, composition, activation energy

Leaf Litter Decomposition In Beech And Chestnut Mixed Forest In Western Black Sea Region Of Turkey

Murat Sarginci[a*], Oktay Yildiz[b], Doganay Tolunay[b], Bulent Toprak[a]

[a]Duzce University
[b]Istanbul University

*muratsarginci@duzce.edu.tr

Abstract:

Although forests are the most important source and the sink of the terrestrial carbon (C), forestland cover has been dramatically decreasing since the industrial revolution. Therefore long-term ecological researches has been conducted to estimate the role of forests on global C cycle. The aim of this study is to to estimate leaf litter decomposition rates in eastern beech (Fagus orientalis Lipsky) and Sweet chestnut (Castanea sativa Mill.) mixed stands in Duzce-Akcakoca located in Western Black Sea Region of Turkey.

Eight sites were used for sampling and litterbag experiment. Litter decomposition was examined in four time periods (3, 6, 15 and 27 months) and 81%, 68%, 55% and 42% of total mass of chestnut leaf litter was remained after these time periods, respectively. Amount of remaining mass of beech leaf litter for four time periods was found 1.1, 1.2, 1.2 and 1.4 times greater than chestnut leaf litter, respectively. First year k values for chestnut and beech were estimated 0.478 and 0.307, respectively. The mass loss and estimated k values of chestnut leaves were greater than those of beech leaves. Total C amount of the litter was also measured and it was estimated 4.2 Mgha-1.

Most decomposition models assume that decomposition rates in adjacent sites are similar and synchronous. This means that they vary in similar magnitude and direction when influenced by similar conditions. This allows us that the data acquired from one place can be extrapolated across a broader region or landscape. Yet the synchrony of decomposition rates in a complex, mountainous landscape like this study site has not been demonstrated experimentally. Therefore estimating the decomposition rates may help to make more accurate models for this mountainous sites. Equations obtained from the current study may be used for similar ecosystems and submitted to global estimations made by various organizations.

Keywords: Beech, chestnut, litter, decomposition, carbon.

Levelised Cost Analysis for Solar Energy Plants

Yasin Ust[a*], Seyfullah Dede[b]

[a]Yildiz Technical University

*yust@yildiz.edu.tr

Abstract:

In our World, tendency to use renewable energy is increasing due to the reduction of fossil fuel reserves and climate changes. The using of renewable energy for electric generation will become widespread with decrease in the levelized cost of renewable electric energy. According to Bloomberg New Energy reports, the levelized cost of solar(PV) energy plants for electric generation will pass the levelized cost of fossil fuel based plants and wind plants for electric generation in 2030s.Because of this, Turkish government want to nationalize the PV panels and equipments production, assembly works and O&M works according to 2023 energy vision. This work contains the feasibility analysis of 500 kW PV plant for 4 suitable location in Turkey according to government supports. The results show that, the feasibility of this plant is really bad due to high interest rates, high cost and low efficiency of domestic panels&inverters. Government supports should be increased and investment rates should be decreased.

Keywords: Solar energy; Levelized cos analysis; PV panels; Energy efficiency

Limiting Drawing Ratio Prediction of Dual Phase Steels Using Finite Element Method

Sadik Olguner[a*], Ali Tolga Bozdana[a]

[a]Department Of Mechanical Engineering, University Of Gaziantep

*olguner@gantep.edu.tr

Abstract:

The application of Dual Phase (DP) steels has been highly preferred way by vehicle body part manufacturers to improve car crash safety without increasing the vehicle weight that is critical to fuel consumption. Limiting Drawing Ratio (LDR) of sheet materials is one of the most important parameters for deep drawing and it shows the performable extent of drawing without tearing of the blank. Body parts of vehicles are formed in multiple steps because of the fact that the drawing ratios are quite high in automobile industry to perform in a single step. Therefore, it is inevitable requirement to determine the LDRs of DP steels in order to reduce the total number of drawing steps to reach the final shape of the body parts. Finite Element Method (FEM), which provides minimizing experimental cost and reducing the number of trials, is a widely preferred technique to estimate the LDRs of the sheet materials in recent years. In the present study, the FEM simulations of DP600, DP800 and DP1000 steel sheets are carried out using the non-linear Ls-Dyna solver. Barlat-89 yield criterion is preferred in analyses with kinematic hardening model. Minor and Major true strain values obtained from analyses are equated with theory based forming limit curves of materials and LDRs of the above mentioned materials are predicted. The LDR results numerically obtained are compared with the numerical and experimental results in the literature. It is concluded that the Barlat-89 yield function is suitable for prediction of the LDRs of the DP steels.

ACKNOWLEDGEMENTS

This study is financially supported by TUBITAK with the project under the grant number of 315M300 and University of Gaziantep (BAPYB) with the project under the grant number of RM.16.01.

Keywords: Deep Drawing, Limiting Drawing Ratio (LDR), Dual Phase (DP) Steel, Finite Element Method (FEM)

Local Rings Of Homogeneous Type

Pinar Mete[a*]

[a]Balikesir University

*pinarm@balikesir.edu.tr

Abstract:

In commutative algebra, to study the numerical invariants of classes of local rings, the connection between the graded and local perspective is a very new and quite useful viewpoint. The extensive literature of the graded algebra can be benefitted to get information to the local case. If the associated graded ring G of the local ring A is Cohen-Macaulay, Gorenstein or complete intersection, then so is A. But in general, these nice properties can not be carried from A to G and this is one of the main problems in commutative algebra. But if the local ring A is homogeneous type whose Betti numbers coincide with their associated graded ring, these nice properties are preserved when we pass from A to G.

In this talk, motivated by the above problem, I will present large families of local rings of homogeneous type.

Keywords: Local ring, Associated graded ring, homogeneous type, Betti number

Low Floor Electric Bus Handling Analysis Via GNSS Measurment

Pornporm Boonporm[a*], Supakit Rooppakhun[a], Ekalak Prompakdee[a]

[a]School Of Mechanical Engineering, Suranaree University Of Technology

*pornporm@sut.ac.th

Abstract:

Vehicle handling ability is one of the important characteristics in order to make it ease of control and be avoid from fatal accidents especially for the mass transportation system vehicle. In this study, we focus on the evaluation test and data interpretation by applying GNSS system to evaluate how well of the handling performance of the low floor electric bus under the steady state cornering condition as well as normal driving by monitoring the course over ground and speed over ground data from the receiver in combination of data accuracy. The lateral-, longitudinal acceleration and yaw rate are further calculated. Due to the subjectivity of data determination, the fuzzy logic inference system is applied and trained via multibody dynamics simulation for interpretation of the qualitative score, which will be related to the understeer gradient from the simulation.

Keywords: bus handling evaluation, GNSS measurment, understeer gradient, multibody simulation.

Low Velocity Impact Response On Steel Sandwich Panels: An Experimental And Numerical Study

Umut Caliskan[a*], M. Kemal Apalak[a]

[a]Erciyes University

*ucaliskan@erciyes.edu.tr

Abstract:

This study presents a numerical and experimental investigation on low velocity impact response of steel sandwich panels with expanded polystyrene foam (EPS) core. Sandwich structures based on strong, stiff skins bonded to a low density core material are used widely in high-performance applications such as, aerospace industries, automotive, civil engineering and transportation industry due to their high in-plane and flexural stiffness, good acoustic and thermal insulation, high energy absorption capability, very good corrosion resistance. The effect of impact energy levels was investigated on the impact energy absorption of the panel. The dynamic response of the panels was predicted using the finite element analysis package ABAQUS/Explicit. The material and geometrical nonlinearities were considered and the foam material was modeled as a crushable foam material. The cohesive response of the adhesive interface was modeled using the cohesive zone model. The temporal variations of contact force, kinetic energy histories and central permanent deflections were compared for different impact energies experimentally and numerically. The peak contact force levels and central permanent deflections are increased with increasing the impact energies. The numerical simulations were found to be in good agreement with the experimental results.

Keywords: Low velocity impact, foam core sandwich structure, explicit finite element method

Macro and Micro Modelling of the Unreinforced Masonry Shear Walls

Sedat Komurcu[a*], Abdullah Gedikli[a]

[a]Istanbul Technical University

*komurcus@itu.edu.tr

Abstract:

Masonry structures are constructed by joining masonry units (brick, stone, marble etc.) with mortar. Various methods are used for modelling of masonry walls of the structures. Micro modelling and Macro modelling are two diverse modelling techniques. In this study, these two modelling strategies are analyzed on a solid unreinforced masonry shear wall numerically. The models are implemented in ANSYS software to simulate the structural behavior of a tested wall in literature. The homogenization technique is applied to obtain the material parameters used in the macro model. Brick and mortar are modelled separately in the micro model. Stresses occurring in the walls under the effect of in-plane loads are investigated. The propagations of the cracks on the walls are analyzed numerically. The results obtained in the micro modelling and macro modelling are in consistent with the experimental study in the literature. However, macro modelling and micro modelling represent strictly disparate behavior in the geometry creation, material identification, and crack propagations.

Keywords: Crack, Macro, Masonry, Micro

Mathematical Model for Wind Turbine Type-Site Match of a Wind Power Plant in Turkey Based on Power Maximization

Emin Sertac Ari[a*], Hakan Ozkose[b], Cevriye Gencer[c]

[a]Gazi University Institute Of Informatics
[b]Bartin University
[c]Gazi University

*sertacari@hotmail.com

Abstract:

Several methods that have been developed to obtain energy; which is indispensable for life and whose necessity has increased geometrically in the course of time; are no longer sustainable. European Commission emphasizes the inevitableness of finding an eco-friendly way to satisfy the need for energy, which is the key input for all sectors of modern economy. Wind has been one of the most interested renewable energy sources for human, who has become skillful at generating power from wind as of the beginning of the twentieth century. Although the average service life of a typical wind turbine is about 20 years, especially the setup cost of wind farms is quite high. So the investors have to be highly meticulous on the establishment phase. For this reason, site selection is one of the most important steps of the establishment phase. In this study, the main objective is to select the optimal site by matching optimal wind turbine type. A Mixed Integer Linear Programming (MILP) model with the objective function of power maximization is used to find the optimal site-turbine match.

Keywords: wind energy, wind turbine, site selection, Mixed Integer Linear Programming

MATLAB GUI Model for PV System Feasibility of a House Electricity Consumption in Turkey

Ayse Ceyda Erdogan[a], Kubra Nur Akpinar[b*], Bedri Kekezoglu[a]

[a]Yildiz Technical University
[b]Ondokuz Mayis University

*kubranur.birlik@omu.edu.tr

Abstract:

In this study, feasibility analysis was done with a program that created a simulation model in the MATLAB GUI environment for the PV system installation in the production of electricity requirement of a house in Turkey conditions. The energy consumption is calculated through the data of the operating hours in a day and the number of running days in a year which entered by user. Once the panel and zone selection options have been specified, the program calculates the annual energy need for the house, the energy generated, the number of panels required to produce this energy, and the area required for system. Monthly energy distribution is shown graphically. Calculations are being revised for different panel number usage. In the economic analysis part, system cost, amortization period and annual earnings are determined. PV system model, consumers will invest in renewable energy that will help to make the pre-feasibility and can be used as a decision-making mechanism.

Keywords: Renewable Energy, Solar Energy, PV Systems, MATLAB GUI Simulation Model, Economic Analysis on PV Systems

Measurement of Turkish Textile and Clothing Enterprises' Export Efficiencies with Data Envelopment Analysis

Turan Atilgan[a*], Seher Kanat[a]

[a]Ege University Department Of Textile Engineering

*turan.atilgan@ege.edu.tr

Abstract:

Textile and clothing sector constitutes the second biggest item of Turkish exportation after automotive sector. Besides, sector is the biggest sector of the country in terms of net added-value creation. The sector is the most competitive Turkish sector in international trade due to its export success. Moreover, brand value of the country and textile and clothing enterprises are increased due to the sector's international trade success. The performance and success of the sector; which approximately constitutes 18% of Turkish exportation, 9% of gross domestic product and 22% of manufacturing industry employment; seriously affect the performance of national economy. Therefore, a cause and effect relationship between them is established.

In this study, export efficiencies of textile and clothing enterprises, which are quoted on Borsa Istanbul, in 2016 are measured with data envelopment analysis which is one of the most significant techniques that are used in efficiency measurement. Besides; suggestions are made about the factors that should be observed and the strategies that would be implemented by the enterprises.

Keywords: Data envelopment analysis, textile and clothing sector, efficiency, textile and clothing exportation

Mechanical And Dynamical Properties Of Ir3Ti Compound In The L12 Phase

Nihat Arikan[a*], Osman Ornek[b], Ahmet Iyigor[c]

[a]Mathematic And Science Education Department, Education Faculty, Ahi Evran University, Kirsehir, Turkey
[b]Department Of Materials And Metallurgical Engineering Ahi Evran University, Kirsehir , Turkey
[c]Central Research And Practice Laboratory (Ahilab), Ahi Evran University, Bagbasi-Kirehir, Turkey

*nihat.arikan@hotmail.com

Abstract:

A theoretical study is presented for the structural, electronic, elastic and phonon properties of Ir3Ti compounds in L12 phase in the framework of density functional theory. The calculations are carried out within the PBE-GGA for the exchange correlation potential. The electronic structure and particle density of states (DOS) show that Ir3Ti compound is metallic with sturdy hybridization near the Fermi level. The phonon dispersion curves, and the projected density of states been investigated for the first time with a first-principle method using density functional perturbation theory (DFPT). Temperature variations of specific heat capacity in the range of 0–1000 K are obtained using the quasi-harmonic model. This work has been supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: EGT.E2.17.006.

Keywords: DFT, elastic constants, intermetallic compound, specific heat capacity, phonon

Mechanical Properties of Butt Welded Mineral Filled Polyethylene Pipes

Ilbeyi Kilavuz[a*], Pasa Yayla[b]

[a]Kocaeli University
[b]Marmara University

*ilbeyikilavuz@yahoo.com

Abstract:

Polyethylene pipes are used in piping networks for distributing potable waterand gas even in hard conditions and under considerable pressures. Being under pressure fora minimum period of fifty years, these pipes may suffer from the risk of slow even rapidcrack propagation. In addition to the third party damage, construction machinery as wellas workers can induce failure to these piping networks. Polymeric materials may also befilled with some additives like calcium carbonate or talc to regulate some mechanicalproperties. Although there are some studies on polyethyelene pipes, fracture of pipes andfracture properties of welded pipes and filled polyethylene, the fracture properties ofcalcium filled polyethylene pipes are not widely investigated. In this study, commercialhigh density polyethylene pipe grade material is extruded with different ratios of calciumcarbonate filler. Then these pipes are butt welded according to ISO 11414 method. TheCharpy notch impact and tensile tests are carried out on the samples extracted from thesepipes. Furthermore the fracture surface examination was made using SEM and stereomicroscopes to explain fracture behavior of those butt welded mineral filled polyethylenepipes. Special attention is paid to the weld region on the pipe and the results are presented.

Keywords: Butt welding, polyethylene pipe, filler, fractography

Mechanical Properties of Dissimilar 5754-H22/6082-T6 Aluminum Alloy Lap Joints by FSSW

Oguz Tuncel[a], Kurtulus Yigit[a*], Mumin Tutar[a], Hakan Aydin[a]

[a]Uludag University

*kyigit@uludag.edu.tr

Abstract:

Friction stir spot welding (FSSW), which is a solid-state welding process, was generally used for joining lightweight alloys. The application of this process lies in the capacity to assemble alloys which are not easily weldable by the traditional processes especially aluminum alloys. In addition, demand for the joining of different materials is increasing day by day. Especially in the automotive industry, focusing on energy efficiency has made it necessary to combine different materials. The aim of this study is to evaluate the effect of welding parameters on the mechanical properties of dissimilar aluminum alloys (3 mm-thick AA5754-H22 and 3 mm-thick AA6082-T6 sheets) joints produced by FSSW. The rotational speed, dwell time and plunge depth were the parameters taken into consideration. In the experimental study, microhardness tests and tensile shear tests of the FSSW joints were conducted.

Keywords: FSSW,Dissimilar 5754-H22/6082T6,Mechanical Properties

Mechanical Properties of Steel Fiber Reinforced Self Compacting Concrete

Demet Yavuz[a*], Soner Guler[a], Zehra Funda Turkmenoglu[a], Refik Burak Taymus[a]

[a]Yuzuncu Yil University

*demetyavuz@yyu.edu.tr

Abstract:

Self-compacting concrete (SCC) is one of the most riveting development in recent years. SCC can be defined as a composite that can be fit in within the mold without needing any vibration. It is also able to flow under its own weight without showing any segregations. And the hardened state of the SCC also has the same engineering properties as traditional concrete. In this study, properties of fresh and hardened state for steel fiber reinforced SCC was studied. Steel fibers were added to the concrete mix at 0.25%, 0.50% and 0.75% by volume fraction. Compressive strength of target concrete was designated as 40 MPa. As result, it is concluded that with increasing fiber volume concrete's workability was badly affected. It has been seen that adding steel fibers slightly increased compressive strength of the concrete. On the other hand, splitting tensile and flexural strength of the concrete were significantly increased.

Keywords: Self compacting concrete, Steel fiber, mechanical properties.

Mechanochemical-Enhanced Chemical Depolymerisation Of Glass-Based Fibre Reinforced Plastics From End-Of-Life-Boats And Ships

Nzioka Antony Mutua[a*], Kim Young-Ju[a]

[a]Department Of Environmental And Energy Engineering, Kyungpook National University

*manymutua@knu.ac.kr

Abstract:

Chemical depolymerisation is one of effective methods of separating fibres from fillers and polymer resin from fibre reinforced polymers (FRP). From recycling point of view, depolymerisation is more effective than existing processes that have been used to dispose high-strength and difficult-to-process material such as landfilling and incineration processes. One of the advantages is that the process could be undertaken at ordinary atmospheric pressure using environmentally-friendly solvents. Application of mechanochemical/mechanical activated methods in depolymerisation is paramount in process intensification of depolymerisation process thereby reducing energy demand overall recycling costs. This experimental analysis was conducted to analyse the impact of a set of two mechanical activated methods (ultrasound and turbulent mixing) on chemical recycling process of glass-based reinforced polymer from end-of-life boats and ships. These methods were implemented consecutively and solvent used in this process was benzyl alcohol. Depolymerisation process was studied under ordinary pressure and at initial temperature of 80°C. Parameters such as ultrasound amplitude, FRP/solvent vol/vol ratio, rpm of mixer was varied in the experimental setup. Time duration for each method was 10 minutes. Changes in temperature were measured during ultrasound and mixing process and level of depolymerisation determined for chosen methods. Experimental results revealed the positive impact of ultrasound cavitation and consecutive turbulent mixing on cleavage of FRP structure, depolymerisation process and solvent temperature. Analysis conducted revealed depolymerisation products and the structures thereof. Fibres produced from depolymerisation process revealed negligible damage. Possible depolymerisation mechanism was also proposed. Results showed effectiveness of such chemical depolymerisation process using mechanical activation methods.

Keywords: Chemical depolymerisation, solvent, glass-based fibre reinforced polymer, mechanochemical process, temperature, resin

Metaheuristic Based Optimization Of Tuned Mass Dampers On Single Degree Of Freedom Structures Subjected To Near Fault Vibrations

Sinan Melih Nigdeli[a*], Gebrail Bekdas[a], Aikerim Aydin[a]

[a]Istanbul Univesity

*melihnig@istanbul.edu.tr

Abstract:

Near fault ground motions excitations have specific characteristics comparing to regular earthquake excitations. Near fault ground motions contain impulsive pulses and flint steps in different directions and these excitations are the reason of more damages than regular excitations for structures. A successful method to reduce structural vibrations is the usage of tuned mass dampers. By using optimally tuned mass dampers, it will be possible to reduce vibrations resulting from earthquake excitations. In the present study, the optimization of tuned mass dampers are done for near fault excitations. During optimization, 6 different pulse like excitations are used. Three of these excitations are directivity pulses while the other ones are flint steps. The periods of excitations are 1.5s, 2.0s and 2.5s since near fault pulses have long period and big peak ground velocity around 200 m/s. The optimization objectives are related to maximum displacement of structure in time domain, the maximum stroke limitation of tuned mass damper and transfer function of the structure in frequency domain analyses. The iterative optimization process uses both time and frequency domain analyses of the structure. Three different metaheuristic algorithms are used in the methodology. These methods are harmony search algorithm, teaching learning based optimization and flower pollination algorithm which are inspired from musical performances, education process and reproduction of flowering plants, respectively. As the numerical investigation, three different single degree of freedom structures with periods 1.5s, 2.0s and 2.5s are investigated for optimum mass, period and damping ratio of a tuned mass damper positioned on the structure.

Keywords: Optimization, tuned mass dampers, near fault vibrations

Metal Doped Tio2 Thin Films For Organic Solar Cell Applications

Osman Ornek[a*], Zuhal Alpaslan Kosemen[b], Saban Findik[a], Arif Kosemen[c]

[a]Ahi Evran University
[b]Tubitak Ume Optics Laboratory
[c]Mus Alpaslan University

*osmanornek@ahievran.edu.tr

Abstract:

PCDTBT is a candidate material for organic solar cell application used as a active material. In this study PCDTBT:PCBM active layer system was used as active layer for inverted type organic solar cell. TiO2 and Eu doped TiO2 thin films was used electron selective and hole blocking layer in the inverted type solar cell system and Eu doping effect was investigated on the solar cell efficiency. TiO2 films were prepared by sol-gel method and the optical as well as the structural properties of the thin films were characterized by UV-Vis spectrophotometer and SEM. The concentration of Eu was varied as 1, 2, 5, 7, and 10 % (w/w) in TiO2 layer and the influence of Eu doping on the solar cell parameters were systemically investigated. It was experimentally found and demonstrated that charge injection and selection in the TiO2 interlayer was improved by doping of Eu atoms in the TiO2. The efficiency of the devices was increased with Eu doping and achieved 2,11 % power conversion efficiency at 5 % Eu doping concentration while undoped device efficiency was 0,65 %. Almost 3 times improvement has been achieved.

This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: MMF.E2.17.002.

Keywords: Inverted type solar cells, TiO2 thin film, Doped metal oxide semiconductors

Microwave Energy Assisted Carbonization of Nanostructured Conducting Polymers for Their Use in Energy Storage Applications

Selcuk Poyraz[a*], Marissa Flogel[b], Xinyu Zhang[b]

[a]Namik Kemal University
[b]Auburn University

*spoyraz@nku.edu.tr

Abstract:

Three well-established approaches, namely, conducting polymer (CP) nanofiber (NF) synthesis by NF seeding, CP nanoclip (NC) synthesis by oxidative template, and microwave (MW) energy-assisted carbonization were systematically combined to prepare carbonaceous nanostructures from CPs, with great potential as the active material for energy storage purposes. Polypyrrole (PPy), as one of the most well-known and commonly studied members of the CP family was prepared in both NF and NC forms, as the sacrificial carbonization precursor, for different property comparison purposes. Due to PPy's highly electromagnetic active nature, both of its NF and NC versions had vigorously interacted with MWs. The as-obtained carbonaceous samples from such interactions exhibited high thermal stabilities, competitive specific capacitance values and long-term stable electrochemical cyclic performances, which are crucial for the active materials used in energy storage applications. Thus, it is believed that, this well-established and well-studied process combination will dominate the large-scale manufacturing of the carbon-based, active energy storage materials from CPs.

Keywords: carbonization, conducting polymer, energy storage, microwave energy, nanostructure

Microwave Welding Of Industrial Polymer Polyoxymethylene (POM)

Bedri Baksan[a*], Osman Torun[b], Ibrahim Celikyurek[a]

[a]Eskisehir Osmangazi University
[b]Afyon Kocatepe University

*baksan@ogu.edu.tr

Abstract:

Microwave welding is a technique to join materials. The microwave frequencies used for welding purpose are generally from 915 MHz to 5800 MHz, for this study domestic microwave oven with a frequency of 2450 MHz, and a switchable power of 850 Watt's was used. The 5 mm thick polymer (POM) sheet samples were obtained from local supplier. The POM samples were cut as 8 mm width, 60 mm length stripes. The POM sheets stripe was lapped against other stripe to obtain a joining surface of around 80 sq-mm. The tests were conducted under full power of 850 Watt's, with three duration times of 70, 80, and 90 seconds. Longer duration times above 90 seconds causes burning of samples, therefore the welding time limited to 90 seconds, below 70 seconds no joining was observed due to insufficient heat input. The lap joined samples were tested for their weld strength by shear test. The highest shear strength was obtained averagely 6.72 MPa from 90 seconds welding time samples.

Keywords: Microwave welding, polyoxymethylene, shear strength

Microwave-assisted Extraction of Non-Polar Compounds from Pistachio (Pistacia vera L.) Hull and Characterization of Extracts

Hatice Neval Ozbek[a*], Derya Kocak Yanik[a], Sibel Fadiloglu[a], Hasene Keskin Cavdar[a], Fahrettin Gogus[a]

[a]Gaziantep University

*haticeneval@gantep.edu.tr

Abstract:

The chemical composition of pistachio (Pistacia vera L.) hull was determined and Soxhlet and microwave assisted extraction (MAE) methods were used to obtain non-polar extracts from hull samples. Chemical analysis indicated that pistachio hull contains 11.40% ash, 8.54% protein, 70.56% total carbohydrates and 9.50% non-polar extract on the dry basis. Microwave assisted extraction parameters (liquid to solid ratio, microwave power, and extraction time) were studied to obtain maximum extraction yield. Liquid to solid ratio of 15:1 (v/w), microwave power of 250 W and extraction time of 12.5 min were chosen as optimum to obtain maximum extraction yield. The extraction yield, total phenolic and tocopherol content, antioxidant activity and fatty acid compositions of non-polar extracts were determined to compare MAE and Soxhlet method. The extraction yields were 9.74 and 9.50% for MAE and Soxhlet methods, respectively. Palmitic acid was the predominant saturated fatty acid, while oleic and linoleic acids were the main unsaturated fatty acids for the oils in both of the extraction methods. The results showed that extract obtained by MAE had 33.37 mg GAE/g dw of total phenolic content and 846.84 mg/kg extract of tocopherol content while these values were 24.84 mg GAE/g dw and 758.85 mg/kg extract for the Soxhlet extract. IC50 values were calculated as 2.47 and 2.58 mg extract/mL for MAE and Soxhlet, respectively. The findings propose that pistachio hull extracts can be considered as a source of natural bioactive compounds and MAE can be a good alternative to traditional Soxhlet method.

Keywords: Antioxidant activity, extraction yield, microwave assisted extraction, pistachio hull, tocopherols, total phenolic content

Milk Total Fat and pH Curves Of Simmental Cows in Early And Late Lactation Period

Yeliz Yilmaz[a], Murat Cimen[a*]

[a]Munzur University

*mcimen@munzur.edu.tr

Abstract:

In this study, 30 Simmental cows were used. The study began at first day of lactation and lasted after 10 month. To observe milk parameters, samples were obtained from each Simmental cow for only first day of first weeks in 1. and 2. month of early lactation and 7, 8, 9 and 10. month of late lactation. There was a fall of milk fat rate for second month and an increase after from 7 th month. The rates for milk fat and pH of dams at 9th and 10th months were the highest point. The resistance to decrease of milk contents was higher during last months (between 7-10 months) than during first months. In this research, the means of components in milk from Simmental cows were differ than reported results for dairy cows during lactation period, whereas the curves of milk biochemical parameters were coincide with the curves of dairy cows in literature.

Keywords: Simmental, cows, early and late lactation, biochemical curve

Mining Association Rules For Quality Improvement Of The Examination Guidance In Hospitals

Esra Satir[a*], Ufuk Karacayli[a], Gamze Karaduman[a]

[a]Duzce University, Engineering Faculty, Computer Engineering Department

*esrasatir@duzce.edu.tr

Abstract:

People suffer various diseases each of which diagnosis may not be certain in the beginning due to the problems like misdirection, miscommunication and etc. Generally, detection of true departments in hospitals for diagnosis and treatment may be difficult at the first stage. Therefore, the aim of this study is to set up a system linked to Knowledge Discovery in Databases for directing the patient, efficiently. The procedure is to choose and perform the appropriate algorithm by considering the parameters in the handled data set. Accordingly, association rules are preferred where data can be described in rules of multiple granularities. These rules can be effective in uncovering unknown relationships and provide some results that can be basis for forecasting and decision making. Apriori algorithm is regarded as a well-known association rule learning algorithm in computer science. Apriori algorithm has been successfully applied to various problem domains such as manufacturing, marketing, logistics, medicine and many others. This study focuses on directing the patients efficiently by considering the previously appealed departments in the employed data set. Similar situations in the data set will be considered during the queries for decision making by using association rules. Implementation of this study has been carried out via a program developed with C# programming language. The employed data set has been obtained from Duzce University Medical Faculty. The experiments in the scope of this study have been performed by testing various support and confidence values. Thus, an effective guidance has been aimed for the patients without losing any time and without causing any misunderstanding.

Keywords: data mining, association rules, Apriori algorithm

Mobile Phone Based Portable ECG System via Bluetooth in Intensive Care Unit

Gul Fatma Turker[a*]

[a]Suleyman Demirel University

*gulturker@sdu.edu.tr

Abstract:

It is very important to follow patients in vital heart diseases. Elektrocardiogram device allows simultaneous display of all heart movements. With the developing technology, portable electrocardiogram devices ensure that patients can move easily and follow patients from distant points by using wireless technologies. In the transmission of biological signals, bluetooth, radio frequencies, Zigbee etc. are used as wireless communication technologies. In this study, ECG Signals of patients monitored in intensive care units were delivered to the central computer and transmitted to the doctora via smartphone. A portable prototype designed and designed with EKG signals transmitted with bluetooth technic. Firstly, an ECG circuit design with a Bluetooth transmitter was made to monitor and transmit of heart signals. The ECG signals obtained from the patient were transmitted wirelessly to the central computer interface of the intensive care unit. Thanks to this designed system, the ECG signals which are being monitored on the bedside monitors on the intensive care units are traced from a single point. Secondly, in the sudden state changes that may occur in the signals coming from the central computer, the warning message was sent to the doctor in the hospital or the responsible person in a different place via mobile phone. This study, developed to prevent neglect of patients and to provide emergency intervention, is an integrable application with different telemetry systems.

Keywords: ECG, Bluetooth, Biomedical Signal, Smartphone, Wireless Systems

Modeling Of The Lactation Curve With Cubic Spline Regression Data From The Holstein Cows

Muzaffer Cevik[a*], Yakut Gevrekci[a], Cigdem Takma[a], Funda Erdogan Atac[a], Mustafa Sahin[a]

[a]Ege University

*muzaffercevik1905@gmail.com

Abstract:

Regression analysis is used to model the relationship between a dependent variable and one or more independent variables. A spline regression analysis (segmented or piecewise regression) is a method which the independent variable is partitioned into intervals and a separate line segment is fit to each interval. Spline regression is useful when the independent variables can be defined into the different groups which are related to each other. Cubic splines, which are a transformation of a continuous predictor model of non-linear relationships in regression models.

In this study a total of 5226 milk records belong to 557 Holstein Friesians were examined. Data set were collected from 2010 to 2015 in located west of Turkey. First lactation test day milk records were conducted by cubic spline regression to model of the Holstein's lactation curves. After analysis; total coefficient of determination value, Durbin Watson statistic, Akaike information criterion(AIC) and root mean square error(RMSE) were found 0.998, 3.02, -13.06 and 0.11, respectively. The findings of this study suggest that cubic spline regression model good has gave good fit for the Holstein lactation curve.

Keywords: Spline regression, Holstein Friesian, Lactation curve

Modelling of Defect Transport within Mixed Conducting Perovskite Materials

Selgin Al[a*]

[a]Ahi Evran Universitesi

*selgin.al@ahievran.edu.tr

Abstract:

Ceramic based materials from the ABO3 perovskite family, exhibit both proton and oxide ion conductivity at intermediate temperatures depending on the gaseous environment. Due to these multi-species transport features of them, there has been lot of research focused on improving their properties. These types of ceramic materials such as barium cerate and barium zirconate have been envisioned to be used for various applications such as sensors, gas separation membranes, fuel cells and electrolysers [1, 2]. In this study, a model was developed and evaluated in order to predict this multi-species transport within various perovskite materials. Then the results were compared to the experimental data in literature. This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: FEF.E2.17.006.

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Keywords: Perovskite membranes, multi-species transport

Modification Of Bitumen By Maleic Anhydride Grafted Recycled High Density Polyethylene.

Perviz Ahmedzade[a], Alexander Fainleib[b], Taylan Gunay[a*], Irem Bozyigit[a], Selim Altun[a]

[a]Ege University Civil Engineering Department
[b]National Academy Of Sciences Of Ukraine

*taylan.gunay@ege.edu.tr

Abstract:

Modification of bitumen is a widespread phenomenon around the world mainly on the purpose of acquiring better performance properties by decreasing temperature dependency of bitumen which leads to diminish permeant deformation on highways such as rutting.

In this study, it was aimed to investigate the effects of maleic anhydride (MAH) grafted recycled high density polyethylene (HDPER-MAH) on bitumen Maleic anhydride was dissolved and mixed with recycled polyethylene which was observed by the Fourier infra-red (FT-IR) spectrum. Subsequently, Six different binders (one base and five modified) were prepared with HDPER granules to investigate the effects of the modifier on properties of bitumen. Conventional tests such as penetration, softening point and ductility were conducted on base and HDPER-MAH modified binders to examine physical changes in bitumen after modification. Rolling thin film oven test (RTFOT) was applied to base and modified bitumen to investigate effects of HDPER-MAH on short term aging properties of bitumen. Rotational viscometer (RV) and dynamic shear rheometer (DSR) was used to determinate viscosity of the binders.

The tests results reveal that a gradually increment in HDPER-MAH modification leads to a decrease in phase angle and an increase in complex shear modulus which is evidence of an increased stiffness of bitumen. An increment in rutting parameter after modification observed by DSR test is a clear indication of better rheological properties of bitumen which means permanent deformation occurred in flexible pavement can be restrained by HDPER-MAH modification.

Keywords: Recycled polyethylene, bitumen, modification, maleic anhydride, graft

Modified Arithmetic Circuits for Galois Rings

Oguz Emre Kural[a], Durmus Ozkan Sahin[a*], Sedat Akleylek[a], Erdem Alkim[b]

[a]Ondokuz Mayis University
[d]Ege University

*durmus.sahin@bil.omu.edu.tr

Abstract:

Galois rings have some applications in coding theory, cryptography, communication and digital signal processing such as desinging code division multiple access, constructing public key cryptosytems. Thus, efficient arithmetic in Galois rings is an important issue for applications. In this paper, we focus on the representation of the coefficients of the polynomials in Galois rings. There are 24 various possibilities to represent the coefficients of the polynomials in Galois rings with four elements as pairs of binary digits. In standard representation we have “0=(00)”, “1=(01)”, “2=(10)”, “3=(11)” and arithmetic operations are defined according to this representation. Our motivation in this study is that what happens if we change the representation of elements. We provide various ways in explicit form to represent the elements in Galois rings. Then, we design modified arithmetic circuits including adder and multiplier for each representation. We compute the required number of gates (AND, OR, XOR, NOT) to implement each operation and compare the arithmetic complexity with the standard representation. We improve the complexity of arithmetic operations in Galois rings. To design an arithmetic circuit, we first fix the elements representation. Since binary circuits are easy to implement and more practical, we emphasize the usage of binary gates. Then, we show that the standard representation is not the most efficient one considering the required number of binary gates and some representations have better arithmetic complexity results than standard representation, i.e., arithmetic circuits are simpler than standard representation in view of the number of requiring binary gates to achieve addition and multiplication.

Keywords: arithmetic circuits, representation of an element, arithmetic complexity, coding theory, cryptography

Multiple Criteria Decision Making for Site Selection of a Wind Power Plant in Turkey

Sertac Ari[a*], Hakan Ozkose[b], Cevriye Gencer[c]

[a]Gazi University Institute Of Informatics
[b]Bartin University
[c]Gazi University

*sertacari@hotmail.com

Abstract:

Energy is one of the essential parts of life, the most vital source for subsistence and the most important tool of sustainable development efforts. The consumption of energy has increased in parallel with the development of urbanization, industrialization and technology. Even though the majority of the electricity is still acquired from fossil fuels, decreasing reserves of them and global environmental concerns have pushed governments and nongovernmental organizations to seek sustainable resources. The most important characteristic of renewable energy resources is its support on environmental protection by decreasing the carbon emission. Together with solar power, wind power is the most studied renewable energy resource. The share of wind power in electricity generation is supposed to increase in the future. Although the average service life of a typical wind turbine is about 20 years, especially the setup cost of wind farms is quite high. Therefore, site selection process is vital in order to take highest advantage of the return of the investment on them. This study aims to select the optimal site to establish a wind farm in Turkey. The method used within the study is based on Multiple Criteria Decision Making (MCDM) methods. Three MCDM methods; a deterministic, a stochastic and a hybrid method was used within 7 criteria to determine the optimal site among 6 alternatives.

Keywords: wind energy, site selection, Multiple Criteria Decision Making

Multivalued Contractive Maps And Some Fixed Point Results

Murat Olgun[a*], Ishak Altun[b], Gonca Durmaz[c]

[a]Ankara University-Turkey
[b]Kirikkale University
[c]Cankiri Karatekin University

*olgun@ankara.edu.tr

Abstract:

In this talk taking into account the Wardowski's technique we give new fixed point theorems for multivalued maps on complete metric space without using the Hausdorff metric. Our results are real generalization of the famous Feng and Liu's result in the literature. We also present some illustrating examples.

Keywords: Complete metric space, fixed point, multivalued maps

Multivalued Weakly Picard Operators On Complete Metric Spaces

Murat Olgun[a*], Ishak Altun[b], Gonca Durmaz[c]

[a]Ankara University-Turkey
[b]Kirikkale University
[c]Cankiri Karatekin University

*olgun@ankara.edu.tr

Abstract:

By using the new proof technique, which was used for single valued maps by Wardowski, we demonstrate that multivalued nonlinear F-contractions of Ćirić type are weakly Picard operators on complete metric spaces. Also, we give a nontrivial example, which many fixed point results in the literature can not be applied, to guarantee that our result is a proper generalization of recent result of Ćirić.

Keywords: Fixed point,weakly Picard operators, F-contractions

Nanotechnology Of Materials For Energy Storage In Electrochemical Supercapacitors

Igor Zhitomirsky[a*], Y.Su[a], Y.Liu[a]

[a]Mcmaster University

*zhitom@mcmaster.ca

Abstract:

Nanotechnology offers powerful tools for the fabrication of advanced materials for energy storage. Electrochemical deposition techniques, such as cathodic reduction and anodic oxidation, polymer mediated electrosynthesis and electrophoretic deposition allowed the deposition of metal oxides, conductive polymers, carbon nanotubes, graphene and composites. Anodic electropolymerization of conductive polymers and composites was performed using novel multifunctional additives, which combined properties of dopants, dispersants and charge transfer mediators. A bio-inspired chemical approach has been developed for the surface modification, dispersion and colloidal processing of various materials. Advanced dispersants provided strong bidentate, polydentate or chelating bonding to the particle surface and allowed co-dispersion of different materials. New strategies have emerged for the synthesis of non-agglomerated nanoparticles of controlled size, organic and inorganic fibers and polymer coated carbon nanotubes. New aromatic and steroid dispersant molecules outperform other dispersants in the colloidal processing of pristine carbon nanotubes. Further advancements in the colloidal nanotechnology were achieved by the use of chelating polymers and complexes for the efficient colloidal processing of multicomponent systems. Various heterocoagulation techniques, liquid-liquid interface synthesis and extraction method were developed for the synthesis of advanced composites. The advancements in the nanotechnology were utilized for the fabrication of efficient electrochemical supercapacitors, which showed high capacitance, excellent power-energy characteristics, good capacitance retention at high charge-discharge rates, excellent cyclic stability, low impedance at high active material to current collectors mass ratio. The highest capacitance of 8.2 F cm-2 was achieved at a scan rate of 2 mV s-1. The capacitance retention in the scan rate range of 2-100 mV s-1 was 62%. New devices with a voltage window of 1.6 V and supercapacitor modules were tested for energy storage and capacitive water purification.

Keywords: nanoparticle, oxide, dispersant, supercapacitor, polymer, composite, device

Necessary And Sufficient Conditions For A Set Function To Be A Fuzzy Measure That Is Subadditive For Singletons

Gokhan Ozcelik[a], Mehmet Unver[b*]

[a]Karadeniz Technical University
[b]Ankara University

*munver@ankara.edu.tr

Abstract:

Fuzzy measure theory has an important role in multicriteria decision making problems. However, identification of the fuzzy measure is a complicated process due to the exponential number of the subsets. In this talk a particular set function which depends on densities of singletons with interdependence coefficients and which provides redundancy among the singletons is considered to achieve this complexity. First of all the Mobius representation of this function is obtained. Then some necessary conditions and some sufficient conditions are presented to attain a fuzzy measure from this set function. Finally, these conditions are discussed and also supported with explanatory numerical examples.

Keywords: fuzzy measure, multicriteria desicion making, subadditive set function, Mobius representation

New Fixed Point Theorems For Multivalued Mappings On Quasi Metric Space

Ishak Altun[a*], Murat Olgun[b], Ozlem Acar[c]

[a]Kirikkale University
[b]Ankara University
[c]Mersin University

*ishakaltun@yahoo.com

Abstract:

In this talk, we present some new fixed point results for multivalued mapping on some kind of complete quasi metric spaces by taking into account recent contractive technique, which is called F-contraction.

Keywords: Fixed point, multivalued mapping, quasi metric space

Newtonian Heating Effect On Radiative Casson Fluid Flow Over Exponentially Stretching Sheet In Porous Media

Kartini Ahmad[a*], Zaharah Wahid[a]

[a]International Islamic University Malaysia

*kerjaphd@yahoo.com

Abstract:

This study focuses on a steady two-dimensional boundary layer flow and heat transfer of a Casson fluid over an exponentially stretching sheet which is embedded in porous medium along with Newtonian heating and radiation effects. By imposing suitable similarity transformation, the partial differential equations are transformed into ordinary differential equations which are then solved numerically using Keller-box method. The numerical solutions for the skin friction and the surface temperature are obtained for few values of exponential parameter (N), Casson fluid parameter (β), permeability number (κ), radiation parameter (R), Prandtl number (Pr) and Biot number (Bi). It is found that increasing the N will decrease the surface temperature and increases the skin friction coefficient. However, the imposition of the radiation towards the thermal flow rises the wall temperature.

Keywords: exponentially stretching sheet, newtonian heating, numerical methods

Non-Invasive Glucose Detection Using Biomedical Photo-Acoustic Sensor

Yasar Kemal Erdogan[a*], Ismail Bayrakli[a]

[a]Suleyman Demirel University

*yasarerdogan@sdu.edu.tr

Abstract:

Glucose is one of the most important molecules for all living things. Especially, it is a major source of energy for the human body. Significant diseases arise in the case of glucose abnormality in human blood and diabetes is one of the most common diseases in the world. Therefore, it is very important to detect the glucose levels in blood.

In the present study, we aimed to detect and analyze the glucose levels by using a photo-acoustic method. An external cavity laser system and photo-acoustic cell has been used for the experiments. The glucose solution was prepared from D-glucose which present in human blood. Photo acoustic signals were detected from the synthetic glucose sample. In subsequent studies, non-invasive glucose detection studies will be performed from different regions of the human body. So with the improved photo-acoustic measurement technique, such methods can become a practical, painless, inexpensive and easy to use device for detection of diabetics.

Keywords: Photo-acoustic, glucose, non-invasive, diabetes

Nonlinear Static Analysis of an Existing RC Building using Fiber Section Modelling

Baris Gunes[a], Baris Sayin[a*], Turgay Cosgun[a]

[a]Istanbul University

*barsayin@istanbul.edu.tr

Abstract:

Majority of the existing building stock of Istanbul can be considered under high seismic risk. Significant proportion of the existing structures in Istanbul will get heavily damaged in case of a possible seismic hazard. These structures may possibly reach beyond their elastic limit when affected with strong ground motion. With this respect, nonlinear behavior of these structures should be taken into consideration for the seismic assessment procedures. Nonlinear static analysis, also known as pushover analysis has become a popular procedure to estimate this kind of behavior with the developments on processing capacity of modern computers. It is widely used to determine seismic vulnerability of existing and new structures. One of the most important benefits of the nonlinear static analysis is the capacity curve which reflects the overall behavior of the building. Detailed knowledge about numerical modelling of the structure is important to determine this behavior correctly. In this study; a reinforced concrete building is considered and detailed procedure of nonlinear static analysis has been explained. Fiber section modelling was used for frame and shear walls with P-M2-M3 interacting plastic hinges. A Visual Basic based Excel application was used for evaluating output data. Seismic performance assessment of the related structure was carried according to the Turkish Seismic Code (TSC 2007).

Keywords: Reinforced concrete structures, seismic performance assessment, nonlinear static pushover analysis, fiber section

Novel Local Reactivity Descriptor for 4D-QSAR Study on Antibacterial Activity

Yahya Guzel[a*], Ertugrul Aslan[a], Burcin Turkmenoglu[a], Ekrem Mesut Su[a]

[a]Erciyes University

*yguzel@erciyes.edu.tr

Abstract:

In this work, Klopman's index was used as a novel local reactivity descriptor to describe the electrophilic, nucleophilic attacks of molecules in the drug design. Unlike other local descriptors such as condensed fukui functions, free valencies, atomic charge etc., the local reactivity of the molecular structure was investigated using both charge and coefficient for each atom. The agreement between the experimental data and the computational results was made with the Levenberg-Marquardt (LM) algorithm according to the nonlinear least squares method. Interaction of the ligands with the receptor has been considered as the main structure Pha as well as activity enhancer (Auxiliary Group-AG) or reducing (Anti-Pharmacophore Shielding-APS) groups. Among the multiple conformers that led to the 4D-QSAR operation, only one conformer selected was used to describe the activity of each ligand. Satisfactory results of antibacterial activity values for 29 training sets and 7 test sets (pEC50 (µM)) were found (r2cvv =0.98 and r2pred =0.91), respectively.

Keywords: Descriptor, Klopman index, Sulfone Derivatives, 4D-QSAR

Numerical Approach for Solving Composite Fractional Relaxation/Oscillation Equations

Ayse Anapali[a*], Gul Gozde Bicer[a], Yalcin Ozturk[a], Mustafa Gulsu[a]

[a]Mugla Sitki Kocman University

*ayseanapali@mu.edu.tr

Abstract:

In this paper, we present a Taylor collocation method for the numerical solutions of solving composite fractional relaxation/oscillation equations. This method transforms the fractional differential equation into matrix equations. The desired approximate solutions can be determined by solving the resulting equation, which can be effectively computed using symbolic computing codes on Maple

Keywords: Composite Fractional Relaxation/Oscillation Equations, Caputo derivative, Taylor collocation method, Fractional Taylor series, a

Numerical Investigation of Deformation Behavior of Energy Absorbers for Passenger Coaches

Ramazan Ozmen[a*], Mustafa Gunay[a], Tuncer Toprak[b]

[a]Karabuk University / Turkey
[b]Istanbul Technical University /Turkey

*ramazanozmen@karabuk.edu.tr

Abstract:

Thin-walled structures is used commonly as energy absorbers at the front and back of the coaches. These parts should be designed to minimize the damage to the vehicle and prevent the passengers from fatality and/or injury by absorbing the collision energy in railway transportation. In this paper, deformation behaviours of tube like structures with truncated cone under the axial impact load were investigated by means of finite element analysis (FEA). The energy absorbers having tube like structures were modelled the same weight and have three different wall thicknesses and taper angle. As a result of FEA, the performances of circular section absorbers were compared in terms of energy absorption capacities and average deformation forces. The analysis of variance in 95% confidence level was applied in order to determine the effects of design parameters on total efficiency (TE). Besides, optimum design parameters for TE were determined by using Taguchi optimization methodology. Thickness was found as the most significant parameter on total efficiency with 60.52% percentage contribution ratio according to ANOVA results.

Keywords: Coach, Energy absorption, Finite element analysis, HSLA steel,

Numerical Investigation of Hot Ultrasonic Assisted Turning of Titanium Alloy

Fatih Hayati Cakir[a], Selim Gurgen[a], Mehmet Alper Sofuoglu[a*], Melih Cemal Kushan[a], Sezan Orak[a]

[a]Eskisehir Osmangazi University

*alpers87@gmail.com

Abstract:

Titanium alloys exhibit superior properties such as high strength to weight ratio and corrosion resistance but these alloys possess poor machinability. In order to overcome this disadvantage, new machining methods (Ultrasonic Assisted Machining, Hot Machining etc.) are developed. Hot Ultrasonic Assisted Turning (HUAT) is a new method which changes the cutting system between tool and workpiece therefore reduced cutting forces and better surface finish for workpiece are obtained. In this study, 2D finite element (FE) analysis was carried out to investigate the effects of HUAT for titanium alloys. It was confirmed that HUAT technique reduces cutting forces and effective stress significantly but cutting temperature increases compared to conventional turning.

Keywords: Finite element modelling, hot ultrasonic assisted machining, titanium alloys; ultrasonic assisted machining; hot machining

Numerical Investigation Of Single And Repeated Impacts For Foam Core Sandwich Structures

Umut Caliskan[a*], M. Kemal Apalak[a]

[a]Erciyes University

*ucaliskan@erciyes.edu.tr

Abstract:

Single and repeated impact behaviors of sandwich structures which are used in for various purposes in engineering structures such that they can absorb the impact energy induced by foreign objects were examined. In general, sandwich structures are constructed with a thicker flexible core between stiff, strong and thin face-sheets. Adhesive bonding is an effective joining technique and has been widely applied in various industries. Compared to other joining methods such as welding, adhesive bonding is relatively easier to perform and does not require excessive enterprise costs. The foam core sandwich structure is subjected by a mass at one time in single impact, but sometimes multiple impact load can occur simultaneously and/or non-simultaneously. Single and repeated impact loads were conducted for the different impact energy levels. Abaqus/Expiclit finite element package programme was used for the numerical simulations. Plates and adhesive were used as aluminum 6061-T6 and Araldite 2015 in numerical analysis, respectively and foam core was used as PVC foam. The variations of the contact force, kinetic energy histories and the deflection of the central impact region were investigated under single and repeated low velocity impact loads.

Keywords: Repeated impact, foam core sandwich structure, nonlinear finite element method

Numerical Investigation Of The Effect Of Twisted Tape In A Tube Using TiO2 Nanofluid On Heat Transfer Enhancement

Toygun Dagdevir[a*], Orhan Keklikcioglu[a], Veysel Ozceyhan[a]

[a]Erciyes University

*toygun@erciyes.edu.tr

Abstract:

In this study, effects of inserting twisted tape to a horizontal tube and adding TiO2 nanoparticle to water on heat transfer enhancement performance and pressure drop penalty is investigated with using CFD program. The CFD program is based on finite volume technique to solve differential equations. The continuity, momentum and energy equations are discretized and Simple algorithm scheme is applied to link the pressure and velocity fields inside the solution domain. Analyses are carried out with Reynolds number of in range from 7860 to 15860, and constant heat flux is applied to wall of the tube. In order to simulate turbulent nanofluid flow k-ω standard turbulent model is applied for all cases. TiO2 particles with diameter of 10 nm dispersed in water with volume fraction of 0.2 - 2.0 are used as the working fluid. In order to generate swirl flow and enhance heat transfer, the twisted tape (constant twist ratio is y/W=3.0) is used in this study. The results show that adding nanoparticle to water causes to get more convective heat transfer coefficient as from 6% (for 0.2% vol. fract.) to 11% (for 2.0% vol. fract.) in a smooth tube. Furthermore, both adding nanoparticle to water and inserting the twisted tape to the smooth tube causes to approximately %50 much more convective heat transfer coefficient for all nanofluid cases. In addition to heat transfer performance, pressure drop penalty is investigated in this study. Increasing nanoparticles in the water increase pressure drop penalty slightly, but using twisted tape in the smooth tube increases pressure drop penalty as about 4.0 times more.

Keywords: CFD, nanofluid, twisted tape, heat transfer, pressure drop

Numerical Investigation on Determining The Effect of D/L Ratio on Thermal Performance for Horizontal Mantled Hot Water

Necdet Altuntop[a*], Dogan Erdemir[a]

[a]Erciyes University

*altuntop@erciyes.edu.tr

Abstract:

Thermal stratification is the most important performance parameter for hot water tanks. Enhanced thermal stratification increases the stored energy, system performance, standby time and system equipment efficiencies. With the widespread use of vacuum tube solar collectors, the use of horizontal hot water tanks has also increased. This situation has increased the interest in horizontal hot water tanks. This study presents a numerical investigation for determining the thermal performance of horizontal mantled hot water tank in the terms of D/L ratio. Where D represents the diameter of inner tank and L represents the length of the inner tank. At the end of the study, the best D/L ratio is determined. Also mantle inlet velocity, mantle inlet temperature, main inlet velocity and main inlet temperature are studied.

Keywords: Thermal stratification, Sensible thermal energy storage, Mantled hot water tank, Obstacle

Numerical Modelling of the In-Plane Loaded Homogenized Masonry Walls

Sedat Komurcu[a*], Abdullah Gedikli[a]

[a]Istanbul Technical University

*komurcus@itu.edu.tr

Abstract:

Masonry structures are one of the oldest structures in the world and have a considerable place among all the structures. Modelling of the masonry structures has become a significant requirement to evaluate the strengths of existing masonry structures and to build modern masonry structures. In this study, in-plane behaviors of the walls which constituting masonry structures are numerically modeled and analyzed. The homogenization technique is applied to obtain the material parameters used in the models. Unreinforced solid masonry wall and masonry wall with an opening are analyzed. The propagations of the cracks which may occur under the in-plane loads on the walls are investigated numerically. Fracture mechanisms occurring in the walls under the effect of in-plane loads are determined as a result of the analyzes. Results were compared with the experimental studies in the literature and it was seen that the results obtained in the numerical study were compatible with the experiments in the literature.

Keywords: Crack, Fracture, Homogenization, Masonry

Object Detection with RGB-D Data using Depth Oriented Gradients

Erkut Arican[a*], Tarkan Aydin[a]

[a]Bahcesehir University

*erkut.arican@eng.bau.edu.tr

Abstract:

In this work, we present new descriptor for object detection using edge information and RGB-D's depth data. Histogram of Oriented Gradients algorithms is very popular for human detection and it is widely adapted in many object detection methods. Although edges include sufficient information to represent object boundaries, objects with high texture introduce edges that are incapable of describing the objects. We address this problem by including additional information from depth data obtained from RGB-D sensors readily available on the shelves. For object detection, we train and test our data using with multiclass support vector machines.

Keywords: Histogram, Oriented, Gradients, HOG, RGB-D, Depth Data, Multiclass SVM

Observation Of Ac-Loss Valley In A Commercial Bi:2223/Ag Tape

Ibrahim Duzgun[a*], Ali Ozturk[b], Selahattin Celebi[b]

[a]Gumushane University
[b]Karadeniz Technical University, Department Of Physics, Trabzon, Turkey

*ibrahimduzgun@gumushane.edu.tr

Abstract:

We report on measurements of the AC susceptibility of a commercial Bi:2223/Ag tape as a function of temperature T, for several different AC magnetic field amplitudes, Hac, in the presence of static bias magnetic field Hb directed along Hac, hence the total applied field Ha=Hb+Hac . For each choice of Hac, the imaginary part of the AC susceptibility versus T traces a peak, denoted, centered at a temperature denoted Tmax. We find that versus Hac trace a valley for the orientation where total applied field Ha perpendicular to wide face of the tape. However we did not observe such a valley for the orientation where Ha parallel to the wide face of the tape. It can be attributed to the fact that the condition for the observation of a valley is not met when Ha is paralel to wide face of the tape. We note that the observation of the valley depends on various paremeters such as field dependence paremeter n in the critical current density, in the simple power law expression jc=(T)/Bn, choice of the bias field Hb together with selected AC field amplitudes Hac, and dimension and geometry of sample studied.

Keywords: Bi:2223/Ag tape, AC Loss Valley, Critical State Model, Critical Current Density

On the Vibration Behavior of Intraply Woven Carbon/Kevlar Reinforced Composites with Nano Silica Particle

Ahmet Erklig[a], Nurettin Furkan Dogan[a*], Mehmet Bulut[a]

[a]University Of Gaziantep

*nfurkandogan@gantep.edu.tr

Abstract:

Damping and vibration characteristics of intraply Carbon-Kevlar hybrid fiber reinforced epoxy (CKFRE) composites were investigated with the inclusion of nano silica particle. Nano silica contents of 0, 0.5, 1, 1.5, 2.5 and 3 weight percent were added to epoxy matrix and test samples were produced per ASTM standard. The dynamic modal analysis was used to investigate the dynamic characteristics of composite laminates. Also, half-power bandwidth method was used for determining the damping properties. Storage modulus and loss modulus were also determined. It was observed that nano silica inclusion improved the vibration and damping properties. Natural frequency value reaches its maximum value of 87.53 Hz while the damping ratio value of 0.122 is minimum as expected. Also, maximum storage and loss moduli are obtained with increasing of 41.5 percent and 18 percent respectively at the 1.5 weight percent compared to pristine samples.

Keywords: Damping, vibration, carbon, kevlar, composite

One-Step Synthesis Of Carbon Fiber Based Bi2WO6 Catalysts For Photocatalytic Decolorization Under Visible Light Irradiation

Esra Bilgin Simsek[a], Zeynep Balta[a], Dusan Berek[b], Ivan Novak[b]

[a]Yalova University
[b]Slovak Academy Of Sciences

*esrabilgin622@gmail.com

Abstract:

Contamination of groundwater by persistent organic substances such as dyes or agrichemicals has been a worldwide environmental problem for decades [1], and efficient advanced oxidation processes should be applied. Carbon-based nanostructures such as graphene, carbon nanotube, carbon fibers are good candidates to form hybrid materials with new functionalities for the photocatalytic applications. In the present study, carbon fiber based Bi2WO6 catalyst was successfully prepared by one-step hydrothermal method. The catalysts with different weight ratios of carbon fiber were characterized by FTIR, TGA-DTG, XPS, and UV–vis spectroscopy. The red shift of the absorption wavelength indicated that the Bi2WO6-CF hybrid catalyst can absorb visible light and be applied for the visible-light photocatalysis. The carbon fiber loading ratio decreased the indirect band gap and enhanced the photoactivity by suppressing the electron–hole recombination. The photocatalytic performances of the Bi2WO6-CF catalysts were evaluated in decoloration of Orange II dye under visible-light irradiation. The Orange II aqueous solution was reacted with Bi2WO6-CF catalyst. The effects of initial concentration of the dye contaminant (5–20 ppm), carbon fiber ratio (3–10 wt.%), catalyst dosage (0.1–0.5 g/L) and the effect of different scavengers in photoreaction were also investigated. By the increase in carbon fiber ratio from 0% to 5wt.%, the Orange II photodegradation increased from 34.5% to 56.0% at the end of 180 min visible irradiation. By comparison, the catalytic activity of Bi2WO6-CF was superior to Bi2WO6 and WO6-CF catalysts. The enhancement could be attributed to the high separation and easy transfer of photogenerated electron–hole pairs at the heterojunction interfaces and to the synergistic effect of adsorption-photodegradation process.

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Keywords: Tungsten, Carbon Fiber, Photocatalysis, Decolorization

Ongoing Polyphasic Characterization of Z2R53 Geodermatophilus sp. (DSM 103353) Isolated from Forest Soil

Fadime Ozdemir Kocak[a*], Salih Saricaoglu[b], Hilal Ay[c], Maria Del Carmen Montero[d], Kamil Isik[d]

[a]Bilecik Seyh Edebali University
[b]Kirsehir Ahi Evran University
[c]Ondokuz Mayis Universitesi
[d]Newcastle University

*fadime.ozdemirkocak@bilecik.edu.tr

Abstract:

Blastococcus, Modestobacter and Geodermatophilus (type genus) which are the members of Geodermatophilaceae family was first described by Normand et al. (1966). Members of the genus Geodermatophilus were generally isolated from arid soil (Urzi et al., 2001). Certain members of this genus are also known to be isolated from rhizosphere soil (Zhang et al., 2011; Jin et al., 2013). 16S rRNA gene sequencing is a PCR-based molecular method commonly used in identification of bacterial isolates and phylogenetic relationships. This method is currently being used in identification of Z2R53 isolate of Geodermatophilus sp. In the present study, it was aimed to determine taxonomic position of Z2R53 isolate obtained from Geodermatophilus sp by polyphasic approach. Samples were collected from forest soil in Burgazada, Istanbul. Phylogenetic analysis of 16S rRNA gene sequences showed that strain Z2R53T (KT867376) had been closely related to the type strains of G.saharensis,G. aquaeductus and G.tzadiensis. Growth of this isolate occured at pH7.0–12.0 and 20–37 °C in the presence of 0–3 % (w/v) NaCl. Results indicated inhibition of growth in pH interval of 4.0-6.0 and temperature interval of 4-55 °C. Diffusible pigments are not produced. Arbutin reduction is positive. Casein, gelatin, Tween 20, 40 and 80 and xylan are degraded. The whole-cell sugars were galactose, glucose, mannose, ribose and ramnose. The predominant menaquinone was MK-9(H4). The polar lipids were diphosphatidylglycerol, phosphatidylethanolamine, phosphatidylmethylethanolamine, hydroxyphosphatidylethanolamine, phosphatidylcholine, phosphatidylinositol, phosphoglycolipid and in addition three unidentified phospholipid structure was observed. Geodermatophilus sp. Z2R53T showed a combination of morphological, biochemical, physiological and chemotaxonomic properties which had been consistent with its classification in the genus Geodermatophilus.

This is a confirmed study with GenBank/EMBL/DDBJ accession number KT867376 and cultural collection numbers of Geodermatophilus sp. nov., Z2R53T are DSM 103353T and KCTC 39797T.

Keywords: Geodermatophilus, Forest Soil Isolate, Polyphasic Taxonomy.

Optimisation of Surface Roughness for Powder Mixed Electric Discharge Machining of Inconel-600 material using Response Surface Methodology

Ashwani Kumar Dhingra[a*]

[a]Department Of Mechanical Engineering, University Institute Of Engineering &Amp;Technology, Maharshi Dayanand University Rohtak

*ashwani_dhingra1979@rediff.com

Abstract:

Present work is an attempt for the experimental investigation foroptmisation of surface rougness of Inconel-600 material using powder mixed electrical discharge machining (PMEDM) process. Different machining process variables i.e. current (Ip), pulse on time (Ton), pulse off time (Toff), tool material and powder particles have been varied for the analysis of the surface integrity of Inconel-600. Copper, copper–chromium and graphite have been considered as a tool material along with three fine powder particles based dielectric, i.e. tungsten carbide, cobalt and boron carbide for the experimentation. Different sets of experiments have been performed using Box-Behnken Design of Response Surface Methodology (RSM). Surface structure of cleaned samples was examined using SEM joined with EDS analyzer. The quality of machined surface is represented by formation of cracks, metallurgical changes on the machined surface and the formation of different chemical compounds. The optimum value of the surface roughness has been predicted using the Response Surface Methodology. From the results of ANOVA, it has been found that the quadratic model developed for surface roughness is fairly well-fitted with experimental results with in 95% confidence level.. The co-efficient of regression (R2), adj. R2 and predicted R2 obtained for the developed surface roughness is 0.9503, 0.9322 and 0.8911. "Pred R2" of .8911 is in an acceptable contract with the "Adj R2" of 0.9322. The most significant parameters with respect to the optimized rougness surface rare found to be current, pulse off time, tool electrode and powder particles. The optimum parameter combination for surface roughness during PMEDM of Inconel-600 are current=4A, Ton=60µs, Toff=30µs, copper as a tool material and boron carbide as a powder additive.

Keywords: Optimisation, Response Surface Methodology, Powder Mixed Electric Discharge Machining, Surface Roughness, Inconel-600

Optimization of Cutting Parameters in Hard Turning of AISI H10A Steel under Minimum Quantity Lubrication

Halil Demir[a], Mehmet Erdi Korkmaz[a], Ramazan Cakiroglu[b], Mustafa Gunay[a*]

[a]Karabuk University
[b]Gazi University

*mgunay@karabuk.edu.tr

Abstract:

In this study, influences of cutting parameters in hard turning of hot work tool steel by applying minimum quantity lubrication (MQL) were investigated and optimized using Taguchi method by conducting the-smaller-the-better approach. Firstly, the machinability experiments on hardened AISI H10 hot work tool steel with CBN inserts were performed under the MQL condition. The experiments were carried out by Taguchi L9 orthogonal array. The machinability of AISI H10 steel were evaluated in terms of average surface roughness (Ra) and main cutting force (Fc). The analysis of variance (ANOVA) was applied to determine the effects of cutting parameters (cutting speed, feed rate and depth of cut) on surface roughness and cutting force. It was observed that surface roughness and cutting force increased with increasing feed rate and depth of cut in machining by applying MQL with uncoated CBN inserts. Depth of cut was determined as the most important parameter on surface roughness with 69.68% PCR while feed rate was determined on cutting force with 46.2% PCR. On the other hand, optimum cutting parameters for surface roughness and cutting force were found at different levels as a result of Taguchi optimization.

Keywords: AISI H10A, MQL, Optimization, Cutting force, Surface Roughness

Optimization of Drilling Conditions for Surface Roughness in Drilling of CFRP Composite Laminates

Mustafa Gunay[a*], Oguz Gun[a], Nafiz Yasar[a], Ramazan Ozmen[a]

[a]Karabuk University

*mgunay@karabuk.edu.tr

Abstract:

The thermo-mechanical formations have been occurred in drilling of the carbon fiber reinforced polymer composite materials, which have change depending on their physical and mechanical properties and cutting conditions, indirectly affect the hole quality. On the other hand, surface roughness is one of the important factors when considering for hole quality in drilling of CFRP composite laminates. For these reasons, it is necessary to be selective in drilling of CFRP in terms of cutting tool material and drilling parameters such as cutting speed, feed rate, etc. In this study, the influences of drilling parameters on the average surface roughness (Ra) which have been formed during drilling of CFRP composite laminates with three different drill qualities (uncoated and coated WC drills) were examined. The highest surface roughness was obtained with uncoated WC drill while the lowest surface roughness was obtained with diamond coated WC drill. The interactive influences of drilling conditions on Ra were determined by analysis of variance (ANOVA) with 95% confidence level, and drill quality was stated as the most significant parameter on them. Finally, a Taguchi optimization study has been performed based on “the-smaller-the-better” approach and then confirmation experiment has been conducted. The results have shown that the optimum conditions for better surface roughness were determined as drill quality of diamond coated drill, cutting speed of 100 m/min and feed rate of 0.05 mm/rev according to analysis of signal-to-noise (S/N) ratios.

Keywords: CFRP, Drilling, Surface roughness, Optimization

Optimization Of Spans Of Multi-Story Frames Using Teaching Learning Based Optimization

Gebrail Bekdas[a*], Sinan Melih Nigdeli[a], Aylin Ece Kayabekir[a]

[a]Istanbul University

*bekdas@istanbul.edu.tr

Abstract:

Optimization is a major issue of civil engineering since different goals (design, safety and economy) must be considered at the same time for an engineering design. In the present study, a methodology is presented for optimization of span lengths of frame structures for minimizing the stress of elements resulting from axial force and flexural moments. A metaheuristic based algorithm called teaching learning based optimization (TLBO) is employed in the presented methodology. The methodology can be explained in five steps. In the first step, the design constants and the ranges of design variables are defined. Then, the design variables are randomly generated within the selected range. The generation is done for several times and the number of total generations is equal to the population number representing the population of a class. In the third step, the teacher phase is started and the existing results are updated by using the best existing solution which represents the teacher. Then in the fourth step, the student phase is started and this phase is the imitation of the self-study of students. The existing solutions are used in the modification of the existing solutions. In the last step, the maximum iteration number is checked and the iterations will continue from the third step. The methodology is tested on multi-story frame structures in order to find the optimum lengths of spans.

Keywords: Spans optimization, Frames, Teaching learning based optimization

Optimization Study Of Photocatalytic Decolorization Of Remazol Black B Using Sulfated TiO2 Catalyst

Halit Levent Hosgun[a*]

[a]Bursa Technical University

*hlevent.hosgun@btu.edu.tr

Abstract:

One of the most important environmental problems today is the wastewater problem caused by the dyes used in the textile industry. These wastewaters cause non aesthetic pollution and eutrophication. Numerous methods including chemical and physical processes have been utilized, i.e. coagulation, flocculation, filtration, ion exchange and adsorption. Unfortunately, these methods are transferred the dyes to solid phase from the aqueous phase and not eliminate pollutants. It is necessary to apply a post treatment method for solid contaminants. Advanced oxidation processes are proposed as a solution to this problem. Although, advanced oxidation processes such as Fenton, photoassisted Fenton, photocatalytic, and ozone processes are different system, the main purpose is to produce OH radical. Among advanced oxidation processes, photocatalytic degradation using TiO2 most advantage technology. It can be used under ambient conditions (atmospheric pressure and room temperature) and to complete mineralization of organic materials.

The purpose of this study was to optimization of the decolorization of remazol black B using sulfated TiO2 photocatalysis. The effect of operating conditions such as catalyst loading, dye concentration, and time on decolorization was evaluated. Box–Behnken design was used to understand the effect of different variables on the photodecolorization. Three variables such as dye concentration (50, 100, 150 ppm), catalyst loading (0.01, 0.04, 0.07 g/100 ml), and time (30, 60, 90 (min)) were selected. It was found that the decolorization of dye was affected by the variations in dye concentration, catalyst loading, and time. Optimum conditions for the maximum decolorization are dye concentration (50 ppm), catalyst loading (0.04 g/100 ml), and time (90 min) with 99.97 as the maximum percentage of decolorization.

Keywords: Photocatalysis, TiO2, Box-Behnken, Optimization, Remazol Black B

Optimizing the Weights of the Artificial Neural Networks Using Particle Swarm Optimization Algorithm

Vahit Tongur[a*], Mehmet Hacibeyoglu[a], Mohammed H. Ibrahim[a]

[a]Necmettin Erbakan University

*vtongur@konya.edu.tr

Abstract:

Artificial Neural Networks (ANN) have the ability to solve very difficult problems in many fields of engineering and science. In the literature, the most widely used type of ANN are multilayer ANN which are usually trained with back-propagation algorithms. However, slow training, falling into local minimum and sensitivity to choose the initial weights are the main disadvantages of back-propagation algorithms. In this study, particle swarm optimization (PSO) algorithm is used for training ANN. The proposed training algorithm is implemented on the most common data sets which are taken from UCI (University of California, Irvine) repository. The results of the proposed method are compared to the results of the back-propagation algorithm. According to the experimental results, proposed training method shows better performance in terms of speed and accuracy.

Keywords: Artificial Neural Networks, back-propagation algorithm, particle swarm optimization

Optimum Carbon Fiber Reinforced Polymer Design For Increasing Shear Capacity Of RC Beams

Aylin Ece Kayabekir[a], Baris Sayin[a*], Gebrail Bekdas[a], Sinan Melih Nigdeli[a]

[a]Istanbul University

*barsayin@hotmail.com

Abstract:

Using carbon fiber reinforced polymer (CFRP) strips is an option in order to increase the flexural moment or shear capacity of reinforced concrete (RC) beams. In the present study, the optimum design of CFRP strips is done for RC beams with insufficient shear capacity. The design variables are the spacing of the strips, the width of the strips and angle of strips. The optimization objective is to minimize the area of the CFRP strips per unit meter. The design constraints are controlled according to the ACI318- Building code requirements for structural concrete regulation. As optimization methodology, metaheuristic algorithms are employed. Metaheuristic algorithms are developed from mathematical formulations of the natural happenings such as the process of the ants seeking the most confident and shortest (best) path between food source and nest, the echolocation behavior of micro bats used for searching prey, pollination process of flowers or teaching process in a class. In this paper, two metaheuristic algorithms flower pollination algorithm and teaching learning based optimization algorithm are used in order to find optimum results and compare the performance of the algorithms.

Keywords: CFRP, RC beam, Metaheuristic algorithms, Optimization, Optimum design.

Optimum Transport Line For Pneumatic Transport Systems

Busra Ozgur[a*], Resul Kara[a], Simge Ekiz[a]

[a]Duzce University

*busratakgil@duzce.edu.tr

Abstract:

In pneumatic systems that are frequently used in the industry, compressed air is used as an energy source. With the developing technology, the need for pneumatic systems is increasing.

Transport distance, capacity, ambient conditions, transport direction are factors affecting system performance. In studies for the optimization of pneumatic systems; The factors such as the diameter of the pipeline, the type of material, the change of the system parameters were emphasized or artificial neural networks were used to improve the performance of the system. While previous work is trying to improve the existing system, it is aimed to make the system more efficient in this work before the system is built. Pneumatic systems should be designed with the most efficient energy use. In this systems, increasing the speed for transporting the material in a shorter time not only increases the cost of energy, it can shorten the life of the transportation lines at the same time. Pneumatic systems may need to reduce the transport speed if it is necessary. For example, in hospitals transporting the blood sample too fast can cause hemolysis and may not achieve the desired result. To avoid this, shortening the distance reduces the transport time without increasing the speed. This will reduce cost and energy consumption.

A pneumatic conveying system can also be designed using existing mathematical models. However, the use of mathematical models is very limited and there are few reliable equations available. In this study, it is proposed to model the pneumatic conveying systems with a graphical structure which provides algorithmic solutions for finding the shortest route on the conveying line. To save time and energy in the transport system has been focused on finding the shortest path problem.

Keywords: Pneumatic systems, shortest path algorithm, optimum path

Palladium(II) Complex For The Fabrication Of A New Solid Contact Iodide-Selective Electrode

Semra Muratoglu[a], H.Elif Kormali Erturun[a], Esma Kilic[a], Ayca Demirel Ozel[a*]

[a]Ankara University

*ademirel@science.ankara.edu.tr

Abstract:

Due to the wide applications of anions, considerable effort has been devoted to the design of new tools to be used in potentiometry with high selectivity, small size, low cost, ease of manufacturing, which can be much better alternative than more complex and expensive analytical methods for the direct and selective determination of various anions. As essential micronutrient iodide compounds and iodine have important roles in brain function, cell growth, neurological activities and thyroid function. Although a safe dietary ingestion of iodine was recommended by WHO, there are several people suffering from insufficient or high iodine intake resulting with numerous diseases. Therefore, the determination of iodide to optimize its content in a daily diet is an important task [1]. Different sensing receptors for anion recognition have been used as ionophore in the construction of solid-contact iodide-selective electrodes. Here, dibromo[1,1'-bis(diphenylphosphino)ferrocene] palladium(II) was used to develope a new solid-contact iodide-selective electrode. Furthermore, the effect of the incorporation of multiwalled carbon nanotubes (MWCNTs) to the coating membrane was investigated.

The proposed electrode exhibited linear response in the range of 1.0×10-1 -1.0×10-5 M with a slope of 60.5±0.4 mV/pI at pH 4.0. The effect of pH and the coating membrane composition was investigated. The response time (10-15 s), the lifetime (a month) and the selectivity coefficients towards other anions were determined. SEM images and impedance studies of the membrane were evaluated. Finally, it was successfully utilized as an indicator electrode for the potentiometric determination of iodide in a real sample.

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Keywords: Iodide-selective electrode, solid contact, potentiometry, multi walled carbon nanotubes, iodide determination

Particulate Matter Emissions from Three Broiler Houses in Summer Season

Ilker Kilic[a*], Melike Yalili Kilic[b]

[a]Biosystems Engineering Department, Agriculture Faculty, Uludag University
[b]Environmental Engineering Department, Engineering Faculty, Uludag Univeristy

*ikilic@uludag.edu.tr

Abstract:

Poultry production is an important source for air pollutants emission from animal agriculture. Especially, broiler houses causes a big amount particulate matter (PM) emissions in production terms. Because broiler production rear on litter with straw and hay. The numbers of poultry (layer and broiler) in Turkey increase from 312 million hens to 329 million hens between 2016 and 2015. Therefore air quality monitoring in poultry houses should be done to determine pollutant level of atmosphere. In this study, three broiler operations in Bursa region of Turkey were monitored for PM emission in summer season measurement period. Three broiler houses with natural ventilation systems reared broiler on litter until 40 days and capacity of broiler1, 2 and 3 is 10000, 12000 and 24000 broilers. The PM concentrations and indoor climatic conditions, such as temperature, humidity and air velocity were measured continuously for four days in the beginning, middle and end of each month in summer season in selected broiler houses using Testo 435-2 multiparameter. Measurements were conducted simultaneously in all monitored broiler houses and PM concentrations were sampled at the ventilation exhausts in each house. Thermo PDR 1500 was used for PM concentration measurement. The PM concentrations inside houses were compared with health limit thresholds established in the USA and Europe. Also, the seasonal emission rates of PM were calculated and reported along with herd characteristics, house conditions, and weather. At the end of the study, indoor temperature, relative humidity, air velocity and ventilation rate were ranged between 21 and 32 °C, 34 and 80 %, 0.01 and 0.7 m/s, 0.1 and 0.7 m3 / h. hen, respectively. PM emissions rates were calculated 11.37 g/h for Broiler1, 8.73 g/h for Broiler2 and 16.45 g/h for Broiler3. The results of this study provide useful knowledge about PM emissions for broiler producer.

Keywords: Broilers, Particulate Matter, Emissions, Air Quality, Poultry

Passive-Seat Design to Reduce Whiplash in Rear Impacts

Selcuk Himmetoglu[a*]

[a]Hacettepe University

*s.himmetoglu@hacettepe.edu.tr

Abstract:

Whiplash is a common problem in road traffic accidents and it occurs as a result of sudden differential movement between the head and the torso. There are several different car seat and head restraint designs in the market aimed at reducing whiplash including active head restraints, reactive seats and passive seats. In this study, it is shown that seats which only have passive components can also provide good protection against whiplash. For this purpose, computational multi-body models of a biofidelic 50th-percentile male human and a generic car seat for rear impact are developed. Six different passive-seat designs are studied by subjecting the seat-occupant models to low, medium and high severity crash pulses of the EuroNCAP whiplash test. In the seat models, three different recliners, two different head-restraint foams and two different seatback foam-and-suspension are used. It is shown that a breakaway torque at the recliner can help to reduce upper-neck shear forces up to 85-185 N at the high severity crash pulse. This breakaway torque prevents excessive rotation of the seatback and head restraint at the start of the impact and reduces the maximum seatback rotation by 4.5 degrees. The results also show that a softer head-restraint when used in combination with a more compliant seatback foam-and-suspension can lower upper-neck shear forces up to 65 N. In view of the simulation results, a simple passive-seat design is proposed which only requires the rotation of the seatback, a passive head-restraint and a breakaway torque at the recliner to earn a good rating in EuroNCAP whiplash test. This study is considered to be a useful guide for seat designers to lower whiplash risks.

Keywords: rear impact, car seat design, human body model

Pd-based Catalysts for Electrochemical Detection of H2O2

Hilal Demir Kivrak[a*], Ozlem Sahin[b], Ebru Ozkan[b]

[a]Yuzuncu Yil University, Chemical Engineering Department
[b]Selcuk University, Chemical Engineering Department

*hilalkivrak@yyu.edu.tr

Abstract:

Electrochemical biosensors generally employ the enzymes as detection elements. These sensors are highly selective towards target analytes however, the use of enzymes for biosensors are limited due to the poor stability of the enzyme. To minimize these limitations, chemically modified electrodes have been used to detect H2O2 as rapid and accurate routes, due to their low expense and simple fabrication. In recent years, different types of carbon materials (activated carbon, graphite, carbon nanotubes, etc.) have been investigated as modified electrodes for determining hydrogen peroxide (H2O2).The electrochemical response to H2O2 is improved by using various catalytically active materials such as transition metals and their oxides. The use of carbon nanotubes (CNTs) as a support with metal nanoparticles have been widely studied due to their unique structural, mechanical, and electrochemical properties. Recent studies have shown that CNTs supported metal catalysts have significant activity towards H2O2 detection.

In this study, the characterization of CNTs supported Pd based catalysts at different atomic ratios has been investigated for the electrochemical detection of H2O2. Cyclic voltammetric (CV) and chronoamperometic (CA) methods were used to evaluate the catalytic activities of the prepared electrodes towards H2O2 electro-oxidation. Moreover, the effect of interferents such as ascorbic acid (AA) and uric acid (UA) was examined. The electrochemical measurements showed that Pd based catalysts exhibited high electrocatalytic activity toward the oxidation of H2O2. Therefore, these catalysts could have potential usage for non-enzymatic H2O2 sensors.

Keywords: Pd based catalysts, non-enzymatic sensor, hydrogen peroxide detection

Performance Analysis of MIMO Wireless Networks with Opportunistic Round Robin Scheduling

Hakki Soy[a*], Ozgur Ozdemir[b]

[a]Necmettin Erbakan University
[b]Electrical Engineering, Qatar University

*hakkisoy@konya.edu.tr

Abstract:

The improved spectral efficiency is an important design consideration for next generation wireless networks. Recently, wireless networks that employ multiple antennas at the transmitting end as well as the receiving end have attracted considerable attention due to the spectral efficiency gain over traditional counterparts. Moreover, opportunistic scheduling algorithms have drawn much research interests due to its throughput advantage. On the other hand, the fairness criterion plays an important role in upgrading the performance of the network. In this paper, we consider an orthogonal multi-beam based MIMO wireless network. To improve the short-term fairness performance while providing high throughput, we utilize an opportunistic round robin scheduling algorithm. We investigate the spectral efficiency performance by deriving closed-form expression. In addition, we measure the throughput and fairness performances with statistical simulations on MATLAB. Simulation results confirm the analytical solutions. The obtained results show that opportunistic round robin algorithm improve the fairness but at the expense of slight throughput loss compared to pure opportunistic scheduling algorithms.

Keywords: wireless networks, MIMO, opportunistic scheduling, fairness, spectral efficiency

Performance Comparison of Back Propagation Neural Network and Extreme Learning Machine for Indoor Positioning System

Sinem Bozkurt Keser[a*], Ahmet Yazici[a], Serkan Gunal[b]

[a]Eskisehir Osmangazi University
[b]Anadolu University

*sbozkurt@ogu.edu.tr

Abstract:

Indoor positioning system is an active topic with the recent developments of location based services and increasing usage of smart phones. Among the various proposed methods in the indoor positioning field, fingerprint-based indoor positioning is the one of the most promising method. The fingerprint-based indoor positioning method generally uses Received Signal Strength values of WiFi signal to calculate the position of the mobile device. The Received Signal Strength values have noisy characteristics which lead to inaccurate position estimate. Therefore, hybrid solutions which integrate other sensor types such as magnetic field, or Bluetooth, etc. are preferred in the literature. In this study, two different machine learning methods are compared for a hybrid solution that uses WiFi and magnetic field values. Two popular machine learning algorithms such as Back Propagation Neural Network and Extreme Learning Machine are selected for the comparison. They are tested using publicly available RFKON dataset. And, the test results are compared in terms of accuracy and computation time.

Keywords: Indoor Positioning, WiFi, Received Signal Strength, magnetic field, fingerprint-based positioning

Performance Comparisons of Current Metaheuristic Algorithms on Unconstrained Optimization Problems

Umit Can[a*], Bilal Alatas[b]

[a]Munzur University
[b]Firat University

*ucan@munzur.edu.tr

Abstract:

Optimization is the process of searching for the optimal solution. Analytical, enumeration, and heuristic methods can be used for global optimization tasks. A metaheuristic is a higher level heuristic that may provide a sufficiently good solution to any optimization problem. In this paper; seven of newest metaheuristic algorithms namely, Ant Lion Optimization, Dragonfly Algorithm, Grey Wolf Optimization, Moth-Flame Algorithm, Multi-Verse Optimizer, Sine Cosine Algorithm, and Whale Optimization Algorithm have been tested on unconstrained benchmark optimization problems and their performances have been reported. Some of these algorithms are based on swarm while some are based on biology and mathematics. Performance analysis of these novel search and optimization algorithms satisfying equal conditions on benchmark functions for the first time has given important information about their behavior on unimodal, multimodal, and other types of search spaces for global optimization. These algorithms have been recently proposed and many new versions of them may be proposed in future for efficient results in many types of search and optimization problems.

Keywords: Metaheuristic Algorithms, Global Optimization, Performance

Performance Evaluation Of Mpls Networks With Traffic Engineering

Ali Gezer[a*]

[a]Erciyes University

*aligezerr@hotmail.com

Abstract:

Multi-Protocol Label Switching (MPLS) technology becomes an efficient solution for Internet Service Providers backbone network which includes the traffic engineering specifications of ATM and scalability of IP networks. MPLS nodes route packets from one hop to another in MPLS cloud using short path labels in comparison to IP routers which decides next hop via looking complex routing tables. MPLS establishes connection oriented paths over a connectionless IP network. MPLS also provides many services such as Layer 2 VPN, layer 3 VPN and traffic engineering. It works well with many data link layer protocols such as IP, ATM, Frame Relay etc. In this paper, we take into consideration traffic engineering capabilities of MPLS routing technology. We evaluate the performance of MPLS network with and without traffic engineering via simulating MPLS technology in OPNET modeller. We take into consideration end to end delay, packet drop, throughput, traffic sent and received parameters to show the superiorities of traffic engineering in MPLS routing technology.

Keywords: Multi Protocol Label Switching (MPLS), Performance Evaluation, Traffic Engineering, Opnet Simulator

Performance Evaluation of Security Algorithms for 5G Wireless Networks

Safak Durukan-Odabasi[a*], Makbule Selcen Haskiris[a]

[a]Istanbul University

*sdurukan@istanbul.edu.tr

Abstract:

Recent technological developments have facilitated communication and made network systems be a part of our daily life. On the other hand, wireless networks have an important place among network technologies since they act an effective part on long distance communication with their advantages. But they also open to attacks because they use radio frequency for communication and this feature incapacitates wireless systems against security vulnerability. Therefore, the most fundamental problem is security for wireless networks. Fifth generation (5G) wireless networks aim to solve most of the problems which are observed in previous generations, offer higher data rate and provide more secured network structure. Also, higher spectral efficiency, low energy consumption, simultaneous connection ability, higher QoS and wider area mobility are the other significant goals of 5G. In 5G structure, network components and terminals are redesigned and thus, devices can sense system changes around and offer seamless communication for users. 5G technology has lots of advantages as cooperation with previous generations, gathering all network types under a single platform, offering a completed wireless communication environment with almost no limitation to access and zone issues, ability of sending data faster, unified global standard, higher connectivity speed.

Although all of these advantages, there are many challenges like security, privacy, high cost, multi-mode user terminals, attacks on application level, network infrastructure and QoS support and data encryption that 5G must face with.

In this study, main features of 5G wireless networks are explained, symmetrical and asymmetrical encryption methods and their advantages/disadvantages are analyzed, a 5G network environment is modeled, Advanced Encryption Standard (AES) and Elliptic Curve ElGamal encryption algorithms are implemented on this model to evaluate performance differences. The simulation results of this study show that ElGamal provides significant improvements on number of dropped packets and data security against increasing number of users.

Keywords: 5G, security, AES, ElGamal

Performance Improvement of SCM based RoF System against Non-Linear Distortions by Employing different Modulation Techniques

Suresh Kumar[a*], Abhimanyu Nain[b]

[a]Uiet, M D U Rohtak
[b]Gjus&T Hisar

*skvashist_16@yahoo.com

Abstract:

This paper evaluates the output performance of Sub-Carrier Multiplexing (SCM) based Radio over Fiber (RoF) system based on theoretical analysis for different modulation techniques like Direct and External modulation based on Mach Zehender Modulator (MZM) and Optical Phase Modulator (OPM). Simulation has been carried out using different amplification techniques to understand and compare the performance of the system under the influence of inter-modulation and harmonic distortions. The signal subcarrier spacing affects the system output closely. It is also seen that 2nd & 3rd order inter-modulation distortion terms are almost suppressed by the use of OPM. Optical Phase Modulator along with EDFA greatly improves the system performance considerably by almost 25dB.

Keywords: Radio-over-Fiber (RoF), Sub Carrier Multiplexing (SCM), Direct Modulation (DM), MZM, OPM, Non linear Distortions.

Performance Modelling and Optimization of the Rice Processing Industrial System

Ajay Kumar[a*]

[a]Department Of Mechanical Engineering, Deenbandhu Chhotu Ram University Of Science And Technology, Murthal, Haryana, India

*ajaydabas2@rediffmail.com

Abstract:

The present work includes the performance modelling and optimisation of the rice processing Industry for achieving the maximum availability. The study presents a methodology for availability evaluation of the process industry. In manufacturing systems, tools and manpower are used to convert raw material into final products as per requirements of customer. For the increased production rate and resource utilization, the maintenance plan should be developed which can predict the effect of performance parameters with time. The performance modelling for the Steady State Availability (SSA) has been done using Markov method using historical failure and repair database followed by the system optimization using Particle Swarm Optimization (PSO) . The performance parameters are assumed to be negative exponential which are independent to each other and repaired units are considered as fine as original. The uncertainties of failure and repair rates are removed by selecting these parameters randomly in PSO. The maximum availability of each system for all possible combinations of failure and repair rates within fixed minimum and maximum limits for each subsystem has also been computed. The rice processing plant consists of several subsystems for which optimum availability level for rice processing plant for random combinations of failure and repair rates has been found. The computed results are economically beneficial for the plant personnel in improving the production rate and maintenance planning. The decision matrix is proposed for different population and number of iterations for better maintenance decisions.

Keywords: Performance modelling, Rice processing plant, Markov Modelling, Particle Swarm Optimization, Selection, Decision Support System

Performance Of Grasshopper Optimization Algorithm And Other Swarm Based Methods On Benchmark Functions

Umit Can[a*], Bilal Alatas[b]

[a]Munzur University
[b]Firat University

*ucan@munzur.edu.tr

Abstract:

The real world optimization problems have high dimensions and complexity. The traditional classical optimization technique does not solve current complicated problems. However, at that point to overcome this obstacle the novel metaheuristic algorithms have been developed and proposed. Due to the advantages of these metaheuristic techniques they are getting more strong and famous. These popular techniques provide an acceptable solution within an acceptable time. There is still a gap at the point of finding the best metaheuristic optimization algorithm for all types of problems and state of the art techniques or new types of current algorithms are being developed for this reason. Grasshopper Optimization Algorithm (GOA) is the most current metaheuristic algorithm that has been proposed in 2017 and it has been inspired behavior of grasshopper swarms in the nature. This paper has demonstrated the GOA using in optimization and search problems. The detailed properties of GOA have been shown and GOA's operators have been explained for leading optimization process. In addition to that, the results for benchmark functions obtained from GOA and other swarm based optimization algorithms have been compared and analyzed. GOA is the most recent metaheuristic algorithm and there is only one work in the related area. GOA revealed an impressive and robust optimization way solving in many complicated optimization problems. The obtained results are very promising and hopeful for many future studies.

Keywords: Global Optimization, Metaheuristic Algorithms, Grasshopper Optimization Algorithm, Swarm Intelligence.

Phylogeny and Antibiotic Resistance of Bacteria in Sediments of Aegean Sea

Ilknur Tuncer[a*], Nihayet Bizsel[b]

[a]Institue Of Marine Sciences And Technology, Dokuz Eylul University
[b]Dokuz Eylul University, Institute Of Marine Sciences And Technology,

*tuncerilik@gmail.com

Abstract:

The bacterial diversity and antimicrobial resistance in coastal areas indicate the variability in the community structures and metabolic activities. In the present study, antibiotic susceptibility and phylogenetic analysis of bacteria isolated from stations with different depths and influenced by terrestrial and marine fluxes in eastern Aegean Sea were illustrated. Half of the isolates were found as resistant and 14 percent showed high MAR index indicating the high-risk sources of contamination in the environment. According to 16S rRNA gene analysis, the isolates were found as belonging to two phyla Firmicutes and Gammaproteobacteria with the genera Bacillus, Halomonas, Oceanobacillus, Photobacterium, Pseudoalteromonas, Psychrobacter and Vibrio. Approximately half of Bacillus strains which were dominant among all isolates were resistant. In addition to phylogenetically diverse bacteria, the variability in resistance, intermediate and high MAR index levels of the study area indicated the effect of geographical differences.

Keywords: Bacterial diversity, multiple antibiotic resistance, 16S rRNA genes, Aegean Sea.

Place of Natural Resources in Ceramic Art

Seda Dilay[a*], Fahriye Ozkan[a]

[a]Karamanoglu Mehmetbey Universitesi

*sdilay@kmu.edu.tr

Abstract:

People were benefited from different callings in different forms, and civilization emerged as a result. Humankind is using natural resources to meet the needs of materials and energy. It has a very important place in human life and society. All the resources of wealth that are not spontaneously formed in nature, the product of human intelligence and technology, and where the role of man is not found in the process of coming to the stage is called "natural resource". Air, water, soil, vegetation, mines, minerals and raw materials form natural resources. Natural resources are at the core of many industrial activities on Earth. In addition to these activities, natural resources are used both as a main material and an auxiliary material in artistic activities. Especially the natural resources and minerals used in the production of ceramics are transformed into works of art after being put through certain processes. Natural resources used in the ceramic field are primarily clay-kaolin, feldspath and quartz when it is evaluated in terms of raw material, together with air, water and soil. These raw materials are classified according to the qualities they acquire into ceramics. Clay minerals, kaolin, and killer plastic form the foundation of classical ceramics due to their shaping properties. Feldspaths are aluminum silicates such as potassium, sodium, calcium. When they reach a certain cooking temperature in sludge production, they show melting point by reinforcing sludge. Likewise, they are also used as a very important melter on the secrets. Quartz mineral is obtained from silica-rich rocks. Bonding and dry resistance in the mud greatly increase the contribution rate, reduce drying and cooking shrinkage and serve as a skeleton in ceramic mud. Thus, it contributes to the durability of the ceramic artifacts obtained.

Keywords: Natural resources, ceramics, raw materials.

Platform Development for Parallel Operations of Single Board Computers

Kubra Karadag[a*], Ozgur Tamer[a]

[a]Mechatronics Engineering Department, Dokuz Eylul University

*kubra.karadag@deu.edu.tr

Abstract:

Recent developing technology requires affordable, scalable, efficient and flexible solutions as high performance computing and parallel programming to solve large-scale, data-rich programs.

In this work, we present a scalable cluster consisting of single board computers (SBC) and evaluate its performance. A similar work is presented by Joshua Kiepert and named as “Creating A Raspberry Pi-Based Beowulf Cluster ”. The cluster, will be taken by solving problem of various size and types on different number of nodes and network topologies and the results will be evaluated.

In this work a SBC called SuperPi will be used as the nodes of the cluster. SuperPi is equipped with 1 GB shared DDR3 and dual-core (ARM Cortex-A7). The clusters performance will be evaluated for different number of SBC's up to 24, The cluster nodes will be connected over a gigabit ethernet switch. For building the platform software Linux-based Raspbian OS was installed on the memory cards of the SBCs. A master SBC was reconfigured for the forthcoming operations, then the resulting boot-file was written to the others. The workload program was also written by using Python programming language. The MPICH which is an implementation of the Message Passing Interface standard, was installed on nodes for performing parallelization of the workload program. The program will be tested by solving parallel with each of 1-2-4-8-16-24 node lines. Consequently, the expected result of the project is a considerable reduction at runtime for every node that is added to parallel computing. Changes in runtime will be expected to be proportional to the number of nodes. That will show whether measurable parallelism.

The eventual realization of the project will enable to analyse the response of the programs to the network topology in subsequent studies.

1) Kiepert, Joshua. "Creating a raspberry pi-based beowulf cluster." Boise State (2013).

Keywords: Single Board Computer, Parallel Computing, Cluster Computing

Pointed Arch Formations In 16. Century Istanbul Mosques

Ali Naci Ozyalvac[a*], Sukriye Pinar Ozyalvac[a]

[a]Konya Necmettin Erbakan University

*aozyalvac@konya.edu.tr

Abstract:

This study is an analytical review of arches as the key architectural element in traditional structures specically pointed arches in Mimar Sinan mosques in Istanbul. 19 mosques have been examined using architectural surveys, onsite measurements. Arches are classified according to their locations; interior, narthex, court and facades. The categorical properties like preferred types, places of use and grouping features are discussed and considered together with quantities like span, height, centers of intrados for understanding geometric formation principles of arches. Thus, new types were found like 1:7, 1:9, 1:11 beside known types like (1:5) pencî arches and statistics like where and which conditions they were shown has been revelaled. It has also been possible to compare buildings over used arch types that make up the form repertoires of the designer in selected works. It has been revealed that pointed arches has been classified and arranged to provide speed and convenience in design and construction process as dominant stylistic determinant and founder of traditional construction systems.

Keywords: Ottoman Architecture, Mimar Sinan, Pointed Arches, Istanbul Mosques

Population Development of Tomato Leafminer Tuta absoluta (Lepidoptera: Gelechiidae) in Troia

Burak Polat[a*], Ali Ozpinar[a], Ali Kursat Sahin[a]

[a]Canakkale Onsekiz Mart University

*bpolat@comu.edu.tr

Abstract:

The city of Troia was an important settlement for 3500 years of its 5000 year history. The area around the Troia city was established as a national historical park in 1996 and was placed on the World Heritage List. Recently tomato is one of the most cultivated crops in this area. Invasive pest species tomato leafminer, Tuta absoluta (Lepidoptera: Gelechiidae) is the main pest of tomato and it was first recorded in Europe in 2006. Its first record in Turkey was in tomato fields of Izmir – Urla in 2009 and since then the pest has caused considerable economical damage in tomato growing areas around Turkey. Since the knowledge about population development is important for the successful control of pests, open tomato fields in Troia (Batakovasi, Canakkale) were selected for investigations in 2012 and 2013. Adult population development was investigated by pheromone traps and pre-adult population development was examined by collecting leaf samples twice per week. First catches were recorded on March and the flight continued till the end of December. A total of 2017 and 2988 adults were caught in traps in 2012 and 2013, respectively. Investigations on pre-adult stages showed that, first eggs were found in July in 2012 and in May in 2013. Discovery of the first larvae was in the first week of July in both years. The first pupae were found in the second week of July in both years. The highest number of adults and pre-adults were counted in the 3rd generation in August. Six flight activity periods were observed during the survey - in April, June, July, August, September and October. T. absoluta completed one generation on weeds and 5 generations on tomato plants with a total of 6 generations in Troia (Canakkale) region.

Keywords: Troia, Canakkale, Tomato Leafminer, Open tomato fields, Population Density

Post-seismic Deformation of Aegean Sea Earthquake (24 May 2014, Mw= 6.9)

Ayca Cirmik[a*], Oya Pamukcu[a]

[a]Dokuz Eylul University

*aycayurdakul@hotmail.com

Abstract:

After the major earthquakes, post-seismic deformation may keeps on for a long time and additionally, affects the great scales of fields. The afterslip, pore fluid motion and the viscoelastic loosening in the lower crust and upper mantle may cause the post-seismic deformation. A great amount of changes on the stress field near faults are occurred during the post-seismic movements respect to the stress changes related with the co-seismic movements. Besides, respect to the co-seismic effects, the effects of post-seismic movements on the faults may reach to faraway. The viscoelastic loosening may keep on long time and effects on tectonic deformation at active fault zones with the effects of the major earthquakes. These deformation zones can be monitored with the help of Global Navigation Satellite System (GNSS) observations. In this study, GNSS solutions were performed for Aegean Sea earthquake which occurred in 24 May 2014 (Mw= 6.9) and affected in the Aegean and Marmara regions. In the applications, the GNSS stations of Continuously Operating Reference Stations-Turkey (CORS-TR) IPSA (Marmara Region) and CESM (Aegean Region) which locate in the northern and southern sides of the earthquake epicentre, respectively were used. The Eurasia fixed frame solutions were investigated for 12 days which include pre-seismic and post-seismic periods. Therefore, the co-seismic and post-seismic deformations were observed in the time series. As a result of this study, the large scale deformation was determined in the time-series at the date of earthquake. This result is observed at two different region stations; IPSA and CESM, so it can be said that this earthquake affected on the huge area.

Keywords: Post-seismic deformation, GNSS, Aegean Sea Earthquake

Power Spectral Ratio Analysis of a Single-Cylinder Diesel Engine Vibration When B50 Diesel-Biodiesel Fuel Blend Used

Selman Kulac[a*], Suat Saridemir[a]

[a]Duzce University

*selmankulac@gmail.com

Abstract:

Emissions from petroleum-based fuels used in vehicles pollute the atmosphere. However, the limited availability of world oil reserves accelerated the works on alternative fuels. Biodiesel, one of the alternative and renewable fuels, can be produced from vegetable and waste frying oils. One of the factors causes vibration in internal combustion engines is the combustion characteristic of the fuel. In this study, standard diesel fuel and biodiesel fuel were mixed 50% by volume and B50 fuel was obtained. Frequency spectrums of engine vibration signals have been obtained for the single-cylinder diesel engine operating under full load conditions when B50 diesel-biodiesel fuel blend. The experiments were carried out at engine speeds of 1500, 2000, 2500, 3000 and 3500 rpm. It was seen that as the engine rpm increases, the ratio of the power of high frequency components of vibration signals decreases.

Keywords: Biodiesel, vibration, engine, frequency analysis, power ratio of frequency components

Predicting Ranque-Hilsch Vortex Tube Performance by Using ANNs

Murat Eray Korkmaz[a*], Burak Markal[a], Levent Gumusel[a]

[a]Karadeniz Technical University Department Of Mechanical Engineering

*murat@ktu.edu.tr

Abstract:

Artificial Neural Networks (ANNs) are one of the fields which have shown great interest by artificial intelligence researchers. Artificial Neural Networks; a very successful tool for solving problems, thanks to features such as self-learning or learning from examples and ability to make generalizations are spreading very rapidly and intensively used in researches, applications due to technological developments in recent years. Artificial Neural Networks are especially preferred for non-linear, difficult to modelling mathematical problems due to conveniences provided for to solve the problems. In this study, artificial neural networks (ANNs) are used to predict effects of conical valve angle and length to diameter ratio on the performance of a counter flow Ranque-Hilsch vortex tube by using experimental data. In our Multilayer Feed-Forward Neural Network Model, which is designed by NeuroSolutions 6.0 software, Levenberg-Marquardt is selected as a learning algorithm and hyperbolic tangent function is selected as a transfer function. Input parameters are inlet pressure (Pi), conical valve angle (f), length to diameter ratio (L/D) and cold mass fraction (yc) while total temperature difference (T) is chosen as the output parameter. In the model, there is only one hidden layer with 27 processing elements. 280 data were obtained from experiments. 200 of them were chosen for the training data and 80 of them were chosen for the test data. As a result, it's disclosed that ANN can be a reliable option in modeling of thermo-fluids system. We investigate the prediction ability of ANN by using experimental data obtained from vortex tubes for different geometrical parameters and it's obtained satisfactory predictions with ANNs.

Keywords: Artificial Neural Network, Multi Layer Perceptron, Ranque-Hilsch Vortex Tube

Prediction of Temperature Decreasing on a Green Roof by Using ANN: Budapest Example

Dogan Erdemir[a*], Necdet Altuntop[a]

[a]Erciyes University

*erdemir@erciyes.edu.tr

Abstract:

This study presents an artificial neural network (ANN) model to predict temperature decreasing on a green roof. An ANN model has been created by MATLAB Neural Network Toolbox. The data for training, test and validation of the ANN model have been taken from nine different cities around the world. Meteorological data sets and temperature decreasing values on the green roof for these nine cities have been obtained from the study which is situated in literature. ANN model has indicated sufficient results with 0.3982% RMSE and 99.05% R2. This ANN model has been used for estimating the temperature decreasing on the green roof for Budapest, Hungary. At the end of this study, green roof temperature decreasing performance is going to be determined.

Keywords: Green roof, Temperature decreasing, Thermal comfort, Artificial neural network, Roof cooling

Preliminary Results of Distribution of Fraxinus angustifolia in Turkey and Effects of Ecological Conditions on Its' Distribution and Wood Anatomy

Turgay Birturk[a*], Nihan Kocer[a], Murat Sarginci[a]

[a]Duzce University

*turgaybirturk@duzce.edu.tr

Abstract:

The aim of this study is to determine the effects of some ecological conditions such as soil properties and climate on distribution and wood anatomy of native narrow leaved ash (Franinus angustifolia Vahl), and also renew the distribution list of this ash tree in Turkey. Mass death of ash trees, including narrow leaved ash tree, due to increasing fungi diseases in Northern Europe has created concerns about the future of this tree species. Thus determining the ecological properties of narrow leaved ash distributed areas in Turkey and where this tree species has the best growth rates will have an effective act on decisions for the future of this tree. Wood and soil samples were taken from all distribution sites of ash taxa in Turkey where different environmental conditions occur depending on climate, precipitation, temperature, topography, parent material, altitude, longitude and latitude. Some physical and chemical (properties of soil were determined by soil analyses. Mean annual temperature and precipitation ratios of all narrow leaved ash distribution sites were taken from General Directorate of Meteorological Service of Turkey. From the early results of the soil analyses, it has been found that narrowed leaved ash distribute in a very wide ecological conditions such as from semi-arid regions to humid-mild, humid cold conditions. It also has been figured out that this species of ash tree has a very wide adaptation on varied soil conditions such as from sandy soils to loamy soils, clay soils. Generally it occurs in broad leaved forest ecosystems as individuals but it has been observed that this ash tree also create stands especially on deltoid plains where flooded areas are and these areas called as flooded forest. In some flooded forests elm and alder trees can be seen as individuals.

Acknowledgements: This research is funded DUBAP -2013.02.02.202 project number

Keywords: Wood anatomy, Narrow leaved ash, Ecological conditions, Use area of ash wood, Soil Properties

Preparation and characterization of a new, super absorbent, biodegradable hydrogels

Demet Topaloglu Yazici[a*], Nida Nur Bora[a], Kubra Goral[a], Melis Seval Yildirim[a], Tuba Okdelen[a]

[a]Eskisehir Osmangazi University

*demett@ogu.edu.tr

Abstract:

Raising environmental awareness has increased the relevance of the industry to natural materials and has changed the course of the material researches. Polymer researches have also been affected by this search, and in some applications natural polymers which meet the specifications of synthetic polymers have been begun to replace with synthetic polymers. Agriculture, hygiene products and drug delivery systems are the examples of those applications that degradable and super absorbent natural polymers are being explored instead of using the synthetic polymers. In this study; an environmentally friendly and renewable product was developed by using the selected natural polymer, chitosan and a degradable cross-linking agent. This product has also the capabilities like retaining high amounts of liquid and releasing it slowly. The use of this product as hygiene products is investigated. Two samples were prepared according to the ratio of polymer amount to the total additive amount. Then, the liquid absorption and retention characteristics of the samples in distilled water, sodium chloride and synthetic urine solution were determined. According to the results, the sample including fewer additives (first sample) retains more liquid. Besides this, the other sample is more stable than the first sample. The absorption characteristic of the first sample under load is better than the other sample. Furthermore, the morphological and structural characteristics of the samples were examined by using XRD, SEM, FTIR and TGA analyses. SEM images indicated the cross-linked structure of the samples. FTIR spectra of samples showed the existence of the characteristic peaks of chitosan and additives.

Keywords: Hydrogel, liquid uptake capacity, polymer characterization

Preparation Of Activated Carbon From Apple Pulp With Ecological Precursor

Mehmet Kilic[a*], Mustafa Karaboyaci[a], Semra Kilic[a], Aziz Sencan[a]

[a]Suleyman Demirel University

*mehmetkilic@sdu.edu.tr

Abstract:

Activated carbons are useful materials in wide variety of applications such as waste water treatment, decolorization and other purification applications. Commercial activated carbons are relatively expensive due to high-cost starting material such as coal and coconut shell. In this study apple pulp was used as starting material for to produce cheaper activated carbon and also waste elimination and utilization. And also sodium bicarbonate was used as a chemical precursor. It is a gas generating compound under thermal decomposition and never used as a precursor before. For this purpose NaHCO3 were used with two different type. First it was impregnated from solution and second it was grinded with apple pulp. Effect of NaHCO3 on the surface area of obtained activated carbon was determined with Brunauer–Emmett–Teller (BET) analysis. Reactive red dye adsorption performance of obtained activated carbon was also studied. The binding mechanism was tried to be explained by FTIR analysis. Results shows that apple pulp is a good resource for to obtain low coast activated carbon and NaHCO3 is a good ecological precursor.

Keywords: Activated carbon, NaHCO3, Brunauer–Emmett–Teller, FTIR

Preparation Of Waste Management Plan At Universities And Implementation Of Waste Management

Asude Ates[a*], Hande Atasoy[a]

[a]Sakarya University Environmental Engineering Department

*aates@sakarya.edu.tr

Abstract:

The high diversity and amounts of wastes generated in areas such as industrial establishments, universities, hospitals, etc., make it very difficult to follow these wastes. Disruptions in the follow-up process cause the wastes that can be recovered to be lost by subjecting them to disposal / landfilling and also the natural resource usage, energy and raw material savings cannot be applied. For this reason, it is necessary to establish a system for waste collection in areas where collective life is led. Waste management is the process of separation of the wastes at their sources and its collection, temporary storage, recycling, transport, disposal and controls after disposal operations. This process starting from the formation of the wastes continues until the final disposal of the wastes. With the waste management to be implemented, it is aimed to reduce the amount of waste sent to regular storage or recycling operations by increasing producer responsibility. The waste management planned to be implemented at the Sakarya University is aimed at defining the generated wastes, collecting them separately at their sources, leading awareness raising activities through personnel-student trainings, sending wastes to disposal/recycling and keeping records. With this study, the wastes at the Sakarya University have been classified as solid wastes, package wastes, non-hazardous wastes, hazardous wastes and special wastes. With this classification, the waste management plan is being prepared by evaluating what kind of waste is generated by which departments or faculties. It has been determined that the package wastes and domestic solid wastes are more common than other types of wastes and that the hazardous wastes generated at the University are mostly from laboratories where experimental works are conducted. With this plan prepared after the determinations, a waste management implementation will be launched and thus, the wastes to be generated will be foreseen and assessed

Keywords: waste, management, plan

Present Status And Threats Of The European Eel [Anguilla Anguilla (Linnaeus, 1758)] In Some River Estuaries Of Turkey

Deniz Innal[a*]

[a]Mehmet Akif Ersoy University

*innald@gmail.com

Abstract:

The European eel has a wide geographical range from Northern Norway to North Africa and the Mediterranean, and can be found in a broad range of aquatic habitats with varied salinities. It is presently listed as 'Critically Endangered' on the IUCN Red List and Appendix II of CITES. Very little is known about the distribution, abundance and biology of the European eel in Turkey. The current study aims to update the status of A. anguilla occurring in some river estuaries in Mediterranean coast of Turkey, and to determine the threats of specimens. A total of 4 sites (Ceyhan River Estuary, Seyhan River Estuary, Goksu River Estuary, Manavgat River Estuary) were surveyed between November 2014 to January 2017. Nets of various mesh sizes were used. Details of habitats were recorded. European eel was found at all River Estuaries with different density. Current threats to its habitats and its populations include the fragmentation of habitats, water pollution, boat traffic and overfishing.

This research was financially supported by the TUBITAK (Scientific and Technological Research Council of Turkey) under the Project numbered KBAG, 114 Z 259.

Keywords: Degradation, threats, freshwater, dam, migration

Probabilistic Approach to Solar Radiation Modelling

Fatih Onur Hocaoglu[a*], Fatih Serttas[a]

[a]Afyon Kocatepe University

*fohocaoglu@gmail.com

Abstract:

Solar radiation prediction and modeling techniques have an important place in solar energy engineering. There are numerous studies in the literature for estimating and modeling solar energy. Many of these studies anticipate future data, taking into account the history of data and other related meteorological parameters. In this study on the other hand, it is aimed to propose an alternative but successful model for solar radiation. For this aim the data is converted into states with Markov chain approach and then to model the behavior of data state transition probabilities are calculated. Consequently, modeled data behaviors are transformed into a system that generates data using a proposed algorithm. The proposed modeling method was tested on hourly measured and recorded data at the main campus of Afyon Kocatepe University. Successful modeling results are obtained and the results are discussed.

Keywords: Solar Energy, Probabilistic Modeling, Forecasting

Probiotic Properties of Indigenous Lactobacillus paracasei Strains of Human Origin

Esin Kiray[a*], Ergin Kariptas[a], Selda Songur Dagli[a]

[a]Ahi Evran University

*esin.kiray@ahievran.edu.tr

Abstract:

The study was aimed to evaluate the probiotic potential of indigenous. Lactobacillus paracasei strain isolated from vaginal secretions of adolescent and young adult women. The L. paracasei strain was identified using 16S rDNA gene sequencing and characterized by biochemical methods. Tolerance and resistance to acidic pH and bile salts were carried out in broth medium. In vitro assessment of antimicrobial activity against enteropathogenic bacteria, susceptibility to antibiotics, hydrogen peroxide (H2O2) production, and cholesterol assimilation activity were also tested. The results showed that tolerance of L. paracasei to pH 3.0 and a high bile salt concentration 1%. The isolated strain was resistant to ciprofloxacin, gentamicin, vancomycin, teicoplanin, tobramycin, amikacin, aztreonam, netilmicin and ceftazidime antibiotics. In addition, this strain was found to reduce cholesterol levels by >50% in vitro conditions. This probiotic organism demonstrated that antimicrobial activity against pathogenic microorganisms including E. coli ATCC (American Type Culture Collection) 25922, E. faecalis ATCC 29212, P. aeruginosa ATCC 27853, C. albicans ATCC 90028, C. albicans YN-1200. On the basis of the ability of L. paracasei to inhibit pathogenic microorganisms through coaggregation and antimicrobial substances, it is likely that this Lactobacillus strain could be a potential probiotic candidate for beneficial use in protecting against gastrointestinal and vaginal microbial infections.

Acknowledgements: This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number PYO-FEN.4001.16.012

Keywords: Lactobacillus paracasei, vaginal secretions, probiotic properties

Production Of Anthocyanin Dye Sensitized Solar Cell From Red Wine Pulp

Mustafa Karaboyaci[a*], Canan Can[a], Kubilay Tasdelen[a], Aziz Sencan[a], Mehmet Kilic[a]

[a]Suleyman Demirel University

*mustafakaraboyaci@sdu.edu.tr

Abstract:

Photoelectrochemical cell utilizing anthocyanin dyes coupled with colloidal TiO2 powder, can convert sunlight to electrical power. The photoelectrochemical performance of the DSCs mainly based on the dye which used as a sensitizer. Anthocyanins are natural pigments which can use sensitization of semiconductors. In this study anthocyanins dyes were obtained from red wine pulp which is a residue of red wine production process. The conductive glass was obtained at high temperature from methanolic SnCl2. TiO2 powder used as semiconductor and it was coated to conductive glass surface over 600 ºC. Iodine iodide based solution used as an electrolyte. Obtained dye sensitized solar cell performance was measure with Keithley 2400 Source meter solar simulator. Results show that wine pulp can use as a dye source for dye sensitized solar cells.

Keywords: Dye sensitized solar cell, wine pulp, anthocyanin dyes

Production Of Celluloid From Rose Wastes

Mustafa Karaboyaci[a*], Canan Can[a], Aziz Sencan[a], Mehmet Klic[a]

[a]Suleyman Demirel University

*mustafakaraboyaci@sdu.edu.tr

Abstract:

Celluloid is the first synthetic plastic material, created from homogeneous colloidal dispersion nitrocellulose and camphor. Main component of the celluloid is nitrocellulose and it obtains from ceelulose reach plants. In this study, waste rose pulp was used as a source of cellulose which is pulp of rose oil production industry and have bearing environmental risks. The rose oil flower grown around Isparta approximately 7,000 tons a year and after obtaining the oil, rose flowers lose their economic value and wastes are left to rot. The cellulose content of the rose pulp was first determined for to evaluate the wastes as an industrial product. Results shows that rose wastes contains 36% cellulose 29% hemicellulose. So it is a good source for industrial nitrocelluse production. Rose wastes were tried to purify from the non cellulose impurities by different reducing and oxidizing methods. Obtained cellulose was converted to nitrocellulose with nitric acid sulfuric acid mixture. The presence of nitro groups added to the celluloses were determined by FTIR analysis The obtained nitrocelluloses were converted into cellulose resin (celluloid) with an etheric camphor solution by the cold process method.

Keywords: Waste utulization, Celluloid, Nitro cellulose, Rose waste

Pyrolysis Of Composite Packaging Wastes And Characterization Of Pyrolysis Products

Aysun Ozkan[a*], Zerrin Gunkaya[a], Ece Yapici[a], Silan Gizem Ceylan[a], Mufide Banar[a]

[a]Anadolu University Faculty Of Engineering Department Of Environmental Engineering

*aysunozkan@anadolu.edu.tr

Abstract:

C/LDPE materials are composite packaging materials used for food packaging products and their recycling is so difficult. They are made by different materials, not able to separate by hand, obtained by full consolidation at least two of the surfaces in order to increase the durability and combine the unique properties of materials. From this point, the aim of this paper is investigation of the recovery potential of C/LDPE wastes by pyrolysis. Firstly, physical and chemical properties of the composite C/LDPE wastes were determined. Secondly, the wastes were pyrolyzed at three different temperatures (400, 600, 800°C) and 30°C/min heating rate and solid, liquid and gas products were obtained. In the third stage, the aluminum content and the surface structure of the pyrolysis solid product were determined by SEM-EDX and XRF. GC-MS (alkanes/alkenes and concentrations of PAHS), FT-IR (functional groups) and H-NMR (chemical structure determination) analysis of the liquid product were performed. Analyses of gas product was carried out by GC-TCD. The solid product was mainly compromised by aluminum material (approximately 85 %). Higher alkane/alkene compounds and lower aromatic compounds were determined in liquid product. Maximum product yield (was obtained for the gas product (96.45 %) at 600 °C. Higher hydrocarbon compounds content of the gas product was very high (99%). According to these findings, it is concluded that the solid product is an aluminum source, the liquid product has contain higher alkane and alkene compounds and the gaseous product can be evaluated as hydrocarbon source for commercial products such as carbon nanotube. In this sense, it is believed that this study will provide significant outcomes for stakeholders and will make an important contribution to the both national and international literature.

This study was financially supported by the Anadolu University Scientific Research Project Commissions under the Grant no.: 1703F074.

Keywords: C/LDPE, composite packaging waste, pyrolysis

QAP Implementation With A New Hybrid ACO Algorithm

Batuhan Saygin Arslan[a*], Mustafa Servet Kiran[b]

[a]Necmettin Erbakan University
[b]Selcuk University

*bsarslan@konya.edu.tr

Abstract:

The quadratic assignment problem(QAP) is one of the well-known fundamental NP-hard combinatorial optimization problem that attract attention in areas of interest in research community for many practical application such as allocation of facilities, design of electronic devices etc.. There are some metaheuristic algorithms that solve the problem. Ant Colony Optimization (ACO) is currently among the best performing algorithm for the QAP. But its standard form can cause some problems such as finding local wrong solution and redundancy at runtime. Therefore in this study, a new hybrid ACO algorithm was applied to the QAP and some improvements in local searching and pheromone system were used. The standart method and the new method were implemented to the some known QAPs. Promising results were obtained as a result of the comparison.

Keywords: Ant colony optimization(ACO), quadratic assignment problem(QAP), optimization

Qualification Design and Sanitation for Pure Drinkable Water: A Project Study

Fehiman Ciner[a*], Neslihan Dogan-Saglamtimur[a]

[a]Omer Halisdemir University

*fciner@ohu.edu.tr

Abstract:

Drinking water quality management has been a key element of primary prevention for a long time and it continues to be foundation for the prevention and control of waterborne diseases. “SHTEFIE (S- Social, H- Health, T- Technological, E- Economic, F- Financial, I- Institutional and E- Environmental)” criteria can be grouped as a tool to help development programmes for pure water. This study based on the EU Project “Implementation of ECVET for Qualification Design in Drinking Water Treatment Plants and Sanitation for Pure Drinkable Water-PureH2O” that contribute to the recognition and transparency of qualifications at the EU level and provide an innovative model for competencies for the potable water sector. The main dilemma that Pure-H2O intends to tackle is the lack of mutual recognition of qualification that is often impaired by national restrictions by applying EUROPASS, European/National Qualification Framework (EQF/NQF) and he European Credit System for Vocational Education and Training (ECVET) instruments. The aim of the project is enhancing the quality and performance of VET system improving education in drinking water supply and development. This project could also be achieved through promoting creativity, innovation and transfer of EQF/NQF principles in education of the main target group in the sector. To meet its objectives the PureH2O project focuses on:

- creating of blended learning programme by the PureH2O project consortium into the field of the drinking water plants,
- becoming a tool that will promote transparent environmental planning and education in the development of sustainable, sound practices in the area of potable water and related treatment plants,
- contributing the recognition and transparency of qualifications at the EU level,
- providing an innovative model for competencies for the potable water sector,
- building a structured model following EQF,

The authors wishing to acknowledge special work by the team of this project.

Keywords: Drinking water, ECVET, Environment, EQF/NQF, EUROPASS

Reaction Of Some Chickpea Genotypes To Ascochyta Blight Based On Real-Time Pcr

Gulsum Palacioglu[a*], Goksel Ozer[b], Abdulkadir Aydogan[c], Harun Bayraktar[a]

[a]Department Of Plant Protection, Faculty Of Agriculture, Ankara University, Ankara
[b]Department Of Plant Protection, Faculty Of Agriculture And Natural Sciences, Abant Izzet Baysal University, Bolu
[c]The Central Research Institute For Field Crops, Ankara

*gpalacioglu@ankara.edu.tr

Abstract:

Ascochyta blight caused by Ascochyta rabiei frequently occurs in all parts of Turkey and causes heavy yield losses under favorable conditions. Development of resistant/tolerant cultivars is the most effective method to control this disease. Therefore, the reactions of different chickpea genotypes must be constantly monitored to determine the sources of genetic resistance to this disease by taking into account pathogenic groups of this pathogen. This study was conducted to evaluate the reactions of some chickpea genotypes for resistance against Ascochyta blight. Disease severity in chickpea genotypes, which detected to have some desirable characteristics in field yield trials in 2015 season was evaluated by using real-time PCR assay, developed in a previous study. The results obtained were compared with those of the conventional pathogenicity test. The amount of pathogen DNA in chickpea genotypes, showing disease severity below 10% according to 0-4 scale changed between 0.3 and 1.2 ng. Also, Tub-29, Tub-42, Tub-53, Tub-28 and Tub-48 genotypes were found to be promising for tolerance to this pathogen

*This work was supported by TUBITAK Project 113O074 (Turkey)

Keywords: Ascochyta rabiei, chickpea genotypes, screening, real time PCR

Reactive power control in power systems with nonlinear loads BY USING different SVC configurations

Muhammed Mustafa Ertay[a]*

[a]Duzce University

*mustafaertay@duzce.edu.tr

Abstract:

Efficiency in electrical power systems has gained great importance in recent years. Because increasing energy demand and non-linear loads have negative affect on power systems. FACTS and custom power devices have been used since the end of the 80's in order to increase the efficiency and control of power systems. The SVC is a thyristor based FACTS device. It is used for reactive power compensation and to increase the voltage stability in power systems. The SVC has various configurations. In this study, FC-TCR-TF (Fixed capacitor-Thyristor controlled reactor-Tuned filter) configuration is used for SVC. Since SVC is a power electronic based technology, it also produces harmonics itself. In the simulations, the effect of FC-TCR-TF and FC-TCR configurations on power systems with non-linear loads are investigated. Simulations have been performed in MATLAB / Simulink environment.

Keywords: Power systems, nonlinear loads, SVC, reactive power control, FC-TCR-TF

Recommendations for xDSL Technologies and Applications

Esra Sogut[a*], Saadin Oyucu[a], O. Ayhan Erdem[a], Huseyin Polat[a]

[a]University Of Gazi

*esrasogut@ggazi.edu.tr

Abstract:

All kinds of data such as audio, video and text are transmitted without errors, quickly and easily in media such as fiber, radio or copper cable. The transmission environments used must be user-supported, highly usable, portable and qualified. Modems, which are the technologies used in data transmission, cannot achieve success in data transmission completely. Because modem technology cannot support bidirectional data transmission. In addition, the bandwidth cannot be adjusted according to the increasing number of users, and band narrowing occurs. DSL (Digital Subscriber Line) technology is used in order to enable users to transmit and process the data quickly and securely on advanced systems and to handle this data, apart from modem technology. DSL technology is capable of successfully transmitting remote data, video, graphics, and other high-performance data through the high-speed internet. In addition, it provides fastly, economically and easily processing.

DSL technology is examined in this study; xDSL technology is explained in terms of usage areas, distance and speed relationships. DSL varieties called xDSLs are handled separately and compared in terms of data transmission speeds (download/upload), structures (symmetric/asymmetric) and transmission distances. And it is presented in detail. According to the researchers made, it has been suggested which xDSL technology model is more suitable for which application or system. Thus, the advantages of DSL technology for institutions, organizations or individual users are mentioned. It has also come to the conclusion that DSL technology can work in integrated with different applications and the efficiency achieved can be further improved.

Keywords: DSL Technologies, xDSL, xDSL Applications, ADSL

Reinforcement of Silty Soil by using Basalt Fibers

Cyrille Prosper Ndepete[a], Sedat Sert[b*]

[a]Sakarya University Institute Of Natural Science
[b]Sakarya University Engineering Faculty Civil Engineering Department

*sert@sakarya.edu.tr

Abstract:

The use of fibers and chemical products in order to enhance the soil and concrete properties is not a new technique. But with environmental problems, natural fibers have been the most desired to be used in recent years to strengthen the physical and mechanical properties of soils. Many of the studies conducted on concrete show that basalt fibers are one of the preferred fibers and non-polluting. But it is difficult or impossible to find researches in the literature on the strengthening of soils by using basalt fibers. It is in this context that this study is oriented on the study of mechanical behavior of consolidated saturated silty soils reinforced by basalt fibers. This study is performed by using basalt fibers that are a natural and non-polluting material to improve the mechanical and physical properties of the soil by providing additional resistance to the shear strength. The study consists of gradually adding basalt fibers of different lengths 6 mm, 12 mm and 24 mm in the silty soil. For this study, 40 undrained-unconsolidated triaxial tests (UU) were carried out on saturated soil samples which were firstly consolidated for 5 days under a load of 300 kPa. The results of these tests show that the inclusion of basalt fibers have indeed improved the soil shear strength used in this study. The improvement was observed for all soil samples enhanced with basalt fibers. This improvement is expressed by a contribution of forces opposed to breaks in soil during shearing.

Keywords: Consolidated saturated silty soil, soil improvement, basalt fiber, triaxial compression strength

Relation between Sink Marks Formation and Rib Dimension on Plastic Parts

Abdulmecit Guldas[a], Mustafa Goktas[a*], Omer Bayraktar[a], Mesut Duzgun[a]

[a]Gazi Universty

*mustafagoktas@gazi.edu.tr

Abstract:

In this study, the optimization of rib dimensions on plastic parts to prevent sink mark during molding have been investigated. Ribs are used for improve strength without increase in thickness of parts on design of plastic parts. Sink marks occur due to the non-uniform thickness distribution on the plastic parts. Numerical analyzes were carried out to determine the relationship between rib dimensions and sink mark formation. The effects of rib parameters such as rib thickness, high of rib, and corner radius on the formation of sink mark was investigated. As a result of these analyzes, it was determined that the most effective parameter in the formation of sink marks was the rib thickness. Besides, it has been determined that the corner radius parameter is more effective than the rib height.

Keywords: Keywords: Sink marks, Plastic part design, Ribs, Strength of plastic parts

Relationship Between Seismic Response Of A Cantilever Retaining Wall And Backfill Interaction

Tufan Cakir[a*], Kasif Furkan Ozturk[a], Merve Tuzen[a]

[a]Gumushane University

*cakirtufan@hotmail.com

Abstract:

The seismic vulnerability of earth retaining structures which are key elements of ports, transportation systems, lifelines, and other constructed facilities has attracted a great deal of attention of the investigators for many years. Many factors affect the seismic response of retaining walls. Several of the more important factors incorporate the intensity and duration of strong ground motion, relative soil-structure displacements, dynamic properties of local soil deposits, structural rigidity, backfill and foundation soil properties, and soil-structure interaction (SSI). There are generally two major methods for analyzing SSI: the direct method and the substructure method. The experiences show that while the direct method is a conceptually easier way to model the entire soil-structure system in a single step, the substructure method is computationally more efficient. In this study, the problem of SSI analysis with direct method is studied in order to reveal the relationship between seismic response of a cantilever retaining wall and backfill interaction. In line with this target, the finite element model (FEM) of the backfill-cantilever wall-soil/foundation system is constituted in ANSYS program. The cohesionless soil is modelled as an elasto-plastic medium with viscous boundary applied on the artificial boundary of soil to simulate the wave energy absorption. Backfill-cantilever wall interface behavior is taken into account by using interface elements between the wall and soil to allow for de-bonding. Taking four different backfill soil conditions into account, the seismic response of cantilever wall is evaluated depending on the backfill interaction. “CLS090” component of 1989 Loma Prieta earthquake record is used in the nonlinear time history analyses. Based on the response amplification/reduction pattern, it is concluded that there is a remarkable relationship between seismic response of a cantilever retaining wall and backfill interaction.

Acknowledgment

This research has been supported by Gumushane University Scientific Research Projects Coordination Department. Project Number: 15.F5110.02.02.

Keywords: SSI, cantilever wall, finite element method, seismic vulnerability

Relationships Between Micro- And Standard-Size Mechanical Properties Of Oak Wood

Umit Buyuksari[a*], Nusret As[b], Turker Dundar[b]

[a]Duzce University
[b]Istanbul University

*umitbuyuksari@duzce.edu.tr

Abstract:

In this study, the aim was to examine the relationships between micro- and standard-size mechanical properties of Oak (Quercus petraea) wood. Six trees with straight stems were selected as sample trees. Logs of 3 m in length were cut from each tree at a height of 0.30 m, and then 6-cm-thick planks, including the central pith, were cut from these logs. The micro- and standard-size specimens for bending, tensile and compression tests were prepared from these planks. The bending strength, modulus of elasticity in bending, tensile strength and compression strength values were determined using micro- and standard-size samples. A regression analysis was used to determine the relationship between the standard- and the micro-size specimens in individual trees and all trees. The regression analyses indicated a positive linear regression between the mechanical properties of the micro- and standard-size specimens. The correlation coefficients ranged from 0.719 to 0.817 for bending strength, from 0.722 to 0.788 for modulus elasticity, from 0.701 to 0.771 for tensile strength, and from 0.752 to 0.809 for compression strength.

Keywords: micro-size, standard-size, oak, correlation

**This study was supported by the Scientific and Technological Research Council of Turkey (TUBITAK Project Number: 112O815)*

Removal of COD and Color Parameters from Industrial Textile Wastewater by Fenton Process

Yeliz Asci[a], Sefika Kaya[a*]

[a]Eskisehir Osmangazi University

*sefikakaya@ogu.edu.tr

Abstract:

COD and color values are very high in the wastewaters of the textile industry. The discharge of these wastewaters, which include color and toxicity in extreme quantities, cause serious environmental problems. Fenton process is successfully applied treatment of industrial wastewater containing toxic and non-biodegradable substances. In this study, the removal of COD and color parameters in industrial textile wastewater by fenton process was examined in batch reactor. The wastewater was provided from at a factory located in Bursa. The effect of parameters such as pH, the amount of iron, the amount of H2O2, the temperature, reaction time and stirring speed on the removal of COD and color in the wastewater were evaluated. Concentrations of Fe(II) between 25 and 400 mg/L and of H2O2 between 500 and 2500 mg/L were chosen. At the studies with textile wastewater the optimum pH as 2, optimum Fe(II) concentration as 100 mg/L, optimum H2O2 concentration as 2000 mg/L, optimum temperature as 30oC, optimum reaction time as 30 minutes were determined. Under optimal operating conditions, the maximum COD and color removals were 84 and 80%, respectively.

Keywords: Removal, fenton process, wastewater, textile.

Robotic Applications on Millitary

Yesim Kalkan[a]*

[a]Ankara University

*yesim_2688@hotmail.com

Abstract:

Robots are re-programmable electro-mechanical systems and they may various equipments or part according to their special usage purposes. The main aim of the robotic technology is producing talented robots which have skills similar to human abilities. These talents are physical and mental abilities. Robots are frequently used in many areas which are automatic systems, industrial, medical, military, and research and rescue etc. Usage of robots for military purpose increases day by day. Moreover, ever-growing unmanned vehicle technology points out that in the future possible war will be managed by mobile robots which are equipped with heavy weapons. Serves for military purpose of autonomous and semi-autonomous combat robots are used under different environmental conditions which are air, marine and land. In this review will be mentioned about robot soldiers and their usage of military equipments, advantages from the point of tactics and financial of widespread spy robots which, logistics transportion robots, disposal bomb and mines robots, technical and mechanical properties of the monitor and reconnaissance robots with marine robots.

Keywords: Robotic, Military, Automation systems

Route Assessment Of Underground Tunnels Using Mobile Robots

Dogan Savran[a*], Gurkan Tuna[a]

[a]Trakya University

*dogan.savran@yahoo.com

Abstract:

Though archaeologists have a great desire to uncover ancient underground tunnels, it is a really tough work since most of those tunnels are narrow, typically measuring only around 60 cm in width, just enough to crawl through. Moreover, most underground ancient tunnels include storage chambers and small rooms in some places. Generally, those underground tunnels are very long, exploring and mapping those tunnels is not practical at all by using traditional approaches. In this paper, we propose a novel approach to assess the route of ancient underground tunnels. The proposed approach is based on the use of autonomous mobile robots and a set of geodesic methods. In the proposed approach, the mobile robots are responsible for exploring and mapping of the route, and geodesic methods are used to improve the route assessment process and minimize possible mapping errors. With a set of calculations realized with handheld highly-accurate GPS devices, possible mapping errors are minimized. A set of simulation studies is given to show the usability and efficiency of the proposed approach.

Keywords: Route assessment, underground tunnels, route, surveying, mapping, mobile robots

Scheduling the Unrelated Parallel Machines with a Common Server

Cagri Sel[a*], Alper Hamzadayi[b], Atabak Elmi[c]

[a]Karabuk University
[b]Yuzuncu Yil University
[c]Gaziantep University

*cagrisel@karabuk.edu.tr

Abstract:

Scheduling of unrelated parallel machines is analogous with a variety of industries ranging from paper and textile industries to casting industry. Sequence dependent changeovers are encountered in the production stages including cutting, bending or molding operations. In case of servers for the changeovers are limited, only one setup operation can be allocated to a common server and, the common server causes inevitable delays of the production. In this study, we address the unrelated parallel machines scheduling problem where the sequence dependent setup operations are performed by a common server. A mixed integer linear programming model is proposed to solve the problem. The model is tested by a set of randomly generated problem instances. As an overall remark, the model is capable of solving the small and medium sized illustrative examples optimally. The numerical analysis on the large-scale examples show the need for heuristic algorithms to overcome the complexity of the problem.

Keywords: Unrelated parallel machines, A common server, Sequence dependent setup times, Mixed integer linear programming

Second Law Analysis Of A Ground Source Heat Pump

Cagatay Yildiz[a*], Halil Ibrahim Sarac[b], Abdullah Akbulut[b]

[a]Kocaeli University
[b]Dumlupinar University

*cagatay.yildiz@kocaeli.edu.tr

Abstract:

Since the energy efficiency is a very important issue in this time, the energy efficient systems, the proper use of energy and the thermodynamic first and second law analysis have been focused on by engineers and scientists. Heat pumps, in this case, are both energy efficient systems due to their low energy consumption and high COP values and also environment friendly because of having almost zero emissions. However, in order to determine the efficiency and performance of a thermodynamic system, the first law analysis might not be enough. In addition to first law analysis, the second law analysis -which is also known as exergy analysis- should also be carried out in order to determine how much useful work a system can obtain from its energy. In this study, an exergy analysis of a ground source heat pump (GSHP) which is located in a biogas production site and used for heating a reactor has been considered. By using the data obtained from the computers and sensors that are frequently collecting data such as temperature at some specific points, ground temperature, pressure, flow rate etc., the thermodynamic values such as enthalpy and entropy can be determined at those points which is then used for exergy and irreversibility calculations. Exergetic performances of each component are to be calculated and then determined which component of the system is relatively more inefficient, so the optimizations can be carried out.

Keywords: Exergy, heat pump, second law analysis

Seismic Assessment of a Masonry Building According to TSC2007: A Case Study

Baris Sayin[a*], Baris Gunes[a], Turgay Cosgun[a]

[a]Istanbul University

*barsayin@istanbul.edu.tr

Abstract:

Istanbul has become one of the most populated cities in Europe because of the immigration for decades. Social and financial importance of this city has attracted many people to move into various areas in Istanbul through the history. Thus, building pattern of especially historical regions in Istanbul is formed with masonry structures. Seismic risk and vulnerability are considerably high in this region since Istanbul is located closely to The North Anatolian Fault (NAF) which is an active right-lateral strike-slip fault in northern Anatolia and runs along the transform boundary between the Eurasian Plate and the Anatolian Plate. A vast number of the masonry structures exist in this region. The seismic assessment of these buildings has vital importance to avoid loss of lives and financial problems for a proximal seismic hazard. This study presents the seismic performance assessment of an existing masonry building in Istanbul. The analyses and evaluation were performed according to the criteria described in the Turkish Seismic Code (TSC2007). In the assessment procedures, a visual basic based office application was used to process the analysis outputs. It is believed that a case study will be useful to present this approach for engineering practice.

Keywords: Masonry structures, seismic assessment, performance evaluation, case study

Selection Of Inventory Policies Using Distance Based Approach Method

Ramesh Kumar Garg[a*], Amit Gupta[b]

[a]Deenbandhu Chhotu Ram University Of Science &Amp; Technology, Murthal
[b]Chandigarh Engineering College, Landran Mohali India

*romeshkgarg@gmail.com

Abstract:

This paper presents Distance Based Approach (DBA) method for optimal selection of inventory policies for a single location inventory which hitherto not developed in literature. The major development of inventory policies over the time, this work recognizes the significance of inventory policy selection problem; identify the selection criteria; the relative importance of selection criteria for this research problem. The developed model is capable to compare of any number of alternate inventory policies for various selection criteria where cardinal values are assigned as rating to alternate inventory polices for selection criteria and weights of selection criteria. The illustrated example demonstrates the model and presents the result in terms of ranking of inventory policies the results so obtained have been compared with other technique.

Keywords: Distance Based Approach, Ranking, Inventory Policies, JIT

Shear Behavior Of Propylene Fiber Reinforced Lightweight Concrete Panel

Bengi Arisoy[a], Fethi Sermet[a*], Emre Ercan[a]

[a]Ege University

*fethi.sermet@gmail.com

Abstract:

In this study, shear strength of propylene fiber reinforced lightweight concrete (PFRLWC) was investigated and possible panel application was discussed. Fiber reinforced lightweight concrete has been used in the construction industry mostly as wall panels, non-structural members, flooring, roofing, pavement, bridge and road paving, earth retaining, tunnel lining, back filling, and masonry stucco. In mentioned applications, steel and glass fibers were used widely due to their availability, low cost, and durability. Nowadays, propylene fibers are used as substitution of steel and glass fibers due to better tensile and bond strength. Because of its high tensile strength, bonding between propylene fibers and cementitious materials is considerably high. In order to use advantages of high tensile strength, shear response of PFRLWC panels is studied. In the frame work of the study, propylene fibers, cement, sand, and perlite were used to produce propylene fiber reinforced lightweight concrete. The standard cube, cylinder and beam samples were prepared to determine material and mechanical properties. In order to determine shear response of PFRLWC panels, dimensions of 50x50x10cm samples were prepared and samples were tested in diagonal tension tests as it is described in ASTM E 519-02, 2002. Material test results indicated that density of PFRLWC is 1.74gr/cm3, compressive strength is 30MPa, flexural strength is 7MPa, splitting tensile strength is 6.4MPa, and modulus of elasticity is 16800MPa. The panel shear strength collected from diagonal tension test is 2.78MPa. The results exhibited that the PFRLWC is lightweight compared to the regular concrete, and it has high strength values regarding its density. Especially, shear resonance of PFRLWC panel is high comparable to lightweight concrete panels without propylene fibers.

Keywords: ductility, fiber reinforced concrete, lightweight concrete, wall panels

Shortest Path Network Interdiction Problem with Multiple Starting Nodes

Ertugrul Ayyildiz[a], Gokhan Ozcelik[a*]

[a]Karadeniz Technical University

*gozcelik@ktu.edu.tr

Abstract:

In the shortest path network interdiction problems, there are two sides called interdictor and evader who have conflicting objectives. While the evader wants to minimize the total s-t path's length, the interdictor tries to maximize this length by interdicting the arc(s) or node(s) of the network. In this study, we extend the traditional shortest path network interdiction problem. For this purpose, we handle the shortest path network interdiction problem with multiple starting nodes (i.e. the network has two or more s nodes). Firstly, the problem is modeled as a bi-level mixed integer program and is converted into mixed integer program where the leader explicitly maximizes the shortest path (achieved by follower) by interdicting the arc(s). Later, an explanatory numerical example is carried out for different interdiction budget and the results are discussed.

Keywords: Shortest Path Problem, Network Interdiction Problem, Discrete Optimization

Silica Based Support Material Containing Crown Ether Units For The Protein Adsorption

Bahar Yilmaz[a*], Mevlut Bayrakci[a]

[a]Karamaoglu Mehmetbey University

*bahar-1311@hotmail.com

Abstract:

In this present study, protein binding abilities of novel silica based materials with and without crown functional groups were investigated. Newly obtained silica based solid support for the protein adsorption was fully characterized by spectroscopic techniques. From the spectroscopic data, it was clearly seen that the surface of the amino propyl silica was successfully modified by crown ether units interacting with amino groups of proteins. After preparation of solid support, protein binding studies were performed by solid-phase extraction process and obtained extraction results showed that the modified amino propyl silica support materials containing crown ether units could be effectively used for the protein purification or separation studies.

Keywords: Silicabased materials, crown eter unit, characterization

Simulation Of Drainage Process In Sport Fields Subject To Various Rainfall Intensities And Various Drainage Layer Orientations

Ahmet Dogan[a*], Emmanuel Rukundo[a], Hayrullah Agaccioglu[a], Erdal Kesgin[a]

[a]Department Of Civil Engineering, Yildiz Technical University

*dogan42@gmail.com

Abstract:

The simulation of water transport and drainage in unsaturated layered soils is challenging due to the contrast of hydraulic properties and the dependence of hydraulic conductivity on saturation. This study deals with the simulation of soil water dynamics, retention and drainage process in a sport field under various rainfall rates. The experimental plot of coarse grained layered soils and root zone layer covered by grass was subjected to the rainfall simulators. Matrix water potential sensors (MPS-6) and soil moisture sensors (10 HS) were installed into the soil layers in order to accurately measure the water potential and volumetric water content respectively during the infiltration and drainage process. The nonlinearity problem of water flow in unsaturated soil was settled by Richards' equation. The HYDRUS program is used to simulate the drainage process in the study. HYDRUS simulates the movement of water, heat, and multiple solutes by solving the Richards' equation for saturated-unsaturated water flow. The unsaturated hydraulic properties were estimated by laboratory means and inserted into Hydrus model. The modelled soil water retention curve was described by using the Van Genuthen model and compared with the one obtained experimentally from the sensors. The HYDRUS model realistically simulated soil water content throughout the water flow in unsaturated soil and drainage period. The model results and experimental measurements were compared for various rainfall rates and various drainage layer orientations. The outcomes of this study yields important insights into comprehension of water dynamics in unsaturated coarse soils and quick drainage of a field sport. The model results help decision makers to understand up to what rainfall intensities football can be played without any hassle due to undrained or slow-drained rainfall waters.

Acknowledgement: Authors greatly appreciate Turkish Scientific and Technical Research Council (TUBITAK) for supporting this study with project number 214M616.

Keywords: Drainage, unsaturated flow, Richards equation, Hydrus.

Slope Design for Excavations and Embankments at a Waste Deposit Area

Ertan Bol[a*], Askin Ozocak[a], Sedat Sert[a]

[a]Sakarya University

*ebol@sakarya.edu.tr

Abstract:

In this study, the stability of excavations and embankments have been investigated for a planned waste deposit area. Six borings have been conducted. In almost all of the borings, red sandstones are encountered at the surface. In two borings, the average thickness of topsoil is 3 meters. These red sandstones are characterized as reddish brown, granular-partly-broken, weak strenght, middle-heavy weathered sandstones.

There are two different approaches in the design of rock engineering structures. These are empirical and numerical design approaches. Numerical solutions, which are developed mathematical approaches, are generally capable of solving stability by using the mechanical properties of rock materials. Emprical approaches generally use charts which are developed with observations or engineering experience. The input parameters required for both approaches are determined by rock mechanical tests and geotechnical studies carried out on rock masses encountered at the site. The integrative approaches, expressing rock mass parameters in a numerical form, are called rock mass classification systems. RMR and Q classification systems, which are the famous ones, are mainly used for determining the required supports in tunnels, mines and underground spaces. On the other hand, the Geological Strength Index (GSI) can classify rock mass for general engineering problems.

In this study, classification of rock mass was made according to GSI and preliminary parameters which could be used to design slope geometry were determined. Limit equilibrium methods have been used as well and the comparison of the two methods results show similar tendency. According to analyzes made; there is no problem in terms of stability in excavations with 1H/1V ratio. Stability analysis on embankments were performed only by using limit equilibrium methods. It has been understood that there will be no stability problem for the slope geometry to be performed at 3H/2V ratio for the embankments.

Keywords: Slope Stability, Waste Deposit, Excavations, Embankments

Solar Heating of a Concrete Block

Ersan Guray[a]*

[a]Mugla Sitki Kocman University

*ers.guray@gmail.com

Abstract:

The amount of sun radiation varies with the time in the day referring to the geographical location on the earth at a specific date of a year. In this study, a numerical simulation is performed to observe the heat propagation in a concrete block which is exposed to daily solar radiation and convection under clear sky conditions. The location is chosen to be city of Mugla in Turkey at a usual summer day. A numerical scheme is developed with finite difference formulation and varying solar radiation is contributed into the calculations at each time step. Fully implicit equations are solved by Gauss-Seidell iteration. Temperature variation at the top and bottom surfaces is given at a figure.

Keywords: solar radiation, concrete, heating, finite difference method

Solar Radiation Modeling with Adaptive Approach

Emre Akarslan[a*], Fatih Onur Hocaoglu[a]

[a]Afyon Kocatepe University

*e.akarslan@gmail.com

Abstract:

The unsustainable formation of fossil fuels, increase the interest on different resources and this leads to greater emphasis on clean resources. Solar energy is one of the popular sources among the renewables. Electricity generation from PV panels directly related to the solar radiation value measured on surface of the panel. Modeling of solar radiation is important due to manage the integration of different sources to the grid. In this study, previously developed Adaptive Approach method is used for modeling the solar radiation values. This method combines linear prediction filter method with an empiric approach. Linear prediction filter used in this study utilize the current value of the solar radiation to predict next hour's solar radiation value while the empiric model utilize from the current value of the solar radiation and the deviation on extraterrestrial radiation. One year solar radiation data belong to Van region is used in this study. The accuracies of the forecasting results are compared and discussed.

Keywords: Solar radiation forecasting, Adaptive approach, Empiric model, Linear prediction filter

Solution Of The Symmetric Travelling Salesman Problem Using The Migrating Birds Optimization Algorithm

Saban Gulcu[a], Halil Ibrahim Ayaz[a*]

[a]Necmettin Erbakan University

*hiayaz@konya.edu.tr

Abstract:

This paper presents the solution of the symmetric travelling salesman problem (STSP) which is a combinatorial optimization problem using the migrating birds optimization (MBO) algorithm. Over the past few decades, many nature-inspired metaheuristic algorithms have been developed to solve the optimization problems. One of them is the MBO algorithm based on the V flight formation of the migrating birds which is proven to be an effective formation in energy saving. In the STSP, a travelling salesman has to visit all cities once and aims to create a closed tour with a minimum length. Besides, the distance from city i to city j is equal to the distance from city j to city i. As the number of cities in the STSP increases, it becomes very difficult to determine the optimum tour length. In the experiments, we used the well-known 15 STSP instances and the numbers of these instances' cities change between 51 and 500. We compared the results with the results obtained by the ant colony optimization algorithm. It is seen that the MBO algorithm is efficient in solving the STSP instances.

Keywords: Metaheuristic, migrating birds optimization algorithm, optimization, symmetric travelling salesman problem

Solving Constrained Optimization Problems With Sine-Cosine Algorithm

Simge Ekiz[a*], Pakize Erdogmus[a], Busra Ozgur[a]

[a]Duzce University

*simgeekiz@duzce.edu.tr

Abstract:

Optimization algorithms aim to find the optimum values that give the maximum or minimum result of a function under given circumstances.

There are many approaches to solve optimization problems. Stochastic population-based optimization approaches tend to give the best results in a reasonable time. Two of the state-of-art stochastic optimization algorithms are Genetic Algorithms(GA) and Particle Swarm Optimization(PSO).In addition, Sine-Cosine Algorithm is one of the recently developed stochastic population-based optimization algorithms. It is claimed that Sine-Cosine has a higher speed than the counterparts of it. Moreover, Sine-Cosine Algorithm occasionally outperforms other optimization algorithms including GA and PSO. This algorithm is successful because it can balance exploration and exploitation smoothly.

In the previous studies, the above-mentioned algorithms were evaluated and compared to each other for the unconstrained optimization test functions. But there is no study on constrained optimization test problems. In this study, we aim to show the performance of Sine-Cosine Algorithm on constrained optimization problems. In order to achieve this, we are going to compare the performances by using well-known constrained test functions.

Keywords: Sine-Cosine Optimization Algorithm, Constrained Optimization Problems,

Some Factors Affecting Flocculation Properties Of Fine Quartz Particles

Tuba Tasdemir[a], Adem Tasdemir[a*]

[a]Eskisehir Osmangazi University

*atasdem@ogu.edu.tr

Abstract:

Flocculation is used as an effective method for many industries in order to increase the settling rate of fine particles in water treatment. Many factors including flocculant type, slurry properties and mixing conditions may affect the flocculation process and it is necessary to determine the most effective flocculation conditions for the related material.

In this research, effects of different molecular weights of anionic flocculants (medium low, high and very high), solid concentration (0.06%, 0.1%, 0.5% and 1.0%) and particle size (<5µm, <10 µm and <20 µm) were investigated at different flocculant dosages for the flocculation of quartz mineral. The flocculation experiments were carried out by jar test apparatus at constant fast stirring rate, slow stirring rate and settling time. Residual turbidity of flocculated slurry was measured after each experiment to evaluate the success of the flocculation process.

It was found that the three factors tested were have important effect on the flocculation process of quartz and should be taken into account in order to increase the flocculation efficiency. More the molecular weight of flocculant, lesser the supernatant turbidity of quartz slurry at constant solid ratio and particle size. Increasing solid concentrations in the slurries resulted with more flocculant dosage consumptions at constant particle size. In addition, residual turbidity was higher for the finest particle size compared to larger ones at constant solid concentration.

Keywords: Flocculation, quartz, molecular weight of flocculant, solid concentration, particle size

Some Geometric Properties Of A New Paranormed Double Sequence Space

Fatma Altun[a*]

[a]Gumushane Universitesi

*fatmaaltun@gumushane.edu.tr

Abstract:

In this work, a new double sequence space which is defined by the operator W=(ωnk) on the sequence space l2 (p) is introduced. A modular functional is defined on this space and then structure of this space equipped with Luxemburg norm is investigated. Also some geometric properties such as Kadec-Klee, k-nearly uniformly convex, uniform opial of this space are studied and it is proved that this new space possess these properties.

Keywords: Luxemburg norm, Kadec-Klee, ,Double sequence space

Some Hematological And Biochemical Findings In Boer X Hair Cross Breed Goats In Siirt In Turkey

Ozgur Yasar Celik[a*], Kivanc Irak[a], Gulsah Akgul[a], Memis Bolacali[a]

[a]Siirt University

*oyc@siirt.edu.tr

Abstract:

With the presented study; it was aimed to determine the hematological and biochemical parameters in Boer x Hair Cross Breeds goat and their being useful for other future studies on this Cross Breed. The animal material of the study was consisted of a total of 34 (17 male and 17 female) Boer x Hair Cross Breed goat in the goat farm of Siirt University Veterinary Faculty. Blood samples were taken to the hematology and biochemistry tubes from the vena jugularis of the animals according to its technique. The samples in the biochemistry tubes were kept for 30 minutes at room temperature, and after that, they were centrifuged at 3000 rpm for 10 minutes, and serums were transferred to ependorf tubes and stored at -20 ° C until use. Biochemical analyzes (Na, K, CI, CRE, TP, IP, ALT, AST, CA, ALB, ALP, GLUO, MG, CHOL, HDL, TRIG, LDL) were performed on an ADVIA 1800 autoanalyzer and hemogram analyzes (WBC, RBC, HGB, HCT, MCV, MCH, MCHC, RDW) were performed on a Mindray BC2800 fully automated blood counting device. According to the results of the analyzes made, TRIG, HDL and LDL values were found close to the reported references and other biochemical and hematological parameters were found to be between the reference values.

Keywords: Boer x Hair crossbreed, Goat, Blood Parameters, Siirt, Turkey

Some Results On The Topology Of Fuzzy Metric Type Spaces

Tarkan Oner[a*], Oguzhan Degirmenci[a]

[a]Mugla Sitki Kocman University, Mugla 48000, Turkey

*tarkanoner@mu.edu.tr

Abstract:

In this study, we investigate the concept of fuzzy metric type spaces. We show that $s \leq Kt$ implies $M(x,y,s) \leq M(x,y,t)$. After emphasizing the fact that $M(x,y,.)$ may not be nondecreasing for fuzzy metric type space, we reprove that intersection of two open sets is open. We give examples to show that open balls are not necessarily open and closed balls are not necessarily closed. Moreover, we show that these spaces are sequential, Fréchet and weakly first countable.

Keywords: Fuzzy metric type spaces, sequential, fréchet, first countable

Stability of Embankment Built on the Slope

Askin Ozocak[a*], Ertan Bol[a], Sedat Sert[a]

[a]Sakarya University

*aozocak@sakarya.edu.tr

Abstract:

In this study, the stability of embankments built on a slope has been investigated. Embankment of 3 to 11 m height was placed on the soil surface of %10-30 slope. Slopes formed by the embankment are around 45 degrees. Embankment was constructed as a three step benches. After the construction, partial collapses occurred in the benches and tension cracks formed on the surface. The region is exposed to short period of intensive or long period of continuous rainfall.

In the study area, 6 rotary drilling studies were carried out. It is understood that the environment is composed of gravel and clayey units. Gravels are round and spherical in shape indicates that this region is dominated by stream beds in the geological past. In order to determine the parameters shear box tests were carried out in the laboratory. Soil layers with different shear resistance were considered when the boundaries of the layers are determined for the analyzes to be performed.

Earthquake forces were required to take part in the solutions due to the proximity of the region to the North Anatolian Fault. Stability analyzes pursued on all sections with different software have considered both earthquake conditions and different water pressures. The same solutions for the parameters used for the analyzes were also made with the Plaxis 2D software based on the finite element method. The number of security decreases as the groundwater level increases with the existing embankment, in all earthquake solutions it is less than 1. The rock fill (berm) system placed in the toe to play the role of increasing the passive resistance against slipping in order to ensure the safety of the area. Structural arrangements are proposed such as ditches, which will allow drainage without reaching the potential water supply.

Keywords: Slope Stability, Embankment, Earthquake, Water Pressure

Statistical And Strong Convergences With Respect To Power Series Methods

Cihan Orhan[a], Mehmet Unver[a]

[a]Ankara University

*munver@ankara.edu.tr

Abstract:

In this study we introduce the concepts of Pp-statistical convergence and Pp-strong convergence that are introduced via power series methods. Introducing a new type of uniform integrability with the help of power series method we obtain a relationship between these concepts which is actually a characterization of the concept of Pp-strong convergence. As an application

we give a Korovkin type approximation theorem by using Pp-statistical convergence.

Keywords: power series method, statistical convergence, strong convergence, uniform integrability, Korovkin type approximation

Stduy Of Defects In Gan Epilayer Grown On Patterned Sapphire Substrate

Ismail Altuntas[a], Ilkay Demir[a], A.Alev Kizilbulut[b], Baris Bulut[b], Mehmet Erkus[b], Ali O. Cetinkaya[b], Sezai Elagoz[b]

[a]Cumhuriyet University
[b]Ermaksan Optoelektronics

*ialtnts@gmail.com

Abstract:

GaN-based semiconductors are promising material for light application since the first high-brightness GaN-based blue light emitting diode (LED) was achieved on c-plane sapphire substrate. Generally sapphire substrate uses for GaN growth because of lack of single crystal GaN substrate. In case of using sapphire substrate, the large lattice mismatch between the GaN epitaxial layer and the applied substrate causes high defect density, which can affect device performance. To decrease defect density we used patterned sapphire substrate to growth GaN by using MOCVD. In addition, we investigated the effect of changing V/III ratio during 3D-2D growth region (transition from 3 dimension to 2 dimension) of GaN on reduction of defect density.

Keywords: MOCVD, GaN, Dislocation density

Strassen-like 2x2 Matrix Squaring Revisited

Sedat Akleylek[a], Durmus Ozkan Sahin[a*], Oguz Emre Kural[a]

[a]Ondokuz Mayis University

*durmus.sahin@bil.omu.edu.tr

Abstract:

In this paper, we investigate new methods for efficient 2x2 matrix squaring in view of arithmetic complexity and then give modified versions of Strassen-like formulaes for 2x2 matrix squaring. With the search algorithm, we obtain the lowest multiplication complexity given in the literature. The idea is based on divide-and-conquer the core part of Strassen matrix multiplication method. The search algorithm consists of two parts: computation of main diagonal of the square matrix and computation of anti-diagonal of square matrix. Let A be a 2x2 matrix having vectors [a ,b] and [c,d] as the first row and the second row, respectively. Then, the main diagonal of the square matrix have squaring of a and d as well as b*c. This part can be computed with three multiplications. We obtain alternative computations for them after a clever search manner. The anti-diagonal of square matrix includes a*b+b*d and c*a+d*c. Since these parts can be grouped as b*(a+d) and c*(a+d), only two multiplications are required. We also give other alternative combinations to compute the elements in the anti-diagonal. Finally, we explore new squaring methods for 2x2 matrices with only five multiplications instead of seven in the schoolbook method. In order to speed up the search process, the program is run as a multi-processor. However, since the interprocessor communication is very costly, the desired performance increase has not been achieved. Developed methods are coded on Matlab. The symbolic toolbox is used on Matlab because the operations performed while running the algorithm require symbolic calculation.

Keywords: matrix squaring, arithmetic complexity, symbolic computation, parallel computation

Strengthening Using Steel Members Of Masonry Walls In Historic Structures

Baris Sayin[a*], Tarik Serhat Bozkurt[b], Baris Yildizlar[a], Cemil Akcay[a]

[a]Istanbul University
[b]Istanbul Technical University

*barsayin@hotmail.com

Abstract:

Preserving historical identity has a vital importance in historical structures and also the structures must demonstrate period properties. Additionally, historical structures should fulfilled current functional needs and new structural regulations. As aspect of functional needs and regulations, strengthening technics must be performed without giving damage to historical identity of the structures. The present study is related to strengthening technics of structural wall system of the historical structure. The examined historical structure for the research is belongs to Istanbul University, located in Istanbul historical peninsula. In this scope, strengthening technics of the masonry walls are carried outs for selected historical buildings according to current needs and function requirements. Modern strengthening technics are performed in order to establish structural regulation needs. To this end, steel connecting rods and steel wire mesh applications are applied in masonry-filled walls. Moreover, strengthening layer, which is obtained from hydraulic lime binder, is applied to existing masonry historical wall surface in restoration process. Thanks to strengthening layer, section thickness of the masonry walls is increased in order to improve load-bearing wall capacity. Therefore, masonry wall's load-bearing capacity is compared to before- and after-strengthening application with the ANSYS simulation software. In the study, it is aimed to help researchers and academic staff in strengthening process of historical walls in restoration.

Keywords: Historical structures, Strengthening, Steel members.

Stress Analysing With Gravity Data

Oya Pamukcu[a*]

[a]Dokuz Eylul University Engineering Faculty Department Of Geophysical Engineering

*opamukcu70@gmail.com

Abstract:

Geodynamic movements are a consequence of gravitational mass forces acting on the solid mantle and crust. Gravitational forces cause to increase of pressure with the effect of depth increasing. The rocks must carry the weight of the rising covering together with the depth. Static equilibrium is not possible with absolutely increasing pressure because there are horizontal differences in the gravitational mass forces within the earth. Horizontal variations of the gravitational mass force produce different stresses that control the relative movements associated with plate tectonics. It is possible to obtain stresses by going out of the gravity anomalies. In this study, for the application of this method, gravity anomalies of two theoretical cube models were calculated, which had different depths and densities. The gravity anomaly of regional structure was obtained by applying a low-pass filter to theoretical cube models gravity values. Using filtered gravity values, the horizontal tectonic stresses of medium were determined.

Keywords: tectonic stress, gravity, geodynamic

Stress Generation In Nitihfpd Alloys

Emre Acar[a], Harun Celik[a*]

[a]Erciyes University

*haruncelik@erciyes.edu.tr

Abstract:

NiTi shape memory alloys are the most well-known functional alloys due to their attractive physical and mechanical properties. Beside, their strength is not very suitable for high strength applications. NiTiHfPd alloys are unique shape memory materials that can provide possible solutions for applications requiring very high strength (e.g. oil-gas, aerospace, automobile, construction etc.) compared to equiatomic NiTi alloys. In this study, stress generation abilities of NiTiHfPd single crystalline shape memory alloys as functions of deformation were investigated. These materials can generate very high stresses under extreme conditions. The generated stress levels increased with increasing temperature and the maximum recovery stress was determined to be 950 MPa. Recovery stress larger than 500 MPa was obtained in partial superelasticity tests. The maximum stress that a material can work against (maximum working stress) was higher than 1500 MPa in the all loading orientations.

Keywords: Shape memory alloys, Phase transformation, Stress generation

Structural Analysis And Fatigue Life Prediction Of A Universal Joint With Finite Element Method

Murat Ozsoy[a*], Neslihan Ozsoy[a]

[a]Sakarya University

*ozsoy@sakarya.edu.tr

Abstract:

Universal joint crosses are most important parts of cardan shafts because of transmitting the rotational moment via their body from gearbox to the differentiel. So at the design stage strength calculations need to be taken very carefully according to rotational torque values needed. These calculations, which are made by hand when computers are not as advanced as today, are now made through software that solves the problem with the finite element method.

In this study a type of universal joint cross used in light commercial vehicles will be investigated whether it can transfer the required rotational moment without having plastic deformation. First calculations will be done manually then will be solved via software by finite element method. The mathematical model will be proved by comparing the two solutions. Then a fatigue analysis will be performed for prediction of fatigue life of the universal joint.

Keywords: Universal joint, Structural Analysis, Finite Element Method, Fatigue Life

Structural, electronic and elastic properties of Ti3Hg and Zr3Hg in the A15 structure

Ahmet Iyigor[a*], Abdullah Candan[a], Murat Unsal[b], Nihat Arikan[c]

[a]Central Research And Practice Laboratory (Ahilab), Ahi Evran University, Bagbasi-Kirsehir, Turkey
[b]Graduate School Of Natural And Applied Science, Ahi Evran University,Kirsehir, Turkey
[c]Mathematics And Science Education Department, Education Faculty, Ahi Evran University, Kirsehir, Turkey

*ahmetiyigor@ahievran.edu.tr

Abstract:

First principle calculations of structural, electronic, elastic, and phonon properties of the intermetallic compounds like Ti3Hg and Zr3Hg in the A15 (Cr3Si) structure are presented in this study, using the pseudo-potential plane waves approach based on the density functional theory, within the generalized gradient approximation. The optimized lattice constant, bulk modulus and its pressure are evaluated and compared with the available experimental and theoretical data. The numerical first principles calculations of the elastic constants were used to calculate C11, C12 and C44 for these compounds. The present results concur with the earlier theoretical calculations. The electronic band structure, electronic total and partial densities of states of the Ti3Hg and Zr3Hg alloys are computed and analyzed with the existing theoretical and experimental findings. The band structures of both materials show metallic character; the conductivity is mostly governed by d states.

This work has been supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: AHILAB.E2.17.002.

Keywords: A15 Structure, Elastic properties, Electronic properties

Structural, Electronic And Mechanical Properties Of A Newly Predicted Layered Ternary Ti3SiN2 *

Abdullah Candan[a*], Salih Akbudak[b], Sule Ugur[c], Gokay Ugur[c]

[a]Ahi Evran University
[b]Adiyaman University
[c]Gazi University

*cndn14@gmail.com

Abstract:

The structural, electronic and mechanical properties of ternary layered Ti3SiN2 ceramic has been studied using the first-principle method based on the density-functional theory. We have obtained the equilibrium lattice parameters (a0 and c0), the equilibrium atomic positions, total and partial density of states, Voigt's bulk modulus (BV), Reuss's bulk modulus (BR), effective bulk modulus (B), Voigt's shear modulus (GV), Reuss's shear modulus (GR), effective shear modulus (G), elastic constants (C_ij), Young's modulus (E), Poisson's ratio (σ), ductility index (μ_D) and machinability index (μ_M) in the hexagonal P63/mmc space group. The equilibrium lattice parameters are computed to be a0=2.98 Å and c0=17.81 Å. The band structure and density of states reveal that Ti3SiN2 is an electronic conductor.

This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: AHILAB.E2.17.001.

Keywords: max phases, Density Functional Theory, electronic properties, mechanical properties

Study Of Laser Induced Micro-Hole Configuration In Order To Exploit Mechanical Interlocking Effect On Adhesive Bonding

Mustafa Ozgur Bora[a*], Erhan Akman[a], Onur Coban[a], Belgin Genc Oztoprak[a], Arif Demir[a]

[a]Kocaeli University

*ozgur_bora@yahoo.com

Abstract:

There are many different techniques to improve the adhesion between carbon fiber reinforced polymers (CFRP) which are used in aircraft primary structures. One of the most common techniques is the specific surface structuring of the joining partners in order to obtain mechanical interlocking. In this study laser induced surface structuring effect on adhesion strength of carbon-epoxy composites was investigated by single lap shear tests. Micro-holes were created by CO2 laser treatment with different configurations in x and y axis for the best mechanical interlocking effect on adhesive bonding. Different micro-hole configured CFRP composite partners were adhesively bonded for single lap shear tests. Single lap shear adhesion tests were conducted according to ASTM D5868 with 60 kN DARTEC universal test machine. Lap shear tests showed that micro-hole structuring has significant effect on mechanical interlocking for adhesive bonding of CFRP composites.

Keywords: CFRP, Adhesive Bonding, Laser surface structuring, Mechanical Interlocking

Successive Olive Oil Extraction Of Alkanna Tinctoria Bioactive Colorants And Their Potential Use In Food Industry

Evren Altiok[a]*

[a]Giresun University

*evrenaltiok@gmail.com

Abstract:

Black Sea Region in Turkey is an important area where industrialization is rarely seen, and the natural plant flora is well-protected and rich in endemic plants. Among them, Alkanna tinctoria is wide-spread plant species, which is important source of natural colorants; alkannin and shikonin. Food industry uses food colorants as an additive. Generally, these additives are synthetic ones, however, consumers are much more showing resistance to use synthetic ones because of their health threatening effects. So, parallel to this current situation, natural food colorants have intensively been studied aiming to replace synthetics with the natural ones. This study aimed to extract and purify shikonin with successive olive oil extraction system. The oily naphtaquinone structures were determined and their stability were evaluated for further application in food industry. Extra virgin olive oil was used for the successive extraction of alkannin/ shikonin and their derivatives from the root. Solid/oil ratio was predetermined as 1/10. Olive oil was refreshed after reaching predetermined absorbance as 2.0 (±0.20) at 520 nm. HPLC analysis of the extract was performed to determine the alkannin/shikonin and their derivatives quantitatively. Stability tests were performed considering the shelf life of the shikonin/oil at 25, 40 and 60 ˚C. 21 successive extractions were required to extract whole oil-soluble shikonin/alkannin and their derivatives. HPLC analysis indicated that, alkannin/shikonin and their oligomers and esters were the main compounds of the extracts. It was revealed that olive oil extract exhibited extremely high and consistent radical scavenging activity on ABTS+ even at higher temperatures. Olive oil extracts of Alkanna tinctoria roots containing radical scavengers mainly alkannin, shikonin and their esters could be used promisingly in food industry to obtain functional foods by exhibiting effective, stable and long lasting antioxidant and antimicrobial activities even at high temperatures.

Keywords: shikonin, oil extraction, natural food colorant, stability

Survey On Security Issues And Solutions In Cloud Computing

Safak Durukan-Odabasi[a*]

[a]Istanbul University

*sdurukan@istanbul.edu.tr

Abstract:

Development on information technologies and accordingly the increment of information sharing makes additional sources necessary which are used to access, store and process huge amount of data. At this point, cloud computing technology shows up to satisfy these needs, provides services beyond grid and cluster approaches and offers computing as a utility to users.

Cloud computing is the collection of Internet-based information services in which Internet-enabled host computers and devices can be used and their sources can be shared among users on demand. Thus, virtually collecting all computing sources and services under a single system and providing vast amount of computing power is possible. Cloud computing has various type of basic characteristics like permitting users to access and manage services directly, providing an opportunity to use these services non-spatially, sharing a wide range of physical and virtual computing sources among its users, rescaling of sources according to user demands. A cloud computing system consists of different types of services, storage mechanisms and users. Such systems always face with security problems because of their complex structures. As a consequence, providing and maintaining system security become a crucial challenge for these systems.

Security of cloud computing must be discussed in many aspects since each of the system components has different requirements. Data storage and computing, virtualization, Internet and services, network, access control, trust management, compliance and legal aspects may bring security issues with it. So, all of these topics must be analyzed carefully and considered while proposing security solutions.

In this study, main features of the cloud computing are explained, system security issues are analyzed and solutions are presented.

Keywords: Cloud computing, security

Synthesis and Anticholinesterase Activity of Eugenol Derivatives

Belma Zengin Kurt[a], Fatih Sonmez[b*], Mustafa Kucukislamoglu[b]

[a]Bezmialem Vakif University
[b]Sakarya University

*fsonmez@sakarya.edu.tr

Abstract:

Alzheimer's disease (AD) is a progressive neurodegenerative disease and the most common form of dementia that affects aged people. Acetylcholinesterase is a hydrolase involved in the termination of impulse transmission at cholinergic synapses by rapid hydrolysis of the neurotransmitter ACh in the central and peripheral nervous system. Eugenol (4-allyl-2-methoxyphenol) is a phytochemical compound isolated from many medicinal herbs, such as Syzigium aromaticum, Ocimum Sanctum. It is known that eugenol has been widely used as an aroma substance in food and cosmetic products and in the pharmaceutical sector. In this paper, a series of 14 novel eugenol substituted carbamate derivatives (2a-n) was synthesized and their inhibitory activities on AChE and BuChE were evaluated. Among them, 4-allyl-2-methoxyphenyl(3,4-dichlorophenyl)carbamate (2j) exhibited the strongest inhibition against AChE with an IC50 value of 71.60 µM, which was minimum 3-fold more than that of eugenol (IC50 = >200 µM).

Keywords: Acetylcholinesterase, Butyrylcholinesterase, Carbamate, Eugenol

Synthesis and Biological Properties of Novel 2-(2-(thiophen-2-yl)benzo[b]thiophen-3-yl)-1H-indole

Can Yilmaz[a*], Muheb Algso[b], Arif Kivrak[c], Metin Konus[d], Aslihan Kurt Kizildogan[d]

[a]Yuzuncu Yil University
[b]Department Of Chemistry, Faculty Of Science, Yuzuncu Yil University
[c]Dose Drug R&D, Yuzuncu Yil University, Technopolis
[d]Department Of Molecular Biology And Genetics, Faculty Of Science, Yuzuncu Yil University

*cyilmaz@yyu.edu.tr

Abstract:

Benzothiophene and indoles are very important class of heterocyclic compounds. They have used as analgesic, anti-inflammatory, anti-bacterial, antiparasitic, antitussive, hypoglycemic, antitumor and/or anticancer activities. Many synthetic methods have been employed for the synthesis of this heterocyclic compounds and they have also been isolated from different kinds of plants and used to treat different diseases for many years. In this study, we developed new methodologies for the synthesis of biologically active indole-benzothiophene derivatives containing fused heteroaromatics. The antimicrobial activities, anti-oxidant capacities and potential inhibitory effects on drug metabolizing enzymes were tested to find out biological properties of synthesized compounds.

Keywords: benzothiophene, heteroaromatics, antioxidant capacity, antimicrobial activity

Synthesis And Electrochemical Characterization Of The Pdag/CNT Electrocatalyst

Berdan Ulas[a*], Aykut Caglar[a], Hilal Demir Kivrak[a], Nahit Aktas[a], Hilal Celik Kazici[a]

[a]Yuzuncu Yil University

*berdanulas@yyu.edu.tr

Abstract:

In this study, carbon nanotube supported PdAg catalysts were prepared at varying atomic ratio via NaBH4 reduction method to examine their electro catalytic activity and stability toward formic acid electrooxidation. The catalysts were prepared successfully via NaBH4 reduction method. Electrochemical characterization of the electrocatalysts were performed with cyclic voltammetry (CV) and chronoamerometry (CA) in 0.5 M H2SO4 + 1 M HCOOH. It was reported that electrocatalytic activity of the PdAg/CNT was higher than that of Pd/CNT catalyst. In other words, electrocatalytic activity for formic acid electrooxidation was effected positively with Ag addition. This was explained by the fact that the electrochemical active surface area of the Pd/CNT catalyst increased with the Ag addition.

Keywords: FUEL CELL, FORMIC ACID, PD, AG

Synthesis Of Alumina Based Composites Prepared By Ball Milling For Defense Industry

Ahmet Burcin Batibay[a*], Hasan Gokce[a]

[a]Konya Necmettin Erbakan University
[b]Istanbul Technical University

*abbatibay@konya.edu.tr

Abstract:

Alumina, Al2O3, is a very useful industrial material and is the most widely used ceramic. It possesses favorable properties such as high hardness, high compressive strength, excellent wear resistance, good chemical and thermal stability and a high elastic modulus. However, its application as a structural material is limited by its low fracture toughness and low fracture strength. The purpose of this work is to produce alumina based composites of different compositions by ball milling and to investigate the mechanical behavior and to develop applications for defense industry. High energy planetary ball milling with zirconium (YZP) balls was used to produce the alumina based system. Alumina and metals powders such as nickel and cobalt were milled for 30 hours until steady-state conditions were achieved. After milling processing, alumina based powders were consolidated using a uniaxial press and sintered at high temperatures. Mechanical tests carried out using hardness, compression, 3-point bending and ballistic tests on the sintered samples. Microstructural characterizations were conducted using XRD, SEM and optical microscopes. Metallic additives such as nickel and cobalt were found to improve the properties of alumina for the use of defense industry.

Keywords: Alumina Based Material, Defense Industry, Ball Milling, Fracture Toughness

Synthesis Of Graft Copolymers From Renewable Sources Using Different Polymerization Techniques

Sema Alli[a], Abdulkadir Alli[a*]

[a]Duzce University

*abdulkadiralli@duzce.edu.tr

Abstract:

Novel oil/oily acids graft copolymers have been synthesized using renewable oils and fatty acids since 2004. Free radical polymerization, ring opening polymerization, one-pot polymerization (free radical and ring-opening polymerization), aqueous free radical polymerization (redox) and nitroxy-mediated polymerization methods have been used respectively. Poly(linoleic acid)-g-poly(ε-caprolactone) (PLina-g-PCL) and poly(linoleic acid)-g-poly(styrene)-g-poly(ε-caprolactone) (PLina-g-PSt-g-PCL) were synthesized by ring-opening polymerization of ε-caprolactone initiated by PLina and one-pot synthesis of graft copolymers, and by ring-opening polymerization and free radical polymerization by using PLina, respectively. Polymeric linoleic acid graft copolymers have been synthesized via nitroxide mediated radical polymerization (NMRP) method in the presence of 2,2-6,6-tetramethylpiperidinyl-1-oxy (TEMPO). For this purpose, PLina-ox exposed to polymerization with styrene (Sty) or Sty and pentafluorostyrene (F5Sty) in the presence of TEMPO by NMRP method in order to obtain PLina-g-PSty and PLina-g-PF5Sty-g-PSty graft copolymers with controlled structure and low polydispersity. The principal parameters such as monomer concentration, initiator concentration, and polymerization time that affect the one-step polymerization reaction were evaluated. The graft copolymers obtained were characterized by 1H NMR, GPC, TGA and DSC techniques.

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Keywords: Auto-oxidation, polymeric oil/oily acid, polymerization, biodegradeble

Synthesis Of Sodium Borohydride Based Ag-Co/MWCNT Nanocomposites For Applications In Catalysis

Hilal Celik Kazici[a*], Firat Salman[a], Aykut Caglar[a], Hilal Demir Kivrak[a], Nahit Aktas[a]

[a]Yuzuncu Yil University

*hcelik@eng.ankara.edu.tr

Abstract:

The synthesis of Ag-Co/MWCNT nanobimetallic particles was successfully carried out by the reduction of the sodium borohydride solution A novel strategy to fabricate a hydrogen peroxide (H2O2) sensor was developed based on this electrode The sensor was fabricated by simple casting of silver cobalt nano particles. The electrochemical properties of H2O2 sensor were evaluated by cyclic voltammetry (CV) and differential puls voltammetry. The as obtained nanobimetallic particles exhibited favorable electro reduction activity toward H2O2, and results indicated that the electrode might be gifted from CV scanning with higher surface area and more active sites that afford more effective surface exposure in the electrode–electrolyte interface and consequently improved electro- chemical properties. Enzyme-free sensor exhibited a wide linear range of 0.1 µM – 10 mM to H2O2, with a detection limit of 0.23 µM.

Keywords: Non-enzyme, Hydrogen peroxide, Electroreduction

Synthesis Of The Pdagco/CNT For Direct Formic Acid Fuel Cell

Aykut Caglar[a], Berdan Ulas[a*], Hilal Demir Kivrak[a], Nahit Aktas[a], Hilal Celik Kazici[a]

[a]Yuzuncu Yil University

*berdanulas@yyu.edu.tr

Abstract:

Recently, fuel cell technology is very popular among the researchers, because of depletion of the fossil fuels. Fuel cells are eco-friendly devices that convert the chemical energy to electrical energy. In the previous study of our research group, carbon nanotube supported PdAg nanocatalysts were investigated for direct formic acid fuel cell. In this study, carbon nanotube supported PdAgCo catalysts were prepared via NaBH4 reduction method to examine their electro catalytic activity and stability toward formic acid electrooxidation. Moreover, effect of Co addition on electrocatalytic activity was studied. Electrochemical properties of the catalysts were characterized via cylic voltammetry (CV) and chronoamperometry (CA). It was observed that electrochemical properties of the catalyst enhanced with the Co existence.

Keywords: formic acid, fuel cell, Cobalt

Synthesis, Characterization And Possible Agricultural Application Of P(DMAAM-Co-Ca) Hydrogel

Tuba Ersen Dudu[a], Duygu Alpaslan[a], Fevzi Erdogan[a], Nahit Aktas[a*]

[a]Yuzuncu Yil University

*naktas@gmail.com

Abstract:

In this study, nonionic p(DMAAm-co-CA) hydrogel was synthesized by using N, N-Dimethylacrylamide (DMAAm), citric acid (CA) as monomers and utilized for targeted nitrogen fertilizer removal. Synthesized p(DMAAm-co-CA) hydrogel was investigated swelling behaviors in deionize water and sensibility pH and were characterized using Fourier Transform Infrared Spectroscopy (FT-IR) and Thermal Gravimetric Analysis (TGA). In the environmental applications of (DMAAm-co-CA) hydrogel aimed removal from aqueous medium of nitrogen fertilizer. Therefore, in this study investigated effect on the absorption performance of initial fertilizer concentration (mg/L), the pH of the media, and temperature (°C). Ultra-Viole spectroscopy was used to quantify nitrogen fertilizer during absorption studies. The most utilized absorption isotherms models like Langmuir and Freundlich were studied to obtain the best-fitted isotherms equation. Moreover, thermodynamic parameters were evaluated. Under specified experimental conditions, the maximum absorption capacities for nitrogen fertilizer were calculated to be approximately 109.8 mg/g.

Keywords: N,N-Dimethylacrylamide, citric acid, nitrogen fertilizer, absorption

Synthesis, Spectroscopy, Magnetic Properties, X-Ray Single Crystal, Biological Activity and DNA Binding Studies Of Sulfonyl Hydrazones And Their Metal Complexes

Murat Cinarli[a*], Humeyra Bati[b], Hatice Ogutcu[a]

[a]Ahi Evran University
[b]Ondokuz Mayis University
[a]Ahi Evran University

*murat.cinarli@ahievran.edu.tr

Abstract:

In this study, sulfonyl hydrazone ligands and their transition metal complexes were synthesized. Chemical structures of the ligands were characterized by elementel analysis, IR and UV-Vis. spectral data. Metal complexes were clarified by means of elementel analysis, IR, UV-Vis. spectral data and magnetic susceptibility studies. Crystal structures of ligands and complexes were studied and their structure were investigated by X-ray single crystal method. Antimicrobial activities of ligands and complexes were also investigated ten bacteria and one fungi. The interactions of all synthesized compounds with plasmid DNA were charecterized using agarose gel electrophoresis.

This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number:AHILAB.E2.17.003

Keywords: sulfonylhydrazone, schiff bases, hydrazone

Synthesized Uniform Distributed Graphene Reinforced Mg-Al Matrix Composite Via Semi Powder Metallurgy

Muhammet Emre Turan[a*], Yavuz Sun[a], Hayrettin Ahlatci[a], Yunus Turen[a]

[a]Karabuk University

*memreturan@karabuk.edu.tr

Abstract:

This study aims to compare mixture methods of powders to fabricate graphene (GNP) reinforced Mg-Al matrix composite. GNP and Aluminum content was kept constant and these values are 0.25%wt. and 3%wt. respectively. Mixing of powders was carried out both turbola mixer and ultrasonication process to make comparison. Powders were compacted in hot press system in same conditions for two different type of mixture powders. Densities of specimens were calculated by Archimedes methods. Hardness and compression tests were performed at room temperature. Microstructures of samples were characterized by Scanning Electron Microscope (SEM). Results clearly show that, uniformly distribution was achieved with mixing by ultrasonication process and also hardness, density and compression strength values are better than other sample mixing type of powders.

Keywords: Graphene, Ultrasonication, Turbola Mixer, Archimedes, SEM

Taguchi Optimization of Tribological Properties of Carbon Fiber Reinforced Epoxy Composites

Neslihan Ozsoy[a*], Murat Ozsoy[a], Abdullah Mimaroglu[a]

[a]Sakarya University, Engineering Faculty, Department Of Mechanical Engineering

*nerken@sakarya.edu.tr

Abstract:

Dry tribological performance of carbon fiber reinforced epoxy (CFRE) composites are reported in this paper. Composites were fabricated by hand lay up method in three different orientations 0˚, 90˚,[0˚/90˚] according to the ASTM standard. Experiments were designed according to Taguchi method and conducted with pin on disk test apparatus against a steel disk (60 HRC) for a constant distance (1000 m) and under different loading conditions. Signal to noise ratio and analysis of variance (ANOVA) were used to investigate the influence of parameters on the wear rate and coefficient of friction. The results showed that performance of composites effected by load mostly.

Keywords: Carbon Fiber Reinforced Epoxy Composites, Taguchi Method, Tribological Properties

Tectonically Driven Uplift And Seismicity Of The Eastern Pontides (Trabzon-Rize/Turkey And Its Vicinity)

Mustafa Softa[a*], Tahir Emre[a], Hasan Sozbilir[a], Joel Q.G. Spencer[b], Mehmet Turan[b]

[a]Dokuz Eylul University
[b]Kansas State University, Deparment Of Geology

*mustafa.softa@deu.edu.tr

Abstract:

The Eastern Pontides has undergone active and progressive uplifting at rates ranging from 0.59–1.00 mm/year during the Quaternary period because of active deformations caused by Eurasia and the Arabic platforms. A total of 308 earthquakes that were greater than a magnitude of 3 were detected using catalogs of instrumental and historical earthquakes between 1852 and 2017. Lineation analysis from aerial photos and field studies show that there has been extensive earthquake activity in the Eastern Pontides since the historical period and the dominant direction was identified as different sets of WNW-ESE, E-W, and ENE-WSW. The linearity overlaps for the earthquakes that occur on the land and in the Black Sea. These lineations were infilled with obsidians during the Pleistocene age. During seismic studies performed in the Eastern Black Sea, the reverse fault, the strike-slip faults and the normal faults are defined in the Trabzon-Rize region. Previous seismic profiles have also shown that the eastern part of the Eastern Pontides is more active than the western part because these faults cut Quaternary sediments. Additionally, we suggest that the Eastern Black Sea Fault, which limits the south of the Black Sea, may be active today because of the oblique reverse fault that was observed during the focal mechanisms solution of the earthquakes at Mw: 6.2 in 1959 and Ms: 5.8 in 2012 in the nearest Batum. To date, our findings indicate that: (i) the eastern part of the Eastern Pontides that rises between 0.59 mm and 1.00 mm/year is more active than the western part; (ii) linearity can be an active fault based on the fission track studies of the obsidians and the intense earthquake activity on these lineaments in Eastern Pontides; and (iii) earthquakes of at least a magnitude of 5 have occurred in the Eastern Pontides within 200 years.

Keywords: uplift rate, Eastern Pontides, earthquake, active fault, Black Sea

The Analysis And Evaluation Of University Campus Areas In Terms Of The Urban Equipments - Example Of Duzce University

Zeki Demir[a*], Aysegul Tanriverdi Kaya[a]

[a]Duzce University

*zekidemir@duzce.edu.tr

Abstract:

Urban equipments have very important roles in supporting different social and cultural activities and the improvement of urban lifestyle. The main aims of universities are supporting students to gain occupational skills by education and practice, producing information by conducting social and economic based researches and practices, preparing students to community life by giving them duties and responsibilities and contributing to the education, awareness and cultural level of the society. In this manner, physical planning of University campuses, as a small model of a city, must be evaluated according to city planning criteria. In this study we aimed to evaluate Duzce University campus planning according to city planning criteria and urban equipments. In this study, literature data and studies of survey and analysis of the campus have been evaluated. The analysis of the data indicated that Equipment areas on the campus are one of the important places in which ecological relationship between natural and artificial elements in terms of landscape architecture. In the light of these evaluations, solutions and suggestions have been developed.

Keywords: urban planning, campus planning, equipmants, Duzce

The Annual Energy Consumption Comparison by means of Energy Savings of a Two Story Flat and a Regular Flat That are Located in the same Building in Ankara During Winter

Nalan Kalkan[a*], Murat Korkmaz[a]

[a]Hacettepe University Ppolatli Vocational School Of Technical Sciences

*nalank@hacettepe.edu.tr

Abstract:

Due to increasing population in country, house construction is also in rise. House construction not only should satisfy the need of housing but also should aid people meet their energy consumption expenses in reasonable amounts especially during winter in order to maintain a standard of living. The housing preferences of people vary by their need of area of use. Our country is 70% to 80% foreign-dependent by means of providing fuel/natural gas that is needed to heat housings. Because of that reason it becomes an obligation to conserve energy and there are regulations on enegry efficiency in our country. The aim of this study is to evaluate the energy consumptions of a two story flat and a regular flat which are in the same building in September, October, November 2015 and January, February, March 2016 by means of energy saving and propose suggestions on energy saving and efficiency.

Keywords: Energy savings, The annual energy consumption, Heating

The Coenurus Cerebralis Case for a Boer x Hair Cross Breed Goat in Siirt in Turkey (Some Biochemical Parameters and Pathologic Findings)

Burcak Aslan Celik[a*], Serkan Yildirim[b], Ozgur Yasar Celik[a], Kivanc Irak[a], Gulsah Akgul[a]

[a]Siirt University
[b]Ataturk Universty

*burcakaslan@siirt.edu.tr

Abstract:

The aim of this study is to investigate the clinical, laboratory and pathological findings of a case of Coenurus cerebralis in a 2 year old boer x hair hybrid goat, which was brought to Siirt University Veterinary Faculty Clinics. Respiration, heart rate and body temperature were measured in the clinical examination of the animal. Blood samples were taken into the biochemical tube from vena jugularis, according to its technique, for laboratory examinations. The sample was centrifuged at 3000 rpm for 10 minutes after waiting at the room temperature for 30 minutes, and then stored at -20°C until used. Some biochemical parameters in serum samples were analyzed (ALT, AST, TP, ALB, GLU, Na, K, CL, CHOL). The animal was sacrificed and necropsy was performed. The clinical examination revealed that the animal was sluggish, turned around itself, and rested his head on the wall. Respiration was found to be 600/min, Heart rate 120/min and Temperature 390C. ALT (25 U/L), AST (179 U/L), TP (6.5 gr/dL), ALB (2,7 gr/dL), GLU (60 mg/dL), Na (146 mmol/L), K (4.5 mmol/L), CL (110 mmol/L) and CHOL (63 mg/dL) levels that analyzed in the blood serum were found to be among the reference values Coenurus cerebralis cysts located in the cerebral hemispheres in the animal's brain were found at the necropsy. Coenurosis is a very important disease, especially for small ruminants. For this reason, we think that it is necessary to take preventive measures for the host and intermediate host to reduce the spreading of the disease.

Keywords: Boer x Hair crossbreed, Coenurus cerebralis, Goat, Blood Parameters, Pathologic Findings, Siirt, Turkey

The Color Removal From Chipboard Industry Wastewater By Electrocoagulation Method

Elif Calgan[a*], Elif Ozmetin[a], Mustafa Korkmaz[a], Cengiz Ozmetin[a]

[a]Environmental Engineering, Faculty Of Engineering,Balikesir University

*eliftekin@balikesir.edu.tr

Abstract:

The chipboard wastewater contains high amounts of organic matter and suspended solids due to the materials used during production as well as cellulose and lignin in the wood structure. Therefore, the wastewaters of chipboard industry should be treated before discharge or reuse. Chipboard wastewater also includes color as an important parameter. Color creates a problem in terms of aesthetics and restricts the ability of water reuse. The colored wastewater to the receiving waters reduces the light permeability in the water environment and affects the photosynthetic activity negatively. In this study, it was aimed to removal of color by electrocoagulation from wastewater of chipboard industry. In the electrocoagulation (EC) process, iron electrode was used as anode and cathode material. pH, current density and EC time were selected as experimental parameters.

Keywords: Chipboard wastewater, Color removal, Electrocoagulation

The Correlations Between Udder Measurements And Somatic Cell Counts In Milk Obtained From Holstein Cows

Aliriza Sahin[a], Yeliz Yilmaz[b], Murat Cimen[b*]

[a]Provincial Directorate Of Food, Agricultural And Livestock
[b]Munzur University

*mcimen@munzur.edu.tr

Abstract:

It was determined the correlations between udder morphology and somatic cell count (SCC) levels in milk obtained from Holstein cows in this study.The correlations between SCC and udder characteristics by using the Pearson correlation coefficients have been obtained in this research. The milk samples at last day of fourth week of postpartum period were collected from 20 cows. The somatic cell count within taken raw milk samples was detected by the standard analysis (Microscopic count) method. The teat length was found to be positively ($r=0.072$) and significantly ($p=0.035$) associated with the SCC of milk. However, no significant correlations ($p>0.05$) were observed between SCC levels and teat diameter, udder depth, udder circumference. The positive correlation coefficient ($r=0.072$) indicated that increase in teat length leads to increase in the SCC level in milk obtained from Holstein cows. The correlation analysis results show that, SCC will be highest levels for cows with long teats. According to result of this research, teat length may be selection criteria for the genetic potential of the Holstein cows and their attending breeding practices in augmenting hygienic milk production.

Keywords: Milk, Somatic cell count, Udder measurements, Holstein, Correlation

The Determination of Some Agronomic and Quality Characteristics of Soybean Varieties and Lines Grown as a Double Crop in Different Locations in Turkey

Halis Arioglu[a], Cemal Kurt[a*], Halil Bakal[a], Leyla Gulluoglu[a], Bihter Onat[a]

[a]Cukurova University

*ckurt@cu.edu.tr

Abstract:

This study was conducted at two different locations in Adana and Mersin (Turkey) in 2016 as a double crop growing season. The objective of this study was to determine some agronomic and quality characteristics of soybean varieties and lines grown as a double crop. The experimental design was a Randomized Complete Block with three replications. The 34-55, 36-13, 37-54, 34A7, Blaze, Arisoy, Atakisi, Y-1, Y-2, Y-3, Y-4, Y-5, TS-1, TS-2, TS-3, TS-4, TS-5, TS-6, TS-7, HA.16-21and Atlas varieties and lines were used as a plant material in this research. These research materials were provided from USA and University of Cukurova. Plant height, Pod and branch number per plant, the lowest pod height, 1000- seed weight, oil and protein content and seed yield per hectare characteristics of varieties and lines were investigated. According to a two-location average, the seed yield values of soybean varieties and lines varied between 2316-3786 kg ha-1. The highest seed yield was obtained from TS-1 lines. Some of the varieties provided from USA were susceptible against to whitefly.

Keywords: Soybean variety, Seed yield, double crop, agronomic and quality characteristic

The Effect of Ballistic Investigation on Small Arms Design

Oner Ozyilmaz[a], Ozgur Kaplan[b*], Cenk Celik[b]

[a]Sarsilmaz Firearms Industry
[b]Mechanical Engineering, Kocaeli University

*ozgurkaplan1@gmail.com

Abstract:

Designing small arms is very crucial for the defense industry of Turkey. In this work, the effect of ballistic investigation on small arms design was studied. An effective design of small arms strongly depends on identifying variables during the period between the bullet leaves the barrel and reaches its target. In order to determine these variables, a number of shots were fired and pressure-time, pressure-displacement and velocity-time graphs were drawn with ballistic analysis unit. Obtained results showed that ammunition is the most important design criteria in small arms design and all other design criteria's are related with ammunition type. Dimensions of chamber and forcing cone are important for initial velocity of bullet and target accuracy. That's why extensive care should be given during the manufacturing of these sections in a barrel. Since operation cycle and mechanism type determine number of rounds, they should be determined before designing the gun. The small arms which is the subject of this study is a mechanic machine. Any obtained theoretical design criteria may not be producible. In regard of that, state-of-the-art manufacturing methods should be extensively investigated during the small arms designing phase.

Keywords: Ballistics, Small Arms, Arms Design

The Effect Of Cross-Section Dimension Limits In Optimum Design Of Reinforced Concrete Continuous Beams

Gebrail Bekdas[a*], Sinan Melih Nigdeli[a]

[a]Istanbul Univesity

*bekdas@istanbul.edu.tr

Abstract:

As known, steel and concrete are different types of materials in fracture. In order to express a ductile behavior, reinforced concrete elements must have less reinforcements from the situation in which concrete and steel rebar yields at the same time. There are two options if the maximum reinforcement area is exceeded. The first optimum is to use a doubly reinforced design, but this design may not be an economic choose since steel is a more expensive material than concrete. The other option is to use a bigger cross-section to enlarge the force in compressive section. In the present study, the optimum design of reinforced concrete (RC) continuous beams are investigated for different ranges of cross-section dimensions. Thus, it will be possible to see the effect of singly or doubly reinforced beams in economic design. For the investigations, a random search technique (RST) is used and the methodology considers the rules of ACI318 building code requirements for structural concrete, all live-load distribution patterns for unfavorable solution and detailed reinforcement design of rebars according to the market sizes.

Keywords: optimizaiton, beam, reinforced concrete

The Effect Of Different Criteria Weighting Methods On Hesitant Fuzzy Topsis

Kezban Bulut[a]*

[a]Kirikkale University

*kezbanbulut@yahoo.com

Abstract:

The Fuzzy TOPSIS method is a kind of simple and useful decision making method to handle the multi criteria decision making problems with fuzzy data. In literature, this method also has some other extensions for different fuzzy sets. In this paper Hesitant Fuzzy Topsis method is discussed. In real world situations; the decision makers have much hesitancy in providing their preferences between the criteria in the process of decision making. Hesitant fuzzy sets are an extension of ordinary fuzzy sets and handle with this problem in decision making process. This paper develops the fuzzy Topsis method using different criteria weighting methods for hesitant fuzzy sets. Different criteria weighting methods like Maximizing Deviation Model and Entropy Based methods are discussed in this paper and the impact of these methods is examined in a numerical example.

Keywords: Hesitant Fuzzy Sets,Fuzzy Topsis,Criteria Weighting Methods

The Effect Of Different Whey Proteins On The Viscosity, pH And Sensory Properties Of Salep Beverage

Kurban Yasar[a], Adnan Bozdogan[a*]

[a]Osmaniye Korkut Ata University

*bozdogan@osmaniye.edu.tr

Abstract:

Salep is obtained by grinding dried tubers of wild Orchidaceae species and is used as an additive in various foods. Traditional salep milk beverage is produced using cow milk, salep powder, sugar and spices. In recent years, various additives have been used in food production in order to increase the nutrient content of foods and to improve their functional properties. Whey proteins and their products are significant food additives which are used extensively in food production due to their versatile functional properties and high nutritional quality. The aim of this research is to obtain high-protein salep beverage using nutritious whey proteins.

In this study, powder mixtures at different ratios were obtained using whey proteins (whey protein concentrate WPC %35 and demineralized whey protein powder) and milk powder then salep beverage was prepared using this powder mixtures by mixing with water, sugar, starch, cinnamon, and ginger. As a control, another salep milk beverage was produced by mixing cow milk, salep, sugar, starch, cinnamon and ginger without whey proteins.

All salep beverage samples were heat treated at 90 ° C for 15 minutes and cooled at 5 ° C and stored in refrigerator. The difference between the samples in terms of viscosity was found to be significant and the highest value was obtained with 50% whey protein concentrate (WPC %35) + 50% milk powder mixture. The difference between the samples in terms of color, structure, taste, smell, and overall was found to be significant and the highest value was obtained from the control sample. Panelists gave the highest score after the control to the samples produced from 25% whey protein concentrate (WPC %35) + 75% milk powder mixture. As a result, salep beverage that produced including 25% whey protein concentrate (WPC %35) + 75% milk powder can be consumed by consumers.

Keywords: Salep, whey protein, viscosity, sensory analysis, pH

The Effect of Exhaust Vent Placement on the Temperature Distribution of a Fire Resistance Test Furnace

Ogan Karabas[a*], Ozgur Kaplan[a], Kadri Suleyman Yigit[a], Mesut Gur[b]

[a]Kocaeli University
[b]Istanbul Technical University

*ogankarabas@gmail.com

Abstract:

Fire resistance test furnaces are used in the test of a material's behavior during a fire incident. This behavior can be explained in terms of load-bearing capacity, integrity and insulation. In this study, the placement of exhaust vent of a fire resistance test furnace was investigated. A 3 dimensional model of the fire resistance test furnace was built with a 3 dimensional modelling program. Exhaust vent was placed at the bottom of side surface. Dimensions of the fire resistance test furnace and exhaust vent were 1x1x1 m3 and 0,4x0,1 m2, respectively. Finite Volume Method was selected as discretization method. Conservation of mass, momentum and energy equations were solved in second order. Realizable k-ε turbulence model was used in the pressured based solver with unsteady and first order implicit formulation. Radiation was also taken into consideration in the CFD study. The results showed non-uniform temperature distribution in the fire resistance test furnace until 21st second when the exhaust vent was placed at the bottom and it was found that exhaust temperatures were much lower than expected for the first 21 seconds. The reason of the decreased exhaust gas temperature is found to be related with exhaust vent placement. This means more heat is transferred to fire resistance test furnace than needed and it caused the increase of the fire resistance test furnace temperature then expected.

Keywords: Fire, Fire Resistance, Fire Resistance Test Furnace

The Effect Of Inlet Fluid Temperature On Thermal Efficiency Of Pv-T

Riza Buyukzeren[a], Ali Kahraman[a*]

[a]Necmettin Erbakan University

*akahraman@konya.edu.tr

Abstract:

The past thirty years have seen increasingly rapid advances in the field of photovoltaic-thermal panel industry. The aim of the present work is to investigate the effect of inlet fluid temperature on thermal efficiency for photovoltaic-thermal solar panel. ASHREA method has used to get theoretical characteristics of thermal collector. Five different inlet temperatures 20˚C, 35˚C, 50˚C, 65˚C and 80˚C has selected for performance tests. Thermal efficiencies of PV-T collector have calculated for each inlet temperatures. Moreover, heat removal factor and overall heat loss coefficient are also calculated. Pure water has used as fluid and tests have been done in closed system. During whole tests, standard value for the mass flow rate, which is provided by manufacturer and ambient temperature are always constant which are 0.018 kg/s (65liter/hour) and 27.5˚C respectively. Also, another constant values, absorptance and transmittance, of the PV-T collector given by the manufacturer are 0.9 and 0.875 respectively. However, specific heat of fluid has changed with the temperatures of inlet fluid. The results of these tests show that the thermal efficiency of PV-T collector decreases rapidly with increasing of the inlet temperature. Experimental collector efficiency data measured for a liquid flat-plate collector with one cover and a selective absorber. The thermal efficiency of PV-T panel at 20˚C inlet temperature is 0.79 where the efficiency at 80˚C inlet temperature is 0.07. The differences between inlet and outlet temperature is approximately 7˚C at 20˚C inlet temperature and 0.6˚C at 80˚C correspondingly. The electrical power output also decreased with high temperature because of the lower cell efficiency at higher temperature. Overall, this study strengthens the idea that PV-T collectors work better lower temperature heating such as swimming pool, indoor heating etc.

Keywords: Renewable energy, Solar, Photovoltaic Thermal

The Effect Of Material Pairs On The Axial Force, Traverse Force And Temperature In The Friction Stir Welding Process

Musa Bilgin[a*], Sener Karabulut[a], Ahmet Ozdemir[b]

[a]Hacettepe University
[b]Gazi University

*musabilgin@hacettepe.edu.tr

Abstract:

In this study, the axial force, feed force and friction temperature were investigated during the friction stir welding of aluminum alloy 7075 and magnesium alloys. For this purpose, Al 7075-T6 and magnesium alloys (AZ91 D and AZ 31 B) were combined by using friction stir welding under constant spindle speed of 1400 rev/min and feed speed of 25 mm/min. Visual inspection and penetrants tests were performed to investigate the weld quality of the joined materials. Nondestructive evaluation results indicated that an acceptable welding quality was achieved in the friction stir welding of the same materials while the noteworthy welding quality was not obtained during the dissimilar friction stir welding of aluminum and magnesium alloys. A smoother weld surface was obtained in the FSW of similar. The experimental results are also depicted that the axial force, traverse force and temperatures are affected by the mechanical properties of the experimental specimens.

Keywords: Al Alloy; Mg Alloys, FSW, Force, Temperature

The Effect of Production Conditions on the Structural and Physical Properties of the Graphene; a potential electrode

Nevin Atalay Gengec[a*], Erhan Gengec[a], Mehmet Kobya[b]

[a]Kocaeli University, Department Of Environmental Protection
[b]Gebze Institute Of Technology, Department Of Environmental Engineering

*atalay_nevin@hotmail.com

Abstract:

The purpose of this study was to investigate the effect of production conditions on structural and physical properties of the graphene films. Therefore, graphite oxide was synthesized with three different methods (Hummers, modified Hummers and improved Hummers methods) as reported in literature and then graphene oxide (GO) dispersion was obtained by ultrasonication of the graphite oxide in water. Finally, GO films were produced by filtration of GO dispersion at different dispersion volumes (33, 50, 80, and 120 mL) and the conductive thick graphene films were fabricated from GO films through a direct thermal annealing process at different temperature (700 and 1100 oC). Structural analysis and physical properties of the prepared GO and graphene films were determined by SEM, digital avometer and XRD.

XRD results showed that GO was successfully produced with three methods. However, the improved Hummers method was selected for the synthesis method due to high oxidation degree and reaction yields. The cross-section SEM images indicated that GO and graphene films have a layered structure. GO and graphene films are flexible and foldable without deformation. The reduction degree, conductivity, and the surface roughness of graphene films increased with increasing of the thermal annealing temperature and decreasing of dispersion volumes. Furthermore, it is clear that the increasing of the thermal annealing temperature contributed the exfoliation of the graphene films. However, thickness of GO, graphene-700, and graphene-1100 films for all dispersion volumes decreased by increased thermal annealing temperature due to the removal of oxygen-containing functional groups. For instance; thickness of GO, graphene-700, and graphene-1100 films which were prepared with 50 mL GO dispersion were observed as 22, 11.7, and 8.7 □m, respectively. As a result, the produced thick conductive graphene films with low roughness can be an important potential for using as electrode.

Keywords: Graphene, Graphene oxide, Thick film, Filtration, Thermal annealing

The Effect Of Silicon Carbide Nanoparticle Content On The Mechanical Properties Of The Aluminum-SiC Composites

Yasin Akgul[a*], Emre Turan[a], Yavuz Sun[a], Fazil Husem, Memis Isik[a]

[a]Karabuk University

*yasinakgul@karabuk.edu.tr

Abstract:

Aim of this study is to investigate effect of silicon carbide nanoparticle content on the mechanical properties of the Aluminum-SiC composites. Aluminum-SiC composites were fabricated via powder metallurgy method with a different content of SiC nanoparticles (1, 2 and 5 wt.%). Mechanical alloying technique was used at the ball-powder ratio of 4:1 for 4 hours in the presence of absolute ethanol for mixturing of powders. Cold press was applied to powders at 600 Mpa for production of 25 mm diameter compact green billets. Green bodies were sintered at 550 °C in argon atmosphere for 2 hours. Scanning electron microscope (SEM) analysis for characterization of microstructure, compression test for determination of strength, Vickers test for measuring of hardness and wear test for observation of wear behavior of sintered billets were done. End of the study is concluded that, enhancement of physical and mechanical properties is observed by increasing content of silicon carbide nanoparticles.

Keywords: Aluminum, silicon carbide, powder metallurgy

The Effect of Synthetic Fibers on Self Compacting Concrete

Zehra Funda Turkmenoglu[a*], Demet Yavuz[a], Soner Guler[a], Fuat Korkut[a]

[a]Yuzuncu Yil University

*fundaturkmenoglu@yyu.edu.tr

Abstract:

Workability is a significant problem of concrete technology. This mentioned issue has received considerable attention from researchers during last decades. Self-compacting concrete (SCC) offers a reasonable solution to this problem that traditional concrete faces. There has been a substantial improvement on workability and reducing human resources needed for concrete replacement with replacing self-compacting concrete with traditional one. The purpose of this paper was to explore the relationship between synthetic fibers and mechanical properties of concrete. With this aim, three different fiber ratios were investigated (0.25%, 0.50% and 0.75% by volume). In conclusion while, compressive and flexural strength were not constantly increasing; splitting tensile of synthetic fiber reinforced concrete was improving with the fiber volume

Keywords: Self compacting concrete, Synthetic fiber, mechanical properties.

The Effect Of The Capsaicine Of Green Pepper Grown In The Southeastern Anatolia Region On The DNA Protection

Sibel Bayil Oguzkan[a], Merve Can[b], Halil Ibrahim Kilic[a], Mehmet Ozaslan[a], Halil Ibrahim Ugras[a*]

[a]Gaziantep Universitesi Fen-Edebiyat Fakultesi, Biyoloji Bolumu
[b]Duzce Universitesi Fen Edebiyat Fakultesi, Kimya Bolumu

*halilugras@gmail.com

Abstract:

Capsicum annuum L. green peppers, which are common in the Southeastern Anatolia region, are both produced and consumed extensively. It is one of the most important secondary metabolities in capsaicin peppers and is known to have anticarcinogenic and antimutagenic potential. In this study, we investigated the effects of capsaicin purified from green peppers grown in Gaziantep region on antiradical, oxidant conditions and DNA protective activity. For this purpose, a pure capsaicine extract was obtained from the green pepper samples collected and shaded in the shade and dried in methanol and dichloromethane for 72 hours. Total antioxidant level (TAL), total oxidant level (TOL) and DPPH (1,1-diphenyl-2-picrylhydryrazyl) method were used for the determination of antioxidant activity of purified capsaicine with Rel Assay Diagnostics kits. For DNA-protecting activity, pBR322 plasmid DNA and UV-C method were used. The extract of capsaicin in dichloromethane was found to be better than both of antioxidant and antiradical activity. Oxidant values of Capsaison are very low compared to standards. When the results in terms of DNA protective activity were examined, the extract of methanol showed better protective effect at high concentrations when the dichloromethane extract showed higher protective effect at low concentrations. As a result, it has been revealed that the capsaicine in green peppers have bioactive components in antioxidant, antiradical and DNA protective properties.

Keywords: Antioxidan, Antiradical, DPPH, DNA and UV-C

The Effect Of The Consideration Of Slab Dimensions On Optimum Design Of Reinforced Concrete Beams

Sinan Melih Nigdeli[a], Gebrail Bekdas[a*]

[a]Istanbul University

*bekdas@istanbul.edu.tr

Abstract:

In the design of reinforced concrete (RC) beams, the slab can be also considered as a part of the beam and a t-shaped cross section is considered. In the presented study, the optimum design of RC beams are investigated for different slab thickness and slab width values. Thus, the effect of the consideration of slab dimensions for the optimum design is investigated. In the optimization methodology, an iterative cost optimization process is proposed. The process contains the optimization of design variables such as the cross-section dimensions and amount of rebars of RC beams subjected to flexural moments. In order to find a precise optimum solution without trapping local optimums, a metaheuristic based method called harmony search is employed. The optimum values are chosen according to user selected range and the design constraints. The design constraints are generated according to ACI318- Building code requirements for structural concrete. By the increase of compressive force in the compressive section of the beam, the amount of the rebars shows a decreasing manner and this situation is effective on the optimum design and cost.

Keywords: optimum design,reinforced concrete beams, metaheuristic algorithms

The Effect Of The Process Parameters On The Axial Force And Traverse Force In The Friction Stir Welding Of Al7075-T6 And AZ 91 D

Musa Bilgin[a], Sener Karabulut[a], Ahmet Ozdemir[b], Yunus Kayir[b]

[a]Hacettepe University
[b]Gazi University

*musabilgin@hacettepe.edu.tr

Abstract:

In this study, an experimental study was conducted to investigate the effect of process parameters such as feed rate and spindle speed on the axial force and traverse forces in the friction stir welding of Al 7075 - T6 and AZ 91 D magnesium. FSW process was carried out to join the 3 mm thick sheets Al 7075 - T6 and AZ 9 D1. We have investigated to combine the Al 7075 - T6 and AZ 91 D magnesium alloys by friction stir welding method using three different spindle speeds of 900, 1120 and 1400 rev/min and four different feed rates of 16, 25, 31.5, 40 mm/min at constant tool with a lead angle of 0°. The axial force measurements were carried out with Kistler multicomponent dynamometer type 9272. The experiments were performed three times on the same process parameters and evaluated the axial and traverse forces on the influence of the better solid state welding conditions. Experimental results showed that the axial and feed forces were decreased with increasing spindle speed and reducing feed rates.

Keywords: Friction stir welding, Axial force, Traverse force, AZ91 D, Al 7075 - T6

The Effect Of The Waiting Times Of The Some Wood Species On The Fungal Species Diversity And Intensity

Mesut Yalcin[a*], Caglar Akcay[a], Burcu Sertkaya[a]

[a]Duzce University, Department Of Forest Industrial Engineering

*mesutyal@hotmail.com

Abstract:

The aim of this study was to determine the fungi species diversity and intensity of waiting times of the some wood species in wood depots. Study was carried out in 21 depots in western black sea region of Turkey. Fungi species and intensity was determined on five wood species (Beech, Oak, Fir, Pine, and hornbeam). The results of this study showed maximum fungi species were found on waited wood for 4-6 years while minimum fungi species were found on waited wood for 3 years. A positive correlation was found between wood waiting times and fungi intensity in oak and hornbeam. At the same time A positive correlation was found wood waiting times and fungi intensity in Panus neostrigosus, Polyporus meridionalis, Trametes hirsuta, Trametes versicolor ve Stereum hirsutum without considering wood species. On the other hand a negative correlation was found between wood waiting times and fungi intensity in Schizophyllum commune and Auricularia auricular .

Keywords: Fungi species, waiting time, Wood depots, Fungi intensity

The Effect of Ultrasound Intensity on Polyethylene oxide Chain Scission

Onur Inan[a*], Ali Ozhan Akyuz[a], Omer Aydogan[b]

[a]Mehmet Akif Ersoy University
[b]Akdeniz University

*oinan@mehmetakif.edu.tr

Abstract:

Ultrasound has various usage areas in the polymer industry. In academic means, polymer chain scission is the most important in these areas. When ultrasound is applied to the polymer solutions, cavitation bubbles are produced in the solution and the resulting hydrodynamic forces cause the polymer chains to scission and thus reduce the viscosity. Polyethylene oxide is a water-soluble and non-ionic polymer. Generally it is used as a rheological control agent in solutions and drug release-protein adsorption in biomedical applications. Molecular weight is an important parameter in these applications. In this study, the effect of ultrasonic intensity on the solution of polyethylene oxide (Mw = 1000000 g / mol) has been investigated. The ultrasound frequency (20 kHz), temperature (25 0 C), polymer concentration (0.001 g / mL) have been kept constant and the ultrasonic amplitude has been changed to 20,50,80,100 %. The polyethylene oxide chain scission has been characterized by the time-dependent change in specific viscosity of the solution. The results have also been analyzed with the theoretical Giz model.

Keywords: Ultrasound, Polyethylene Oxide, Chain Scission

The Effects of Nanosilica on Charpy Impact Behavior of Glass/Epoxy Fiber Reinforced Composite Laminates

Omer Yavuz Bozkurt[a], Ozkan Ozbek[a*], Atban Rafea Abdo[a]

[a]Gaziantep University

*ozkanozbek@gantep.edu.tr

Abstract:

Desire to improve the efficiency of composite materials for engineering applications has led to the use of nano-sized additives or fillers such as nanoclay, nanosilica, nano-graphene, carbon nanotubes. The effect of nanoparticle inclusion on mechanical properties of fiber reinforced composite materials has been investigated by many researchers and crucial effects have been reported in several papers. In this work, the effects of nanosilica content on the low velocity impact behaviors of glass/epoxy fiber reinforced composite laminates are determined using Charpy impact tests. The composite laminates are fabricated via hand lay-up followed by hot press moulding. The nanosilica particles with different weight percentages are dispersed in epoxy resins using mechanical stirring. The absorbed impact energy values of flatwise-unnotched and edgewise-notched beam specimens, and impact damages are analyzed as a measure of impact behavior. The results show that the incorporation of nanosilica particles have significant effects on the Charpy impact behaviour.

Keywords: Charpy impact, glass fiber, nanosilica

The Effects Of Osimertinib Applications In HER (-) Breast And Ovarian Cancer Cells

Duygu Aygunes[a*]

[a]Ege University

*aygunesduygu@gmail.com

Abstract:

Osimertinib is a third-generation epidermal growth factor receptor tyrosine kinase inhibitor that has taken FDA -approval in November 2015. Altough the approval is for EGFR mutant non-small cell lung cancers (NSCLC), our findings have showed that Osimertinib is effective in HER (-) breast and ovarian cancer cells in terms of cytotoxicity and apoptosis. MCF-7 and MDA-MB-231 breast cancer and OVCAR-3 ovarian cancer cell lines have been used as models for HER (-) cancers. To find IC50 values, we performed WST-1 cytotoxicity assays for each cell lines within 24, 48, 72 h experiment groups . Untreated cells considered as negative controls. Apoptosis was determined with Annexin V and MitoCapture assays after applying spesific IC50 values for each cell lines. We observed that Osimertinib induced apoptosis for each cell lines comparing to untreated controls. To determine the molecular regulation behind cytotoxicity and apoptosis, we performed gene expression analysis by real-time RT-PCR. We determined remarkable genetic alterations in BAX, MAPK1, MAPK8, BIRC5, MGMT genes for all cancer cell lines. These findings suggest that Osimertinib may have roles and trigger some pathways in cancers without EGFR mutations, beside the known effects in EGFR mutant NSCLC. Our further studies may brighten this dark space.

Keywords: Breast cancer, ovarian cancer, HER, osimertinib, cell culture, RT-PCR, cytotoxicity, apoptosis, gene expression

The Effects of Spirulina platensis on Growth and Body Condition

Nilay Seyidoglu[a*], Sevda Inan[b]

[a]Department Of Physiology, Veterinary Faculty, Namik Kemal University
[b]Veterinary Faculty, Department Of Phathology, Namik Kemal University

*nseyidoglu@nku.edu.tr

Abstract:

Nutrition provides the growth and maintains function of organism. The main factors that prevent to health (from metabolic disorders such as obesity, hypertension, cardiovascular problems) are still in scientific discussion. Belong this issue, natural food additives are interested in both human and animal nutrition nowadays, especially Spirulina platensis. S. platensis is a microalgae, called as "Super food", is the most nutritious food, as endorsed by lifestyle personalities. It has been approved as a health food by the World Health Organization (WHO) and it will become one of the most alternative treatments in the 21st century. This study, we aimed to evaluate the effects of different doses of S.platensis on body weight, height, waist circumference (WC), body mass index (BMI) and waist /height ratio (WHtR) which are important for maintain a good health. 30 Wistar Albino rat, aged 7-8 weeks, were divided in 3 equal groups. The groups; I.Control (basal diet), II. SP-1 (added 500 mg/kgbw S. platensis, daily), III. SP-2 (added 1000 mg/kgbw S. platensis, daily). Body weight, height and abdominal lipid weight were determined at the end of the trial (45 days), and calculated all rats' WC, BMI and WHtR. According to the results, although there is no statistically differences among all groups, positively correlations were found in parameters. As the doses were considered, especially in group I, the lower dose, the statistically significant positively correlations were determined in abdominal fat, growth, height, BMI and WC. This interesting result is pointed out that calibrating the dose of food additives is in assessing the link between body condition. It suggested that dietary requirement is based on optimal dose, and it's necessary to evaluate the aspect of S. platensis that will boost the health status.

This study is supported by Scientific Activities Support Program of Namik Kemal University.

Keywords: S.platensis, growth, body condition, health

The Effects of Supplementary Choline on Quail Meat and Fatty Liver

Suleyman Ercument Onel[a*], Sana Sungur[a], Mikail Baylan[b]

[a]Mustafa Kemal University
[b]Cukurova University

*ercumentonel@gmail.com

Abstract:

Choline is an important water-soluble micronutrient that is often classified as “vitamin-like.” Although the human body produces this micronutrient, dietary supplementation of choline is necessary for good health. Choline deficiency can manifest itself as fatty liver and hemorrhagic kidney necrosis, and may lead to increased free radical activity in the liver, which may lead to carcinogenesis. The objectives of this study was increased the choline content of quail meats. 136 one-day-old Japanese quails were divided into eight equal groups of 17 quails each. The quails were received feed and water ad libitum. Continuous light was provided. The quails were kept in cages of 50x100 cm in size with a normal stocking density and high stocking density. The quails in control groups were fed with basal diets. The quails in other groups were fed basal diets with addition of choline 900, 1800 and 3600 mg/kg. The choline levels of quail meats were determined. Furthermore, the effects of choline on fatty liver were investigated.

Keywords: Choline, Japanese quail, fatty liver, UV-Vis spectrophotometer

The Evaluation Of Biocomposites Prepared With Natural Additives For Pharmaceutical Applications

Demet Topaloglu Yazici[a*], Arzu Yener[a]

[a]Eskisehir Osmangazi University

*demett@ogu.edu.tr

Abstract:

Renewable biopolymers, reinforcements and additives are preferable as pharmaceutics due to the being biodegradable and biocompatible materials. Biocomposites were prepared by choosing a natural biopolymer and a clay mineral which are used in pharmaceutical applications. Environmentally benign, natural additives such as vegetable oil and glycerol used as additive materials. The effects of the additives mixed in each pair of reinforcement-matrix materials were investigated. Biocomposites which were prepared by using polysaccharide sourced biopolymers are known with their low water uptake resistance; and, with this intention, the improvement possibility of water uptake resistance of biocomposites was examined. Water and moisture uptake characteristics of biocomposites were decreased with the addition of the hydrophobic additives. Additionally, the ATR/FTIR spectra, X-Ray patterns and SEM images of prepared materials were also obtained in order to analyze the effect of additive materials and the structures. Infrared spectra showed that the biocomposites formed from the additives, reinforcement and the polymer matrix. The changes in the morphology of biocomposites were observed by XRD and SEM analyses. Then, drug sorption studies were done by using B12 and methylene blue as model drugs. B12 is a hydrophilic drug vitamin. Using B12 orally is not effective according to the other ways. In B12 desorption studies, the hydrophobic vegetable oil added biocomposites had decreased the % percent dissolved amount by showing the similar effects for both reinforcement materials. Methylene blue is a dye which is usually used for screening and phototherapy in medicine. The biocomposites which showed the highest water uptake tendency adsorbed the highest amounts of methylene blue in equilibrium.

Keywords: Biocomposite, Additive materials, Composite Characterization, Water uptake, Desorption

The Fabrication, Microstructure And Wear Properties Of ZrO2 Particulate Reinforced Mg Matrix Composites By Hot Press Technique

Fatih Aydin[a*], Yavuz Sun[a], Hayrettin Ahlatci[a], Yunus Turen[a]

[a]Karabuk University

*fatih.aydin@karabuk.edu.tr

Abstract:

In present study, pure Mg and Mg matrix composites (10, 20, 30 wt. % ZrO2) were produced by hot press technique under argon and vacuum atmosphere. Firstly, samples were pressed with 50 MPa at 600°C and sintered for 1.5 h at 600 °C. Microstructure characterization was done with Scanning Electron Microscope with Energy Dipersive Spectrometer. Phase analysis was realized with X-ray diffractometer. Hardness and density of samples were also measured. Hardness values significantly increased when compared to pure Mg. To determine wear properties, the reciprocating wear test was applied under 5, 10, 20 N load under dry sliding condition. Wear volume loss decreased with the increasing of ZrO2 particulates. Also, wear mechanisms were investigated with SEM.

Keywords: ZrO2, wear, hot press, hardness, microstructure

The Finite Element Analysis and Geometry Improvements of Some Structural Parts of a Diesel Forklift Truck

Omer Yavuz Bozkurt[a], Ihsan Cihan Da[a], Ozkan Ozbek[a*]

[a]Gaziantep University

*ozkanozbek@gantep.edu.tr

Abstract:

In this work, static analyses of structural parts of a diesel forklift were performed using Finite Element Method and possible modifications based on the original geometry of parts were utilized with respect to stress distributions at critical region to improve reliability of the forklift design. The analyses were carried out according to standard regulations related with the examined parts. The structural parts of forklift such as chassis and head guard were analyzed under compulsion loading conditions. The improvements in relevant parts were demonstrated by the comparison of stress values of original and modified geometries. The finite element analyses were carried out using MSC SimXpert Nastran Finite Element software package.

Keywords: Finite element analysis, forklift, Msc SimXpert Nastran

The Geochronological and Petrochemical Characteristics of Plio-Quaternary Volcanism in Sebinkarahisar (Giresun) Area NE, Turkey

Cem Yucel[a*]

[a]Gumushane University

*cemyucel@gumushane.edu.tr

Abstract:

The Sebinkarahisar area volcanic rocks from Southern part of Eastern Pontides are compose of plagioclase + hornblend + clinopyroxene + opaque mineral ± biotite and they are mainly amphibole phyric trachyandesites have narrow range SiO2 (61.88 to 63.00 wt %). The age of the volcanism were yielded as 3.9 Ma to 1.9 Ma by using U-Pb and 3.8 Ma by using K-Ar techniques and thus correspond to Plio-Quaternary era. The enrichment in LREE (La=145.5-155.9) and HREE (Yb=5.2-6.0) for studied volcanic rocks resulted in LaN/LuN ratios ranging from 25.6-30.1. The lack of sizeable Eu anomalies (EuN/Eu*N = 0.81-0.90) for the studied volcanic rocks indicates that plagioclase was not an important fractionating phase during fractional crystallization stage. The studied volcanic rocks displaying moderate light earth element (LREE)/heavy rare earth element (HREE) ratios and characterized by enrichment in LILE element (Sr,K, Rb, Ba) and depletion in HFSE elements as Zr, Y, Nb, Ta ve Ti coupled with high Th/Yb ratios show that parental magmas of the volcanic rocks were derived from mantle sources previously enriched by slab-derived fluids and/or subducted sediments. The trace elements AFC modelling suggests that upper crustal contamination play an important role during the evolution of the volcanic rocks. In the light of textural petrographic, petrochemical and geochronological data and the petrological modelling affords, it is concluded that the magmas of Plio-Quaternary Sebinkarahisar volcanic rocks were derived from an enriched mantle source by relatively higher partial melting and they were composite products of combined petrogenetic stages as mixing, FC and AFC during their ascension through the crust.

Keywords: U-Pb and K-Ar dating, Petrochemistry, Plio-Quaternary volcanism, Sebinkarahisar (Giresun), Turkey

The Heat Production and Definition of P-Wave (Vp) Velocities

Ayca Cirmik[a*]

[a]Dokuz Eylul University

*aycayurdakul@hotmail.com

Abstract:

The magnetic minerals in the crust which represent ferromagnetic features are turned to paramagnetic minerals with the effect of the temperature increasing within increasing of the depth. This depth is called as Curie point depth (CPD) where the magnetic minerals lose their magnetism under that depth point. CPD values which are obtained by applying the magnetic spectral methods to the magnetic data represent the bottom of magnetic structures. In determining the depths of magnetic sources, a relation is defined between the spectrum and depths of the magnetic anomalies and during this application the spatial data is converted to frequency domain. Therefore, the CPD is a significant value for predicting the locations of the thermal structures of the crust. Additionally, the CPD values include information about the crustal radiogenic heat production by taking account the corruptions of the radioactive elements. There is an empiric relation between the radiogenic heat production and the P-wave (Vp) seismic velocities and with the help of this relationship Vp values of the region are obtained. Defining the Vp values is a very significant case for clarifying the locations of new possible geothermal regions. In this study, the applications related with determining the seismic velocities by using the heat productions which obtained from the CPD values.

Keywords: Curie point depth, heat production, seismic velocity (Vp)

The Hollow Earth Phenomania and Its Some of Proofs

Fikret Dogru[a]*

[a]Dokuz Eylul University

*fikretjfm@gmail.com

Abstract:

The Earth has still changed since estimated 4.5 billion years with its unknowns. The phenomanias such as the Hollow Earth, is discussed from the 15th century to the now. Some of scientists claimed that the earth has two part shells and and each shell has its own magnetic poles. Also they brought about that the arctic wars are all related to the conquer this entered area of hollows. Because they believe that ancient people, amazing creatures, giants and especially superior technology knowledge is in the Hollow Earth. In addition, there is so much documents, photos and films about a journey to the Earth's interior. Also we are witness to some incredible inventions that we could not imagine ten years ago and we are facing all of them. Is not it so weird that the technology development is so fast? Could the governments hide these all information? Because some of photos are from NASA in the 80's and statements of soldiers who are retired from army shows that there are hollows in the North and South Poles. In my personnal research, I could not find any proof about hollows in the results of satellite gravity and Google Earth photos except new magnetic satellite that is called SWARM. It is seen in that photo, NASA is adjusting their satellites route from outside the hollows. Because these hollow areas have very low gravity values so satellites may be lose its trajectory. The hollows in the poles are obviously visible in the SWARM satellite route.

Keywords: The Hollow Earth, NASA, Earth's interior, SWARM.

The Immunohistochemical Investigation Of Matrix Metalloproteinases (Mmp-2 And Mmp-9) In Pancreatic Adenocarcinoma Induced By Dimethyl Benzanthracene (Dmba) In Rats Consuming Of High Fructose Corn Syrup And Sucrose

Sevda Inan[a*], Gursel Sonmez[b], Ahmet Akkoc[b], Ender Uzabaci[c]

[a]Department Of Pathology,Veterinary Faculty,Namik Kemal University
[b]Department Of Pathology,Veterinary Faculty,Uludag University
[c]Department of Biostatistics, Veterinary Faculty, Uludag University

*sevdainan@nku.edu.tr

Abstract:

The aim of this study was to investigate immunohistochemical staining of MMP-2 and MMP-9 in pancreas ductal adenocarcinomas experimentally induced by implantation of 7, 12-dimethylbenzantracene in Sprague Dawley rats fed with corn syrup containing high levels of fructose, sucrose and control.DMBA applied high fructose containing corn syrup fed rats (n:15), sucrose fed rats (n:16) and control rats (n:15) which were histopathologically diagnosed pancreatic adenocarcinoma were stained with MMP-2 and MMP-9 antibodies. Stained cells, staining rates and intensities of the pancreas tissues were investigated semi-quantitatively.The differences were observed between rats which were applied high-fructose containing corn syrup and developed PDACs, and sucrose and control groups in MMP-9 enzyme staining intensities of acinar cells ($p<0.017$) and tubular complexes ($p<0.021$). In comparison of groups, significant differences were observed between high-fructose containing corn syrup-fed rats and control rats in staining intensities of acinar cells and tubular complexes, and between sucrose-fed rats and control rats in staining intensities of acinar cells. In comparison of MMP-2 staining rates and intensities, although the median value was higher in islets of Langerhans, acinar cells, tumoral ductal epithelium, inflammatory cells, desmoplasic structures and tubular complexes in DMBA applied high-fructose containing corn syrup-fed rats when compared with sucrose-fed rats and control rats, no statistical difference could be observed.As a conclusion, when MMP-2 and MMP-9 staining characteristics were compared in different feeding regimes, high fructose was suggested to have a role in development of PDACs.

This study is supported by Scientific Activities Support Program of Namik Kemal University.

Keywords: DMBA, high fructose, immunohistochemistry, sucrose.

The Impedance Response Of LiCoO2|C Batteries In Series

Salim Erol[a*]

[a]Eskisehir Osmangazi University

*esalim@ogu.edu.tr

Abstract:

The impedance response of LiCoO2|C coin-type batteries in series was measured to explore the influence of overcharged or over-discharged cells on the impedance responses of a stack. To mimic the behavior of a stack, two new cells were stabilized at 4 V each and connected serially, such that the total potential was 8 V. At this cell voltage, the impedance measurement was taken. Then, one of the cells was overcharged and relaxed until it reaches to the nominal range. Again, both of the cells were taken to a potential of 4 V and the impedance measurement was taken. The results indicate that the overcharged cell had a dominant effect on impedance response. Three new cells were stabilized at 3.8 V each and connected serially, such that the total potential was 11.4 V. At this voltage, the impedance measurement was taken. Then, one of the cells was over-discharged and relaxed until it reaches to the nominal range. Again, all the cells were taken to a potential of 3.8 V and the impedance measurement was taken. The over-discharged cell had almost no effect on the impedance response.

Keywords: Li-ion batteries, impedance spectroscopy, overcharged battery, over-discharged battery, battery pack

The Influence of Zeolite on Nutritional Elements Concentration of Buckwheat in Coarse Textured Soils

Enise Sukusu[a*], Veli Uygur[a]

[a]Suleyman Demirel University

*enisesukusu@sdu.edu.tr

Abstract:

Management of nitrogen in coarse textured soils with very low cation exchange capacity is very important problem owing to leaching which accelerates due to nitrification promoting environmental conditions. The objective of this study was to test the efficiency of clinoptilolite-zeolite to control nitrogen losses and nutritional status of buckwheat in three differing soils with changing physico-chemical properties. The experiment which were carried out in completely randomised design with 3x4x3 factors and three replications, three coarse- to medium-textured soils with different physico-chemical properties (Sandikli, Aksu, Ciftlik soil series) were used. The effect of three different particle sizes (< 106, 425-106, and 700-425 µm) and four different application rates (0, 0.5, 1, and 2%) of clinoptilolite-zeolite on nutritional status of buckwheat was investigated in pot experiment. 25 mg N/kg as ammonium sulphate was applied to the soils at sowing (8 mg/kg) and 30 days after sowing (16 mg/kg). The available phosphorus concentration of the soils was fixed by additional fertilization. Three buckwheat (Fagopyrum esculentum Moench) plants in each pot containing 3 kg air-dry soil were grown to the maturity. A sequential harvest was made and the concentrations of some nutritional elements were determined in buckwheat grains. Higher grain nitrogen (16.2 g/kg) and zinc (37.9 mg/kg) contents were obtained for 2% zeolite treatment; whereas phosphorus content showed a decreasing tendency due to increasing zeolite treatment. The main effect of zeolite size was only significant on phosphorus and boron elements. The maximum concentrations were found at 425-106 µm size. The majority of the element concentrations were affected by soil properties. Consequently, different sizes and doses of clinoptilolite may be used to reduce nitrate leaching and to control nutritional status of buckwheat in different soils.

Keywords: clinoptilolite, coarse textured soil, nitrogen, buckwheat

The Investigation Of Geometric And Electronic Parameters Of A Thiophen Based Chiral Amino Alcohol By Using Dft

Berna Catikkas[a*], Alime Ebru Aydin[a]

[a]Mustafa Kemal University

*agberna@yahoo.com

Abstract:

β-Amino alcohols are used as starting material in the organic synthesis of biologically active natural and synthetic products [1] unnatural amino acids [2] and asymmetric synthesis as chiral auxiliaries [3]. Amino alcohols are mainly divided into three general subgroups; 1) naturally amino alcohols, 2) synthetic, pharmacologically active amino alcohols and 3) chiral catalysts and auxiliaries containing the amino alcohol motif [4]. In this work, conformational analysis and quantum chemical calculations of the thiophen based amino alcohols were carried out. The aim of this theoretical study is to investigate structural, electronic and spectroscopic parameters of the thiophen based amino alcohols by performing Density Functional Theory (DFT). The geometry optimization and the geometric parameters (bond length, bond angle and torsion angle) were calculated for the ground state structure. Optimization of the geometry properties, frontier molecular orbitals, a map of the molecular electrostatic potential surface, dipole moment (μ) and nonlinear optical properties of the molecules were determined with the Gaussian 09W software package.

Keywords: Density Functional Theory, Raman Spectra, Infrared Spectra

The Investigation Of Microstructure And Wear Behavior Of Tib2 Particulate Reinforced AZ91 Matrix Composites By Powder Metallurgy

Fatih Aydin[a*], Yavuz Sun[a], Muhammet Emre Turan[a]

[a]Karabuk University

*fatih.aydin@karabuk.edu.tr

Abstract:

In this study, AZ91 and AZ91 matrix composites reinforced with 10, 20, 30 wt. %TiB2 particulates were manufactured by powder metallurgy (hot press). All productions were realized under 50 MPa pressure and 520 °C process temperature. After press step, sintering was applied for 1.5h at 520°C under argon and vacuum atmosphere. Microstructure characterization was realized with Scanning Electron Microscope and X-ray diffractometer. Uniform distribution of TiB2 particulates were observed for Mg/10 TiB2 and Mg/20 TiB2 composites and agglomeration was not observed. Hardness and density measurements were also realized. Hardness values increased significantly with the increasing of particulate percent. The reciprocating wear test was applied under 5, 10 and 20 N. Wear volume loss decreased with the increasing of TiB2 particulates. Scanning electron microscope study was realized for determining wear mechanism for 10, 20 N.

Keywords: TiB2, powder metallurgy, hot press, wear, microstructure

The Investigation of Rock Mass Characteristics of the Caglayan Dam Reservoir Area (Western Anatolia) by Using Geophysical Parameters

Tumay Kadakci Koca[a*], Aykut Tuncel[a], Mehmet Yalcin Koca[a]

[a]Dokuz Eylul University

*tumay.koca@deu.edu.tr

Abstract:

Geophysical methods are commonly used to solve geological, geotechnical and environmental problems. Investigation of the dynamic properties of rock masses and water table level in a dam site is one of these problems. In this study, an electrical resistivity tomography survey was performed to investigate the water table level and geological units were evaluated in terms of being foundation rock for Caglayan Dam in Manisa city (Western Anatolia). Dynamic elasticity modulus, poisson's ratio, shear modulus and lame constant were identified for the carbonate and clastic sedimentary rocks. The resistivity data were acquired along 3 profiles by a Wenner-Schlumberger electrode array and were processed by a tomographic inversion technique. Geologic units up to a depth of 24 m were clearly revealed by the electrical resistivity imaging and the results were compared with the MASW data along 6 profiles and logs from two drillholes.

Resistivity values of the layers were defined between 15 Ωm and 750 Ωm at P1 and P2 profiles. Resistivity values at P3 profile are changing about 15 Ωm and 250 Ωm and well correlated with the high resistivity values derived from 2D resistivity models. Each profile demonstrates a high resistivity top layer and low resistive zones following the depth of 10 m are found. Low resistivity values are associated with high water and clay content of the sediments. Water table level indicates that once the water is retained, it may be discharged towards the permeable layers on the left and right banks of the dam structure. As a consequence, seepage problems may arise in the left and right banks. The amount of settlements will be lower than the permissible settlement (12 mm) beneath the dam structure due to the favourable dynamic elastic properties of the sedimentary rocks.

Keywords: Borehole logging, dam, ERT, MASW, seepage

The Investigation Of The Effect Of Chip Breaker Apparatus On Cutting Force And Temperature In Turning Inconel 718 Material

Bahattin Yilmaz[a*], Sener Karabulut[b], Abdulkadir Gullu[a]

[a]Gazi Universitesi
[b]Hacettepe Universitesi

*bahattinyilmaz@gazi.edu.tr

Abstract:

The continuous chip formation which occur during turning operations decreases the precision of the work piece and threats the operator's safety. Continuous chip formation stops the operation on CNC machines and causes various damages on the hardware. All these situations reduce the machining efficiency and raise the importance of chip controlling. Therefore, in the terms of chip controlling, obtaining short chip becomes crucial. In this study, chip breaking of Inconel 718 super alloy material was aimed. Inconel 718 super alloy chip formation cannot be broken with conventional methods. In accordance with this purpose, a novel chip breaker apparatus was designed and its efficiency tested with experimental studies. Taguchi L16 test model was used in the experiments with four different cutting speeds, four different feed rates and four different cutting depths. Cutting forces and cutting zone temperatures were evaluated. The obtained data from the experiments were interpreted with the aid of ANOVA. It is seen that the chip breaker apparatus affects positively on cutting forces and temperature. Short chip formation was obtained in all cutting parameters.

Keywords: Cutting force, Chip Breaker Apparatus, Inconel 718, ANOVA

The Investigation Of Thermoluminescence And Optically Stimulated Luminescence Properties Of Biomaterials Used In Dental Processes

Esme Isik[a*], Huseyin Toktamis[b]

[a]Gumushane University
[b]Gaziantep University, Department Of Engineering Physics

*esma_boz@hotmail.com

Abstract:

In retrospective dosimetry applications, evaluation of the absorbed dose during nuclear accidents or radiological terrorist events is necessary for the estimation of health effects following such an exposure. In such cases specimens of the materials taken from directly human body are readily available for quick and reliable dose estimations. The optically stimulated luminescence (OSL) and thermoluminescence properties of materials used in dental prostheses and restorations were examined. Dental ceramics which are investigated of luminescence properties were obtained from Vivadent ivoclar, Sweden. Measurements were taken using a Risø TL/OSL reader, and irradiations were made using a 90Sr/ 90Y source. Linear dose response characteristics of dental ceramics were obtained < 2 mGy to 1.5 Gy for glass ceramic and < 150 mGy to 2 Gy for composite material. Dental composite material undergo 58 percent faded after 12 hour waiting and dental glass ceramic undergo more than 70 percent faded after 6 week waiting.

Keywords: Opticallay stimulated luminescence, thermoluminescence, dental ceramic

The Investigation of Toll Life on Processing Open Internal Threads by Rolling and Cutting in Ti6Al4V Alloy

Gultekin Uzun[a*], Ihsan Korkut[a]

[a]Gazi Universitesi Teknoloji Fakultesi Imalat Muhendisligi Bolumu

*uzun.gultekin@gazi.edu.tr

Abstract:

Requirements for durable and light materials have gradually increased in especially medical, electronic, computer, aviation and space industries. Titanium and its alloys have met a great portion of these expectations because of high durability, heat and corrosion resistance they had. Ti6Al4V alloy has the biggest share among these alloys. While titanium allow is maintaining its strength under too high temperatures formed during process, cutting tool may loss its strength under these high temperature and pressure. The increase in development amount has increased tool/chips section temperature and cutting force falling into tool/chips contact area and decreased tool life rapidly. In this study, tapping was carried out the holes formed on Ti6Al4V alloy using different types of taps (coated and uncoated taps, oblique mouth taps, rolling taps) and different levels of cutting parameters. Cutting performances of the taps was determined depending on cutting tool wear and screw quality were occurred during tapping operations.

Keywords: Internal thread rolling, Tapping, Toll Life, Ti6Al4V

The Kinetic Analysis Of Dextran Degradation

Onur Inan[a*], Ali Ozhan Akyuz[a], Omer Aydogan[b]

[a]Mehmet Akif Ersoy University
[b]Akdeniz University

*oinan@mehmetakif.edu.tr

Abstract:

The application of low frequency and high intensity ultrasound (20 – 100 kHz)is often used to enhance chemical and physical processes. Most of the effects caused by high intensity ultrasound are attributed to acoustic cavitation. When a polymer is subjected to ultrasound, it undergoes irreversible cleavege through the scission of a covalent bond. Dextran is a branched polysaccharide consisting of glucose molecules, which are composed of chains of varying length. Generally it is used in infusion fluid and volume expander solutions. Dextran is also used various applications such as biomedical and food technology. In this study, the effect of ultrasonic on the solution of dextran has been investigated. The ultrasound frequency , temperature, dextran concentration have been kept constant . Dextran degradation has been characterized by the time-dependent change in specific viscosity of the solution. The results are also analyzed with the theoretical Madras and Giz model.

Keywords: Ultrasound, Dextran, Polymer Degradation

The Optimization Of Tool Wear Of Carbide End Mills Using Taguchi Method In Machining Carbon Fiber Reinforced Composite Materials

Selcuk Yagmur[a*], Yafes Cavus[b], Ramazan Cakiroglu[c], Ulvi Seker[a]

[a]Gazi University Faculty Of Technology
[b]Erzincan University Vocational School
[c]Gazi University Technical Sciences Vocational School

*syagmur@gazi.edu.tr

Abstract:

Carbon fiber reinforced composite materials are widely used in aviation and aerospace industries due to their low density, high strength, high corrosion resistance, low thermal expansion coefficient characteristics. In this study, the optimization of tool wear of four flute coated carbide end mills which were used for peripheral milling on carbon fiber reinforced composites (CFRC) were investigated using Taguchi method. Two different cutting speeds (400 and 450 m/min), four different cutting tools (TiAlN coated without chip breaker (G1), TiAlN coated with chip breaker (G2), AlCrN coated with chip breaker (G3) and diamond coated (G4)) and constant feed rate (1270mm/min) were used as cutting parameters. The experiments were carried by using Taguchi L8 orthogonal experimental setup. By the help of Taguchi method, 450 m/min (cutting condition was 1270 mm/min constant feed rate with machining G4 tool) were determined as optimum cutting parameter by using experimental results. Moreover, the most effective operational parameter on tool wear was determined as cutting tool under the favor of analysis of variance (ANOVA).

Keywords: CFRP, Carbide End Mills, Machining, Taguchi

The Optimization Of Treatment Of Olive Oil Mill Wastewater By Bigadic Zeolite Using Responce Surface Methodology (Rsm)

Elif Ozmetin[a*], Elif Calgan[a], Yeliz Suzen[a], Cengiz Ozmetin[a]

[a]Environmental Engineering, Faculty Of Engineering, Balikesir University

*eozmetin@balikesir.edu.tr

Abstract:

Because of its geographical location and Mediterranean climate, Turkey is among the leading olive and olive oil producers in the world, along with other Mediterranean countries such as Spain, Italy, Greece and Tunisia. Turkey is the second position in the world table olives production, and is the forth position between the major olives and olive oil manufacturers. Olive oil mill wastewaters which is occured in production of olive and olive oil has high pollutant properties due to the high organic matter and toxic substances content, and it needs to be purified before it is discharged. In this study, the wastewater was supplied from a manufacturing plant in Edremit, Balikesir province, and the optimization of the COD removal with Bigadic zeolite from the wastewater was investigated. The optimization parameters were selected as pH (5, 7 and 9), dose (20, 40 and 60 g/L) and temperature (20, 30 and 40 0C). The compatibility of the model with the experimental studies was determined as R2 = 99.55. The optimum conditions for maximum zeolite retention capacity (q) were pH 5, dose 20 g / L, temperature 20 0C and q value was found as 502.59 mg/g. The COD removal efficiency of raw water was obtained as 21.36%. In addition, using the experimental results, a model equation which gives the predicted COD retention capacity of the zeolite by calculation for the random selected parameter values in the model range was derived according to the Response Surface Methodology (RSM).

Keywords: Olive Oil Mill Wastewater, Zeolite, Optimization, Response Surface Methodology (RSM)Olive Oil Mill Wastewater, Zeolite, Optimiza

The Parametric Design And Analysis Of Industrial Dye Mixing Machines

Hatice Cansu Ayaz[a], Zeki Kiral[a*]

[a]Dokuz Eylul University

*zeki.kiral@deu.edu.tr

Abstract:

Industrial dye mixing machines are widely used in dye industry, but their analyses on determining the structural design, mixing impeller geometries, mixing performances and the power requirements are not generally performed in scientific quality. The aim of this study is to propose a practical method for the industry related to the design process of the dye mixing machines. In the scope this study, a Visual Basic API code is developed for parametric design of the impeller models in SolidWorks and then flow analyses are conducted with SolidWorks Flow Simulation software. With the help of the flow analyses, flow curves and the velocity profiles around the impeller and moment/torque values required for mixing operation are determined. The results of this study will give an opportunity to save time in comparison with the traditional modeling methodologies when the same design is carried out for different impeller sizes or the minor changes in the mixer geometry.

Keywords: Parametric design, Impeller model, Flow analysis, API.

The Physicochemical Properties And Antioxidant Activities Of Honey From Kars (Turkey)

Tulin Eker[a*], Adnan Bozdogan[a], Zeynep Ulukanli[a]

[a]Department Of Food Engineering, Faculty Of Engineering, Osmaniye Korkut Ata University

*tulinsahin@osmaniye.edu.tr

Abstract:

This study investigated some physicochemical and biochemical properties, and antioxidant activities of different honeys collected from beekeepers from Kars regions of Turkey. Seven honey samples from the regions of Centre, Kagizman, Digor, Selim, Sarikamis, Susuz and Arpacay were examined. Electrical conductivity, moisture, pH, brix, refractive index, total acidity, and color values (L, a and b) analyses of the honey samples were assessed for the determination of the physiochemical characteristics. Total phenolic compounds, total flavonoids and antioxidant activity were measured. The findings of the present study confirm that honey sample from the region of Selim showed the highest pH (3.47±0.02), total acidity (30.0±2.80 meq/kg), moisture (19.41±0.02%) and L (64.50±7.80) values. The results for total phenolic content (13.11–35.06 mg GAE/100 g), total flavonoid content (4.31-7.97 mg QE/100 g) and the antioxidant assays revealed that honey samples from the region of Kars have high level of antioxidant activity.

Keywords: Kars, honey, antioxidant activity, physicochemical properties, Turkey

The Preliminary Design of a Passive Exoskeleton used in Upper Extremity Rehabilitation

Mehmet Erkan Kutuk[a*], Memik Taylan Das[b], Lale Canan Dulger[a]

[a]Gaziantep University
[b]Kirikkale University

*mekutuk@gantep.edu.tr

Abstract:

Movement disorders reduce or restrict the quality of life of human beings significantly. In particular, the problems in the upper extremity directly affect the independencies of the patients. The robots are used for improving motor recovery by assisting and enhancing the trainings in rehabilitation. This paper presents the preliminary design of a passive exoskeleton for human wrist and forearm. The designed exoskeleton is used to adapt a 6 degrees of freedom (DOF) serial robot manipulator (Denso VP-6242G) for upper extremity rehabilitation. It is attached to the end effector of the manipulator which is the motion provider of the rehabilitation. The exoskeleton has three passive DOF, flexion/extension and adduction/abduction motions for wrist and pronation/supination motion for forearm. It is possible to enable or to restrict the motion(s) depending on locking/unlocking of a passive joint(s) on it. Anatomical range of human limbs will be taken into account during design.

Keywords: upper extremity, robotic rehabilitation, exoskeleton, 6 DOF robot

The Purification And Characterization Of B-Glycosidase From Aspergillus Oryzae NRRL 5590 By Solid State Fermentation

Asli Tangunu[a], Selma Celen Yuceturk[b*], Ayse Dilek Azaz[a]

[a]Balikesir University Faculty Of Science And Arts, Department Of Biology
[b]Balikesir University Faculty Of Science And Arts, Department Of Molecular Biology And Genetics

*selcelen@yahoo.com

Abstract:

Microorganisms, due to their biochemical properties and their suitability for genetic manipulation, are considered as an excellent enzyme sources. In this study, β-Glycosidase enzyme was purified using two-step procedures, namely ammonium sulfate precipitation and sepharose-4B-L-tyrosine-1-napthylamine hydrophobic interaction chromatography from Aspergillus oryzae NRRL 5590. β-Glycosidase, play key roles in a variety of essential physiological process and potential biotechnological applications, was obtained from the strain of Aspergillus oryzae NRRL 5590 by using moistening with NaH2PO4, pH 6.5 wheat straw as medium. For the production of enzyme conditions were determined 25°C and 7 days by solid state fermentation. The purification rate of our method was found 5.85 fold with yield of 4.35 %. The purified enzyme was migrated as a single band on native and SDS-PAGE. The enzyme was a monomeric protein of 31kDa, by SDS and Native PAGE analysis. Optimum β-Glycosidase activity as a function of pH and temperature were determined 5.25 and 65°C using p-NPG (p-nitrophenyl-β-D-glucopyranoside) as substrate. The Km and Vmax values of the purified enzyme were determined 0.36 mM and 454.54 EU, respectively. The enzyme was competitively inhibited by D(+)Glucose and δ-gluconalactone against p-NPG as substrate. The IC50 and Ki values of δ-gluconalactone were determined as 0.0004 mM and 0.0000299±0.00000009 whereas for the D(+)Glucose 0.088 mM and 0.000958±0.000802, respectively. As a result, in addition to its numerous supports in science and economy, our study is vitally important for environmental problems. The data, obtained from our studies can be a source for the production of enzymes of microbial origin for industrial size and can be developed for use in some industrial fields such as food, paper, textile and detergent.

Acknowledgment The financial support of the Research Funds of Balikesir University (Project no: 2014/111) is gratefully acknowledged.

Keywords: Aspergillus oryzae, β-glukosidase, Solid Substrate Fermentation, Optimization, Purification

The Removal of Phenol by Electro-Oxidation Process Using Graphene Cathode

Erhan Gengec[a*], Nevin Atalay Gengec[a], Merve Anac[a], Mehmet Kobya[b]

[a]Kocaeli University
[b]Gebze Technical University

*erhan.gengec@kocaeli.edu.tr

Abstract:

Nowadays, due to the increasing fresh water cost and limited charges standards of wastewater in legislation, focus of researcher have shifted to new treatment alternatives such as electrocoagulation (EC) and electrooxidation (EO). Among these, electrooxidation (EO) has presented a lot of advantage and the selection of electrode is a key point in the EO processes. On the other hand, more recently, graphene have become an important research topic due to outstanding electrical, mechanical, thermal and optical properties. Therefore, In this study, a graphene cathode (Gc) for electro-oxidation process was produced by four main steps; (I) production of graphite oxide, (II) exfoliation of graphite oxide to graphene oxide (GO) by sonication (IV) fabrication of GO films with a thickness of about 20 by filtration of a measured amount of GO dispersion and (III) a direct thermal annealing process at 1100 ºC of GO film. The structure and properties of Gc were determined with XRD, SEM, and four probe methods. The fabricated Gc was used in treatment of model pollutants and a piece of platine was used as anode in a 250 ml batch reactor. Phenol concentration was measured by HPLC with C18 column and 88:12 v/v water-acetic acid (%1): methanol mobile phase. The effects of pH (3-10), current density (10-100 mA/cm2), operation time (0-180 min), electrolyte concentration (0.3-2.0 g/L) and phenol concentration (50-300 mg/L) were evaluated during electrooxidation. The maximum removal efficiencies for 50, 100, 200 and 300 mg/L of phenol were obtained as 95.6 %, 87.8 %, 56.9 % and 18.1 % at the 100 mA/cm2, 180 min., pH 5 and 2.0 g/L Na2SO4. The result showed that the produced Gc has a huge potential for treatment of wastewater and the main parameters in EO with Gc was the current density.

Keywords: Electro-oxidation, Graphene Cathode, Phenol

The Roof Institution In The Sector On Real Estate Appraisal

Fatih Taktak[a*], Mahir Serhan Temiz[a]

[a]Usak Universty

*fatih.taktak@usak.edu.tr

Abstract:

The real estate is determined based on current and reliable data with the scientific and technical method. Real estate appraisal is constituted the basis for many activities that such as valuation, tax calculations, expropriation, capital market practices, urban transformation, zoning practices and real rights facility. Therefore, real estate values is important to objective, determine accurately and safely. Real estate appraisal activities are conducted within many different organizations in different applications. When transporting the judgment of value disputes, the appraisal mission is undertaken experts. In public places outside of the institution that appraisal, appraisal activities for the capital market, it is made by real estate appraisal companies. Necessary restructuring for existing applications, not a holistic approach that was created in a multi-part sizes to meet seasonal requirements.

Here, social network analysis method will be used. Real estate valuation, are realized in a multi-headed organizational structure in Turkey and it is used extensively by both the public and private sector results. Under the name of real estate valuation; non-visible network of relations between the public and private sectors will be examined. The numerical and visual analysis; Corporate structuring Which institutions will undertake the task of recovery under one roof? Study of Real estate appraisal, jobs on which institutions are using the most? Most of which is done in collaboration with the institution acts obtain data related to real estate appraisal? Most of which are known real estate appraisal organization? Which is relied on real estate appraisal organization? It will attempted to find answers to questions. As a result, the relationship between real estate appraisal organization will be assessed by social network analysis. Invisible network of social awareness and interoperability will be presented.

Acknowledgement

The authors gratefully acknowledge the financial support the Research Foundation of Usak University (BAP) under project number 2016/MF012.

Keywords: Real Estate Appraisal, Social Network Analysis, Interoperability, Organizational Communication, Organizational Network, Usak

The Seismic Behavior of High Rise Building subjected to Far field Ground Motions

Fikrat Almahdi[a], Adem Dogangun[a*]

[a]Uludag Universitesi

*adogangun@uludag.edu.tr

Abstract:

Recently the world is seeing a fluctuation in the design of high rise building, for example at the time of this writing the Number of skyscrapers in Hong Kong is 1302, in New York city 722, in Istanbul 143,.. etc. Many of researchers are working on understanding the behavior of high rise buildings (HRBs) and the seismic response of (HRBs) when subjected to different types of ground motions. As a result the state of art of near fault ground motions (NFGM) problems which affected by forward directivity in addition to fling step effects has been thoroughly investigated. The characteristics of (NFGM) were addressed and the damaging effects of it on (HRBs) were compared with the damaging resulted from far fault ground motions (FFGM). the said works concluded that (NFGM) is characterized by pulse like time history and it is different from (FFGM) and should have significant attention in the case of (HRBs) especially for resonance phenomena. This work aims at identification of characteristics of (FFGM) , understanding the real seismic response of (HRBs) when subject to far fault ground motions and to incorporate this knowledge into codes. The seismic behavior of high rise building when subjected to far field ground motions will be evaluated by performing a large number of nonlinear time history analyses using a large set of far field ground motions which are compatible with new Turkish response spectrum. On the other hand the characteristics of the most damaging far field ground motions will be addressed.

Keywords: far field ground motion, highrise building

The Stress Response and Onset of Yield of Internally Pressurized Two-Layer Spherical Pressure Vessels

Tolga Akis[a*]

[a]Atilim University Department Of Civil Engineering

*tolga.akis@atilim.edu.tr

Abstract:

An analytical model is developed to study the stress response and the yielding of internally pressurized two-layer spherical pressure vessels in the framework of small deformation theory. Making use of von Mises yield criterion, the analytical expressions for the critical values of internal pressure leading to plastic flow are obtained in terms of material properties and sphere dimensions. It is shown that, unlike the deformation behavior of an internally pressurized single layer spherical vessel, yielding may commence at the inner sphere or at the outer sphere or simultaneously in both spheres of the assembly. The conditions for different nature of plastic flow are also determined. Using the analytical expressions obtained for critical values of the parameters and properties of real engineering materials, various numerical examples are handled and the variation of elastic limit internal pressure with interface radius is explained.

Keywords: Spherical pressure vessel, von Mises criterion, stress analysis

The Synthesis And Characterization Of Pd-Based Alloy Anode Catalysts For Formic Acid Electrooxidation

Hilal Demir Kivrak[a*], Ozlem Sahin[b], Orhan Alal[a]

[a]Yuzuncu Yil University, Chemical Engineering Department
[b]Selcuk University, Chemical Engineering Department

*hilalkivrak@yyu.edu.tr

Abstract:

Direct formic acid fuel cells (DFAFC) have been recognized as an attractive alternative power sources. One of the factors limiting the development and use of direct formic acid fuel cells is that palladium (Pd) anode electrocatalysts partially promotes the undesired reaction pathway, leading to the low power density and poor long term stability of the DFAC. Hence, the undesired reaction is not promoted by modification the electrocatalytic properties of Pd metal. This modification of Pd metal could be achieved by combining it with various transition metals to form a multimetallic nanocatalyst. If non-expensive transition-metals are used, total operation cost of the fuel cell can be reduced by decreasing the required amount of Pd. A good understanding should be developed for appropriate multimetallic catalysts for formic acid oxidation and how these added transition-metals influence the electronic structure, chemical property of nanocatalyst toward formic acid oxidation and its reaction pathways. However, adequate understanding is not presently available.In this study, the synthesis and characterization of CNT supported PdCo PdMn PdV PdZn PdAg PdNi PdAu catalysts were prepared by NaBH4 reduction method. Advanced analytical techniques such as XRD, XPS, SEM, and TEM measurements were performed to investigate the surface and crystal properties of these catalysts. Cyclic voltammetric (CV) and chronoamperometic (CA) methods were used to evaluate the catalytic activities of the prepared catalysts towards formic acid electro-oxidation. The electrochemical measurements showed that Pd based alloy catalysts exhibited high electrocatalytic activity toward the oxidation of formic acid electro-oxidation. Furthermore, CNT supported Pd-Co catalyst revealed the highest electro-oxidation activity compared to the Pd based alloy catalysts. In conclusion, these catalysts could have potential usage for formic acid anode catalysts.

Keywords: Pd based alloy catalysts, formic acid electro-oxidation, and catalyst characterization

The Synthesis Of The Proton Transfer Salt With Aminobenzothiazole Including Sulfonamide And The Formation Of Unexpected Tdsa Compound

Zeynep Alkan Alkaya[a*], Cengiz Yenikaya[b], Halil Ilkimen[b]

[a]Usak University
[b]Dumlupinar University

*zeynep.alkan@usak.edu.tr

Abstract:

In this study, a novel proton transfer salt (SMABTDPC) have been prepared between 2-amino-6-sulfamoilbenzothiazole (SMABT) and 2,6 pyridinedicarboxylic acid (H2DPC). Two transition metal complexes of SMABT and five transition metal complexes of the proton transfer salt have been synthesized. An unexpected complex was also obtained during the synthesis of Fe (II) complexes of the salt among rearrangement form of SMABT (4-(5-imino-3-((4-sulfamoylphenyl)amino)-1,2,4-thiadiazol-4(5H)yl)benzenesulfonamide (TDSA)) and DPC and Fe(II) with the ratio of 1: 2: 1, respectively. After recrystallization, seven metal complexes have yielded proper crystals for single X-ray diffraction studies. The structures of the amorphous proton transfer salt and the SMABT have been characterized by 1H-NMR, 13C-NMR, FT-IR and UV-Vis methods while the structures of metal complexes with single crystals ([Cu2(SMABT)2(Ac)4].2H2O, (HSMABT)[Fe(DPC)2].4H2O, (HSMABT)2[Co(DPC)2].5H2O, (HSMABT)2[Ni(DPC)2].5H2O, (HSMABT)2[Cu(DPC)2].5H2O, [Cu(DPC)(SMABT)(H2O)]2.H2O and (HTDSA)[Fe(DPC)2].EtOH) have been characterized by means of single crystal X-ray diffraction, magnetic susceptibility and molar conductivity, TGA, FT-IR, UV-Vis techniques. The structure for amorphous metal complex (Fe(SMABT)3(OH)2(H2O)].2H2O) has been proposed by using the above techniques without X-ray diffraction. All compounds, including acetazolamide (AAZ) as the control compound, were also evaluated for their in vitro inhibition effects on human hCA I and hCA II for their hydratase and esterase activities. The synthesized compounds have remarkable inhibitory activities on hCA I and hCA II. Especially, the inhibition potentials of the salt and the metal complexes are comparable with AAZ.

Keywords: 2-Amino-6-sulfomoylbenzothiazole, Carbonic Anhydrase Inhibition, Metal Complexes, Proton Transfer Salt, 2,6 Pyridinedicarboxylic

The Wear Behavior Borided Cast Iron Cylinder Liner On A Running Diesel Engine

Mehmet Cakir[a*], Ismail Hakki Akcay[b]

[a]Yildiz Technical University
[b]Suleyman Demirel University

*mecakir@yildiz.edu.tr

Abstract:

This work aims to investigate wear effects of borided cast iron cylinder liner on a running diesel engine. With this regard, cast iron cylinder liner was borided using powder box-boronizing technique at 780 °C for 4 hours. The boronizing thickness and microstructure were defined as 25 µm. Borided surfaces hardness of cylinder liner was increased from 330 HV to 1380 HV. Single cylinder diesel engine was operated for 200 hours both cylinder liners (original and borided). Then, the engine was separated into parts.The microstructural analyses of worn surfaces were examined by SEM and X-ray diffraction, especially at the top dead center area of cylinder liner. As a result of, the abrasive wear deeply formed axial scratches have been observed on the surface of Top Dead Point vicinity (TDC) of the original liner. The same section of the borided liner has been not observed any plastic deformation. Only, little plastering damages were observed on surface morphology. Besides, crushing shaped plastic deformation is formed on the borided liner surface. In this case, it is interpreted that graphite on the surface were crushed and plastered on borided surface. Because, it was seen that borided layer were exactly protected and proved by XRD analysis.

Keywords: Cylinder Liner Wearing, Boronizing, Engine Tribology

Theoretical And Experimental Study Of Molecular Structure And Vibrational Spectra Of 2,4-Bis[4-(N,N-Dibenzylamino)-2,6-Dihydroxyphenyl]Squaraine Molecule By Density Functional Theory

Zuhre Calisir[a*], Emine Babur Sas[a], Mustafa Kurt[a]

[a]Ahi Evran University

*zcalisir@ahievran.edu.tr

Abstract:

In this study, we were investigated spectroscopic studies of 2,4-bis[4-(n,n-dibenzylamino)-2,6-dihydroxyphenyl] squaraine molecule (2,4-bis[squaraine]) with FT-IR and FT-RAMAN spectroscopic techniques. FT- IR and FT-Raman spectra were recorded in the solid phase. The molecular geometry and vibrational frequencies of 2,4-bis[squaraine] were calculated using density functional methods (B3LYP with 6-311G(d,p) basis set). The theoretical and tentative results will give us a detailed description of the structural properties. The theoretical results of the title molecule were compared with the experimental results, which shows a good agreement with the observed spectra.

This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: FEF.A3.16.012

Keywords: DFT, FT-IR, FT-RAMAN, VIBRATIONAL SPECTROSCOPY

Theoretical Investigation of Formability Limits for Dual Phase Steels

Sadik Olguner[a*], Ali Tolga Bozdana[a]

[a]Department Of Mechanical Engineering, University Of Gaziantep

*olguner@gantep.edu.tr

Abstract:

Among the advanced high strength steels, Dual Phase (DP) steels are used in many fields of production especially in automobile industry in order to reduce vehicle weight while improving car crashworthiness performance. Microstructure of DP steels consists of hard martensite as dispersed islands in soft ferrit phase and thus, they provide a good combination of important mechanical properties for metal forming such as high tensile strength and acceptable ductility. Car body parts are manufactured with considerable amount of forming of sheet metals and problems such as wrinkling and tearing must be avoided during production. Therefore, it is critical to determine formability limits of material used. Formability limits of metallic materials are expressed by Forming Limit Diagram (FLD) and it indicates the upper limits of the minor and major true strains that the material maybe exposed to without tearing. In the literature, for the determination of FLDs, theoretical, numerical and experimental methods are used.

In this study, it has benefited from two theoretical FLD formulations, namely Keeler-Brazier (KB) empirical relation and Chow damage model. The FLDs of the DP600, DP800 and DP1000 steels, the most commonly used DP steels in automobile industry, are derived using relevant theories and mechanical properties of the materials. The results theoretically obtained are compared with the experimental FLDs in the literature. It is noticed that the FLDs of DP steels can be predicted very well using Chow damage model.

ACKNOWLEDGEMENTS

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Keywords: Deep Drawing, Forming Limit Diagram (FLD), Dual Phase (DP) Steel

Thermal, Structural and Mechanical Characterization of Sn-Bi-Cu Hypereutectic Alloy

Fatma Meydaneri Tezel[a], Yuksel Akinay[a], Yasin Akgul[a], Neslihan Atalay[a*]

[a]Karabuk University

*neslihanatalay12@gmail.com

Abstract:

The thermal, tensile test, micro hardness and microstructure properties of Sn-30 wt. % Bi-0.5 wt. % Cu hypereutectic alloy were investigated. The alloy in previously determined composition was casted in the wet grit model. The surface pollutions of the samples which were obtained after casting processes were cleaned; heat treatment was applied for 15 mins at about 70 °C, and it was left for cooling in the furnace. After metallographic processes, the values of enthalpy of fusion (H) and the specific heat (Cp) for Sn-30 wt. % Bi-0.5 wt. % Cu hypereutectic alloy were measured with DSC. The crystal structure parameters and the grain sizes of the alloy were investigated by XRD pattern. After preparing of the sample which are used for the tension and hardness measurement, according to TS EN ISO 6892-2:2011 standard at the room temperature (25°C), tension experimental was performed with 0,0067 l/s velocity, and micro hardness was measured by using Vickers micro hardness device, and mechanical properties were obtained. Moreover, the surfaces of broken samples were investigated by using Scanning Electron Microscopy (FESEM), and its composition was determined by Energy Dispersive X-Ray (EDX) analysis, information related to ductility and fragile of the samples were obtained.

Keywords: Key Words: Hypereutectic alloy, Bi-Cu-Sn, Strain-stress, Microstructure, Enthalpy, Specific heat

Thermally Stimulated Luminescence Method For Retrospective Dosimetry Of Commenly Used Dental Ceramic

Esme Isik[a*], Huseyin Toktamis[b], Huseyin Toktamis[b]

[a]Gumushane University
[b]Gaziantep University

*esma_boz@hotmail.com

Abstract:

The dental ceramics, because of their closed contact with the human body, which is potentially exposed to radiation, are commenly used as retrospective dosimetry for quick and reliable dose estimations due to nuclear power plants are closed to settlement of people. Dental glass ceramics can be used as an alternative method for dose measurement as a result of accident or nuclear attack. Therefore, in this study, commonly used dental restorative materials used in human teeth using as an availability of retrospective dosimetry with thermally stimulated luminescence method has been investigated. Dental glass ceramics which are investigated of luminescence properties were obtained from Vivadent ivoclar, Sweden. The dental glass ceramics were irradiated with 90Sr-90Y β-source from 10 Gy to 6.5 kGy and had linear dose responses for the absorbed doses ranging from 10 Gy to 3.5 kGy. According to the reproducibility properties of the dental ceramic, the area under the glow curve increased about 25 percent after ten cycles. Dental ceramics undergo about 60 percent faded at the end of 1 hour waiting and after 6 week waiting the peak with the lowest temperature completely faded.

Keywords: Dental ceramic; retrospective dosimetry; thermally stimulated luminescence

Thermodynamic Analyses of a Coal-Fired Power Plant in Izmir, Turkey

Emrah Ozahi[a], Alperen Tozlu[b*], Aysegul Abusoglu[a], Ahmet Ihsan Kutlar[a]

[a]University Of Gaziantep
[b]Bayburt University

*alperentozlu@bayburt.edu.tr

Abstract:

It is possible to increase the efficiency of a system by decreasing the exergetic losses. In this study, energy and exergy analyses are carried out for a coal-fired thermal power plant in Izmir for screening the system efficiency and proposing how the efficiency of the plant can be increased. Thermal Power plant has 250 MW installed power which is a portion of 5.83 % of total power production in Izmir. According to the thermodynamic analyses, the highest and the lowest exergy destructions are found to be 408.17 MW for the boiler and 0.26 MW for the centrifugal pump, respectively. Exergetic efficiencies of the higher, intermediate and lower pressure turbines are evaluated as 94.24 %, 95.38 % and 68.61 %, respectively. Exergetic efficiencies of the intermediate pressure turbine and the feed water pump are found to be the maximum and minimum among the subcomponents of the thermal power plant. As a result of the thermodynamic analyses, the exergetic efficiency of the power plant is found to be 28.65%. Beside this, the thermal efficiency of the power plant is evaluated as 25.11 %, which is compatible with the efficiencies of other thermal power plants. It can be mentioned that higher exergy destructions represent the most potential for possible improvements in the performance for this analysis.

ACKNOWLEDGEMENTS

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Vehicles) energy for their financial supports.

Keywords: Coal-fired power plant, energy, exergy, exergy destruction, efficiency.

Thiocyanate -Selective Membrane Electrode Based on a New Calix[4]arene Derivative

H.Elif Kormali Erturun[a*], Ayca Demirel Ozel[a], Ezgi Akceylan[b], Mustafa Yilmaz[b], Esma Kilic[b]

[a]Ankara University
[b]Selcuk University

*kormali@science.ankara.edu.tr

Abstract:

The thiocyanate ion is present in low concentrations in human serum, saliva and urine as a result of digestion of some vegetables and ingestion of food containing thiocyanates such as cheese and milk [1,2]. In low concentrations, it acts as a natural antioxidant in the immune system and protects the body from various diseases by strengthening its defense mechanism. On the other hand, it has been proven that the higher concentration of this ion, which is a metabolic product of cyanide, arises from tobacco smoke [3]. As a result, the presence of high concentrations or the absence of this ion in body fluids is closely related to various diseases. Therefore, the determination of thiocyanate in food, wastewater, and biological samples is important.

Many analytical methods have been reported for the determination of thiocyanate. In comparison with classical/instrumental determination, potentiometry with ion-selective electrodes (ISE) possess many advantages. Several ionophores such as derivatives of calix[4]arenes, metal complexes, schiff bases have been used for the preparation of thiocyanate-selective electrodes. Hence, in this study, we focused on the possibility of using a new calix[4]arene derivative, 25,27-bis-4-ethyl-piperazine-1yl-1-propoxy-26,28-dihydroxy calix[4]arene, in the construction of PVC membrane SCN--selective electrode.

The proposed electrode exhibited linear potential response to thiocyanate in a linear range of 1.0×10−6 to 1.0×10−1 M with a slope of −53.4 mV/decade at pH 4.0. The lifetime, the response time and the selectivity coefficients of the electrode were determined. It was also successfully applied as an indicator electrode for the determination of thiocyanate ion by potentiometric titration with AgNO3.

Keywords: Thiocyanate-selective electrodes, calix[4]arene, potentiometry, thiocyanate

TiO2-ZnO Immobilized Graphene Oxide Nanocomposite As Visible Light Activated Photocatalyst For Degradation Of Pharmaceuticals

Esra Bilgin Simsek[a*], Bayram Kilic[a], Mansur Asgin[a], Ayse Akan[b]

[a]Yalova University
[b]Yildiz Technical University

*esrabilgin622@gmail.com

Abstract:

Pharmaceutical residues are introduced to the environment by pharmaceutical industry, hospitals, medical facilities, households and farming. The non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen and flurbiprofen, are pharmaceuticals which presence in water intakes and effluents from wastewater treatment plants [1]. As the traditional water treatment process cannot remove these drugs completely, powerful oxidation techniques are required to remove these pollutants from wastewater. Heterogeneous photocatalysis has important applications such as achieving sustainable energy generation and treating environmental pollution. TiO2 and ZnO have been the most widely researched catalysts, but suffers from low efficiency and narrow light response range. Combining TiO2 or ZnO with carbonaceous nanomaterials is being increasingly investigated as a means to increase photocatalytic activity [2]. Graphene oxide based TiO2-ZnO nanocomposites (GTZ) were synthesized by hydrothermal method, and examined by characterization techniques. X-ray diffraction patterns revealed TiO2 presented as anatase phase and ZnO as wurtzite in the nanocomposites. UV–vis absorption spectra indicated that mixing graphene oxide into TiO2-ZnO nanoparticles could reduce band gap energy, thereby enhancing utilization efficiency of visible light. Photocatalytic performance of the synthesized nanocomposites was systematically evaluated during pharmaceutical (ibuprofen and flurbiprofen) degradation under UV-A and visible light irradiation. While graphene-TiO2 catalyst achieved 79.6% degradation of ibuprofen, and 84.3% of flurbiprofen after 60 min visible irradiation, the GTZ composite catalyst achieved 84.6% degradation of ibuprofen, and 88.7% of flurbiprofen. Moreover, the repeatability of the photoactivity with the use of GTZ was investigated in the multi-round experiments and the results demonstrated the stability of the nanocomposites for water treatment.

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Keywords: Graphene, Photocatalysis, Visible ligth, Pharmaceutical

Total Antioxidant Capacities Of Cherry Laurel (Prunus Laurocerasus) And Strawberry Tree Fruit (Arbutus Unedo)

Aysegul Cebi[a*]

[a]Faculty Of Engineering

*cebiaysegul@hotmail.com

Abstract:

Prunus laurocerasus and Arbutus unedo are the plant species which spread around North-east of Turkey. Fruits of these species are widely consumed. It was aimed in this study to determine the total antioxidant capacities of these plant species. Methanol and ethanol were used as solvent to extract the dryed parts of these species (leaf and seed of Prunus laurocerasus and fruits of Arbutus unedo) . Total antioxidant capacities were measured by spectrophotometry according to the ferric thiocyanate method (FTC) comparing with BHT and trolox known as standard antioxidants.

Ethanol extracts of Prunus laurocerasus and Arbutus unedo had higher inhibition levels at all time (12th-132nd hours) more than the BHT and trolox. Ethanol extract of Prunus laurocerasus leaf had the higher inhibition level at 48th hour (% 94.67). Methanol extracts of the plants arrived the maximum inhibition level at 84th hours (seed of Prunus laurocerasus % 67.1, leaf of Prunus laurocerasus %66.97, fruits of the Prunus laurocerasus %64.29).

Our results clearly demonstrate that Prunus laurocerasus and Arbutus unedo have promising level of antioxidant capacity. Further investigations are needed.

Keywords: Prunus laurocerasus, Arbutus unedo, Antioxidant capacity, FTC method

Training Artificial Neural Networks with Ions Motion Algorithm on Real Estate Dataset

Burak Gulmez[a*], Sinem Kulluk[a]

[a]Erciyes University

*burakgulmez@erciyes.edu.tr

Abstract:

Artificial neural network (ANN) is inspired from biological neural networks and has abilities like adaptability, ability to generalize and learning capability. An ANN can be used for a specific application such as pattern recognition, function approximation or data classification through a learning process. Back-propagation (BP) algorithm which is a gradient-descent method is the most common algorithm for training ANNs. However it has some disadvantages; it requires differentiable neuron transfer function and has a high possibility to converging into local optima. In order to overcome these shortcomings of BP algorithm meta-heuristic algorithms are successfully used for training ANNs in the literature. In this study, a new generation meta-heuristic namely Ions motion (IM) algorithm is used for training ANNS on a real-life real estate dataset. The dataset includes several attributes such as facade, number of rooms, number of bathrooms, building age, heating system, etc. The aim of the study is to estimate the sales price of a flat by taken into consideration these input variables. ANNs is trained by using IM algorithm on the real estate dataset and the error rates are obtained. The capability of the IM algorithm on training ANNs is compared with some regression-based algorithms and ANNs models from Weka data mining software. The obtained error rates and comparison with the other algorithms shows that the IM algorithm is highly capable on training ANNs on real estate dataset. This study was supported by Research Fund of the Erciyes University (Project number: 6771).

Keywords: Training artificial neural networks, Ions motion algorithm, Real estate dataset

Transesterification Of Foeniculum Vulgare Oil To Produce Biodiesel

Gokhan Tuccar[a], Erinc Uludamar[a*], Anil Erkan[a]

[a]Adana Science And Technology University

*euludamar@adanabtu.edu.tr

Abstract:

Transportation fuel demand rises dramatically in the last decades due to number of increasing vehicles. Fossil fuel is the first option to fulfill this demand, however they are non-renewable since it takes millions of year to form them. Another disadvantage of fossil fuel utilization is pollution of environment as a result of combustion of fossil fuels. Biodiesel has potential to become candidate of fossil fuel with its favorable combustion profile. Biodiesel is also renewable source of energy since it can be obtained from renewable feedstocks such as vegetable oils and animal fats. Foeniculum vulgare (Apiaceae) commonly known as fennel is a well-known and important plant that is frequently used for medical purposes. Availability of F. vulgare (Apiaceae) oil as biodiesel is not widely discussed by the literature. The aim of this study is to identify availability of F. vulgare oil in diesel engines as alternative fuel. Foeniculum vulgare oil biodiesel was blended with diesel fuel with the volumetric ratios of 20% and 50 %. Fuel properties of blends were identified and the performance characteristics and exhaust emissions of the engine fuelled with blends were analyzed.

Keywords: Foeniculum vulgare, biodiesel, transesterification, fuel properties

Treatability of Tannery Wastewater by Electrocoagulation Process

Ufuk Durmaz[a], Fehiman Ciner[a*]

[a]Department Of Environmental Engineering, Omer Halisdemir University

*fciner@ohu.edu.tr

Abstract:

Tannery industry wastewater is a powerful pollutant that can cause severe environmental problems related to its high chemical oxygen demand (COD), oil and grease together with deep colour content. Tannery wastewater can cause significant pollution to the ecological system unless treated prior to discharge. Many conventional treatment processes were carried out to treat wastewater from tannery industry such as physical treatment, biological treatment, chemical treatment processes including coagulation–flocculation, ion exchange, adsorption, electrochemical and combined chemical/biological processes. But, these treatment methods show several disadvantages including lower treatment efficiency, higher sludge yield and high capital. Nowadays, electrochemical treatment methods have reached such a state that they are not only comparable with other technologies in terms of cost, but they are also more efficient and more effective. One of these processes is electrocoagulation (EC) which has achieved much attention due to its attractive advantages as: simple, reliable, and cost-effective operation for the treatment of wastewater.

In this paper, treatability of leather tanning industry wastewaters by electrocoagulation (EC), as one of the electrochemical methods, was experimentally evaluated. The wastewater sample was taken from a leather factory of an Mixed Organized Industrial District in Bor-Nigde, Turkey. Treatment of the wastewater was carried out by an electrochemical batch reactor equipped with aluminum electrodes, which were connected parallel to each other. Effects of pH, current density and operating time were analyzed to optimize the electrocoagulation process with aluminum electrode. The optimum operating conditions were determined and applied to the process. The obtained results indicate that EC reactor is the applicable option to treat tannery industry wastewater in terms of removal efficiency and operating cost.

Acknowledgments

This research has been supported by Omer Halisdemir University Scientific Research Projects Coordination Unit. Project Number: FEB 2015/30 YULTEP, 2015.

Keywords: COD, electrocoagulation, leather, organized industrial district, tannery wastewater

Treatment of Acid Orange 7 dye by Electro-Fenton: Optimization Through Response Surface Methodology

Erhan Gengec[a*], Mehmet Kobya[b], Burak Durmus[a]

[a]Kocaeli University
[b]Gebze Technical University

*erhan.gengec@kocaeli.edu.tr

Abstract:

Nowadays, researchers focus on advanced oxidation processes (AOPs) in the treatment of wastewater for the removal of non-biodegradable and/or toxic materials. Among AOPs, electro-fenton depends on production of H2O2 and/or Fe2+ by electrochemical cases. As known hydroxyl radicals which are highly reactive, forms by electron transfer between H2O2 and Fe2+. The performance of electro-fenton reactions depends on process parameters such as pH, current density, operation time etc. Thus, determination of optimum process parameters is very important. Conventional methods for determination of optimum process parameters are time-consuming and not combined impacts of all involved factors. In order to overcome these deficiencies, statistical experimental design have been applied.

In this study, electro-fenton process parameters were optimized during treatment of acid orange by Response Surface Methodology (RSM). An undivided cell (0.5 l) was used with carbon soft felt (25 cm2) as cathode and a Platin (0.5 cm2) as anode electrode. Process parameters were selected as operating time (T; 60-180 min), current density (CD; 7.5-37.5 A/m2), electrolyte concentration (MEC; Na2SO4; 20-60 mM) and Fe2+ concentration (MFe; 0.05-0.65 mM).

The results showed that the quadratic model fitted very well with the experimental data. R2 correlation coefficients (96.8%) for the dye removal showed high significance of the model. T and CD contributed noticeably to removal efficiency because higher T and CD increased hydrogen peroxide production. In the studied ranges, MFe and MEC have not significant influence on dye removal. However, MEC reduced the solution resistance and the voltage between the electrodes. As a result, the optimum process conditions for removal efficiencies of dye was found as 95.6% at 92.6 min, 15 mA/cm2, 30mM of MEC and 0.20 mM of MFe. These results showed that RSM was a suitable method to optimize the operating conditions and the electro-Fenton process was an appropriate process for treatment of wastewater.

Keywords: Electro-Fenton; Carbon Soft Felt; Acid Orange 7; Response Surface Methodology

Turbulent Boundary Layer with Logaritmic Law in 3-D

Ozgul Ilhan[a*], Niyazi Sahin[b]

[a]Mugla Sitki Kocman University
[b]Yildirim Beyazit University

*oilhan@mu.edu.tr

Abstract:

The problem of predicting behavior of turbulent flows is common in many applications such as geophysical flows, turbulent mixing, pollution dispersal and even in the design artificial hearts [1,2].One promising approach is large eddy simulation (LES), which seeks to predict local spacial average of the fluid's velocity [3]. Very often, LES models have difficulty predicting turbulence generated by interactions of a flow with a boundary [1]. One important problem in LES is to find appropriate boundary conditions for the flow averages which depend on the behavior of the unknown flow near the wall. In the light of the works of Navier and Maxwell [4,5], we develop boundary conditions on the wall. In this study, we derive friction coefficient appropriate for 3-D turbulent flows and study asymptotic behavior as the averaging radius goes to zero and as the Reynolds number goes to infinite. In this study, we don't want to develop new theories of turbulent boundary layers, we use available boundary layer theories to improve numerical boundary conditions for flow averages .

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Keywords: LES, Near Wall Models, Turbulent Flows

Uncategorized Wheat Recognition Based On New Shape Based Descriptor

Kemal Ozkan[a*], Ahmet Okan Onarcan[b], Erol Seke[a], Murat Olgun[a]

[a]Eskisehir Osmangazi University
[b]Anadolu University

*kozkan@ogu.edu.tr

Abstract:

Wheat is one of the main nutrients used in the world. Consumption of foodstuff produced from quality wheat is of great importance for healthy generations. It is necessary to separate the high and low quality wheat. In this paper, a new recognition method for quality wheat and unclassified wheat is presented. The most distinctive feature for determination of wheat quality is its shape. In this study, objects are first represented by a few descriptive points on their contours obtained from their images. Neighboring points are connected by linear or conical curve fitting. The objects are then represented by an attribute vector constructed from parameters of the curves. Finally, these vectors are used to classify objects (wheat) using quadratic separation analysis (QDA), support vector machines (svm) and k-nearest neighbor (k-NN). Performance is improved with cross validation for each class.

Keywords: feature extraction, unclassified wheat, shape desciptor.

Underground Coal Mining In Turkey-Western Lignite Corporation Case

Cem Sensogut[a*], Ozer Oren[a]

[a]Dumlupinar University

*sensogut@dpu.edu.tr

Abstract:

The main target of coal mining is to exploit the coal reserves from the depth of underground economically. The coal, which is the basic input for many sectors due to possessing energy in its form, has been the important area of interest for positive science for centuries. The coal reserves, which have been extracted since the historical ages, maintain its presence nowadays in the depth of ground where mostly underground mining can only be practised. This current state is unfortunately valid both for Turkey and for many countries in the world.

In the present work, brief information about the coal reserves found in the world and particularly in Turkey together with the underground coal mining activities was given. Additionally a specific enlightenment was made for the Western Lignite Corporation (WLC) which is a subsidiary of Turkish Coal Board.

Keywords: Coal, Coal Mining, Underground Coal Mining

Underground Heat and Important

Huseyin Kaya[a*], Mesut Kilit[a]

[a]Karamanoglu Mehmetbey Universitesi

*hskaya@kmu.edu.tr

Abstract:

Mankind must be strong against natural conditions and external human negativities in order to survive on earth. Being strong is also possible by having the necessary energy resources. This inevitable reality leads to constant recompense between people and societies. In the research conducted, it seems that the reason for the close of the wars in the last century is due to these reasons. In this study, the possibilities of using natural heat as an alternative energy source besides fossil energy sources which are widely used today have been investigated. A detailed literature study on the subject was made within the scope of the research. According to the information obtained from the literature, although the atmospheric temperature did not vary between 30-40 ° C, the underground temperature varied between 3-5 ° C. In particular, it is predicted that the optimization of the systems can be achieved by utilizing this heat at the points where the temperature values are marginal. This present heat source has been included in the study of applications for agricultural and industrial purposes. It can be said that significant energy saving can be realized with efficient use of underground heat potential. However, there is no adequate use in our country in this regard. The work to be done will contribute both to scientific development and to the increase of the national income and prosperity of the societies.

Keywords: Underground heat, energy, efficiency.

Uniformly Resolvable (C_M;K_2)-Designs

Ugur Odabasi[a*]

[a]Istanbul University

*ugur.odabasi@istanbul.edu.tr

Abstract:

A decomposition of a graph G is a set D={H_1,H_2,…,H_k} of edge-disjoint subgraphs of G such that union of the edge sets of the subgraphs is exactly the edge set of G. A H-decomposition is a decomposition of G such that H_i≅H for all H_i∈D. If each H_i is a cycle (or union of cycles), then H is called a cycle decomposition. A parallel class or resolution class of the decomposition D of G is a subset of vertex-disjoint graphs whose union is the vertex set of G. A decomposition is called resolvable if it has a partition of the subgraphs H_i into parallel classes. A parallel class is called uniform if for all 1≤i≤k and a H∈D, H_i≅D. In this case the parallel classes are called H-factors and we say G has a H-factorization. A {F_1^(k_1),F_2^(k_2),…,F_l^(k_l) }-factorization of a graph G is a decomposition which consists precisely of k_i factors isomorphic to F_i-factors.

The case H≅K_2 is known as 1-factorization. Another important case is 2-factorization where every vertex in the graph H has degree 2. Whether there exists a 2-factorization of K_v (or for even v, 2-factorization of K_v-I where I is a 1-factor) with prescribed 2-factors is a long standing important problem in combinatorial design theory. The main focus of this talk will be to give a {K_2^r,C_m^s }-factorization of the complete graph K_v.

Keywords: Uniformly resolvable decompositions, factorizations, decompositions

Usability Of Blast Furnace Flue Dust In Reduction Of Manganese Ore Concentrate

Fikri Erdem Sesen[a*], Ibrahim Ozdemir[a], Mustafa Kelami Sesen[a]

[a]Istanbul Technical University

*sesen@itu.edu.tr

Abstract:

Blast furnace flue dust is an important source of iron and carbon. Depending on the blast furnace practice, its carbon content varies roughly between 20 and 50 % while its iron content can exceed 50 % if iron oxides are considered. It is traditionally recycled by adding in to the sintering blend. However, it can be used as a reductant since it is a carbon-bearing by-product. This study aims to investigate the utilisation of blast furnace flue dust as a reductant and iron source in ferromanganese production. For this reason, two blends were prepared: Manganese ore concentrate + coke + mill scale (1) and manganese ore concentrate + coke + blast furnace flue dust (2) were blended in a ratio that was calculated for providing 200 % of the theoretical carbon content. The blends were heated in a furnace at 1200 °C for 2 hours to achieve the reduction. The reduction degree of 68.35 % achieved by the reduction of the second blend was considerably higher than the reduction degree of 60.97 % achieved by the reduction of the first blend. After that, a new blend was prepared by the addition of lime having a CaO content equal to the SiO2 content in order to adjust the basicity ratio as 1 and CaF2 in order to obtain fluidity. This new blend was heated in the furnace at 1600 °C for 90 minutes to achieve ferromanganese production via reduction-melting.

Keywords: blast furnace flue dust, ferromanganese, reduction-melting, recycling

Use of Fibrolytic Enzyme in Ruminant Nutrition: I. Effect of Fibrolytic Enzyme Administration on Growth Performance in Suckling Calves

Tuncay Tufan[a*], Cavit Arslan[b]

[a]Department Of Animal Nutrition And Nutritional Disease, Faculty Of Veterinary Medicine, Siirt University

[b]Department Of Animal Nutrition And Nutritional Disease, Faculty Of Veterinary Medicine, Selcuk University

*tuncay-tufan@hotmail.com

Abstract:

The aim of this study was to evaluate effects of different rates orally fibrolytic enzyme administration on growth parameters of suckling calves. Eighteen, 4 to 11 d old, 32 to 50 kg live weight suckling male Simmental calves were used in the study. Calves divided into three main groups (Control, Enzyme I and Enzyme II) according to similar live weight. Animals were housed individually in calf hutches. Animals were fed whole milk from the beginning to the end of the study, 10 % of their live weight, and also calf starter concentrated and chopped dried grass as ad libitum. Additionally, calves in the Control, Enzyme I and Enzyme II groups were fed orally at 0, 2 and 4 g/day a commercial fibrolytic enzyme, respectively, which is dissolved in 50 ml distilled water. The research lasted for 84 d. Live weights and dry matter intakes of the animals were determined biweekly intervals during the study. There were no statistical differences on live weights of calves among the groups in all study period. There were no statistical differences on live weight gains of calves at 14th, 28th and 42th d of the study, whereas it were significantly higher in the Enzyme I and II groups than the Control group at 56th, 70th and 84th d of the study. There were no statistical differences on the feed intake among the groups in whole study period. There were no statistical differences on the feed conversion ratio among the groups in all study periods; except for at 56th d. Enzyme II group had a significantly lower feed conversion ratio than the Control group at 56th d. As a result, it has been determined that administration of 2 and 4 g/day orally exogenous fibrolytic enzyme to suckling calves is not advisable during the suckling period.

Keywords: Calve, fibrolytic enzyme, growth performance, feed conversion ratio

Using 3D Vision Camera System To Automatically Assess The Lameness Of Broiler Chickens

Arda Aydin[a*]

[a]Department Of Agricultural Machinery And Technologies Engineering, Faculty Of Agriculture, Canakkale Onsekiz Mart University

*araydin@comu.edu.tr

Abstract:

According to the European Commission report of the Scientific Committee on Animal Health and Animal Welfare, lameness is a major cause of poor welfare in broilers. Losses due to skeletal disorders in broiler chickens are significant. The costs of these skeletal disorders for the U.S. were estimated to be between $80 million and $120 million per year. In this study, a new and non-invasive technique was developed to automatically assess the lameness of broiler chickens. For this purpose, video surveillance images of broilers with five different predefined gait scores were recorded by a 3D vision camera which has a depth sensor as they walked along a test corridor. Afterwards, the image processing algorithm was applied to detect the number of lying events (NOL) based on the information of the distance between animal and the depth sensor of 3D camera. Furthermore, latency to lie down (LTL) of broiler chickens was automatically detected by the proposed system. Later on, the results of the proposed system were compared with visually assessed manual labelling data (reference method) and the relation between these measures and lameness was investigated. 93% of NOL were correctly classified by the proposed 3D vision camera system when compared to manual labelling using a data set collected from 250 broiler chickens. Furthermore, the results showed a significant correlation between NOL and gait score (R2= 0.934) and a significant negative correlation between LTL and gait score level of broiler chickens (R2= -0.949). Because of the strong correlations were found between NOL, LTL and gait score level of broilers on the one hand and between the results of the proposed system and manual labelling on the other hand, the results suggest that this 3D vision monitoring system has the potential to be used as a tool for assessing lameness of broiler chickens.

Keywords: 3D vision, animal welfare, broiler chickens, gait score, lameness, automatic monitoring

Using Artificial Neural Network For Predicting Performance Of Heat Exchangers

Murat Eray Korkmaz[a*], Emrah Ayvaz[a], Levent Gumusel[a]

[a]Karadeniz Technical University Department Of Mechanical Engineering

*murat@ktu.edu.tr

Abstract:

Artificial Neural Networks (ANNs) are using in a wide variety of application fields in today's world. Artificial Neural Networks, which simply imitates the working method of human brain, has an important place in artificial intelligence studies. ANN technology can bring the ability to learn to a computer system from a specified input value. This technology is being utilized in many fields which also brings a lot of advantages and improving day by day. Multi-layer perceptron model has been used for the network formed and an ANN has been modelled using the experimental data gathered by a heat exchanger. In Multilayer Feed-Forward Neural Network Model, Levenberg-Marquart is selected as learning algorithm and sigmoid function is selected as a transfer function. 58 data were obtained from experiments and 47 of them were used as training data and 11 of them were used as test data. The network is also designed by NeuroSolutions V6.0. Oil Inlet Temperature, Oil Outlet Temperature, Wall-Inlet Temperature, Wall-Outlet Temperature, Water Inlet Temperature, Water Outlet Temperature are selected as input parameters and Mass Flow Rate is selected as output parameters. As result, an artificial neural network application has been made on parallel flow heat exchangers by using experimental data to show that ANNs can be used as predictor in thermo-fluids systems and it's obtained satisfactory predictions with ANNs.

Keywords: Artificial Neural Network, Multi Layer Perceptron, Heat Exchanger

Using Continuous Immersion System Liquid Media for In Vitro Microtuber Potato (Solanum Tuberosum L.) Production in Bioreactor

Kahraman Kepenek[a*]

[a]Suleyman Demirel University Agriculture Faculty

*kahramankepenek@sdu.edu.tr

Abstract:

Purpose of this study was to determine effects of in vitro continuous immersion culture system, solid media, different doses of Thidiazuron (TDZ) (0.5, 1.0, 1.5 and 2.0 mg/l) and I Indole-3-butyric acid (IBA) (0.5, 1.0, 1.5 and 2.0 mg/l) on stem segments, microtuber number per plant. In vitro continuous immersion liquid culture media and solid media were used in potato (Solanum tuberosum L.) cv. Granola for stem segments and microtuber micropropagation. The stem segments were cultured on 1/2 Murashige and Skoog (MS) medium supplemented with 2 mg/l gibberellic acid, 10 mg/l paclobutrazol, 5.0 g/l activated charcoal, 100 g/l sucrose with or without 3.5 g/l phytagel; and TDZ and IBA in vitro. Liquid medium was distributed to the carrier in vitro continuous immersion with supporting net liquid culture system containing glass wool + filter paper layer as substrate. In vitro continuous immersion liquid culture media was more suitable and stable for organogenesis of potato microtubers than phytagel (3.5 g/l) solid media. After 30-day of incubation, there were 4.76 axillary stem segments formation having 7.21 mm diameter of microtubers weighing 155.74 mg fresh weight. Microtuber formation rate 84.66% and there were 2.06 microtubers per plant at 0.5 mg/l IBA in vitro continuous immersion liquid culture media treatment. 1.5 mg/l TDZ treatment had 7.56 axillary stem segments formation having 6.21 mm diameter of microtuber weighing 150.10 mg fresh weight. Microtuber formation rate was 92.55 % and there were 3.82 microtubers per plant. Formation and development of microtubers was lowest at 2.0 mg/l and highest at 1.5 mg/l TDZ concentration. At 1.5 ppm TDZ concentration, microtubers cropped from in vitro continuous immersion liquid culture system were bigger and heavier than phytagel solid media.

Keywords: IBA, In vitro tuberization, liquid culture, micropropagation, potato, TDZ

Variations in Seed Nutrient Content of Different Bitter Vetch (Vicia ervilia Willd.) Lines

Mahmut Kaplan[a*], Kagan Kokten[b], Mehmet Fatih Yilmaz[c], Halit Tutar[b], Hasan Kale[b]

[a]Erciyes Universitesi
[b]Bingol University
[c]East Mediterranean Transitional Zone Agricultural Research Of Institute

*mahmutkaplan5@hotmail.com

Abstract:

The present study was conducted to compare feed quality parameters of 14 different forage bitter vetch genotypes. Experiments were carried out in randomized block design with 3 replications under Bingol conditions. A analyses (crude protein, acid detergent fiber, neutral detergent fiber, crude ash, dry matter digestibility, dry matter intake and relative feed value) were carried out to determine the chemical composition of bitter vetch grains.

Results revealed different outcomes with regard to chemical compositions of bitter vetch seeds ($P<0.01$). ADF ratios varied between 6.32-9.79%, NDF ratios between 17.94-28.45%, crude protein contents between 22.96-37.01%, crude ash contents between 2.55-3.26%, dry matter digestibility ratio between 81.28-83.98%, dry matter intakes between 4.22-6.69% and relative feed values between 268.40-435.53. It was concluded that Line 17 was prominent with crude protein, Line 3 with ADF and NDF ratios, dry matter intake and relative feed value.

Keywords: Bitter vetch, ADF, NDF, crude protein, relative feed value

Waste Heat Energy Recovery In The Iron-Steel Industry Using Organic Rankine Cycle (Orc)

Yusuf Ali Kara[a*], Semih Akin[a]

[a]Bursa Technical University

*yusufali.kara@btu.edu.tr

Abstract:

The iron-steel industry is one of the most energy-intensive industries, and it is responsible for almost 5% of total world energy consumption. The molten slag, a by-product of iron-steel making processes, is exhausted with critically high temperature of about 1450℃-1550℃. Thanks to this remarkable high temperature of the molten slag, it is seen as a potential source of energy and raw material. Nowadays, dry granulation method is generally used to increase the heat transfer surface of the molten slag and then waste heat energy recovery processes are implemented by using the fluidized bed technology. However, the granulated molten slag is discharged from the fluidized bed at relatively high temperature of about 650℃-700℃ and this high temperature granulated slag is generally not used for energy recovery. In this study, a waste heat energy recovery system is proposed using Organic Rankine Cycle (ORC) in order to benefit from critically high temperature of the molten slag after it is discharged from the fluidized bed. The theoretical results show that the designed system allows obtaining 104.49 kWh energy production for 1.67 kg/s mass flow rate of the granulated slag.

Keywords: Heat Recovery, Molten Slag Organic Rankine Cycle

Water Budget and Water Quality of Akgol Lake Sensitive Basin

Rabia Koklu[a*], Emrah Dogan[a]

[a]Sakarya University

*rkoklu@sakarya.edu.tr

Abstract:

The aim of this study is to propose a solution for Akgol (Sakarya) Lake, which is at risk from water budget and water quality due to seasonal water reductions and human activities around it. For this aim, the water budget and water quality of the Akgol Lake sub-basin, which is in the sensitive water masses class in Sakarya Basin, were evaluated. Firstly evaporation-precipitation values were obtained from the Sakarya Provincial Meteorological Affairs Directorate. Samples were taken for a period of 3 months from the 3 tributaries and drainage channel. While the samples were taken, flow measurements were made in the channels and the water level fluctuations was determined simultaneously. Some of the water quality parameters that cause eutrophication in the lake and its tributaries have been measured. In addition, lake water budget was determined by using rainfall and evaporation data, flow measurements and water fluctuations. According to the results of the study, to ensure a healthy continuity of life cycle and ecology of the Akgol Lake Basin, it is necessary to control point and diffuse pollutants, regulation of water level and to determine the protection status of the basin.

Keywords: water budget, water quality, sensitive basin, Akgol Lake (Sakarya)

Water Diffusion Of Ultrasound Applied Cowpeas During Soaking

Ali Yildirim[a*], Ibrahim Hayoglu[a], A.Ferit Atasoy[a]

[a]Food Engineering, Faculty Of Engineering, Harran University

*ayildirim10@gmail.com

Abstract:

Cowpea (Vigna unguiculata L. Walp.) is one of the most important pulses in sub-Saharan Africa, where it originated, and also of importance in Asia and certain parts of the Americas. It is also grown in the aegean and mediterranean regions of Turkey. Cowpeas are often called Black-eyed pea or field peas. Soaking, boiling, cooking at high pressure, irradiation, decortications, germination and fermentation processes are implemented during processing of cowpeas. In this study, the effect of ultrasound and temperature on water diffusion of cowpea was examined during soaking process. Soaking process with (40 kHz 200 W, 50 % amplitude) and without ultrasound was applied to cowpea samples at 30, 40, 50, 60, 70 and 80 oC. Fick's model together with Arrhenius relationship was successfully used to evaluate effective water diffusion of cowpea during soaking. Ultrasound application and soaking temperature significantly ($P<0.05$) increased the water diffusion coefficient (Deff) of cowpeas. From the Arrhenius equation, gelatinization temperature of cowpeas for this study was found as 69 oC. Activation energy values of without and with ultrasound applied cowpeas below and above 70 oC were found as 28.96 kJ.mol-1, 6.07 kJ.mol-1, and 24.11 kJ.mol-1, 3.16 kJ.mol-1, respectively. Increase in Deff values of ultrasound applied cowpeas increased the water absorption rate which may be provided cowpeas to soften and cooking in a shorter time.

Keywords: Cowpea, soaking, ultrasound, water diffusion, Fick's model, gelatinization

Water Retention Ratios of Mulching Material Consisting Primarily of Pine Bark Over Different Soil Types

Zeki Demir[a*], Oktay Yildiz[a], Bulent Toprak[a]

[a]Duzce University

*zekidemir@duzce.edu.tr

Abstract:

More than 70 % of the world hazelnut production comes from Black Sea region of Turkey. Hazelnut farming is the main agricultural practices in Duzce region located in the northwestern part of Turkey. Therefore a significant amount of husk is produced annually as hazelnut harvesting residue. Thus there is a potential of using these hazelnut husks (HH) as mulching materials in nurseries and gardening applications of ornamental plants. A pot experiment is conducted to investigate the affects of HH as mulching materials on water retention, weed control and plant growth. Upon the pots filled with soils the mulching material was applied on top of the soils at four levels (0 cm, 3 cm, 5 cm, and 8 cm). The effects of different levels of mulching treatments on water retention, weed germination and growth of wild privet (Ligustrum vulgare) were compared. The analysis of the data indicated that water lost can be decreased up to 19 % by applying 8 cm thick mulch comparing to that of bare soil. The germination rates of English ryegrass (Lolium perenne) and European grass (Agropyron repens) were decreased by 94 and 67 % on 8 cm mulch layer treatment comparing to that of the bare soil, respectively. Therefore using HH as mulching materials for gardening practices can substantially reduce water consumption and the cost of weed control.

Keywords: mulching, pine barks, water retention, soil moisture, Turkey

Wave Energy Potential In And Around Sinop

Bilal Bingolbali[a], Halid Jafali[a], Adem Akpinar[a*]

[a]Uludag University

*ademakpinar@hotmail.com

Abstract:

Wave energy being one of the renewable energy resources has high potential and low impact on the environment, especially in coastal regions. For selection of the appropriate location for wave energy exploitation wave energy potential is computed based on the wave characteristics. Due to lack of measurements of such parameters, these parameters are estimated using the third generation wave hindcast models. On this basis, we aims to develop a nested grid system based on a third generation wave hindcast model SWAN (Simulating WAves Nearshore) for modeling of the wave characteristics and to describe the existence and variability of wave energy in the southern western part of the Black Sea within the TUBITAK Project (Akpinar et al., 2016). In line with this purpose, the present study summarizes wave energy potential in and around Sinop, which has hot spot areas on wave energy, based on 31-year long-term wave hindcast results obtained from this nested grid system. Here, spatial distribution maps of the monthly, seasonal, and annual average wave energy are presented and statistical analysis of wave energy in the selected locations is investigated. Furthermore, wave energy resource is characterized in terms of sea state parameters i.e. significant wave heights, wave periods and mean directions for selecting the most appropriate wave energy converters in the selected site.

Keywords: wave energy, spatial distribution, statistical analysis, Sinop

Wear Behaviors of Carbon Nanotube Reinforced Magnesium Matrix Composites

Muhammet Emre Turan[a*], Yavuz Sun[a], Fatih Aydin[a], Yasin Akgul[a]

[a]Karabuk University

*memreturan@karabuk.edu.tr

Abstract:

This study aims to investigate effect of Multi Wall Carbon Nanotube (MWCNT) on tribological behaviors of pure magnesium. 0.25% wt. and 0.5%wt. MWCNT was used as a reinforcement. Samples were produced via hot press sintering device. Vickers Hardness Test was carried out. Three different loads (10N, 20N and 40N) were applied for all samples at the room temperature for wear tests. Worn surfaces and microstructures were characterized by use of Scanning Electron Microscope (SEM). Results show that hardness of pure magnesium was improved with the addition of MWCNT. Best wear resistance was obtained 0.5wt.% MWCNT reinforced composite under the load of 10N. However partially agglomeration could be seen in this specimen.

Keywords: Magnesium, MWCNT, Wear, SEM

Wi-fi Based and Time-Limited Secure Control System Design for Door Lock

Ismail Kirbas[a*]

[a]Mehmet Akif Ersoy University

*ismailkirbas@mehmetakif.edu.tr

Abstract:

The proposed system provides authorized control of wi-fi based door lock mechanisms from a certain control center via internet connection and recording the input and output operations. A secure random key-token mechanism has been developed to make data exchange transactions over the Internet more secure. Thus, when a user name and key information are entered using a smartphone, tablet or computer capable of connecting to a wireless network, control of the door locks by a central system and control of input / output operations are provided within the scope of user permissions.

Keywords: Internet of Things,key-token security mechanism,remote door control,Wi-Fi based secure control application,time-limited access

WiFi RSSI Based Indoor Location Estimation

Muhammed Fahri Unlersen[a*], Muciz Ozcan[a], Kadir Sabanci[b]

[a]Necmettin Erbakan University
[b]Karamanoglu Mehmetbey University

*mfunlersen@konya.edu.tr

Abstract:

Position estimation of a user (latitude, longitude and altitude) is called automatic user localization. In our daily life, navigation devices have become indispensable. Especially outdoors, thanks to the GPS sensors, a stranger of a city could be seen as an experienced driver. Outdoor localization problem can be solved very accurately thanks to the inclusion of GPS sensors into the mobile devices. But indoor localization is still a problem because the satellite signals cannot penetrate into the buildings. To overcome this problem a WLAN fingerprint based position estimation system has been proposed. A database which was created by collecting various wireless access point (WAP) received signal strength (RSSI) in one of building of Universitat Jaume, has been processed by Artificial Neural Network (ANN). There are 1356 records that collected from 85 WAP in the database. Each record has been collected various points of the building but same floor. In this study, position estimation has been done by using many kind of ANN. Number of neurons in the hidden layer of the ANN has been changed from 1 to 40 to determine the best ANN structure which estimate the indoor position. The effects of change of activation function of the layers on the results have been investigated. Hyperbolic tangent sigmoid (Tansig), Logarithmic Sigmoid (LogSig) and Linear (PureLin) transfer functions have been used as activation function. The prepared ANN structures have been trained various training functions like traingdx, traingdx, trainbr, traincgf, traingd, traingdm, trainlm, trainscg. All of the results of the researches have been compared and the best results have been obtained as 19.7485 RMSE and 14.6373 MAE. The structure that has the best results, has consisted of 23 neurons in the hidden layer with PureLin activation function. And this structure has been trained by Levenberg-Marquardt backpropagation function.

Keywords: RSSI, Received Signal Strength, Indoor Location Estimation

Yield and Quality Performance of Some Peach Varieties Grown in Sanliurfa Conditions

Ali Ikinci[a*], Ibrahim Bolat[a]

[a]University Of Harran, Faculty Of Agriculture, Department Of Horticulture

*aliikinci61@hotmail.com

Abstract:

The peach which features a wide range of adaptation, some sort of around the world because of the wealth of tropical, subtropical and temperate climatic zones spreading is a fruit species. In this study, which feature a semiarid climate in Sanliurfa, 11 peach cultivars (Cardinal, Cresthaven, Dixired, Earlyred, Elegant Lady, Glohaven, Maria Marta, Maycrest, Monroe, Redhaven ve Springcrest), phenological, pomological and yield characteristics were determined with the ratios of creating double flowers with female organs. Peach cultivars early flowering started on 14th March and ended on 08 April. The first flowering with days of end flowering time between varieties, it was determined that according to the varieties between 9-17 days. In the peach cultivars, with the date of full bloom – to the harvest the amount of time between 74 (Maycrest) - 151 (Monroe) days were calculated. According to the long-term observations, the earliest fruit maturation in peach varieties Maycrest (02 June) and is the latest fruit maturation occurred in Monroe (24 August). The weight of the fruit varieties 78.19 (Cardinal) - 218.73 (Dixired), TSS 14.06 (Earlyred) - 17.28 % (Maria Marta), titratable acid content 0.47 (Dixired) - 1.07 % (Redhaven) and flesh firmness of 1.82 (Springcrest) - 4.72 (Dixired) kg/cm2 in the range of variation demonstrated. Peach varieties between the years of 2007-2011, cumulative yield values 166.87 (Elegant Lady) - 278.33 (Earlyred) kg/tree has been identified. High air temperatures in the summer caused by the formation of a double flower pistil has been found to show significant variability among the cultivars. On the other hand, especially in the middle and late season maturing peach fruit quality has been found to be adversely affected from the high summer temperatures.

Keywords: Peach, Prunus persica, fruit yield, pomology

A Preliminary study in finding the relationships between PPG signal and blood sugar concentration using smart phone camera

Kaan Onur Koc[a], Yavuz Unal[b*], Inayet Hakki Cizmeci[c], Kemal Polat[a]

[a]Abant Izzet Baysal University
[b]Amasya University
[c]Akdeniz University

*yavuz.unal@amasya.edu.tr

Abstract:

Photoplethysmography (PPG) signal is one of the most important techniques used in the detection or evaluation of disorders such as vascular parameters, heart, and diabetes. In this study, blood sugar detection and detection of hemoglobin content in the blood using a non-invasive method is proposed by using a photoplethysmography (PPG) signal. It is a more economical method since the system works without the need of most hardware or circuit boards. With the help of a smart phone camera, it is taken from the finger and the video speed is detected by image processing techniques. The received video recordings were processed in the MATLAB platform to obtain RGB (Red-Green-Blue) components. PPG signal was obtained from these components by using red (R) component, moving average (average slip), low pass filter (5 HZ cut frequency) and thresholding methods. The study was basically based on the permeability of the light on the tissue. Blood sugar values taken from hungry individuals and taken after 2 hours from fullness; The PPG signal was used as comparator reference values to predict blood glucose. On the texture; the difference between the weakening of the light on skin-bone-blood and the estimation of blood sugar and the amount of hemoglobin in blood are suggested with PPG signal. It is aimed to make the disease or condition evaluations easily with the aid of PPG signal which is widely used in the literature.

Keywords: Heart rate, blood sugar, photoplethysmography (PPG), smart phone, camera

A Rehabilitation Device: Electric Muscle Stimulator Device Design Using Arduino Processor

Omer Salih Gul[a], Yusuf Korkmaz[a], Yavuz Unal[b], Kemal Polat[a]

[a]Abant Izzet Baysal University
[b]Amasya University

*yavuz.unal@amasya.edu.tr

Abstract:

In this study, a system based on Arduino processor and MATLAB GUI interface was developed for people who need rehabilitation and electrotherapy. In this designed system, pulse width modulation (PWM) signals are generated and applied to the body through bipolar superficial electrodes to the body surface to be stimulated. In the system, the current values are between 0-120 mA, the frequency limit values are 0-2000 Hz and the pulse duration is 100-500 µs. The user inputs the desired current, pulse duration and frequency in the MATLABTM GUI (graphical user interface) environment. The signal to be generated according to these input values is produced using Arduino processor. Communication between MATLABTM GUI environment and Arduino has been done via Bluetooth. This work can be used to move nerves that are damaged in paralyzed patients or injured persons in any accidental limb.

Keywords: Electrical Stimulation, Muscle treatment, Arduino Processor, MATLAB GUI, wireless communication

Geography Of World Organic Viticulture

Atilla Cakir[a], Ezgi Dogan[a], Alperen Meral[b]

[a]Bingol University, Horticulture
[b]Bingol University, Landscape Architecture

*cakiratilla@gmail.com

Abstract:

The first activities in organic viticulture date back to the 1950s when in Switzerland and Germany the first pioneers made great efforts to apply the basic principles of organic agriculture to viticulture. Since then, organic viticulture has developed dynamically in many countries. The developments related to organic wine has begun in the 1970s, the first meeting in 1977, from Germany, Switzerland and France are regulated by organic wine producers in Germany. While the world of organic grape fields is 87 577 ha in 2004, in 2013 it increases three fold and the value is 311 595 ha. That area of the world, grapes (6.8 million hectares) accountsfor 4.6%.European continent is ranked first with 90% field of vie won the basis of organic grapes. Other continents in order in Asia, North America, South America, Australia, Africa and Antarctica. The most important grape producing countries in the world: Spain, France, Italy, China, Turkey have retained the same time in order to organic grape fields in 2013. The largest organic grape of Spainis 83.922 ha., 67 937 ha of Italy. France is 64 610 ha, in addition to a considerable proportion of organic grape fields in China and Turkey are available.

Keywords: organicviticulture, grape, wine, world

Investigation of laser induced line pattern surface structuring effect on adhesive bonding of CFRP aircraft composites

Onur Coban[a*], Erhan akman[a], Mustafa Ozgur Bora[a], Belgin Genc Oztoprak[a], Arif Demir[a]

[a]Kocaeli University

*onur_coban@yahoo.com

Abstract:

Adhesion can be greatly improved by the correct surface preparation techniques. One of the most common and useful technique is specific surface structuring which leads mechanical interlocking and greater adhesion. This work describes the effect of laser induced line pattern surface structuring on adhesive bonding of carbon fiber reinforced polymer (CFRP) composites. Surface patterns with vertical lines in different thicknesses and distances were obtained by CO2 laser treatment. Laser treated surfaces were analyzed by optical microscopy. Surface treated CFRP samples have been adhesively bonded and then adhesive strength of bonded CFRP samples with different line patterns was determined by single lap shear tests according to ASTM D5868-01. After destructive tests, damaged surfaces were analyzed for the failure mechanisms. It was found that the strength of adhesive bonding depends on different line patterned surface types.

Keywords: CFRP, Laser Surface Structuring, Adhesive Bonding, Mechanical Interlocking

Investigation of Bactericidal Activity by Ozone Application on Yersinia ruckeri that is a Fish Pathogen

Tuba Otay[a], Altug Kucukgul[b*], Azime Kucukgul[a]

[a]Munzur University
[b]Mustafa kemal University

*akucukgul@munzur.edu.tr

Abstract:

To evaluate the effects of therapeutic of ozone, two-ozone concentration were used in dose response experiments using DNA damage checkpoint inducing Yersinia ruckeri (ATCC 29473). Y. ruckeri was inoculated on tryptic strain agar (TSA) incubated for 24-48 hours at 22 ° C. At the end of the incubation period, the concentration of 1.5x108 cfu ml-1 bacterial suspension according to 0.5 Mcfarland's (OD600nm = 0.132 absorbance by UV spectrophotometer) of the pure culture obtained were prepared in tubes containing 100 µl of physiological saline (FTS - 0,9% NaCl - Sigma). The following to serial dilutions (1:10 rate), the bacterial concentration (1.5x104 cfu ml-1) was exposed to ozone gas at different times (5, 10, 15 and 30 min). The susceptibility of Y. ruckeri to ozone gas was determined by helping generator at 12 and 14 γ ml-1 concentrations. Obtained the data indicated that the most effective bactericidal effect was determined in 5 and 10 min by 12 γ ml-1 ozone application to Y. ruckeri. However, in the following time, it was observed that ozone lost its activity. At the same time, bactericidal activity increased depending on time in the ozone application of 40 γ ml-1 and all bacteria dead within 15 and 30 minutes. At the end of this trial, it was determined by the bactericidal effect that Y. ruckeri was sensitive to ozone gas.

Keywords: Disc difussion method, Essential Oil, Foeniculum vulgare, In vitro, Yersinia ruckeri

Seasonal Variation of Water Quality and Phytoplankton Response Patterns in Uzuncayir Dam Lake (Tunceli, Turkey)

Banu Kutlu[a*]

[a]Munzur University

*kutlubanu@gmail.com

Abstract:

The seasonal and spatial distribution of the phytoplankton and their relationship with physicochemical parameters of Lake Uzuncayir Dam, oligotrophic lake located in East Anatolia Turkey was studied seasonal between summer, autumn, winter and spring 2015-2016. A total of 134 taxa in 7 divisions were identified during study. The planktonic algae of Lake Uzuncayir Dam was dominated by cyanobacteria in the summer, Charophyta in the fall diatoms in the winter. The relations between water temperature, pH, specific conductance, dissolved oxygen, secchi disk depth, Chl-a nitrate, nitrite and abundance of dominant species were explored using the statistical method of Principal correspondence Analysis (PCA). The PCA results showed that most important factors affecting the distributions of phytoplankton were the concentrations of the main nutrients, water temperature and oxygen.

Keywords: Seasonal distribution, Principal correspondence analysis, Physico-chemical parameters, Phytoplankton species composition, Uzunca

Environmental Impacts Of Mining Operations

Cagatay Pamukcu[a*]

[a]Dokuz Eylul University, Eng. Faculty, Mining Eng. Dept.

*cagatay.pamukcu@deu.edu.tr

Abstract:

Modern mining is an industry that involves the exploration for and removal of minerals from the Earth, safely, economically and with minimum damage to the environment. Besides, it is of great importance because minerals are major sources of energy as well as raw materials in sectors such as fertilizers and steel production. Although it is seen that mining operations are essential for the extraction of minerals in the Earth's crust and for the sustainable growth of civilizations in the world especially for developing countries, unregulated mining on the other hand, always has the potential to release harmful substances into the soil, air, and water. The environmental impact of mining ranges from organic soil erosion to formation of sinkholes, loss of biodiversity, and contamination of soil, groundwater and surface water by chemicals from mining processes. In some cases, additional forest logging is done in the vicinity of mines to increase the available space for the storage of created mine waste dump and soil. Besides creating environmental damage, the contamination resulting from leakage of chemicals also affect the health of the local population. Therefore, mining companies in some countries are obliged to follow environment-friendly production, processing and refinement techniques and they are also required to obey certain rehabilitation guidelines imposed in mining laws and regulations before abandoning the mine site. In this study, overall adverse effects of mining operations on the environment were investigated in detail and the measures that should be taken for the protection of environment and also novel responsible mining methods and processes were mentioned.

Keywords: Mining, civilization, environment, contamination, rehabilitation

Investigation of Sivas-Divrigi Mine Location Using Magnetic Data

Oya Pamukcu[a], Cagatay Pamukcu[b*], Fikret Dogru[a]

[a]Dokuz Eylul University, Eng. Faculty, Department Of Geophysics
[b]Dokuz Eylul University, Eng. Faculty, Mining Eng. Dept.

*cagatay.pamukcu@deu.edu.tr

Abstract:
Edge detection and edge enhancement techniques have been used interpreting potential field data to investigate edges of subsurface structures. There have been various edge detection applications to magnetic data in geophysics such as analytic signal, total horizontal derivative, theta angle, tilt angle etc.. In this study, the magnetic anomaly of Sivas-Divrigi mining area was selected because of importance of this area in terms of high-grade iron ore reserves. The mentioned method was applied on field data and the location of iron ore was revealed. Also radial average power specturum method was applied on magnetic data to determine average depths of sediments and iron ore reserve. As a result, tilt angle and theta map methods gave a good agreement for determination of the structure location in field study.

Keywords: Magnetic, geophysics, mining, tilt angle.

Friction Welding of AZ91 Magnesium and Ti6Al4V alloys

Osman Torun[a*], Ibrahim Celikyurek[b], Bedri Baksan[b]

[a]Bolvadin Voc. School, Afyon Kocatepe University
[b]Metalurgical Materials Eng. Dep., Eng. Art.Fac.,Eskisehir Osmangazi University

*otorun@aku.edu.tr

Abstract:

Ti6Al4V and AZ91 magnesium alloys were welded using friction welding process. The samples were machined to a cylindrical form having a diameter of 8 mm and 40 mm in length. Friction welding processes were carried out for 10, 12, 14 and 16 s friction times under a constant friction and forging pressure, a forging time and rotational speeds. A continuous drive friction welding was used for friction welding process. The friction and forging pressure were 30 and 60 MPa, respectively. The friction speed was 1000 rmp. After welding the microstructure of welding interfaces were examined with optical microscopy and scanning electron microscopy (SEM) at the interface of welded samples. The micro hardness deviation from one matrix to another was measured. The mechanical properties of welding interfaces were determined using a specially designed shear test apparatus. The optical microscopy and SEM investigations were revealed that the welding interfaces of friction welded of AZ91 magnesium and Ti6Al4V alloys have a smooth morphology without any crack or pore. The micro hardness measurements of welding interfaces showed that the hardness values differ slightly at welding interface. It means a diffusion zone is occurred at the interface.

Keywords: Friction welding, AZ91 magnesium alloy, Ti6Al4V, Interlayer, Hardness

Microstructure and Mechanical Properties of Friction Welded AZ91 Magnesium Alloy to Commercially Pure Copper

Osman Torun[a*], Bedri Bak[b], Ibrahim Celikyurek[b]

[a]Afyon Kocatepe Universitesi
[b]Metalurgical Materials Eng. Dep., Eng. Art.Fac., Eskisehir Osmangazi University

*otorun@aku.edu.tr

Abstract:

AZ91 magnesium alloy and commercially pure copper were welded using friction welding process. The samples were machined to a cylindrical form having a diameter of 8 mm and 50 mm in length. Friction welding processes were carried out for 8, 10, 12 and 14s friction times under a constant friction and forging pressure, a forging time and rotational speeds. A continuous drive friction welding was used for friction welding process. The friction and forging pressure were 60 and 120 MPa, respectively. The friction speed was 1000 rmp. After welding the microstructure of welding interfaces were examined with optical microscopy and scanning electron microscopy (SEM) at the interface of welded samples. The micro hardness deviation from one matrix to another was measured. The mechanical properties of welding interfaces were determined using a specially designed shear test apparatus. The optical microscopy and SEM investigations were revealed that the welding interfaces of friction welded of AZ91 magnesium alloy and pure copper have a smooth morphology without any crack or pore. The micro hardness measurements of welding interfaces showed that the hardness values differ slightly from one matrix to another one. It means a diffusion zone is occurred at the interface. The shear test results showed that the shear strength of welding interface is increased with increasing the welding time.

Keywords: Friction welding, AZ91 magnesium alloy, Copper, Interlayer, Hardness, Strength

Mechanical Properties and Microstructure of Diffusion Bonded GGG60 Cast Iron to Commercially Pure Copper

Ibrahim Celikyurek[a*], Osman Torun[b], Bedri Baksan[c]

[a]Metallurgical Materials Eng. Dep., Eng. Arc. Fac., Eskisehir Osmangazi University
[b]Bolvadin Voc. School, Afyon Kocatepe University
[c]Metallurgical Materials Eng. Dep., Eng. Arc. Fac., Eskisehir Osmangazi University

*cibrahim@ogu.edu.tr

Abstract:

GGG60 nodular cast iron and commercially pure copper was bonded using vacuum diffusion process. The samples were machined to a cylindrical form having a diameter of 8 mm and 8 mm in length. The surfaces of both samples were prepared using standard metallographiy, and finally polished with 1 mm diamond paste. The prepared surfaces of samples were matched together. A vacuum furnace was used for diffusion bonding process. The forging pressure was 4 MPa and diffusion bonding temperature was 900 oC. The diffusion bonding of samples was carried out at 30, 60, and 90 minute durations. The furnace was evacuated to 10-1 milibar for all welding processes. After welding the microstructure of welding interfaces were examined with optical microscopy on the perpendicular sections of the welds. The microhardness deviation from one matrix to another was measured. The mechanical properties of welding interfaces were determined using a specially designed shear test apparatus. The optical microscopy investigations were revealed that the welding interfaces of diffusion bonded nodular cast iron and pure copper have a smooth morphology without any crack or pore. The microhardness measurements of welding interfaces showed that the hardness values differ slightly from one matrix to another one. It means a diffusion zone is occurred at the interface. The shear test results showed that the shear strength of welding interface is increased with increasing diffusion time at 900 oC diffusion process.

Keywords: Bonding, Nodular cast iron, Copper, Interlayer, Hardness, Strength

Sliding Friction and Wear Behavior of Bimetal Bronze-Cast Iron Pairs

Ibrahim Celikyurek[a]*, Bedri Baksan[a], Osman Torun[b]

[a]Metallurgical Materials Eng., Eng. And Arc. Fac., Eskisehir Osmangazi University
[b]Bolvadin Voc. School, Afyon Kocatepe University

*cibrahim@ogu.edu.tr

Abstract:

Cast iron having laminar graphite structure and tin bronzes having lead exhibit good friction and wear properties, and both of them are widely used in industry as a friction material. In this study, the friction and wear behavior of metallic laminate composites produced by casting were determined. The cast iron laminates in a thickness of 1mm were placed in a graphite mold. Distance between the laminates was 1mm. Then, molten bronze was poured on the ordered laminates. The bonding interfaces of laminates were investigated using optical microscopy. The friction and wear properties of cast iron, bronze, and composite were determined using a tribometer (CSM) with pin-on-disc geometry. The friction load and speed was 10N and 1m/s, respectively. The reciprocating material was GG25 cast iron for all tests. To standardize the test conditions the surface of reciprocating was machined in the same conditions. Each test was carried out for 2000m sliding distance and weight losses were measured. The tests were repeated up to 10000m sliding distance. The coefficient of friction values were recorded by the tribometer. The optical microscopy examinations show that the bronze - cast iron interface has a smooth morphology without pore or oxide, which means there is a good bonding between them. The friction and wear tests were revealed that the coefficient of friction of cast iron is high and the wear resistance is low, whereas the coefficient of friction of bronze is lower and wear resistance is higher. On the other hand, composite exhibits moderate wear rate, but a coefficient of friction of as high as cast iron. The results showed that the wear losses for the bronze and composite increase with increasing friction distance. The coefficient of friction of composite is higher than bronze and do not differ with increasing friction distance.

Keywords: Cast iron, friction and wear, laminate composite

Effects Of Some Rootstocks On Phenological And Some Fruit Tarits Of "Siirt" And "Ohadi" Pistachio Cultivars In Sanliurfa - Turkey

Bekir Erol Ak[a*], Ahmet Ozdemir[a]

[a]University of Harran

*beak@harran.edu.tr

Abstract:

This experiment was done at the orchard of Ceylanpinar State Farm which is a very big governmental farm in Sanliurfa at Southeast Anatolia Region. Four rootstocks (P.vera, L, P. khinjuk, Stocks. P. terebinthus .L.ve P. atlantica, Desf.) were selected that two cultivars (Siirt and Ohadi) budded on them were selected. In this experiment phenological observations in spring and pomological analyses were done harvested nuts. There are effectiveness of different rootstocks on flowering time and flowering period of cultivars. Generally the flowering period was obtained longer onto P. atlantica rootstock. According to results of pomological analyses, the weight of fruits were higher at the cultivars budded on P. atlantica rootstock. The efectiveness rate of physical traits, such as splitting, blank and filled nuts, were changed either rootstocks or cultivars.

Keywords: Pistachio, Rootstock, Phenology, Traits

Utilization Of Some Elements Of Grape And Pistachio Cultivars Grown As Interplanted Orchard-II

Bekir Erol Ak[a*], Sadettin Gursoz[a]

[a]University of Harran

*beak@harran.edu.tr

Abstract:

Most of the orchards are mixed with pistachio, olive and grape at Southeast Anatolia of Turkey. They can grow dry conditions. It was recommended generally pistachio and vineyard mixture. Mixture of pistachio and olive are not recommended because of the pollination problem. In this experiment, the amount of mineral nutrition uptake of Honusu grape and Kirmizi pistachio cultivars which are commonly grown in the same area was determined. Also, the influences on mineral nutrition uptake of these plants each other grown in the same conditions was compared. In mixed plant orchard, depending on mineral nutrition content of the soil, the amount of N uptake of grape and pistachio changed each other. The leaf mineral nutrients of pistachio trees were determined such as; N 0,91 %; P 0,05 %; K 0,47 %; Ca 1,37 %; Mg 0,53 %; Fe 238,67 ppm; Zn 19,67 ppm; Cu 11,00 ppm; Mn 18,27 ppm. Although soil of the orchard has sufficient amount of K and Ca, it was determined that Honusu grape cultivar and Kirmizi pistachio cultivars could not have enough benefit from K and Ca mineral nutrition. Depend upon Mg content of the soil, Honusu grape cultivar was also uptake and had more benefit from Mg mineral nutrition compared to Kirmizi pistachio cultivar.

Keywords: Grape, Pistachio, macro, micro elements, interplanting

Concrete Strength and Rebar Diameter Effects on Bond Behavior in Bending: Hinged Beam Test

Mehmet Emin Arslan[a*], Talha Arslan[a]

[a]Duzce University

*mehmeteminarslan@duzce.edu.tr

Abstract:

As it is known, RC construction owes its existence bond between concrete and steel rebar. Although there are many studies carried out on bond strength, this event has not yet been clarified due to its complexity. For this reason, in the current study, bond behavior between concrete and rebar was investigated in bending on hinged beam specimens produced with four different concrete strengths and F10, F12 and F14 rebar diameter by using 100 mm development length. In experimental study, totally 12 hinged beam specimens produced by using concretes with 250 kg, 300 kg, 400 kg and 500 kg cement dosage were tested. Tests result showed that strength of concrete and rebar diameter significantly affect bond behavior of concrete and rebar. While the maximum tensile stresses increased with increased concrete strength, the slips of the rebars from concrete decreased. In addition, reached maximum tensile stresses of rebar in the hinged beam specimens produced with 250 kg, 300 kg, 400 kg and 500 kg cement dosage increased for the same diameter and development length by 5-34%, 13-29%, 8-26%, respectively.

Keywords: Bond strength, concrete strength, rebar diameter, hinged beam test

Effect of some hydrosols and essential oils on various properties of block type processed cheese

Hasan Cankurt[a*], Osman Sagdic[b]

[a]Erciyes University, Food Technology Departmant
[b]Yildiz Technical University

*hcankurt@erciyes.edu.tr

Abstract:

The aim of this research is to investigate effect of hydrosols and essential oils on physicochemical, microbiological, texturel, aromatic and sensory properties of processed cheese samples. For this aim, hydrosols of aromatic medicinal plants (thyme, peppermint and garlic) and essential oils of those plants were added to processed cheese paste. The produced cheeses were stored for 90 days and analyses were carried out in storage period. Chemical composition, ripening, color, pH and total acidity analyses were conducted. Inhibition of mold-yeast and Clostridium tyrobutyricum was determined in processed cheese samples. In textural analyses, hardness, adhesiveness, cohesiveness, springiness, chewiness and resilience values of the cheese samples were determined. According to the results, essential oils were found to be more effective than hydrosols and nisin on Clostridium tyrobutyricum; however, garlic essential oils and hydrosols had promoting effect. Thyme essential oil was found as the most effective antimicrobial. As number in control sample was determined as 5,09 log10 cfu/g, that of samples to which thyme and garlic essential oils were added was 4,27 log10 cfu/g and 5,51 log10 cfu/g, respectively. Essential oils inhibited mould number in processed cheese more than hydrosols. While yeast and mould number of cheese sample enriched with essential oil mix was detected as 4,15 log cfu/g that of control sample was 6,82 log kob/g. According to ripening index ratio of water soluble and TCA soluble nitrogen to total nitrogen, garlic hydrosols and essential oils substantially accelerated ripening. Free fatty acid amount incraesed with addition of tyme hyrosols and essential oils. According to results, it could be concluded that all of the hydrosols and essential oils except for those of garlic might be used in processed cheese.

Keywords: Processed cheese, essential oil, hydrosols, Clostridium tyrobutyricum

Surface Properties of Styrene Maleic (SMA) Composites Filled with Thermally Treated Wood Flour

Mustafa Zor[a*], Douglas J. Gardner[b], Nadir Ayrilmis[c]

[a]Bulent Ecevit University
[b]School of Forest Resources, Advanced Structures and Composite Center, University of Maine
[c]Istanbul University

*mustafa.zor@beun.edu.tr

Abstract:

Wood plastic composites (WPCs) substitute for one of the rapidly growing markers within the plastic and wood industries. The use of wood plastic composite is quite limited for interior and outdoor applications such as, decking, furniture etc., due to the strong disposition of such materials to absorb water. In these applications, surface characteristics of the composite, including absorption ability, wettability and roughness properties are important factors affecting better use of the wood plastic composite products. In particular, the surface roughness and wettability are important factors to be painted WPC products. Heat treatment, which is an eco-friendly method for wood modification has been reported to be an effective method for improving the dimensional stability and the durability of wood plastic composites attributable to reduced water absorption and swelling. In this study, heat treatment was conducted at 212°C for 8 h in an attempt to improve the durability of the wood furnish and the SMA-wood flour compounds were extrusion processed and granulating using a lab-scale grinder. Test specimens were prepared by injection moulding at 230ºC. The aim of this study will be investigating the effect of heat treated wood on the surface properties of the wood flour/SMA composites at different loading fillers.

Keywords: wood thermoplastic composite, heat treatment, wettability, surface roughness

The effects on the surface roughness of Tool coating in Drilling of AA6061-T6

Eser Yarar[a*], Sedat Karabay[a], Ersin Asim Guven[a]

[a]Kocaeli University

*e.yarar@hotmail.com

Abstract:

Development of machinability properties of materials is one of the areas that researchers focused on. Aluminum alloys are increasingly used in many areas such as aviation, aerospace and automotive and suitable for machining. For that reason, in this study, the effects on the surface roughness of different tools in the drilling of AA6061-T6 were experimentally investigated. Coated (HSS-G TiN) and uncoated (HSS-G) drill bits were used in the tests. Experiments were subjected at different feed rates and cutting speeds and surface roughness was measured. According to the results, uncoated drill bit was observed to give better results on the surface roughness than coated drill bit. In addition, the increase in feed rates were caused by an increase in the surface roughness for both drill bits.

Keywords: AA6061-T6, Coating, Drilling, Surface Roughness

Evaluation of Sports Field Drainage with Developing a Laboratory-Scale Apparatus.

Ahmet Dogan[a*], Erdal Kesgin[a], Hayrullah Agaccioglu[a]

[a]Yildiz technical University

*dogan42@gmail.com

Abstract:

Sports field drainage has direct effects on quality of sports organization and increasing participation of people to sports facilities. Specifically, there were great numbers of cancellations regarding football organization due to insufficient drainage which was not to be removed fast enough from field surfaces during the play. This study aimed to develop a new lab-scale apparatus to investigate process of drainage in the soil of sports field. The apparatus include two main parts that one is rainfall simulator and the other is drainage tank. Simulating natural rainfall is considerably significant for especially laboratory-scale studies. The rainfall simulator have been used to simulate natural rainfall and produce various rainfall conditions in this study. Therefore, most of these simulators have been designed for constant intensity of rainfall but in this study many discrete of rainfall increments were produced ranging from 25 mm/h to 55 mm/hr. Spatial uniformity of produced rainfall is sufficiently accurate to simulate the natural rainfall event. Secondly, two identical tanks which are parts of the whole drainage tank were prepared by different drainage layers and measured drain waters and hydrographs for corresponding rainfall hyetograph. The initial performance of experimental setup is sufficient to simulate natural rainfall and measure drain waters of each tanks drainage. Also, first results showed that drainage layers in the tanks are distinctly effective how much water drains through the layers. In the present study, a new lab-scale apparatus was developed to evaluate the sports field drainage and determine a relation between hydrological events such as rainfall and sports field drainage.

Keywords: Rainfall Simulator, Drainage, Sports Field.

Effects Of Gilthead Seabream Sparus Aurata Fish Feed Replacement Of Fish Meal At Different Rates Use Of Canola Meal Brassica Spp On Growth Rate, Feed Utilisation And Digestibility

Ibrahim Diler[a*], Adem Kurtoglu[b], Seval Bahadir Koca[a], Halit Bayrak[c]

[a]University of Suleyman Demirel, Faculty of Fisheries, East campus Isparta-Turkey
[b]Institute of Akdeniz Mediterranean Research, Production and Training, Demre- Antalya-Turkey
[c]University of Suleyman Demirel, Water Institute, East campus Isparta-Turkey

*ibrahimdiler@sdu.edu.tr

Abstract:

In this study was used of fish feed replacement of fish meal at different rates use of canola meal Brassica spp. in gilthead seabream Sparus aurata average of live weight 49.86±0.01g 50 fish per tank and total 700 fish. In trial the feed nutrition value isonitrogen (45% protein) and isoncaloric (18% lipid). In this trial groups were designed the fish meal instead of using canola meal 0% (C0), 10% (CaM10), 15% (CaM15), 20% (CaM20), 25% (CaM25) and 30% (CaM30) and fish growth performance, feed conversion ratio and digesitibility. At the end of the experiment the best weight gain in the control group (79.21±2.25g) as a result of the analysis showed that despite insignificant differences were found between groups ($p > 0.05$). To the control group ordinary, respectively CaM30 (77.89±3.34g), CaM10 (77.29±2.26g), CaM25 (77.15±1.99g), CaM20 (76.46±2.66g) and CaM15 (75.84±2.84g) groups were followed. Specific growth rate also were similar trends. Feed conversion ratio (FCR) the lowest value in CaM30 group (1.54±0.1) and the highest value in CaM10 group (2.31±0.2); about of protein efficienct rate the highest CaM30 group (1.52±0.01) an the lowest CaM10 group (11.44±0.02) were obtained and between the groups significant ($p<0.05$). Trial in the second phase of nutrients digestibility performance tries to determine dry matter and crude protein digestibility in the control group at the highest level while the lowest KA10 treatment group were determined and the difference between groups were significant.

Keywords: gilthead seabream, Sparus aurata, canola meal, feed efficiency, digestiblity

Exposure time optimization for a moving camera

Harun Celik[a*], Ilke Turkmen[a], Tugrul Oktay[a]

[a]Erciyes University

*haruncelik@erciyes.edu.tr

Abstract:

In this study, an algorithm is proposed to set the exposure time or shutter speed of a moving camera with respect to motion of the camera. In order to take high quality images from an unstable camera, the optimum value for the exposure time that provides interaction between imaging sensor and the imaging scene needs to be estimated meticulously. Especially, setting exposure time is more important for a moving camera as it leads the exposing image to include motion effect of camera. More clearly, exposure time defines the effect of relative motion between camera and imaging scene on image. This effect is known as motion blur. By setting exposure time regarding to the motion of camera, motion blur can be reduced. However, there are several limits for setting exposure time. For instance, a shorter exposure time can reduce motion blur but results to more sensor noise. Thus, an algorithm is improved to set exposure time of moving camera concerning attitude of motion occurred before exposing image. The motion of camera is recorded during a certain time interval, and various exposure times are selected for various attitudes of motion. Longer exposure time is selected for smooth motion while shorter exposure time is decided for sharp motion or shake. The motion of camera is simulated, and real images are used for simulations. The resultant images are depicted for several motions and exposure times of camera. It is seen that high quality images can be exposed by setting exposure time regarding to attitude of motion.

Keywords: Exposure time, motion blur, moving camera, optimization

Applying The Normalisation Methods For The Coal Net Calorific Values Data And Their Comparision

Adem Tasdemir[a*]

[a]Eskisehir Osmangazi University

*atasdem@ogu.edu.tr

Abstract:

During the evaluation of a coal washing process, huge amount of data needs to be examined. As in the many industrial production process, the data obtained are assumed to have normal distribution without checking the normality. Instead, the raw original data are used commonly without verification of data normality. However, non-normal distributions have a serious effect on data evaluation and are need to be transformed prior to the interpretation of them. Therefore, an effective normalization method are often need to make the data normally distributed. In this research, one year data set of coal net calorific values (net CV) obtained from +18 mm clean coal product of a heavy medium drum at a coal washing plant in Turkey were used. The net CV data were found to be highly skewed, had outliers and non-normally distributed. Three common transformation methods namely, the logarithmic, Box-Cox and Johnson transformation were applied. The transformed results were analysed by standardized kurtosis and standardized skewness and Anderson Darling (AD) normality test. The log transformed net CV data were not obey the normal distribution and failed to AD normality test. In addition, logarithmic transformation increased the skewness and kurtosis of the net CV data. The Box-Cox method passed the AD normality test and reduced the standardized skewness and kurtosis of raw data. However, its standardized kurtosis value was 2,48 which was not within the range of -2 to +2. Among the transformation methods, Johnson transformation approach gave the best normalization results. The Johnson transformed net CV data fit the normal distribution very well, passed the AD normality test easily and their standardized skewness and kurtosis values were within the -2 to +2. According to these results, the Johnson transformation method can be a good solution to achieve normality for the mineral processing data.

Keywords: Data transformation, logarithmic transformation, Box-Cox method, Johnson method, coal washing, net calorific value data

Effect of Dietary Supplementation of Origanum onites L. Essential Oil on Growth Performance, Survival and Liver, Kidney, Spleen Histology of Rainbow Trout (Oncorhynchus mykiss)

Oznur Diler[a], Oznur Gormez[a*], Ibrahim Diler[a], Secil Metin[a]

[a]Aquaculture

*oznurgormez@sdu.edu.tr

Abstract:

The research was aimed to determine the effect of different increasing levels of Origanum onites L. essential oil as feed additives in rainbow trout diets in order to observe their influence on growth performance, survival and liver, kidney, spleen histology. Fish (26-27 g) were fed the experimental diets for 90 days. Experimental diets supplemented with four different concentrations (0.125, 1.5, 2.5, 3.0 ml kg-1). Fish fed diets containing essential oils of O. onites L. had significantly higher final weight and growth than the control group. Feed conversion ratio in fish fed diets containing 1.5 and 3.0 ml kg-1 essential oil of O. onites L. were improved than other treatments ($p<0.05$). There were some histopathologic changes, congestion, necrosis or degeneration were observed in liver, kidney and spleen samples of fish fed with high level of herbal oil containig diets. This results suggested that the essential oil of O. onites L. can be applied as growth promoter, when added to rainbow trout feed.

Keywords: Oncorhyncus mykiss (rainbow trout), Origanum onites L., growth, essential oil, medicinal plant

Modeling and Exergetic Analysis of aPEM Fuel Cell

Mehmet Selcuk Mert[a*], Mehmet Ekrem Cakmak[a]

[a]Yalova University, Faculty of Engineering, Energy Systems Engineering Department, Yalova, TR-77200, Turkey

*msmert@yalova.edu.tr

Abstract

Fuel cells are portable devices that electrochemically convert chemical energy ofa fuel directly into electrical energy. A polymer electrolyte membrane fuel cell (PEMFC) is one of the most advantageous types among the fuel cells due to its relatively low gas emission and heat production. As a promising future power generating technology PEMFCs have been used widelyin public transportation vehicles and portable electronicswith its higher conversion efficiency. However, there are limitations in electricity generation within a PEMFC as a result of activation, ohmic and mass transport losses. In particular, the fluid (gas and liquid) flow and associated mass transfer processes need to be understood in detail in order to enhance electric production efficiency. But, the physical (experimental) methods are not sufficient because of the presence of theoperations at micro flow channels and the porous mediums within the cell. In this paper, the simulation of a 7 W PEMFC was performed with COMSOL (version5.2), a computer simulation program based on finite element method, in order to conduct a detailed analysis to investigate the parameters affecting the operation of the cell. First,based on a commercial fuel cell device (closed cathode, dead-ended anode, maximum 7 W), two-dimensional model of single phase flowwithin the cell was developed and then theresults obtained by numerical simulationswere compared with the experimental data for validation. Secondly, an exergy analysis was carried out to determine the thermodynamic performance of the PEM fuel cell.

This study was supported by Research Fund of the Yalova University. Project Number: 2015/BAP/121.

Keywords: Energy, PEM Fuel Cell (PEMFC), Modeling, Simulation, Exergy

Identification Of The Creep Models Parameters Of The Metalic Materials Using Evolutionary Algorithms

Babur Delliktas[a], Hakan T. Turker[a], Mustafa Sonmez[b], Ali Durmus[a]

[a]Uludag University
[b]Aksaray University

*bdeliktas@uludag.edu.tr

Abstract:

Creep deformation and rupture are important in the determination of limiting design factors such as strain histories, damage field evolution and lifetimes.[1,2]. Therefore, creep modeling has gained considerable importance in recent years in view of the growing needs to develop high temperature metallic materials for modern super critical and ultra super critical power plants . Every constitutive equation has its own method for parameter identification. In conventional approaches, the model of interest is first approximated and its parameters are identified sequentially through the curve fitting approach. However, the determination of its process is problem dependent, and thus may not be easy if the model is highly nonlinear. Then a systematic and objective computer based procedure for parameter identification is necessary. Therefore, In this paper we, propose to use the evolutionary algorithms such as ant colony algorithm for identifying the parameter set to the different creep models. The advantage of the proposed approach is that parameter can be identified without any divergence in every case. This algorithm has clearly demonstrated its capability to yield good approximate solution even in the case of complicated multimodal, discontinuous, non-differentiable, and even noisy or moving response surface optimization problems, and has been successfully implemented in areas of structural design.

Keywords: Metal Creep, power plants ,evolutionary algorithms

Investigation Of A Heat Pump System Utilized In An Agricultural Greenhouse In Yalova, Turkey

Mehmet Selcuk Mert[a*], Mehmet Direk[a], Fikret Yuksel[a], Turgut Ozan Kurnaz[a], Kubra Cagan[a]

Yalova University, Faculty of Engineering, Energy Systems Engineering Department, Yalova,TR-77200, Turkey

*msmert@yalova.edu.tr

Abstract

The climate condition in a greenhouse is extremely important for the growth of plant. Therefore, due to the season, heating and cooling requirements are emerging, and this leads need for energy. In agricultural greenhouses, energy costs share significant part of the total costs. For this reason, energy saving in greenhouse farming is an important issue. A heat pump system can be used to control the climate condition in the greenhouse as a clean technology. In this study, thermodynamic analysis of a water source heat pump system installed in an agricultural greenhouse located in Yalova, Turkey, has been studied. In this regard, the energy and exergy analysis of the system were done. Furthermore, economic analysis of the system was conducted.

Keywords: Heat Pump, Energy, Exergy, Agricultural Greenhouse.

Techno-Economic Analysis of a Regional District Heating System

Mehmet Selcuk Mert[a*], Hatice Hande Mert[b], Mehmet Emre Burulday[a], Kubra Cagan[a], Turgut Ozan Kurnaz[b]

[a]Yalova University, Faculty of Engineering, Energy Systems Engineering Department, Yalova, TR-77200, Turkey
[b]Yalova University, Faculty of Engineering, Chemical and Process Engineering Department, Yalova, TR-77200, Turkey

*msmert@yalova.edu.tr

Abstract

Energy is indispensable for needs of humankind and plays a critical role. Energy consumption is one of the most important indicators of the developmental stages of societies and living standards. Direct energy consumption has been increasing as a result of population growth, urbanization, industrialization and technological developments. However, this rapid growth also brings serious environmental problems. Hence, the efficient use of energy is crucial for a sustainable world. In the future, it is likely that the amount of energy consumption will increase day by day. The residential energy usage constitutes a significant part of the world's total energy consumption. Considering the limited resources of fossil fuels and the demand for a clean environment, it is inevitable to use existing resources in the most efficient way. This can be achieved by designing energy efficient systems. District heating system (DHS) is a substantial choice for energy savings since it allows the utilization of heat sources efficiently than individual systems. A considerable amount of primary energy may be saved via usage of a regional district heating system. A DHS system is mainly composed of three parts. These parts are the heat source where heat is obtained, the DHS network where heat is transmitted and distributed, and the residences where heat is used. This paper presents a techno-economic analysis of a residential district heating system for buildings through obtained hot water from thermal coal power plant located inManisa, Turkey. The initial heating system was for 8100 residences with a potential of 64 MWth.A breakeven analysis was also done, and it is estimated that the plant will profit after the first eight years during its 30-year economic life.The technical and economic analysisresults can be used as a basis for performing optimization to achieve the maximum profitability.

Keywords: Energy, District Heating System, Economic Analysis, Thermal Power Plant

Investigation of Organic Rankine Cycle Integrated in a Geothermal Power Plant

Mehmet Selcuk Mert[a*], Hatice Hande Mert[b], Mehmet Emre Burulday[a]

[a]Yalova University, Faculty of Engineering, Energy Systems Engineering Department, Yalova, TR-77200, Turkey
[b]Yalova University, Faculty of Engineering, Chemical and Process Engineering Department, Yalova, TR-77200, Turkey

*msmert@yalova.edu.tr

Abstract

Low temperature power cycles have been attracted interest over recent years in the design of various thermal plants, for increasing energy efficiency of the processes and in the applications like carbon capture-storage systems. This kind of cycles usually uses an organic fluid or a mixture that has a high vapor pressure and low boiling point compared to water at a given temperature to recover heat from low-temperature heat source. Among these, Organic Rankine Cycle (ORC) has been attracted more attention to be a promising one.

In this study, integration of a low temperature power cycle, namely Organic Rankine Cycle into a geothermal power plant, was studied. First, the simulation of the cycle was performed by ChemCad simulation software, then the energy and exergy analysis of the system were conducted.

Keywords: Exergy, Thermodynamic Analysis, Organic Rankine Cycle (ORC), Power Generation

Determination Of Performance In Some Apple Varieties At Different Maturation Period In The Mediterranean Transitional Zone

Ibrahim Bolat[a*], Mustafa yilmaz[b], Ali Ikinci[a]

[a]University of Harran, Faculty of Agriculture, Department of Horticulture
[b]Osmaniye Directorate of Provincial Food Agriculture and Livestock

*ibolat@harran.edu.tr

Abstract

Apple is a temperate climate fruit grown in different ecology and a wide range of area. However, to determine the suitable variety for every ecology, it is of great importance to investigate the performance of these varieties. This study was carried out in order to determine the performance of some apple varieties grown in Mediterranean Transitional Zone maturation in different periods. In this study, some phonological, pomological, yield and quality characteristics of Mondial Gala, Fuji and Scarlet Spur varieties were studied under Bahce (Osmaniye) district conditions in 2012-2013 years.

According to the results, full bloom occurred in April, ripening on 11th of August (Mondial Gala) and 5 October (Fuji). Fruit weights in ranged between 137.50 g (Scarlet Spur) - 217.30 g (Fuji), fruit size 61.65 mm (Mondial Gala) - 71.03 mm (Scarlet Spur), fruit diameter 66.57 mm (Scarlet Spur) - 80.67 mm (Fuji), seed number 6.33 (Scarlet Spur) - 8.90 (Fuji). Total soluble solids in apple varieties appeared as 13.50 % (Scarlet Spur) - 15.17 % (Mondial Gala), the amount of titratable acidity 0.23 % (Scarlet Spur) - 0.40 % (Fuji), pH of 3.98 (Scarlet Spur) - 4.50 (Fuji), reducing sugar content 8.93 % (Scarlet Spur) - 10.17 % (Fuji), total sugar level 12.08 % (Scarlet Spur) - 13.87 % (Fuji) and the total phenol content 113.40 mg/100g (Scarlet Spur) - 148.40 mg/100g. On the other hand, the stem cross-sectional area in three apple varieties was found to vary between 13.20 cm2 (Mondial Gala) - 22.67 cm2 (Fuji), yield per tree 4.92 kg/tree (Scarlet Spur) – 9.32 kg/tree (Fuji), the effective yield 0.28 kg/cm2 (Scarlet Spur) - 0.66 kg/cm2 (Fuji) and the yield per unit area 1 641 kg/da (Scarlet Spur) - 3 106 kg/da (Fuji).

Keywords: Apple, Yield, Quality, Phenol, Sugar

Effects of Different Intervals And Drip Irrigation Levels on Yield And Some Quality Characteristics of Strawberry in Semi-arid Condition

Ibrahim Bolat[a], Ali Ikinci[a], Mehmet Simsek[b], Bekir Erol Ak[a], Sinan Gercek[c], Halil Kirnak[c]

[a]Harran University, Agriculture Faculty, Department of Horticulture
[b]Harran University, Agriculture Faculty, Department of Farm Strucutures and Irrigation
[c]Erciyes University, Seyrani Faculty of Agriculture, Department of Biosystem Engineering

*ibolat@harran.edu.tr

Abstract

Strawberry, high adaptive capacity to different environments, could grow widely in the subtropical and temperate climates in the world. Strawberry cultivation in semi-arid regions with low precipitation, high temperature and high evaporation could only be achieved by meeting the specific needs of the plant. Strawberry, with shallow root structure, needs a careful irrigation program in semi-arid regions. This study was conducted to determine effect of three different irrigation intervals (1-, 2- and 3 days) and levels (75%, 100% and 125% of Class A pan evaporation) on drip irrigated Oso Grande strawberry cultivar in Sanliurfa, Southeastern Anatolia Region of Turkey. According to results of this experiment, the lowest irrigation level (75%) reduced fruit size while the others increased. On the other hand, the lowest irrigation level (75%) increased the number and weight of fruits per plant and the yield of plot. The results of two and three days irrigation intervals were better than one day irrigation practices in terms of above characteristics. Early strawberry yield was affected negatively from high irrigation levels and low irrigation intervals. The contents of total soluble solids and acidity of fruits were not affected significantly by irrigation practices.

Keywords: Strawberry, Drip Irrigation, Irrigation Interval, Irrigation Level

The Heavy Metal Effects Of Alteration Fields On The Surface Waters: Saricicek (Gumushane-Turkey) And Its Near Vicinity

Alaaddin Vural[a*], Ali Gundogdu[a], Fatih Saka[a], Volkan Numan Bulut[b], Selcuk Alemdag[a], Mustafa Soylak[c]

[a]Gumushane University
[b]Karadeniz Technical Uniiversity
[c]Erciyes University

*alaaddinvural@hotmail.com

Abstract

The objective of this study was to determine the potential heavy metal risks of the Saricicek and its near vicinity (Gumushane in northeast Turkey) alteration area on the surface waters. The alteration area is situated at the east of the Gumushane City. In this study, 27 water samples collected from surface waters flowing through the alteration area were analyzed for contents of some main heavy metal including lead (Pb), copper (Cu), zinc (Zn), cadmium (Cd), cobalt (Co), manganese (Mn), nickel (Ni), mercury (Hg), barium (Ba), stronsium (Sr) and arsenic (As). Element contents range from (as µg/L) 11.3 to 541.3 for Mn, 28.5 to 4981.1 for Fe, 26.5 to 239.7 for Sr, 8.9 to 115 for Zn, 14.6 to 264.5 for Ba, 1.14 to 80.42 for Hg, 18.87 only in on sample for As. Cu, Ni, Co, Cd and Pb contents of the waters were detected below the limit of detection. These findings point out that the surface water flowing through the area was effected by some heavy metals such as Mn, Ba, Sr, As and Hg. So more attention should be paid to heavy metal contamination of the alteration areas on surface waters. Alteration areas are important target fields for ore deposit exploration, while also posing risks of heavy metal contamination.

Keywords: Heavy metal elements, alteration areas, environmental geochemistry, Gumushane

The Heavy Metal Effects Of Mineralization And Alteration Areas With Buried Ore Deposits Potential On The Surface Waters

Alaaddin Vural[a*], Ali Gundogdu[a], Fatih Saka[a], Volkan Numan Bulut[b], Selcuk Alemdag[a], Mustafa Soylak[c]

[a]Gumushane University
[b]Karadeniz Technical Uniiversity
[c]Erciyes University

*alaaddinvural@hotmail.com

Abstract

The Arzular-Kabaköy, Kaletas, Dölek and its surrounding areas are either mineral deposits or alteration areas with buried mineralization potential. All these areas have intense alteration and are situated at the east of the Gumushane city (NE Blacksea Region). Mineral/Ore deposits are important for development of countries but also they have contamination or pollution risk for remote areas as far as the surrounding areas. While alteration areas are important target areas for mineralization and ore exploration, these areas constitute a risk for environmental contamination/pollution. Metal pollution in environments such as terrestrial and aquatic environment have seriously become a problem since the beginning of the past century. This paper aims at elucidating the potential environmental risks associated with these sites by quantifying contamination in stream waters in the areas. For this purposes, 21 surface water samples were collected the streams and analyzed for heavy metals. Concentrations of heavy metals in surface waters reached 495.7 µg/L for Al, 1260.4 µg/L for Mn, 4864.5 µg/L for Fe, 21.7 µg/L for Co, 136.0 µg/L for Zn, 387.1 µg/L for Sr, 118.3 µg/L for Ba and 1.02 µg/L for Hg. In addition, a high arsenic value was detected in one water specimen. Some other heavy metals are below the limit of detection such as copper, lead, tin etc. As a result of the study done, alteration areas with buried ore deposits potential and ore deposit areas have been found to cause heavy metal contamination in the surface waters around these environments, therefore, more detailed studies should be done on such fields and necessary precautions should be taken in order to avert the dispersal of contamination sourced that areas.

Keywords: Water quality, heavy metal contamination, environmental geochemistry, Gumushane

Effects Of Gilthead Seabream *Sparus Aurata* Fish Feed Replacement Of Fish Meal At Different Rates Use Of Canola Meal b*Brassica Spp* On Growth Rate, Feed Utilisation And Digestibility

Ibrahim Diler[a*], Adem Kurtoglu[b], Seval Bahadir Koca[a], Halit Bayrak[c]

[a]University of Suleyman Demirel, Faculty of Fisheries, East campus Isparta-Turkey
[b]Institute of Akdeniz Mediterranean Research, Production and Training, Demre- Antalya-Turkey
[c]University of Suleyman Demirel, Water Institute, East campus Isparta-Turkey
*ibrahimdiler@sdu.edu.tr

Abstract

In this study was used of fish feed replacement of fish meal at different rates use of canola meal Brassica spp. in gilthead seabream Sparus aurata average of live weight 49.86±0.01g 50 fish per tank and total 700 fish. In trial the feed nutrition value isonitrogen (45% protein) and isoncaloric (18% lipid). In this trial groups were designed the fish meal instead of using canola meal 0% (C0), 10% (CaM10), 15% (CaM15), 20% (CaM20), 25% (CaM25) and 30% (CaM30) and fish growth performance, feed conversion ratio and digesitibility. At the end of the experiment the best weight gain in the control group (79.21±2.25g) as a result of the analysis showed that despite insignificant differences were found between groups (p> 0.05). To the control group ordinary, respectively CaM30 (77.89±3.34g), CaM10 (77.29±2.26g), CaM25 (77.15±1.99g), CaM20 (76.46±2.66g) and CaM15 (75.84±2.84g) groups were followed. Specific growth rate also were similar trends. Feed conversion ratio (FCR) the lowest value in CaM30 group (1.54±0.1) and the highest value in CaM10 group (2.31±0.2); about of protein efficienct rate the highest CaM30 group (1.52±0.01) an the lowest CaM10 group (11.44±0.02) were obtained and between the groups significant (p<0.05). Trial in the second phase of nutrients digestibility performance tries to determine dry matter and crude protein digestibility in the control group at the highest level while the lowest KA10 treatment group were determined and the difference between groups were significant.

Keywords: Gilthead Seabream, Sparus Aurata, Canola Meal, Feed Efficiency, Digestiblity

The Relation Between Agro-Tourism and Rural Development in Vahkin-Canakci Microcathchment

Alperen Meral[a*], Alaaddin Yuksel[a], Yasin Demir[a], Yasin Cakar[a], Cetin İnan[a]

[a]Bingol University

*alperenmeral@gmail.com

Abstract

Agriculture and tourism completes each other in terms of common features. The relation between the two, longing of people for natural life, and excessive consumption of natural sources, integrates agriculture and tourism in a common denominator and exposes agro-tourism. Agro-tourism which based on the idea; protect and use, means a kind of sustained tourism without harming agricultural areas. As a rural development means agro-tourism contributes to increase income level depending on activities of the local people and their socio-cultural lives who esspecially living in a rural area. VCMc, which is located in Bingöl city, East of Turkey province, starts from the villages of Balgöze, Bayirli, Binekli, Çanakci, Çaytepe, Dilektasi, Doğanevler, Elmagunu, Gözutok, Kepceli, Kocsirti, Mesedali, Pinaralti, Sarmakaya, Yağizca, Yenisu, Yiğitbasi. The altitude of the CpMc changes between 1000 and 3000 meters. The area of VCMc is 28592,2 hectares. Demand for organic foods and requirement to produce canalizes to people, that living in urban areas, in a search. Recently, agro-tourism in rural areas which are near to urban areas, is increasin on a large scales. Vahkin-Canakci Microcatchment which is projected in scope of MNHRP, has a great number of agricultural areas. Despite generous water supplies, yield is not expected levels because of the lack of irrigation. In the study, which will be performed, current status of irrigation and likely changes that may be occurred in the next decade that after irrigation activities in the project, will be identified with scenario analysis and remote sensing technologies. The effects of improvements in the agricultural areas, that identified with techniques to be applied, to development and agro-tourism, will be determined and included the study. In this study, it is researched that the possibility of agro-tourism in VCM which provides positive contribution to the prosperity and social lives of local people.

Keywords: Agro-tourism, Vahkin-Canakci Microcatchment, Rural Development, Remote sensing, Scenario analysis.

The Relation Between Agro-Tourism and Rural Development in Capakcur Microcathchment

Alperen Meral[a*], Alaaddin Yuksel[a]

Bingol University

*alperenmeral@gmail.com

Abstract

Agriculture and tourism completes each other in terms of common features. The relation between the two, longing of people for natural life, and excessive consumption of natural sources, integrates agriculture and tourism in a common denominator and exposes agro-tourism. Agro-tourism which based on the idea; protect and use, means a kind of sustained tourism without harming agricultural areas. As a rural development means agro-tourism contributes to increase income level depending on activities of the local people and their socio-cultural lives who esspecially living in a rural area. CpMc, which is located in Bingöl city, East of Turkey province, starts from the villages of Alincak, Asağiköy, Çiris, Ortaköy, Yelesen, Balpinar, Şaban, Ücyaka. The altitude of the CpMc changes between 1150 and 2500 meters. The area of CpMc is 10675.7 hectares. Demand for organic foods and requirement to produce canalizes to people, that living in urban areas, in a search. Recently, agro-tourism in rural areas which are near to urban areas, is increasin on a large scales. Capakcur Microcatchment which is projected in scope of MNHRP, has a great number of agricultural areas. Despite generous water supplies, yield is not expected levels because of the lack of irrigation. In the study, which will be performed, current status of irrigation and likely changes that may be occurred in the next decade that after irrigation activities in the project, will be identified with scenario analysis and remote sensing technologies. The effects of improvements in the agricultural areas, that identified with techniques to be applied, to development and agro-tourism, will be determined and included the study. In this study, it is researched that the possibility of agro-tourism in CM which provides positive contribution to the prosperity and social lives of local people.

Keywords: Agro-tourism, Capakcur Microcatchment, Rural Development, Remote sensing, Scenario analysis

Forecasting of Daily Evapotranspiration Using Artificial Neural Networks Technique

Bestami Tasar[a*], Fatih Ünes[a], Mustafa Demirci[a], Ada Yilmaz[a], Yunus Ziya Kaya[b]

[a]Iskenderun Technical University
[b]Osmaniye Korkut Ata University

*bestami.tasar@iste.edu.tr

Abstract

Evapotranspiration estimation has significant roles in irrigation management and hydraulic designs in arid seasons and area. In this paper, evapotranspiration forecast was tried to assess the performances of artificial neural networks (ANN) and empirical equations (classical methods) such as Hargreaves-Samani and Ritchie equation. Study area was chosen Massachusett, U.S.A (Cambridge reservoir). Mean daily air temperature, wind speed, solar radiation and, relative humidity were used for forecasting mean daily evapotranspiration. All daily data are divided as training and test data. The evaluation of the method results was made according to the statistical parameters such as correlation coefficient and error calculations. Based on comparison of the results, it is found that the ANN model gives better estimates than the other techniques.

Keywords: Hargreaves-Samani Equation, Artificial Neural Networks, Evapotranspiration, Estimation

Prediction of Daily Suspended Sediment Load using Support Vector Machine

Bestami Tasar[a*], Fatih Ünes[a], Mustafa Demirci[a], Ada Yilmaz[a], Yunus Ziya Kaya[b]

[a]Iskenderun Technical University
[b]Osmaniye Korkut Ata University

*bestami.tasar@iste.edu.tr

Abstract

Prediction the amount of suspended sediment being transported by a river is correctly important due to the adverse impacts of hydraulic structures such as dam, bridge. In this paper, support vector machine (SVM) and adaptive Neuro-fuzzy (NF) techniques are used for forecasting daily suspended sediment concentration from daily temperature of water and streamflow in the river. As a study area, the Augusta station of Skunk river, in U.S.A., was chosen as. SVM and NF models are compared to each other according to three statistical criteria, namely, mean square errors (MSE), mean absolute relative error (MAE) and correlation coefficient (R). These criteria were used to evaluate the performance of the models. SVM model shows better predictions than the NF model according to obtained model and measurement results.

Keywords: Support Vector Machine, Neuro-Fuzzy, Suspended Sediment, Prediction, Model

Groundwater Level Forecasting Using Artificial Neural Network and Autoregressive Moving Average Models; A Case Study

Ada Yilmaz[a*], Fatih Unes[a], Mustafa Demirci[a], Bestami Tasar[a], Yunus Ziya Kaya[b]

[a]Iskenderun Technical University
[b]Osmaniye Korkut Ata University

*ada.yilmaz@iste.edu.tr

Abstract

Groundwater is the one of the most significant fresh water source in the world. But, sources have been under threat due to population growth, overuse of sources and climate changing. These threats have made groundwater management necessary. Prediction of groundwater level has great importance to prepare an effective groundwater management plan. Although, there are many physically-based methods developed to predict groundwater level, they are limited and unpractical. In recent years, as an alternative way to physically-based methods, empiric models have been started to use in hydrological problems. In this paper, Artificial Neural Network (ANN) and Autoregressive-Moving-Average Model (ARMA) were used to predict groundwater level from lagged time series of groundwater level and model results were compared.

Keywords: Groundwater Level, Forecasting, Artificial Neural Network, Autoregressive Moving Average

Prediction of Daily Groundwater Level in Arcadia, Florida Using Support Vector Machines

Ada Yilmaz[a*], Fatih Unes[a], Mustafa Demirci[a], Bestami Tasar[a], Yunus Ziya Kaya[b]

[a]Iskenderun Technical University
[b]Osmaniye Korkut Ata University

*ada.yilmaz@iste.edu.tr

Abstract

Groundwater is commonly used in irrigation, domestic and industrial activities. Due to large population growth and overuse of groundwater source, groundwater management has become more important issue in recent years. Determination of groundwater level is the most difficult task in the groundwater management. In this study, Support Vector Machines (SVM) method was used to predict daily groundwater level from daily air temperature, precipitation, evapotranspiration and lag time series of groundwater level. SVM model results were compared with Multi Linear Regression (MLR) model results and prediction ability of models were investigated.

Keywords: Groundwater Level, Forecasting, Support Vector Machines

The Importance Role of Agriculture Based on Watershed Scale for Rural Development

Alaaddin Yuksel[a*], Ali Riza Demirkiran[a], Abdulkadir Surucu[a], Yasin Demir[a], Alperen Meral[b], Tahir Baydas[c]

[a]Bingol University, Faculty Of Agriculture, Department Of Soil Science

[b]Bingol University, Faculty Of Agriculture, Department Of Landscape Architecture

[c]Forest Management Directorate Of Bingol

*ayuksel@bingol.edu.tr,

Abstract:

Turkey occupies a total area of about 783.560 km2 of which approximately. It is divided into 25 hydrological basins and 30 agricultural watersheds with large differences properties. Some basins like Euphrates and Tigris are international basins between Turkey and the neighbor countries. Rural development is the process of improving protection and improvement of the rural environment and increase the quality of life and economic well-being of people living in rural area. The aim of rural development in the watersheds area to supply by using environmentally friendly agricultural practices, protection and sustainable use of forest resources and the management of agricultural treatments as watershed scale. Agriculture activities based on watershed scale is getting important for rural development in Turkey. There are some ongoing projects like the Murat River Watershed Rehabilitation Project (MRWRP) including rehabilitation of natural resource and rural developments. In the watershed areas, agriculture practices are one of the most important source of employment and vitally factor in preventing migration to urban areas.

In this study, the main roles of agriculture on rural development were investigated in the watershedscale especially MRWRP in Turkey.

Keywords: Watershed, rural Development, Agriculture, Murat River Watershed Rehabilitation Project (MRWRP)

Sustainable Management of Soil and Water Resources Based on Watershed

Alaaddin Yuksel[a*], Ali Riza Demirkiran[a], Abdulkadir Surucu[a], Ramazan Meral[b], Yasin Demir[a], Alperen Meral[c], M.Nuri Kolak[d]

[a]Departmnet Of Soil Science And Plant Nutriton, Faculty Of Agriculture,Bingol University

[b]Department Of Biosystems Engineering, Faculty Of Agriculture,Bingol University

[c]Department Of Landscape Architecture, Faculty Of Agriculture,Bingol University

[d]Department Of Civil Engineering, Faculty Of Engineering,Bingol University

*ayuksel@bingol.edu.tr

Abstract

Water and soil are the most important natural resources for people's life and activities. Soil and Water quality is a critical component of sustainable agriculture. Population growth, urbanization and industrialization cause these natural resources to decrease and deteriorate. Especially ecological destruction of natural resources has negative effects on the cycle. Particularly, it is important to understand the impacts of agricultural activities on the soil and water resources. Therefore, agriculture and forest areas become inefficient due to these threats. Today, various scenarios are being developed to prevent or minimize these threats. At the beginning of these applications are sustainable basin-based land and water management practices.

The sustainability of the use of land and water resources depends on the protection of them by integrating various strategies. Here, the development of soil quality and water management are the most important in agricultural watershed region. Soil quality and quality index assessment has been recognized as an important precaution for understanding the effects of conservation practices with in Murat RiverWatershedRehabiliton Project.

The sustainable using of these natural resources based on watershed is important role for under development and developing region.

Keywords: Soil and Water Management, Sustainability, Watershed.

Mathematical Model Of A Cardiovascular Mock Circuit: Design And Validation

Dogan Onur Arisoy[a*], Kamuran A. Kadipasaoglu[a]

[a]Yildiz Technical University

*arisoy@yildiz.edu.tr

Abstract

Heart transplantation (HTx) is the only non-palliative treatment for end-stage chronic heart failure. Only a small cohort is treated with HTx due to donor shortage. Left ventricular assist devices (LVADs) present a viable solution to manage patients awaiting suitable donors. LVADs are pumps interposed between the ventricular apex and ascending aorta unloading the left ventricle (LV). Novel LVAD designs must be tested for safety and efficacy before clinical use. Tests in early R&D stages incorporate virtual/physical mock circuits (MCs), consisting of hydraulic compliance chambers, resistance elements and pulsatile pressure sources. MCs simulate normal/pathologic hemodynamics, allowing for design improvements on the LVAD virtual/physical prototypes. In this study the mathematical model of a MC is presented, which consists of electro-hydraulic analogues of LV, right ventricle (RV) and atria, and systemic and pulmonary vasculature. The model first converts Length-Tension [passive stretch (P_pass), isometric contraction/relaxation (P_act)] and Tension-Velocity [auxotonic contraction (P_aux)] relationships of individual myocardial sarcomeres into diastolic relaxation/filling and systolic contraction/ejection phase dynamics (Pressure-Volume relationship) of the ventricles. A single on-off input signal, u(t), switches between phases during each cardiac cycle, based on a prescribed on-to-off (contraction-to-relaxation) duration ratio. Controls a(u,t) and m(u,t) are generated next, both as second-order critically-damped rising and over-damped decaying signals, to model percent volumetric activation (muscle contracting or not) and mobility (muscle contracting auxotonically or isometrically) status, respectively, of the ventricles as the cardiac cycle proceeds. Controller generates LV and RV pressures from P=a*[(1-m)*P_act+m*P_aux]+(1-a)*P_pass and feeds them into the plant (MC), The plant calculates instantaneous ventricular volumes, which are fed back into the controller along with u(t), thus closing the autonomous loop. The control system operates with high stability against parameter variations (resistances/capacitances) and robustness against disturbances (load changes) simulating various physiologies (rest/exercise, hypo/hypertension). In conclusion, the model constitutes an accurate simulation platform to test LVAD performance.

Keywords: Cardiovascular Mock Circuit, Mathematical Modeling, Myocardial Mechanics, Feedback Control, Time-Varying Elastance

Development of A Software to Determine the Shelf Life of Rainbow Trout (Oncorhynchus Mykiss) Under Different Temperatures

Ismail Yuksel Genc[a*], Recep Colak[a], Tuncay Yigit[a], Abdullah Diler[a]

University of Suleyman Demirel

*ismailgenc@sdu.edu.tr

Abstract

The aim of this study is to develope a software to determine the shelf life of rainbow trout under different temperatures. In this context, six data set (temperature and shelf life) that were obtained from the laboratory studies were used for development of primary function namely, days=f (temperature). Least Squares of Errors (LSE) was used to determine the minimum errors that makes the errors of the function minimum. For the estimation of the storage days 2 function was used such as days=a*ln(temperature)+b (1) and days=a*exp(b*temperature). To determine the constants of function 1 and 2 heuristic approach was used (Genetic Algorithm (GA)). Regarding the results of this study the constants were estimated by using GA and LSE. Additionally, the R2 values of determined constants were 0.98 and 0.99 for 1st and 2 nd function. The differences between data set and software estimation was not significantly different ($p>0.05$). In conclusion, the developed software is a significant tool for the determination of the shelf life of rainbow trout under different temperatures and can be used in seafood industry. Acknowledgement This project is supported by TÜBİTAK-TOVAG project number:213O173

Keywords: Software development, genetic algorithm, least squares of errors, rainbow trout

Effect of Enhanced-Solubilization Agents on Mass Removal and Mass Discharge Reduction in Heterogeneous Porous Media

Nihat Hakan Akyol[a]*, Sevgi Turkkan[a], Seda Kilavuz[a], İsmail Ozbay[a], Bilge Ozbay[a]

[a]Kocaeli University

*hakan.akyol@kocaeli.edu.tr

Abstract

The contamination of groundwater by hazardous organic chemicals and the associated risks to human health and the environment are issues of great importance. One of the most critical issues associated with hazardous waste sites is the potential presence of DNAPL source zones in the subsurface. The objective of this study is to investigate the effect of solubilization on the relationship between reductions in contaminant mass discharge and reductions in source zone mass under conditions of enhanced-solubilization flushing. Trichloroethene was used as the model organic liquid and sodium dodecyl sulfate (SDS), Tween 80, cyclodextrine (MCD) and water were used as representative flushing reagents. The results showed that there was minimal reduction in mass flux until a large fraction of mass was removed for systems wherein organic liquid was present solely as residual saturation in regions that were hydraulically accessible. For all flow cell experiments, the later stage of mass removal was controlled by the more poorly accessible mass associated with higher-saturation zones. MDR vs MR relationship exhibited a generally similar behavior for both the water-flood and enhanced-flushing experiments. The results of this study illustrate the impact of enhanced-solubilization agents and flow-field heterogeneity on mass-removal and mass-flux processes.

Keywords: DNAPL, Trichloroethylene, Enhanced-Solubilization, Mass Discharge

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Sorption behavior of 2.4D in a natural soil from Antalya, Turkey

Nihat Hakan Akyol[a]*, Bılge Ozbay[a], İsmail Ozbay[a], Gokce Akyol[a]

[a]Kocaeli University

*hakan.akyol@kocaeli.edu.tr

Abstract

Pesticide contamination of soil and groundwater is a common problem in the environment. 2.4D has been extensively used in recent decades for agricultural control in vicinity of Antalya. The aim of this work was to determine the sorption behavior of 2.4D in a natural soil from Antalya, Turkey. Batch experiments were conducted to investigate the sorption isotherm and sorption-desorption characteristics of 2.4D. The sorption isotherm and kinetic studies showed that the sorption of 2.4D was described by linear and rate-limited processes for soil. Results indicate that organic carbon content of soil on sorption behavior was predominant for 2.4D. Results summarize that sorption of 2.4D to soil was low which could lead to a risk for contamination of groundwater resources.

Keywords: Antalya, 2.4D, natural soil, pesticide, sorption.

POSTER PRESENTATIONS

4D-QSAR Study by Using Fukui Indices for Monoamine Oxidase-A Inhibitor Activity

Yahya Guzel[a*], Ekrem Mesut Su[a], Burcin Turkmenoglu[a], Tugba Alp Tokat[a]

[a]Erciyes University

*yguzel@erciyes.edu.tr

Abstract:

To define the 4D-QSAR assay, the inhibitory effects of monoamine oxidase-A (MAO-A) were applied by a ligand-based method, Molecular Conformer Electron Topological (MCET). The biological structure was found from 3D infrastructures of selected conformers for five different compounds. The electronic properties of the atoms presented in the Electron Topological Method (ETM) are used as 3D structural identifiers (3DSDs) of molecules. The Genetic Functional Approach (GFA) was used to analyze these identifiers that play an active role and to establish a model that predicts binding affinity. We used Atomic Fukui indices as local reactivity parameters to assess the binding affinity of the receptor ligand. Ligand-receptor (L-R) interaction regions were calculated based on nucleophilic and electrophilic properties. The model has been verified by applying a Leave One Out-Conformer Validation (LOO-CV). Using a pharmacokinetic construct with Auxiliary Groups (AG) and Anti Pharmacophore Shielding Groups (APS), a 4D QSAR model derived from the nonlinear equation was constructed; In this case, Q2 and R2 are very valuable; 0.829 and 0.818 respectively.

Keywords: Fukui indice, Monoamine oxidase-A, 4D-QSAR, AG, APS

A Comparative Study on Synthesis of Poly (L-Lactic) acid by DMP and ROP under Continuously Microwave Irradiation

Basak Temur Ergan[a*], Mahmut Bayramoglu[a]

[a]Gebze Technical University

*btemur@gtu.edu.tr

Abstract:

Poly (L-lactic acid) (PLLA) is one of the most commonly used bio-based plastics [1-3] which is expected to have wide applications not only as a biodegradable plastic but also as a biomedical material [4-5]. PLLA, one-component aliphatic polyester, is synthesized by direct melt poly condensation of L-lactic acid (DMP) or by ring-opening polymerization of L-lactide (ROP) which is industrially preferred due to easy control of the polymer molecular weight but at the expense of higher energy consumption. Thus, in this study, firstly, it is aimed to design a Microwave (MW) experimental system to keep temperature and MW energy supply rate continuous and constant during MW supported polymerization of lactic acid. Then, PLLA was synthesized by DMP in the system. Temperature, MW power, reaction time, catalyst type and catalyst amount were considered to determine appropriate process conditions. Furthermore, MW-ROP and conventional (CH) experiments were conducted under the same conditions. These methods were compared in terms of process performance and various properties of the polymers. According to results, polymerization rate, polymer yield, average-molecular weight, the dispersity and thermal properties of polymers were similar in both MW methods but higher than CH counterparts. Finally, energy saving was accomplished by 73% and an increase of polymer production rate by 37.7% in MW-DMP method.

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Keywords: Microwave, Simultaneous cooling method, DMP, ROP, Poly L-Lactic acid

A Dft Study On Structural Properties Of HgSe Under High Pressure

Cihan Kurkcu[a*], Ziya Merdan[b], Selgin Al[a], Sumeyra Yamcicier[a], Hulya Ozturk[a]

[a]Ahi Evran University
[b]Gazi University

*ckurkcu@ahievran.edu.tr

Abstract:

Structural properties of HgSe crystal at different hydrostatic pressures are investigated. HgSe undergoes a structural phase transformation from cubic zinc blende structure with space group F-43m to orthorhombic structure with space group C2221 at 10 Gpa. Another structural phase transformation from this orthorhombic structure to another orthorhombic structure with space group Cmcm occurs at 20 GPa. These phase transformations are also studied by total energy and enthalpy calculations.

Keywords: HgSe: structural phase transition: DFT: high pressure

A graphical user interface for depth and structural index estimation of simple shaped magnetic structures based on an analytical signal approach

Erdinc Oksum[a], Mustafa Nuri Dolmaz[a*]

[a]Suleyman Demirel University

*nuridolmaz@sdu.edu.tr

Abstract:

In interpretation of magnetic anomaly data, obtaining the depth and geometry (structural index) of the causative source is a major acquisition. Data processing techniques noticeably assist in the interpretation of potential field anomalies. Hence, depending on the purpose, many processing techniques have been reported for interpreting potential field anomalies. The analytic signal (AS) is one popularly used data since it exhibits maxima over magnetization contrasts, independent of the ambient magnetic field and source magnetization directions in two dimensions. Regarding the great interest on the studies focusing to obtain the depth and the geometry of the source from potential field anomalies, it was assumed that it might be favourable to develop a computer code for the aim of a such determination procedure.

In this study, we present an easy-to-use graphical user interface (Gui) designed in Matlab for estimating the depth and the nature of isolated simple shaped magnetic structures. The procedure is based on the combination of the analytic signal and its total gradient where the method provides two linear equations to estimate individually the depth and the nature of a magnetic source by the information about the horizontal location. The advantage of the Gui is that it allows the use of two types of data as input, either gridded or section data, one can handle on them simultaneously by the supplied graphical options. Since real data always contain some amount of noise, it also provides upward continuation filtering obtion for a pre-process of the input data to reduce the interference of noise. The feasibility of the proposed code is demonstrated on synthetic and measured magnetic anomalies obtained from an emery ore field in western Turkey. Considering the pre-informations and some excavation studies on the field, the results satisfy a sufficient level for the efficiency of the method.

Keywords: magnetic, analytic signal, depth, structural index

A modeling approach to determine the relationship between gasification parameters and hydrogen production

Ebubekir Siddik Aydin[a*], Ozgun Yucel[a], Hasan Sadikoglu[a]

[a]Department Of Chemical Engineering, Gebze Technical University

*e.aydin@gtu.edu.tr

Abstract:

Gasification is a process that converts carbonaceous materials at elevated temperatures with a controlled amount of oxygen into hydrogen, carbon monoxide and carbon dioxide. In this study, the relation between hydrogen-rich synthetic gas production and the gasification parameters such as equivalence ratio (ER), gasification temperature and biomass moisture were determined. A developed stoichiometric equilibrium model was used to investigate the optimum hydrogen output generated from woody biomass in a fixed bed downdraft gasifier considering the thermodynamic equilibrium limit. This mathematical model will contribute to understand this complicated process in order to obtain maximum attainable hydrogen production. Also effect of using different gasifying agents on hydrogen concentration in the product gas were examined. The influence of varied air-to-biomass and oxygen-to-biomass ratios were investigated. Model results have been compared with the experimental values obtained from the literature. Comparison results proved that biomass oxygen/steam gasification is more effective than biomass air gasification technique. Hydrogen production from biomass gasification with various woody biomass types and at various operating condition are reported. As a conclusion, this study shows that gasification technology is an alternative route to produce hydrogen.

Keywords: Gasification, Modelling, Hydrogen production

A Study On Some New Side Armed Aza Ethers And Their Metal Complexes

Umit Cakir[a*], Meltem Tugce Ayaz[a], Baki Cicek[a], Mehmet Dogan[a], Halil Ibrahim Ugras[a]

[a]Balikesir Universty

*ucakir@balikesir.edu.tr

Abstract:

In this work, some new side-armed mono-aza crown ether derivatives and their solid metal complexes were synthesized by Mannich reaction under nitrogen atmosphere and spectrofotometric characterization of these compounds was carried out, and the complexation constants in binary solutions were determined by conductiometric method.

The starting materials and the ligands synthesized are 3-((1,4,7-trioxa-10-azacyclododecan-10-yl)methyl)-4-(tert-butyl)phenol from 1-aza-12-crown-4 and tert-butyl-phenol; 3-((1,4,7,10-tetraoxa-13-azacyclopentadecan-13-yl)methyl)-4-(tert-butyl)phenol from 1-aza-15-crown-5 and tert-butyl-phenol; 6-((1,4,7-trioxa-10-azacyclododecan-10-yl)methyl)benzo[d][1,3]dioxol-5-ol from 1-aza-12-crown-4 and sessamol; 6-((1,4,7,10-tetraoxa-13-azacyclopentadecan-13-yl)methyl) benzo[d] [1,3] dioxol-5-ol from 1-aza-15-crown-5 and sessamol; 3-((1,4,7,10-tetraoxa-13-azacyclopentadecan-13-yl)methyl)-4-hydroxy-2H-chromen-2-one from 4-hydroxy coumarin and 1-aza-15-crown-5; 6-((1,4,7,10-tetraoxa-13-azacyclopentadecan-13-yl)methyl)-7-hydroxy-2H-chromen-2-one from 7-hydroxy coumarin and 1-aza-15-crown-5; 6-((1,4,7,10,13-pentaoxa-16-azacyclooctadecan-16-yl)methyl)-7-hydroxy-2H-chromen-2-one from 7-hydroxy coumarin and 1-aza-18-crown-6. All aza-crown syntheses were carried out in paraformaldehyde and toluene.

Solid complexes of the ligands with Fe+2, Cu+2, Co+2, Mg+2 metals were then synthesized. The equilibrium constants of complexation of Na+, K+, Ca2+, Al3+, Mg2+, Fe2+, Cu2+ and Co2+ metals and mono-aza crown ether compounds in 50% dioxane-water binary systems were determined by conductiometry.

Keywords: Synthesis, armed aza crown ether, metal complex, equilibrium constants, binary systems, conductiometry

A Study On The Relationship Between Agent Density And Distribution Models According To Spatial Layout

Yoon So Hee[a*], Kim Suk Tae[b]

[a]Interior Design, Department Of U-Design, Inje University
[b]Department Of Interior Architecture, Inje University

*yshh2678@naver.com

Abstract:

In modern society, there is a complex system characteristic that is occurring various phenomenon simultaneously. Individual elements existing in building and indoor space are also organically connected as they affect mutually. In addition, interpretation methodology that focuses on human and interrelationship about any space and may correspond to more scientifically and a lot of variables is required.

So, purpose of this study is to validate the relationship between Agent Density and Distribution models according to spatial layout.

Example models are designed and analyzed data of space syntax analysis. And analyzed the agent-based model using analytical software: Anylogic. This study was conducted to analyze 4 types of one example for relationship evaluation through changed spatial layout.

The results of this study are as follows. First, As result of simulation analysis, the space tends to locate in the significant in space of high density, degree of control value and integration of space syntax evaluating index is also high. Second, As result of analysis of agent based model by spatial layout change, convergence was seen, which is useful simulation model for finding emergent phenomena and agent density that is an aspect of purpose complex system study. Agent-based models can be simulated considering various variables, so realistic predictions will be possible and a new biography of complex systems can be met.

It suggests Agent-Based model may be not only analysis method that may complement limit and weakness of existing space analysis theory but also may be used for spatial structure theory considered characteristic of complex system of space. Also, since multidisciplinary studies were about started at global study trend, study of complex system would be great analysis simulation model to find out point of contact between humanities study such as demographic, psychology, industrial engineering, architecture, civil engineering and engineering studies.

Keywords: Spatial Layout, Agent-Based Model, Simulation Modeling, Space Syntax

A Suggested Magnetic Anomaly Model Of The Trachytic Dome In SW Of The Golcuk Crater Lake, Isparta, Turkey

Mustafa Nuri Dolmaz[a*], Erdinc Oksum[a], Ezgi Erbek[a], Hatice Evrim Tutunsatar[a]

[a]Suleyman Demirel University

*nuridolmaz@sdu.edu.tr

Abstract:

In SW Turkey, Isparta volcanic complex crops out in the inner Isparta Angle area. The Gölcuk Crater and its surrounding area situated in the Isparta volcanic complex consist of important volcanic occurrences such as a sub-volcanic stock, caldera, several volcanic domes, circular, semicircular and elliptical morphologic structures. There is a close relation between these volcanic formations and magnetic anomalies. A total magnetic anomaly reaching to maximum 700 nT and having a wavelength with approximately 800 m was measured in the SSW section of Gölcuk Carater Lake. There is a negative having a value of -200 nT at a distance of 900 m in the NE direction from the maximum point of this anomaly. The anomaly complies with the normal polarizing process of the northern hemisphere and it is compatible with the ideas of westward rotation proposed in the previous studies for the west line of the Isparta Angle and the direction of the polarity indicates 40o counterclockwise rotation. In order to determine mean depths to interfaces of significant susceptibility contrasts, we applied the spectral factorization method. As a result of the power spectrum, after taking a profile on this magnetic anomaly, the source depth of the causative body was estimated as 0.85 km. According to the results of in-situ susceptibility measurements, a susceptibility contrast of 2.7 ×10-3 emu was used in calculating the forward magnetic anomaly of the model. Interpretation of the constructed two-dimensional (2-D) magnetic modeling has indicated the presence of the trachytic dome producing the high magnetic anomalies. The constitutional model clearly indicates the buried circular structure at southwestern part of Gölcuk Lake to be the deep continuations of the described trachytic dome seen at the outcrops in the area. The vertical and the horizontal size of proposed model is approximately 0.85 km and 1.25 km, respectively.

Keywords: magnetic, model, Isparta

Absorption Of Toluidine Blue And Alizarin Red S Dyes By Poly(2-Acrylamido-2-Methyl-1-Propansulfonic Acid Sodium Salt–Co-3-Acrlylamidopropil-Trimethyl Ammonium Chloride)- Lentinus Tigrinus (Bull.) Fr. Composite Hydrogel

Duygu Alpaslan[a], Tuba Ersen Dudu[a], Senol Kubilay[a*], Ali Savran[a]

[a]Yuzuncu Yil University

*senolkubilay@yyu.edu.tr

Abstract:

Pollutants from industries such as textile, printing, plastic, food, paper, pharmaceutical, cosmetic and leather tanning are rather rich in dye and they are non-biodegradable, complex organic molecules and even carcinogenic. Therefore, the discharges to the nearest specially water sources of these pollutants cause of environmental pollution as water and soil. In this investigation p(AMPS-co-APTMACl)- Lentinus tigrinus (Bull.) Fr. composite hydrogels were synthesized by using 2-Acrylamido-2-methyl-propansulfonic acid sodium salt (AMPS) and 3-Acrylamidopropyl-trimethyl ammonium chloride (APTMACl) based the monomers and utilized for targeted dyes removal. Synthesized composite hydrogels were investigated swelling behaviors in deionize water and sensibility pH and were characterized using Fourier Transform Infrared Spectroscopy (FT-IR) and Thermal Gravimetric Analysis (TGA). In the environmental applications of composite hydrogels aimed removal from aqueous medium of Toluidine Blue (TB) and Alizarin Red S (AR) textile dyes. Therefore, in this study investigated effect on the absorption performance of initial dye concentration (mg/L), the pH of the media, and contact time (min). Ultra-Viole spectroscopy was used to quantify TB and AR during absorption studies. A comparison of kinetics models applied to the absorption of TB and AR dyes on the composite hydrogels was utilized for the pseudo-first-order (Lagergren models), pseudo-second-order and intraparticle diffusion kinetic models. Moreover, the most utilized adsorption isotherms models like Langmuir and Freundlich were studied to obtain the best-fitted isotherms equation. Under specific experimental conditions, the maximum absorption capacities for TB and AR dyes were calculated to be 1.46 mg/g and 35.25 mg/g, respectively.

Keywords: Lentinus tigrinus (Bull.) Fr., Composite Hydrogels, Textile Dyes

Acute Phase Proteins in Healthy Male Dogs After Orchiectomy

Nejra Hadzimusic[a*], Amina Hrković-Porobija[b]

[a]Veterinary Faculty University Of Sarajevo
[b]Department Of Chemistry And Biochemistry And Physiology, Veterinary Faculty, University Of Sarajevo

*nejra.hadzimusic@vfs.unsa.ba

Abstract:

An increase in serum CRP and SAA concentration have been described after different surgical procedures in dogs. Orchiectomy is used widely to modify undesirable behavior, prevent health problems, and control pet population, thus exposing a large number of male dogs to surgery each year. The aim of this study was to investigate CRP and SAA concentrations before and after orchiectomy. Twelve clinically healthy male dogs were admitted to elective orchiectomy. Blood samples were collected from the distal cephalic vein just before the orchiectomy (base values) as well as after 24 hours (Day 1), 72 hours (Day 3) and 168 hours (Day 7). The mean serum levels of CRP on Day 1 (68.39 ± 7.87 µg/mL) and Day 3 (29.67 ± 2.11 µg/mL) were significantly higher ($P<0.001$ for Day 1 and $P<0.05$ for Day 3) than the base value (4.84 ± 0.73 µg/mL). No statistical difference was found between the base value and Day 7 (7.95 ± 0.85 µg/mL). The mean serum levels of SAA on Day 1 (103.32 ± 9.79 µg/mL), Day 3 (87.30 ± 6.22 µg/mL) and Day 7 (46.11 ± 4.51 µg/mL) were significantly higher ($P<0.001$ for Day 1 and Day 3; $P<0.05$ for Day 7) than the base value (11.30 ± 2.49 µg/mL). The study shows that the CRP and SAA changes rapidly. The maximum CRP and SAA concentrations were detected on the first day after surgery. Serum CRP concentration on the seventh postoperative day was within physiological ranges, while SAA concentration was significantly higher.

Keywords: CRP, SAA, DOGS, ORCHIECTOMY

Adsorption Properties of 2-(N-morpholino) ethyl methacrylate (MEMA) / 3-dimethyl (methacryloxyethyl) ammonium propane sulfonate (DMAAPS) Gels for Cationic and Anionic Dyes

Zeynep Ilbay[a], Fulya Taktak[a*]

[a]Usak University

*fulya.taktak@usak.edu.tr

Abstract:

Novel and efficient polysulfabetaine adsorbent (PMEMA/PDMAAPS), based on 3-dimethyl (methacryloxyethyl) ammonium propane sulfonate (DMAAPS) and 2-(N-morpholino) ethyl methacrylate was designed and its adsorption properties on the cationic and anionic dyes were investigated. The results demonstrated that the pH plays a key role in the adsorption of the cationic Crystal Violet and anionic Congo Red dyes through (PMEMA/PDMAAPS) hydrogels.

The adsorption capacity increased as the pH increased for the cationic Crystal Violet dye, while the anionic Congo red dye had the highest value at pH 2. These results revealed that the electrostatic forces between (PMEMA/PDMAAPS) gels and ionic dyes have a determinant influence in the adsorption process. The adsorption of dyes followed the pseudo-first order and pseudo-second order kinetic model for the Congo Red and Crystal Violet, respectively. The experimental data were well described by Langmuir isotherm model. This means that monolayer coverage of the ionic dye molecules on the surface of the (PMEMA/PDMAAPS) is the basic adsorption mechanism due to homogenous distribution of zwitterionic pairs over the surface of the (PMEMA/PDMAAPS)

Keywords: congo red, crystal violet, adsorption, zwitterionic adsorbent

Aerobic Biodegradation Of Aromatic Compounds

Ozer Cinar[a*], Abdullah Kizilet[b], Amar Cemanovic[c]

[a]Yildiz Technical University
[b]Kahramanmaras Sutcu Imam University
[c]Istanbul Technical University

*ozercinar@gmail.com

Abstract:

A critical step in aromatic compound biodegradation is cleavage of the benzene ring. The nature of the ring cleavage reactions and many of the peripheral reactions leading to them, as well as many reactions involved in the aerobic and anoxic electron transport chains (ETC), depend on the oxidation state of the environment in which biodegradation is occurring. When molecular oxygen is present, then many of the peripheral and ring cleavage reactions are oxidative and involve molecular oxygen as a reactant. The goal of the peripheral pathways is to remove substituents on the aromatic ring and replace them with hydroxyl ions by using monooxygenases or dioxygenases to produce central intermediates (i.e., catechol, protocatechuate, and gentisate). The goal of the central pathways, on the other hand, is to cleave the central intermediates by using dioxygenases (i.e., catechol 1,2-dioxygenase, catechol 2,3-dioxygenase, protocatechuate 3,4-dioxygenase, protocatechuate 4,5-dioxygenase, and gentisate 1,2-dioxygenase) and converts them into precursor molecules or carbon dioxide. In addition, different types of cytochrome oxidases (i.e., NADH dehydrogenase, ubiquinone (Q), cytochrome cbb3, and cytochrome aa3) involved in the aerobic ETC are expressed, depending on the level of dissolved oxygen (DO) in the environment.

Keywords: Aromatic compounds, Catechol, Protocatechuate, Gentisate, Benzoic acid, Cytochrome oxidases

An Example Of Landscape Design In Educational Institutions: Duzce Arsal Anatolian High School

Ozgur Yerli[a*], Sertac Kaya[a]

[a]Duzce University

*ozguryerli@gmail.com

Abstract:

The design of public space is one of the main field of study of the landscape architecture profession. Parks, squares, public buildings, etc., are all defined as public spaces. Educational institutions' gardens “as well as being one of the public spaces” are also important in terms of their contribution to the open and green space system of the city. In this study, revised landscape design process of Duzce Arsal High School garden which is an educational institution was examined. The method of study are formed by land study, data acquisition, evaluation, decision making, projecting and visualization phases. In this context, the school garden was handled in pieces and problems were identified in these areas and solutions for these problems were developed. Accordingly, parking lot arrangement, refuge design, amphitheater and exhibition area, walkways, rest areas and vegetable landscape arrangements were made. As a result, new spaces have been gained in the school garden with a design concept that includes more livable, easy to use, easily accessible, active and passive recreation possibilities and improved space usage in line with needs.

Keywords: Landscape, Design, Education, Institution, Duzce

An Experimental Study Of Deep-Learning-Based Emergency Warning System

Byungseok Kang[a*]

[a]Sungkyunkwan University

*anferneekang@gmail.com

Abstract:

An emergency warning system (EWS) is a method of facilitating the one-way dissemination or broadcast of signals to people, alerting them to a pending or existing emergency. Acts of terrorism and violence, chemical spills, amber alerts, nuclear facility problems, weather-related emergencies, flu pandemics, and other emergencies all require those responsible such as government officials, building managers, and University administrators to be able to quickly and reliably distribute emergency information to the public. This paper introduces design of a deep-learning-based emergency warning system. The proposed system is applicable for application in existing monitoring devices such as closed-circuit television (CCTV), surveillance camera, smart phone camera, etc. The experimental results show that in most cases, our system immediately detects car accidents and fire.

Keywords: deep learning, emergency alert, emergency warning

Antioxidant Activities Of Total Anthocyanins Extracted From Sweet Cherry Cultivars

Fatih Sonmez[a*], Zuhal Gunesli[a], Ahmet Ali Berber[b], Nurcan Berber[b], Taki Demir[b]

[a]Sakarya University
[b]Canakkale Onsekiz Mart Universitesi

*fsonmez@sakarya.edu.tr

Abstract:

Sweet cherry (Prunus avium) belongs to Rosales order, Rosasea family, Prunoidea subfamily and Prunus genus. This fruit, which can conveniently be grown in mild climate zones, is widely used in a variety of areas such as fruit juice industry, table consumption, cake and jam production (1). Hence, it has a high market value and demand potential. Fruits are considered a natural source of antioxidants including polyphenols and anthocyanins. These compounds can reduce the risk of degenerative diseases caused by oxidative stress, such as cancer, cardiovascular disease and stroke. Red fruits, including sweet cherries, are rich in these types of compounds (2). Sweet cherry cultivars, known throughout the world, are used for both table consumption and processed products (2).

In this study, total anthocyanins were extracted from seven sweet cherry cultivars ('Z0900', 'Stella', 'Bing', 'Karakiraz', 'Noble', 'Beyaz Anadolu', and 'Berriyessa') grown in Sakarya, Turkey and their total phenolic and DPPH activities were evaluated.

Keywords: Antioxidant activity, Extraction, Sweet cherry cultivars, Total anthocyanins

Antioxidant Activity Of Sideritis Lycia Boiss. & Heldr. Tea

Zuleyha Ozer[a], Turgut Kilic[a], Sema Carikci[a], Hasibe Yilmaz[b]

[a]Balikesir University
[b]Tubitak National Metrology Institute (Ume)

*zuleyhaozer@balikesir.edu.tr

Abstract:

The genus Sideritis (Lamiaceae=Labiatae) represented in the Flora of Turkey by 46 species with high endemism (almost 80 %). Turkey is the 2nd country in the world which has the maximum species of the genus and one of the most important gene centers. Sideritis genus named 'Dag cayi or Adacayi' and used as herbal tea and folk medicine in Turkey as well as in the world for their anti-inflammatory, antiulcerogenic, digestive and antimicrobial properties. Sideritis species have been traditionally used as teas, flavouring agents, therapeutics as well as ornamental purposes in rock gardens.

Sideritis lycia Boiss. & Heldr. named as Dag cayi in vernacular, endemic species for Turkey and grown in Antalya region. The present study was aimed to determine the antioxidant activity of S. lycia tea. Two methods were used for prepare of the tea: infusion and decoction. The antioxidant activities were determined based on three methods: 2,2-Diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging, β-carotene linoleic acid and cupric ion reducing antioxidant capacity (CUPRAC) assays. The results showed that for all the activity assays, infusion and decoction of the S. lycia have good activity.

Keywords: Lamiaceae, Sideritis lycia Boiss. & Heldr., Antioxidant activity.

Antioxidant Capacities Of Sulfur-Containing Alkyne Derivatives

Metin Konus[a*], Can Yilmaz[a], Arif Kivrak[b], Bahzad Ahmed Khorsheed[a]

[a]Department Of Molecular Biology And Genetics, Faculty Of Science, Yuzuncu Yil University
[b]Department Of Chemistry, Faculty Of Science, Yuzuncu Yil University

*mkonus@yyu.edu.tr

Abstract:

A molecule that inhibits the oxidation of other molecules called as an antioxidant. Oxidation is a chemical process involving the loss of electrons which may cause production of free radicals. After that, free radicals can start chain reactions. As the chain reaction occurs in a cell, it can cause damage or death to the cell. Antioxidants can terminate these reactions by removing radical intermediates. They are doing these processes by being oxidized themselves, so antioxidants are generally reducing agents. Sulfur element is an important part of many enzymes and antioxidant molecules. Sulfur-containing compounds can efficiently form a line of defense against reactive oxygen and nitrogen species.

In this study, four different antioxidant capacity determination methods (DPPH, ABTS, phosphomolybdenum and Reducing power tests) were used to test in vitro antioxidant capacity of two different sulfur containing alkyne derivatives. According to the antioxidant capacity test results, antioxidant capacities of both sulfur containing alkyne derivatives could not be determined with DPPH and reducing power methods. However, it was found that 3-((2-(methylthio)phenyl)ethynyl)thiophene showed higher antioxidant capacity compared to 2-ethynyl-3-(phenylethynyl)thiophene in ABTS assay. In addition, 2-ethynyl-3-(phenylethynyl)thiophene showed higher antioxidant capacity compared to 3-((2-(methylthio)phenyl)ethynyl)thiophene in the phosphomolybdenum assay.

Consequently, all results in this study indicated that both tested compounds did not seem to be potential drug candidate according to these antioxidant capacity determination tests.

Keywords: Alkyne Derivaties, Antioxidants, Antioxidant Capacity, Sulfur

Antiulcerative Effects Of Apricot Kernel Oil On Ethanol-Induced Gastric Damage In Rats

Ihsan Karaboga[a*], Mustafa Erboga[b], Mehmet Alpaslan[a], Ahsen Yilmaz[c]

[a]Namik Kemal University, School Of Health
[b]Namik Kemal University, Faculty Of Medicine, Department Of Histology And Embriology
[c]Namik Kemal University, Faculty Of Medicine, Department Of Biochemistry

*ikaraboga@nku.edu.tr

Abstract:

Treatment of gastric ulcers with medicinal plants is quite common in traditional medicine worldwide.This study was conducted to evaluate the antiapoptototic and antiinflammatory effect of Apricot Kernel Oil (AKO) in the rats induced gastric ulcer by absolute ethanol. Eighteen male Wistar albino rats were used in this study. Rats were divided three group, randomly. Group I (Control, n=10), Group II (Ethanol, n=10, 1 mL ethanol, orally, 90 min) Group III (AKO + ethanol, AKO 1 mL, 120 min; 1 mL ethanol, 90 min, orally). Gastric ulcer score was determined in gastric mucosa by morphometrically. Immunohistochemical iNOS staining, apoptotic TUNEL staining, gastric IL-10 and IL-6 expression (ELISA) and SOD, MDA, CAT levels were assessed in gastric tissue. The results showed that ethanol incuded gastric damage, higher gastric ulcer score, increased proinflammatory IL-6 level, elevated number of iNOS and TUNEL-positive stained cell number as well as higher MDA level in the group II (ethanol). Pre-treatment of AKO (group III) significantly attenuated the gastric lesions as compared to the group II (ethanol).öIt was concluded that AKO may represents a potential therapeutic option to reduce the risk of gastric mucosal ulceration and the gastroprotective activity of HP might contribute in adjusting the inflammatory cytokines by regulating the IL-6 and IL-10 and its antioxidant properties.

Keywords: Gastric ulcer, Apricot kernel oil, ethanol, IL-6, IL-10

Assessing Antiandrogenic Effects of Propyl Paraben Using the Hershberger Bioassay

Ecem Ozdemir[a*], Nurhayat Barlas[a]

[a]Hacettepe University

*ecemozdemir@hacettepe.edu.tr

Abstract:

Propyl paraben is widely used as antimicrobial excipients in pharmaceuticals, personal care products and foods preventing microbial and fungal contamination. However, an increasing number of reports have indicated the negative effects of exposure to parabens on male reproductive system. In terms of researching the antiandrogenic effects of propyl paraben we found that no previous studies have reported the antiandrogenic effects of propyl paraben on castrated immature male rats with the Hershberger Bioassay (OCSPP Guideline 890.1400). In this assay we investigated possible antiandrogenic profiles of propyl paraben following single oral doses at 10, 250 and 750 mg/kg/day to castrated immature male Wistar Albino rats. According to Hershberger Bioassay, at their 6 weeks of age, rats were castrated and given 8 days for recovery. After recovery period, rats were divided into six groups including the vehicle control, negative control (0.4 mg/kg/day TP), positive control (3 mg/kg/day FLU + TP) and propyl paraben treatment groups (10, 250, 750 mg/kg/day PP + TP). Each animal was observed once in a day and body weights plus food and water consumption were noted. After 10 days of treatment period, rats were killed and the accessory sex organs plus liver and kidneys were carefully weighed. Testosteron propionate (TP), as reference androgen, increased the weights of accessory sex and optimal (liver, kidney) organs at 0.4 mg/kg/day and flutamide (FLU), decreased all the TP-stimulated organ weights at 3.0 mg/kg/day. Propyl paraben significantly decreased the all organ weights at each dose of 250 and 750 mg/kg/day. Thus, we found that propyl paraben is antiandrogenic within the supported results of increasing LH levels and histopathologic results such as atrophy, decrease in epithelium height and hyalinization on androgenic tissues.

Keywords: Propyl paraben, Toxicology, Hershberger bioassay

Au/n-si and Au/PLilPCLPtBA/n-si Diodes' Electrical Properties Comparision

Muharrem Gokcen[a], Ersin Orhan[a*], Abdulkadir Alli[a]

[a]Duzce University

*ersinorhan@duzce.edu.tr

Abstract:

Two different Au/n-Si Schottky diodes were composed with and without poly(linoleic acid)-g-poly(caprolactone)-g-poly(t-butyl acrylate) (PLilPCLPtBA) graft copolymer interfacial layer. By a purposive arrangement in monomers, many properties of graft copolymers can be adjusted. Thus, graft copolymer materials have an important role in the development of novel smart and purposive polymers for various applications due to the fact that these materials have flexible, simpler and cheaper fabrication process. A comparison study was conducted between Au/n-Si and Au/PLiPCLPtBA/n-Si diodes to obtain the effects of novel interfacial layer on Schottky diode's electrical characteristics in dark and under various illumination intensities. The back ohmic and top rectifier contacts of the diodes have formed by a metal evaporator system. The interfacial PLilPCLPtBA layer was coated onto n-Si by electrospinning technique to achieve nano fibers interfacial layer. These diodes' electrical properties have been investigated by current–voltage (I–V) measurements conducted in dark and various illumination intensity levels at room temperature. Some main electrical parameters of these diodes such as resistances, ideality factor (n), leakage current (Io), barrier heights (□B) and surface states density (NSS) were extracted from I–V data.

Keywords: Graft Copolymer, Schottky Diode, Linoleic Acid, Electrical Properties

Bianchi-Type V Universe in f(T) Gravity

Murat Korunur[a*], Mustafa Salti[b], Oktay Aydogdu[b]

[a]Munzur University
[b]Mersin Universty

*muratkorunur@yahoo.com

Abstract:

Energy and momentum localization problem is one of the most studied and unsolved puzzles in both the general theory of relativity and teleparallel gravity. Recently, this significant problem has been taken into account also in some modified gravity theories. In this work, we consider the Bianchi type-V space-time model to calculate localized energy density in the framework of modified gravity. We also specify our results by making use of some well-known f(T)-gravity models.

Keywords: Bianchi type-V space-time; Energyand Momentum; Modified Gravity; Teleparallel Gravity

Biological Activity Studies Of Dyestuffs In Hazelnut Shells

Sibel Bayil[a], Esra Kutuk[b], Bora Karagul[b], Umit Cakir[c], Halil Ibrahim Ugras[c*]

[a]Gaziantep University
[b]Duzce University
[c]Balikesir University

*halilugras@gmail.com

Abstract:

Nowadays synthetic dyestuffs are now becoming more and more toxic to humans and the environmently because some of them are carcinogenic or form carcinogenic intermediates by fragmentation. In recent years, demand for hygiene and nature has increased for textile rinse by high purchasing customer volume. This demand will be achieved when textile materials are colored with natural dyestuffs materials. Among the natural dyestuff materials are the plant materials that hold a large amount of space. They can be obtained from plants called paint plants or from vegetable wastes. Contrary to the fact that natural dyestuffs can be obtained even from paint plants or agricultural wastes, most of them have anti-microbial activity..

Turkey has the most favorable conditions for planting and growing hazelnuts. Today, nearly 300 families in the Black Sea region of our country, especially in the eastern part of the country, grow about 600 thousand hectares of hazelnut nuts and about 8 million people live directly or indirectly from hazelnut farming. In our country, hundreds of thousands of tons of hazelnut growth (nut hard brown shell, green shell and leaf) arise every year.

The total amount of phenolic substances in extracts obtained from different solvents (acetone, water, ethanol and acetic acid), time (2-4 hours) and temperatures (50, 75 and reflux) from hazelnut wastes (nut hard brown shell, nut green shell and nut green leaf) and the total amount of flavonoid was measured by spectrophotometric method. Rel Assay Diagnostics kit which ist he total antioxidant level (TAL) and total oxidant level (TOL) for antioxidant activity and 1,1-diphenyl-2-pikrilhyrazil (DPPH) assay for antiradical activity were used. For DNA-protecting activity, pBR322 plasmid DNA and UV-C method was used.

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Keywords: Hazelnut barks&shells, Dyestuff, DPPH, TAS, TOS, UV-C

Bioremoval of textile dyes by Bacillus sp. isolates in aerobic conditions

Sevgi Ertugrul Karatay[a*], Ekin Demiray, Gonul Donmez[a]

[a]Ankara University, Faculty Of Science, Biology Department

*sertugrul@ankara.edu.tr

Abstract:

The effluents of synthetic dyes and dye solvents used for textile, paper, pharmaceutical, cosmetics and food industries create serious damage to environment. Because they have toxic, mutagenic and carcinogenic effects. Furthermore these colorful effluents has adverse effects for photosynthetic activity in aqueous sysytems.

To overcome the nagative effects of these dyes on environment, several methods such as physical, chemical and biological has been developed. Among them biological methods are often considered as the most economical and ecofriendly alternative process when compared with the other processes. Some specific microorganisms such as microalgae, fungi, yeast and bacteria can be utilized as bioagents for decolorization of textile dyes in wastewaters.

In our current study we used two different Bacillus sp. isolates for removal of Reactive Black 5 (RB 5) and Remazol Brilliant Blue R (RBBR). The bioremoval experiments were performed in 8% molasses medium. The dye removal properties of the bacteria were investigated in a batch system as a function of initial pH and dye concentrations. It was observed that the first isolate could remove 42.4 mg/L RB 5 with the yield of 32.5% at the end of first day incubation time at pH 7. The bioremoval yield was increased in the following days. The highest yield was obtained as 54.4% at the end of fourth day. The second Bacillus sp. isolate could only remove 48.4 mg/L RBBR as 19.1% at the end of fourth days incubation time. The study shows that Bacillus sp. isolates have practical application potential in the bioremoval of dyes which have different chemical structures.

Keywords: textile dye, bioremoval, bacteria

Calixarene modified montmorillonite as novel matrix for biosensing applications

Esra Evrim Yalcinkaya[a*], Serkan Sayin[b], Huseyin Bekir Yildiz[b], Suna Timur[a], Dilek Odaci Demirkol[a]

[a]Ege University, Faculty Of Science Chemistry Department, Bornova-Izmir/Turkey
[b]Kto Karatay University, Department Of Materials Science And Nanotechnology Engineering, Konya, Turkey

*eevrimsaka@yahoo.com

Abstract:

Immobilization of the enzymes in a suitable matrix is crucial for fabrication of biosensor systems and other enzyme-based diagnostic techniques. In the literature, various techniques and immobilization materials have been attempted to fabricate enzyme biosensors [1]. Clays are one of the advantageous materials to design different immobilization matrices for biomolecule immobilization due to their high stability, good adsorptive capacity, large specific surface area, stick out adhesiveness and low costs [2] Laponite, montmorillonite (Mt), nontronite and layered doublehydroxides (LDHs) are well known smectite clay minerals that already were exploited in numerous biosensor studies. Mt is a naturally occurring cationic phyllosilicate and composed of silica tetrahedral sheets layered between alumina octahedral sheets. Calixarenes which are cyclic oligomers, are synthesized traditionally via oligomerization of phenol and formaldehyde [3]. Due to their excellent ability to form host–guest complexes and their multi center bonding with guest molecules, calixarenes can selectively bind different inorganic and organic compounds. In this work, amino-functionalised calixarenes (Calix-NH2) were synthesized and used as a modifier salt which is then, as a platform for the enzyme immobilization. X-ray diffraction, Fourier transform infrared spectroscopy, zeta potential and thermal gravimetric analysis were performed to verify the modification of the clay minerals.

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Keywords: clays, enzyme immobilization, calixarenes, intercalated

Canonical Correlation Analysis of Egg Production Traits on Quails

Cigdem Takma[a], Yakut Gevrekci[a], Muzaffer Cevik[a*], Emine Dilsat Yegenoglu[b], Abdullah Nuri Ozsoy[b]

[a]Ege University
[b]Celal Bayar University

*muzaffercevik1905@gmail.com

Abstract:

In this study, canonical correlation analysis was applied to quail data for estimating egg productions. The model is defined body weight of sexual maturity, chick out time and chick length, as the first set of variables (X) are predictor or independent set with egg number of total 10 weeks, egg weight of total 10 weeks as the second set of variables (Y) are dependent variable set in the study. It is aimed that get the maximum relationship between sets of variables.

Canonical variables were obtained from the linear combinations of the variables in each set. Canonical correlations between the first and the second pair of canonical variates were estimated and first canonical correlation was foung significant ($P < 0.01$). Canonical weights and loadings from canonical correlation analysis indicated that age at sexual maturity had the largest contribution as compared with chick out time and chick length to variation of egg number of total 10 weeks, egg weight of total 10 weeks

Keywords: canonical correlation; canonical variable; egg production; egg weight

Characterization of Polyvinyl alcohol / Clay Nanofibers Prepared by Electrospinning Technique

Esra Evrim Yalcinkaya[a*], Betul Unal[a], Suna Timur[a], Dilek Odaci Demirkol[a]

[a]Ege University, Faculty Of Science Chemistry Department, 35100 Bornova-Izmir/Turkey

*eevrimsaka@yahoo.com

Abstract:

Electrospun nanofibers have been used in a variety and a wide range of applications including sensors, tissue engineering, wound dressing, filtration, fuel cell, capacitors, etc. [1,2]. However, such applications require tailoring of the chemical composition, hydrophobicity, nanofiber surface porosity. Incorporation of fillers into the electrospun nanofibers has been recently used to prepare composite nanofibers since it is an economic, easy and effective way to introduce functionality into the electrospun nanofibers [3,4]. Depending on the nanofillers geometric shape, one can distinguish three categories of nanomaterials: spherical (e.g. metal or metal oxide nanoparticles and), fiber-like (e.g. carbon nanotubes or metal nanowires and) and layered silicates.The commonly layered silicates used in preparing polymer–clay composites belong to 2:1 phyllosilicates having ion exchange properties (e.g. Na-montmorillonite). In this study, the one step incorporation of Na-montmorillonite (Na-MMT) layered silicate into polyvinyl alcohol nanofibers by electrospinning is reported with the aim of keeping the ion-exchange properties of Na-MMT. The influence of electrospinning process on the crystallographic structure of Na-MMT were investigated. The nanofibers were characterized by using FTIR, XRD, TGA/DTG, SEM and Contact Angle methods.

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Keywords: Electrospun, nanofibers, clays, PVA

Chitosan Based Edible Films Enriched with Black Cumin Oil and St. John's wort Oil

Duygu Altiok[a*], Sibel Telli[a]

[a]Department Of Food Engineering, Engineering Faculty, Giresun University

*duygu6ok@gmail.com

Abstract:

The most important hurdle in food industry is the limited shelf life of foods due to enzymatic browning, oxidative rancidity and microbial spoilage. The edible films or coatings have recently been used to overcome these problems. Due to their significant antimicrobial and antioxidant activities, incorporation of essential oils into edible films is promising. These films may extend the shelf-life of product and provide microbial safety for consumers. The antioxidant activity of these films breeds some desirable results like discoloration and reducing the rate of particular oxidation reactions by migrating to food. The main objective of this study was to prepare chitosan based films enriched with black cumin oil and St. John's wort oil for potential use as active packaging having both antioxidant and antimicrobial properties. Chitosan solution was obtained by solvent casting and essential oils were incorporated to form a homogeneous emulsion. Then the film forming solution was dried at 40˚C for 24h. The disc diffusion method was used to determine the antimicrobial activity of essential oils and films on Escherichia coli and Staphylococcus aureus. The antioxidant activity of black cumin oil and St. John's wort oil were determined by ABTS method. Essential oil incorporated chitosan films were homogeneous, brilliant and flexible. Antimicrobial activity test indicated that black cumin oil has stronger antimicrobial activity than St. John's wort oil on test microorganisms. Besides that, the ABTS discoloration provided the information on the antioxidant activity of these essential oils. Accordingly, resulting essential oil incorporated films showed both antimicrobial and antioxidant activity. This study indicates that chitosan films enriched with black cumin oil and St. John's wort oil have great potential to be used as functional food packaging material. These antioxidant and antimicrobial films may enhance the product quality and increase shelf-life of food.

Keywords: Chitosan, edible film, black cumin oil, St. John wort oil, antimicrobial, antioxidant

Cholesterol Assimilation Ability of Lactobacillus gasseri Isolated from Vaginal Tract of Healthy Woman

Esin Kiray[a*], Ergin Kariptas[a]

[a]Ahi Evran University

*esin.kiray@ahievran.edu.tr

Abstract:

Elevated levels of blood cholesterol are associated with cardiovascular disease, a leading cause of morbidity and mortality worldwide. Current therapies for addressing elevated blood cholesterol can be inadequate, ineffective or associated with side effects; therefore, the search for additional therapies is ongoing. The aim of this study was to evaluate the functional properties of Lactobacillus gasseri from vaginal tract of a healthy woman and to identify strains for use as probiotics. The L. gasseri was tested for its ability of bile tolerance, acid resistance and cholesterol assimilation activity. The strain was tested for resistance to bile salts (0.3 %) and tolerance to low pH (2.0-3.0). After treatment with bile salts and acid, viable bacteria (log cfu ml-1) was determineted by surface planting. The cholesterol content of the bacteria supernatant was determined using a modified colorimetric method. The results showed that tolerance of L. gasseri to pH 2.5 and a high bile salt concentration 0.3 % and was found to reduce cholesterol levels by >40% in vitro. The results suggest that selected strain was able to remove cholesterol in vitro by inhibiting the formation of cholesterol micelles with bile acids. The strain evaluated demonstrated sufficient acid and bile tolerance to be resistant to physiological stomach and intestinal conditions, making it potentially useful candidates for the development of probiotics.

Acknowledgements: This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number PYO-FEN.4001.16.012

Keywords: Key words: Lactobacillus gasseri, vaginal tract, probiotic properties, cholesterol assimilation

CO2 Adsorption on MCM-41 Mesoporous Silica

Muge Sari Yilmaz[a*]

[a]Department Of Chemical Engineering, Faculty Of Chemical And Metallurgical, Yildiz Technical University

*sarimuge@gmail.com

Abstract:

Global warming due to increasing of carbon dioxide (CO2) produced by the consumption of increasing amounts of fossil fuels is a severe environmental problem. Currently, CO2 capture research is getting a lot of attention to combat anthropogenic global warming phenomenon. For this reason, amine-functionalized solid sorbents, zeolites and some types of activated carbons were used in CO2 adsorption processes. The disadvantages of these adsorbents are regeneration cost and inefficiencies; they present a steep drop in CO2 adsorption capacity at temperatures higher than 25 °C or in the case of low CO2 partial pressures, which are typical post combustion conditions. With the aim of overcoming these problems, mesoporous silica is being one of the most promising adsorbents due to their excellent textural properties. Ordered mesoporous materials have attracted considerable attention in scientific and technological applications due to their high pore size, large surface area and large pore volume. One of the mesoporous materials is MCM-41 (Mobil Composition of Matter No. 41). In this study, the mesoporous silica MCM-41 was successfully synthesized from sodium silicate solution in order to evaluate its CO2 adsorption performance. The synthesized sample was characterized by X-ray powder diffractometer (XRD), Fourier transform infrared spectroscopy (FTIR) and Brunauer-Emmett-Teller (BET). The CO2 adsorption capacity of the MCM-41 was measured at low pressure and room temperature by a volumetric method. As a result, the CO2 uptake capacity of the sample was found as 0.67 mmol.g-1.

Keywords: MCM-41, CO2 adsorption, adsorbent, volumetric method.

Colored Fiber Cotton In Brazil: An Analysis Of The Productive Chain

Kever Bruno Paradelo Gomes[a*], Rosana De Carvalho C. Martins[b]

[a]Instituto Federal Of Brasília
[b]University Of Brasília

*keverbruno@hotmail.com

Abstract:

Cotton cultivation is part of the culture from the northeast of Brazil, specially at Paraíba state. However, there has been a reduction at region production during the 80's with outbreak of boll weevil. Nowadays, technological innovations allowed the Paraíba state to leader the colored cotton production.The present work had the goal to present an updated diagnosis of the colour cotton productive chain from Paraíba state, Brazil, aiming the competitive niche. The criteria for competition performance was chosen, due to its comparison characteristic. Colour cotton productive systems are constituted by medium farmers and familiar farmers that cultivates agro ecological or organic cotton. In order to overcome the productive chain difficulties, on 2000 was funded the Consórcio Natural Fashion, with the purpose to promote colour cotton commercialization by means of acquisition, core and clean procedure, manufacture, sales and marketing of final products provided by fiber. Colour cotton has become a niche market in which consumers are newborn, individuals allergic to cotton artificially dyed and sustainable niche, consumers denominated "ecologically correct" that demands organic products that do not aggress the environment. The major difficulty is the insufficient investments to publicize. The products lack of knowledge affects considerably the amount of market share inclined to work this raw material and its derivatives. In addition, demand studies are required in order to assess the real market potential of this product. Predominance of the productive system permits income generation and field employment.

Keywords: Agribusiness, Agricultural biotechnology, rural development, sustainability

Comparative Investigations of Temperature and Concentration Behavior of Optical Refractive Properties in Lyotropic Systems

Yasemin Altinay[a*], Arif Nesrullazade[a]

[a]Mugla Sitki Kocman University

*altinayyasemin@gmail.com

Abstract:

Lyotropic systems are the multicomponent colloid systems of amphiphiles, solvents and various additions. Such systems are spatially homogeneous mixtures of the 3D formations in solvent. The 3D formations in such mixtures (in depend on temperature, concentration, type and number of components) are the spherical, plate and cylindrical multimolecular formations. Lyotropic systems exhibit various physical and physico-chemical properties and are very important materials for application in different fields of techniques and technology.

In this work, complex investigations of the optical refractive properties in mixtures of binary ionic amphiphile with polar solvent have been carried out. Structural units in these mixtures were normal micelles with the spherical shapes. Temperature and concentration dependences of the refractive index have been determined for such mixtures. Effect of the ratio on the refractive properties of mixtures under investigations has been found.

Results of these investigations and discussion will be presented.

Keywords: Lytropic systems, amphiphiles, micelle

Comparative Studies of Optical Transmission in Dimorphic Liquid Crystal: Homeotropic-, Planar- and Twist-Aligned Textures

Arif Nesrullazade[a*]

[a]Mugla Sitki Kocman University

*arifnesr@mu.edu.tr

Abstract:

Liquid crystalline materials exhibit unusual structural and physical properties, are sensitive materials to various external effects and boundary conditions and therefore are sufficiently perspective objects for application in special liquid crystalline devices as active displays, multimatrics elements etc. In these devices and displays the aligned liquid crystalline textures are the active elements. Besides, the aligned textures (homeotropic, planar, tilted and twist aligned textures) and non-aligned textures (specific textures in liquid crystalline mesophases) use by studies of physical anisotropic properties of these materials. In this work, we are interested in comparative investigations of the morphologic and thermo-optical properties in various types of aligned textures (the homeotropic, planar and tilted aligned) of smectic A mesophase at the direct smectic A mesophase – isotropic liquid (SmA–I) and isotropic liquid – smectic A mesophase (I–SmA).

Temperature dependencies of the optical transmission for these textures have been investigated. Temperature widths of the heterophase regions for the SmA–I and I–SmA phase transitions have been determined. Homogeneous mixtures of 4–n–octyl–4'–cyanobiphenyl with 4–n–decyl–4'–cyanobiphenyl were the objects of our investigations.

Keywords: liquid crystals, textures, phase transitions, thermo-optical properties, optical transmission

Comparison of Fluid Inclusions of Egrikar Fe-Cu, Kopuz Fe and KaradaG Fe-Cu Skarns Occurrences (Gumushane, Turkey)

Ferkan Sipahi[a*], Alaaddin Vural[a], Ibrahim Akpinar[a], Cigdem Saydam Eker[a], Abdullah Kaygusuz[a]

[a]Gumushane University

*ferkansipahi@gmail.com

Abstract:

Egrikar Fe-Cu, Kopuz Fe and Karadag Fe-Cu skarns occurrences are located in the NE Black Sea region (Turkey) belonging to the Alpin metallogenic province. The mineral paragenesis of Egrikar skarn deposit is consist of diopside, garnet, epidote, actinolite, tremolite, quartz, magnetite, and hematite, with less amount of chalcopyrite, pyrite. Mineral paragenesis of Kopuz Fe skarn occurrence are determined as diopside, garnet, epidote, quartz, magnetite and hematite, and with lesser pyrite. Diopside, wollastonite, orthoclase, garnet, epidote, quartz, magnetite and hematite, and with lesser chalcopyrite and pyrite are determined as mineral paragenesis in Karadag Fe-Cu skarn occurrence.

In Egrikar Fe-Cu, Kopuz Fe and Karadag Fe-Cu skarns occurrences, it is determined type I fluid inclusion. Microthermometric data on quartz from exoskarn zone in Egrikar show that the skarnization took place at 120° to 380°C temperatures and with salinity range of 3.4 to 7.6 wt% NaCl equivalent. Microthermometric data from exoskarn zone in Kopuz Fe skarn show 224°-350°C temperatures for quartz and calcite and 14.8 wt% NaCl equivalent.for quartz. Microthermometric data on quartz and calcite from exoskarn zone in Karadag Fe-Cu skarn occurrence show that the skarnization took place at 175°-430°C temperatures. The magnetite mineralization for Egrikar Fe-Cu skarn is characterized by homogenization temperatures 290 to 380°C and with salinity range of 3.4 to 7.6 wt% NaCl equivalent, for Kopuz Fe skarn homogenization temperatures 224-349 °C and salinity % 4.18 wt% NaCl equivalent, and for Karadag Fe-Cu skarn homogenization temperatures of 210 to 405°C and salinity 0.2 to 14.8 wt% NaCl equivalent.

Keywords: Fluid inclusion, Quartz, Skarn, Turkey,

Comparison Of Natural Wastewater Treatment Systems

Zeki Gokalp[a*], Sedat Karaman[b]

[a]Erciyes Universtiy
[b]Gaziosmanpasa University

*zekigokalp@yahoo.com

Abstract:

Natural wastewater treatment systems are constructed for domestic, industrial and agricultural wastewaters in specially design basins filled with graded substrate material and planted with aquatic plants. The treatment processes naturally encountered in natural wetlands are imitated in these systems. Natural treatment systems can be constructed either as surface flow systems or sub-surface flow systems (either horizontal or vertical flow). Each system has special advantages and disadvantages over one another. In Turkey, mostly sub-surface horizontal flow natural treatment systems are preferred. In present study, initially some design criteria for different natural wastewater treatment systems are provided. Then, different systems were compared based on both design criteria, operational and maintenance practices. Finally, a system recommendation was provided for central Anatolia provinces.

Keywords: Natural treatment, wastewater, surface flow, subsurface flow, central Anatolia

Concentrated Solar Air Collector And PV Module System With Thermal Energy Storage

Ilhan Ceylan[a], Ali Etem Gurel[b*]

[a]Karabuk University
[b]Duzce University

*etemgurel@gmail.com

Abstract:

In this study, design and application have been examined that a concentrated air solar collector and PV module system without solar tracking. Paraffin wax was used as phase change material in the system. Solar air collector has been used for heating process in winter months. With using of concentrator in the system aim to obtained suitable room temperature. In this study, energy of blower has been provided from the PV module. Concentration coefficient of concentrator has been changed between 1-1.5. Thermal efficiency of solar air collector was found as 85%. Experimental measurements were carried out during 7 hours. The solar air collector outlet temperature was not measured below 25 °C. Also outside temperatures were not measured above 10 °C. The payback period of the air solar collectors was calculated as approximately 3 years. Results of environmental analysis were shown that the system was decreased carbon dioxide emissions and water consumption.

Keywords: Solar energy, PV, Paraffin wax

Concentration and Temperature-Concentration Behavior of the Optical Refractive Properties: L1 phase in (Amphiphile1 + Amphiphile2)/Water Lyotropic System

Arif Nesrullazade[a*], Yasemin Altinay[a]

[a]Mugla Sitki Kocman University, Faculty Of Natural Sciences, Department Of Physics

*arifnesr@mu.edu.tr

Abstract:

Mixtures of ionic (cationic, anionic and zwitterionic) amphiphiles in definite temperature and concentration intervals display isotropic molecular phases, isotropic micellar phases and anisotropic micellar mesophases. Isotropic micellar and phases with normal and inverse micelles, accordingly, are the intermediate state between isotropic micellar phases and anisotropic micellar mesophases. Therefore isotropic micellar phases exhibit very interesting physical and physico-chemical properties.

In this work, concentration and temperature-concentration dependences of the optical refractive properties in isotropic micellar phase in binary amphiphilic lyotropic system have been investigated. Two amphiphilic mixtures were chosen as objects of investigations. Monotonous decrease of the refractive properties with an increase of temperature has been observed for all investigated samples. An increase of the refractive index with an increase of amphiphile concentration in amphiphile + water lyotropic mixtures has been found for these mixtures. Effect of the ratio on the refractive properties of mixtures under investigations has been found. Methods of control of the refractive properties in isotropic micellar phase will be discussed.

Concentration and temperature-concentration dependencies of the refractive index for lyotropic mixtures under investigations will be presented.

Keywords: liquid crystals, lyotropic systems, amphiphile, micelle, optical refractive properties

Conductometric Studies for Original Carbazole Schiff bases

Baki Cicek[a*], Umit Calisir[b], Umit Cakir[a]

[a]Balikesir Universty
[b]Siirt Universty

*bcicek@balikesir.edu.tr

Abstract:

In a human body, there are many vital enzymes that contains metal ions in the active regions. These metal ions, which are complexed by selected ligands, are very important to demonstrate usabilityin enzyme activation-inhibition studies in the future[1].

In this study, specific molecular interactions between metal ions and carbazole Schiff base compounds were demonstrated with conductometric method (50% ethanol-water system)[2,3]. The structure of the ligand-cation complex, the complexing constant (Ke), and conductivity parameters (such as K, Λ and α) were calculated. (Z)-9-butyl- N-(2,3,4-trimethoxybenzylidine)-9H-carbazol-3-amine (Schiff-carbazole-anisole) and (Z)-3-((9-octyl-9H-carbazol-3-ylimino)methyl)benzene-1,2-diol (Schiff-carbazole-phenol) schiffbases were used with AgNO3, CaCl2, MgCl2, FeSO4, ZnSO4 metal salts to discover conductivity properties [4]. Binary mixed aqueous solutions are applied to organic chemistry from mechanistic and synthetic studies to biophysical chemistry. Stability constants of macrocyclic compounds complexes are determined by various methods, such as potentiometry , polarography, voltammetry, spectrophotometry, nuclear magnetic resonance, calorimetry and solubility. Conductometry is used advantage of it can measure at very low concentrations in solution systems.

Activation-inhibition studies of enzymes, which are important parts of biological systems, are costly and take a long time. The application of the method as a pre-treatment to all enzymatic studies will facilitate scientists in enzyme activation-inhibition studies.

Keywords: Schiff base, Carbazole, Conductometry, Conductivity parameters

Control and Simulation of High Altitude Zero Pressure Balloons

Oznur Kayhan[a*], Ozgun Yucel[b], M.Alaittin Hastaoglu[a]

[a]Gebze Technical University-Chemical Engineering Department

*okayhan@gtu.edu.tr

Abstract:

High altitude balloons as high altitude platform are capable of reaching the desired altitude (20, 30 km or higher) and can carry heavy loads to near space environment to manage atmospheric studies, earth observation, telecommunication or other applications. High altitude zero pressure balloons are conventional way of scientific gas balloons. Control mechanism is one of the key issues to design safe and reliable long endurance high altitude balloons. Many studies about the zero pressure balloons have focused on conventional methods using ballast to control and keep the balloons at constant altitude. On the basis of balloon dynamics, transport phenomena aspects, gas compress-release control model developed is used to describe the ascent, descent and floating processes and extend flight time without using ballast. In this study, the main program for altitude control and transport phenomena for zero pressure balloons was written in Matlab software package. Gas Compress-Release velocity control model was solved using Matlab/Simulink solver program. The PID control effect is discussed in detail. Balloon system can keep its altitude (30 km) for 330 days and be controlled to start descent by compress-release mechanism with PID control. It was found that the PID controlled Gas-Compress-Release model helps the balloon reach the desired altitude, stay there for a longer period, change the elevation and adjust descent rate without using ballast. Using the model, the temperature, heat and mass transfer aspects and dynamic velocity of the balloon are calculated continuously.

Keywords: Zero Pressure Balloons, High Altitude, Control, PID

Correlation Of Thermal Structure And Vp Velocities Of The Aegean Region

Ezgi Erbek[a*], Mustafa Nuri Dolmaz[a]

[a]Suleyman Demirel University

*ezgierbek@sdu.edu.tr

Abstract:

The Aegean Region is located in western part of Turkey. The region is one of the most seismically active region and is affected by Hellenic subduction system. This study presents correlation of thermal structure and Vp velocities of the Aegean Region. In order to determine thermal structure for the region, CPD (Curie Point Depths) were estimated from power spectrum of magnetic data. Estimating CPD and heat flow calculated from them are ranges 9.8-19.5 km and 51-125 mWm-2, respectively. Using heat flow values, the distribution of Vp velocities was determined to be 3.6- 4 km/s. Obtained distribution maps of heat flow and Vp velocities indicate that low heat flow values correspond to high Vp velocities in the Aegean Sea and this situtiation is thought to be related to asthenospheric upwelling. All results show good agreement with the thermal structure and slab geometry in the Aegean Region.

Keywords: Aegean region, thermal,Vp

Correlations Between Milk Components Of Holstein Cows And Their Live Weights

Yeliz Yilmaz[a], Murat Cimen[a*]

[a]Munzur University

*mcimen@munzur.edu.tr

Abstract:

The interactions and relationships between milk parameters and animal factor in dairy animals are important for dairy sector and producers. In the study, 30 Holstein cows were used. To determine milk composition, samples were obtained from each cow at first day of last week in 1. month of early lactation period by hand milking. Correlations between milk parameters and dam live weight were calculated using Pearson Correlation coefficients. There were no found correlations between dam live weight and milk pH, non-fat solid, total fat in study. It is understood that there were no correlations between dam live weight and milk constituents of Holstein cows in first month of early lactation period and these findings were similar to results of dairy cows in literature. The correlations for many observed biochemical parameters in milk were not clear in Holstein cow during early lactation period. The interactions and relationships between milk parameters and animal factor in dairy animals have been investigated in a limited number of researches. But no detailed studies were found on Holstein cows for dam live weight factor. Further studies are needed to investigate on relationships between milk components and dam live weight.

Keywords: Correlation, milk, cow, live weight

C-Reactive Protein And Some Biochemical Parameters In Female Dogs After Ovariohysterectomy

Nejra Hadzimusic[a*], Amina Hrković-Porobija[b]

[a]Veterinary Faculty University Of Sarajevo
[b]Department Of Chemistry And Biochemistry And Physiology, Veterinary Faculty, University Of Sarajevo

*nejra.hadzimusic@vfs.unsa.ba

Abstract:

An increase in serum CRP concentration as well as changes in some biochemical parameters have been described after different surgical procedures in dogs. Ovariohysterectomy is widely used as a method of contraception and a large number of female dogs are exposed to surgery for neutering each year. The aim of this study is to investigate CRP concentrations before and after ovariohysterectomy, as well as correlation between CRP concentrations and some biochemical parameters (total protein, albumin, alkaline phosphatase, alanine transaminase, aspartate transaminase and lactate dehydrogenase). Ten clinically healthy female dogs were admitted to elective ovariohysterectomy. Blood samples were collected from distal cephalic vein just before ovariohysterectomy (base values) and after 24 hours (Day 1), 48 hours (Day 2), 72 hours (Day 3) and seven days (Day 7). Results: The mean serum levels of CRP on Day 1 (85.15 ±16.2 µg/mL) and Day 3 (31.27 ± 12.06 µg/mL) were significantly higher ($P<0.001$ for Day 1 and $P<0.05$ for Day 3) than the base value (15.35 ± 13.77 µg/mL). No statistical difference was found between the base value and Day 7 (12.08 ± 4.91 µg/mL). There was no significant relationship between CRP levels and investigated biochemical parameters. Present study shows that CRP changes rapidly, whereas maximum CRP concentration was detected on the first day after surgery, while on the seventh postoperative day serum CRP concentration was within physiological ranges. During postoperative period changes in CRP concentration and investigated biochemical parameters showed no significant correlation.

Keywords: CRP, TP, ALB, ALP, ALT, AST, LDH, DOGS, OVARIOHISTERECTOMY

Degradation of Flatulence Causing Oligosaccharides Present in Soy Milk by Sepabead EC-EA and Sepabead EC-HA Immobilized Alpha-Galactosidase

Secil Onal[a*], Evran Bicak Celem[a]

[a]Ege University, Science Faculty, Biochemistry Department, Izmir-Turkey

*secil.onal@ege.edu.tr

Abstract:

Usage of soy based products is limited because of antinutritional factors including oligosaccharides of the raffinose family which not only diminish their nutritive value but also restric their wider acceptance. Soy milk contains considerable amount of oligosaccaharides(1-2% raffinose, 3.5-4.5% stachyose, smaller amounts of mellibiose and verbascose) which are responsible for the flatulence. So, there is a high demand for a-galactoside free soybean products. We aimed to research useability of both free and immobilized enzymes in the hydrolysis of raffinose and raffinose type oligosaccharides present in soymilk. The hydrolysis of raffinose-type oligosaccharides present in soymilk were studied in batch-stirred reactors with both soluble and immobilized enzymes. Carbohydrate analysis of hydrolysis samples were made by HPLC-RID. The quantity of total carbohydrate present in soymilk was determined by phenol-sulphric acid method. Galactose (10-100mg/ml) was used as standard. Individual sugars of soymilk were also identified and quantified by comparison with retention times and known concentrations of standard sugars. After 24 h, Sepabead EC-EA immobilized enzyme hydrolysed 84.4% of raffinose and 92.3% of stachyose and Sepabead EC-HA immobilized enzyme hydrolysed 88.6% of raffinose and 100% of stachyose present in soymilk. At the same time period free α-galactosidase enzyme hydrolysed nearly 100% of both raffinose and stachyose present in soymilk. The difference between the hydrolysis degrees of immobilized and soluble enzymes may be caused by the diffusional limitations. The use of the above biocatalysts for the hydrolysis of raffinose type oligosaccharides present in soymilk shows that it may also find an application area in sugar-beet industry.

Acknowledgement: Thanks to Ege University Research Foundation (Project ID: 2009 FEN 010) for financial support and Dr. P. Caimi (Resindion S.R.L.) for providing us Sepabead supports and technical help.

Keywords: α-Galactosidase, Immobilization, Sepabead EC-EA, Sepabead EC-HA, Raffinose hydrolysis.

Dertermination of Middle Anatolian's Seismic P Wave Structures with Earthquakes in 2016

Ibrahim Hakan Demirsikan[a*], Sakir Sahin[a]

[a]Suleyman Demirel Universty

*qqqhakanqqq@hotmail.com

Abstract:

In this study, a seismic P wawe tomography technique was applied to arrival time data generated by 1123 crustal earthquakes occurred in 2016 at central Anatolia. In order to study Vp structures and their relation with seismic activities, we used P wave tomography method in the study region. Study area bordered with 35 N – 42 N latitude and 32 E – 38 E longitude. The inversion results indicate the existence of structral heterogeneities in the crust and uppermost mantle beneath central Anatolia. We checked Vp wawe's velocity ratio values coherence with Earthquakes occurred in 2016. Low-velocity anomalies are imaged the existing active fault segments beneath the study area. We decleared the study area which is under stress and which is not. Active earthquake activity areas or unactive areas could be shown in the study. The obtained the Vp velocity Ratio values are consistent with previous geophysical measurements conducted beneath central Anatolia and give understanding of the current seismotectonic activities in this region.

Keywords: Center Anatolia, P Wave Tomography, Seismic Velocity Structures, Earthquakes.

Determination of Antimicrobial and Antioxidant Activities of Some Edible Wild Plants Grown in Hakkari, Turkey

Serpil Ugras[a*], Sultan Ulger[a]

[a]Duzce University

*serpilkus@gmail.com

Abstract:

Natural products are used for the discovery of modern drugs. Many plants have been used because of their antimicrobial or/and antioxidant traits, which are due to compounds synthesized as the phenolic compounds. The scientists continue the study to development of alternative natural products. In order to obtain therapeutic substance, in this study, the antibacterial and antioxidant activities of naturally growing plants (known as siyabo and mende) were investigated. The plants are having medicinal value for people in Hakkari and its around. Hexane, ethanol and acetone extracts of two plants were evaluated for DPPH (2,2-diphenyl-1-picryl-hydrazyl) and ABTS (2,2'-azino-bis-(3-ethylbenzothiazoline-6- sulphonic acid) free radical scavenging (antioxidant) activity and antimicrobial activity with agar well diffusion method. The high antimicrobial activity of the extracts was determined against indicator microorganisms as Yersinia pseudotuberculosis ATCC 911, Staphylococcus epidermidis ATCC 12228, Enterobacter cloaceae ATCC 13047, Salmonella typhimirium ATCC 14028, , Klebsiella pneumoniae ATCC 13883, Enterococcus faecalis ATCC 29212 and Candida albicans ATCC 64548 using the agar well diffusion method. Furthermore, the high antioxidant activities of the extracts were determined with two methods.

Keywords: Antimicrobial activity, Antioxidant activity, Edible Wild Plants, Turkey

Determination Of Correlation Time Modulating Relaxation Times Of Pepsin Enzyme Using 64 Mhz Mr Spectrometer

Bilgin Zengin[a*], Sibel Korunur[a], Ali Yilmaz[b]

[a]Munzur University
[b]Batman University

*bilginzengin@munzur.edu.tr

Abstract:

In this work, we investigate 1/T1 (spin-lattice) and 1/T2 (spin-spin) relaxation rates in H2O of solutions of Pepsin enzyme versus concentration at room temperature using 64 MHz (1.5 Tesla) MR spectrometer. The 1/T1 and 1/T2 relaxation rates at 64 MHz increase linearly with concentrations. The correlation time (τ) modulating relaxation mechanism was calculated 64 MHz by using theory derived in this work.

It is shown that T1/T2 relaxation rates can be used for the accurate calculation of correlation time values when proteins and enzymes were assumed to be spherically symmetrical. The results obtained for pepsin enzyme suggest that the relaxation rates are caused by dipolar interaction modulated by molecular tumbling. The fast chemical exchange of protons between free and bound water is also involved in the process.

Keywords: 64 MHz MR, τ correlation time, dipolar interaction

Determination Of Cytotoxicity In Triblock Polymer Bound-Cisplatin On Ovarian Cancer Cell

Nur Selvi Gunel[a*], Buket Ozel[a], Guliz Ak[a], Irfan Akartas[a], Ercument Karasulu[a], Yesim Karasulu[a], Senay Sanlier[a]

[a]Ege University Medical School Department Of Molecular Biology

*selvi.nur@gmail.com

Abstract:

Cancer, today, is one of the most threatening diseases to society. Ovarian cancer is the ninth most common cancer in women and the most lethal gynecologic cancer. Depending on the location and stage, many types of cancer may be treated with surgery, radiotherapy and chemotherapy. Platinium is most commonly used chemotherapeutic agent and it is chosen as first stage drug in ovarian cancer. The Cisplatin-modified primer is indicated for the treatment of patients with advanced- stage refractory ovarian cancer. Classical drug application routes in chemotherapy are oral and intravenous. There are some disadvantages of these methods.. Nowadays, in order to eliminate or minimize the observed negativity in treatment, targeting studies that are increasing the delivery to cellular levels, changing the pharmacokinetic and pharmacodynamic properties of drugs and ensuring the efficient and safety treatment should be realized. In this study, we prepared PGA-PEG-PLGA triblock polymer which was-bound to cisplatin and the cytotoxic effect of cisplatin and cisplatin-bound triblock polymeric conjugate on ovarian cancer cell line (OVCAR3) was evaluated. In the first step of the present work, triblock polymer was synthesized. Amide linkage was formed between the free carboxyl group at the end of the PEG-PLGA polymer and the free amino group in the cisplatin-PGA complex structure through NHS ester formation. In the second step of the study, we investigated the cytotoxic effect of triblock polymer and free cisplatin on OVCAR3 over-cells via the WST-1 test. The cell viability percantage were assessed by comparing with the absorbance values of the untreated control cells.The IC50 values of free cisplatin and triblock polymer bound to cisplatin were calculated using the GraphPad Prism 5 program and results were determined.

Keywords: Triblock polymer, cisplatin, PGA-PEG-PLGA triblock polymer, ovarian cancer, cytotoxicity

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Determination of Some Biological Properties of PAA Nanocomposites

Serap Dogan[a*], Seyman Kirmizi[a], Yasemin Turhan[a], Mehmet Emin Diken[a], Begumhan Yilmaz[a], Mehmet Dogan[a]

[a]Balikesir University

*sdogan@balikesir.edu.tr

Abstract:

Biocompatibility problems can occur in the materials synthesized for biomedical applications. Therefore, some biocompatibility parameters of biodegradable poly(acrylic acid) (PAA) polymers with nanohydroxyapatite (nHAP) and modified nanohydroxyapatite samples in different concentrations (0, 1, 2.5 and 5 %) were aimed to be investigated in this study. Hemocompatibility analyses were performed using a spectrophotometer with microplate reader. Cytotoxic effects of the samples on human lymphoctes were determined by cell proliferation assay using [3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium inner salt; MTS] and a live cell imaging sytem (JuLI) performing the tryphan blue method. In addition, antimicrobial activities of the nanocomposites in different concentrations were shown by disc diffusion method using a gram negative (Escherichia coli ATCC-8739) and a gram positive (Staphylococcus aureus ATCC-6538) bacteria. According to our results, lymphocytes treated with the nanocomposites containing 5% nHAP showed lowest cytotoxicity after 72 hours of incubation. It was also found that all of the nanocomposites have antibacterial activity against Escherichia coli and Staphylococcus aureus. In addition, none of the nanocomposites synthesized in this study showed hemolysis effect. To conclude, all of the materials synthesized in this study were found as biocompatible and can be used for biomedical applications.

Keywords: Nanocomposites, PAA, Nanohydroxyapatite, Antibacterial activity, Cytotoxicity, Hemocompatibility

Determination of VASA (DDX4) and IFITM3 Immunolocalization in Experimental Hyperthyroidism Rat Ovaries

Serpil Unver Saraydin[a*], Kubra Basol[b]

[a]Cumhuriyet University Medicine Faculty Histology Embryology
[b]Cumhuriyet University Medicine Faculty

*unversaraydin@gmail.com

Abstract:

Hyperthyroidism is a clinical table formed by the excretion of excessive thyroid hormone from the thyroid gland. VASA is an ATP-dependent RNA helicase that is a key member of the DEAD-box protein family. Interferon-induced transmembrane protein3 (IFITM3), known as 1-8U, is one of the important members of the IFN-inducible transmembrane protein family. In this study, we investigated the relationship between VASA and IFITM3 with hyperthyroidism by showing immunolocalization in hyperthyroid rat ovaries. L-thyroxine was injected through subcutaneous injection at 250 mcg/kg/day for 21 days to induce hyperthyroidism in adult female rats. The control group was injected with saline. Afterwards, cardiac blood was removed, euthanasia was ensured and ovarian tissue was collected. It has been shown that VASA is intensively expressed in the oocytes and the teka layers of growing folliculs in hyperthyroid rats, IFITM3 is also strongly expressed in the germinal epithelyum and oocytes. An intensive expression of VASA in those regions may be due to ATP, which is an abundant in mitochondrion oocyte cytoplasm. There are LH receptors in teka layers. The increase of VASA expression in teka layers of growing follicles may be caused by hyperthroid that also increase LH level when compared with the control group and it can be said that hyperthyroid increased the VASA expression. IFITM3 can be induced with both type I and type II IFN. Type I IFNs are mostly produced by dendritic cells but also can be induced in cell types such as epithelial cells. Expression of IFITM3 in the germinal epithelium may be resulted from the induction of IFN in epithelial cells. Compared with the control group, a decrease expression of IFITM3 of oocyte cytoplasm by developing follicle in the hyperthyroid ovary may suggest that hyperthyroidism decreases IFITM3 expression.

Keywords: VASA, IFITM3, immunohistochemistry, hyperthyroidism, ovary

Determining the Effects of Finite Element Calculation Parameters on Sheet Metal Forming Numerical Simulations

Emre Esener[a*], Murat Ozsoy[b], Neslihan Ozsoy[b], Mehmet Firat[b]

[a]Bilecik Seyh Edebali University, Engineering Faculty, Department Of Mechanical And Manufacturing Engineering
[b]Sakarya University, Engineering Faculty, Department Of Mechanical Engineering

*emre.esener@bilecik.edu.tr

Abstract:

Improvements on computer technology brings effective engineering technologies, softwares, and easy calculations. As a result of this situation, complex problems can be solve in an effective time range. Today, finite element analysis have a wide usage area in engineering technologies. By this methodology, processes can be predict by numerical calculations. Accuracy of the prediction models are very crucial and critical parameter to use these analysis in industrial applications. Finite element analysis have numerous calculation parameters in pre-process and solving steps. These parameters directly effects the accuracy of the finite element model. Determining the sensitive parameters of a simulation is a critical process to obtain an accurate prediction.

In this study, effects of finite element calculation parameters on a numerical simulation will be determined. Sheet metal forming process will be used as an application. Element size, number of integration point, element formulation, and mesh adaptivity will be investigated as finite element calculation parameters. As a result, all sensitive parameters will be obtained and simulation results using these parameters will be compared with experimental results for verification of the sensitive parameters.

Keywords: Finite element analysis, sheet metal forming, sensitivity.

Dielectric Properties Of Liquid Crystal Doped With Metal Complex

Muharrem Gokcen[a], Ersin Orhan[a*], Oguz Koysal[a]

[a]Department Of Physics, Faculty Of Arts And Sciences, Duzce University, Duzce, Turkey

*ersinorhan@duzce.edu.tr

Abstract:

The simplest and most common of many liquid crystal structures is the nematic phase in which the molecules are oriented in a particular direction. The electro-optic behavior of the system is determined with the orientation of LC molecules. Beside the applied external electric and magnetic fields, dopant materials cause the LC molecules to interact and reorient. Doping of nano particle, dye, and organic or inorganic molecules into the nematic LC has generates the new electro-optical behavior for liquid crystal based device [1-3].

In this study, the combination of 1-(p-chlorobenzyl)-5-nitrobenzimidazole with metal salt (CoCl2.6H2O) were prepared stable solid new di[1-(p-chlorobenzyl)-5-nitrobenzimidazole] cobalt dichloride. Electrical current and dielectric properties of two type liquid crystal (LC) samples which one is pure and other one is new di[1-(p-chlorobenzyl)-5-nitrobenzimidazole] cobalt dichloride doped LC were investigated. Frequency dependence of the dielectric properties and dielectric anisotropy of the LC samples have been investigated using the admittance spectroscopy method (C-V and G/□-V) in the frequency range of 100 Hz-10 MHz at room temperature.

Acknowledgement

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Keywords: Benzimidazole complex; Liquid crystal; electrical properties; dielectric properties.

Distribution Of Plio-Quaternary Sediments In The Northeastern Part Of The Mediterranean Sea

Canan Ciftci[a*], Mahmut Okyar[a]

[a]Suleyman Demirel University

*canancaa@gmail.com

Abstract:

The study area includes Mersin and Iskenderun Bays located between the Turkey and Cyprus in the northeastern Mediterranean. Neogene depocentres, Mersin and Iskenderun Basins, have formed since the mid to late Miocene by the effect of subduction of the African plate beneath the Anatolian plate along the Cyprus arc. Due to its natural structure, these basins have been subject of several investigations from past to present. In this study, the distributions of sediments accumulated during the Plio-Quaternary in the basins were examined from seismic profiles that obtained from Turkish Petroleum Corporation. The boundary between Plio-Quaternary sediments and Messinien evaporates was underlined and Plio-Quaternary sediment distribution map prepared by interpreting the seismic data. Based on previous studies, the average sediment velocity of 1700 m/s has been used to prepare the Plio-Quaternary sediment thickness map. According to the interpretation results, the thicknesses of Plio-Quaternary sediments ranges from 219 m to 2927m. The thicknesses of sediments in the basin center are thicker than the other parts of basin. In the Mersin Bay, Plio-Quaternary sediments have two different reflection packages: regular, strong and continuous reflection package and weak, discontinuous and parallel reflection package. However, in generaly, weak, discontinuous reflection package has not been observed on the seismic data from the Iskenderun Bay.

Keywords: seismic reflection, mediterranean sea, sediment

Do Monomers Used In Polymeric Biomaterials Effect On Apoptosis In Cerebellum?

Serpil Unver Saraydin[a*], Dursun Saraydin[a], Zeynep Deniz Sahin Inan[a]

[a]Cumhuriyet Universitesi

*unversaraydin@gmail.com

Abstract:

Biomaterials in the form of implants and medical devices are widely used in modern medicine. They are prepared by the polymerization reaction of certain monomers. The aim of the present study was to investigate whether acrylamide, methacrylamide and N-isopropylacrylamide induce apoptosis in cerebellum. The cellular process of apoptosis is an important component of tissue and organ development as well as the natural response to disease and injury. DNA fragmentation in neurons was characterized by double staining with terminal deoxynucleotidyl transferase mediated deoxyuridine triphosphate-biotin nick end labeling (TUNEL).

Following the intramuscular injection of aqueous solutions of monomers that are prepared in certain concentrations to animals, desired tissues obtained after two week is fixed in 10 % buffered neutral formalin. Quantitative analysis of apoptotic cells was evaluated used by Olympus cells dimension software. A small number of TUNEL positive cells detected in control group whereas many cells were intensely stained in the tissues obtained from acrylamide, methacrylamide and N-isopropylacrylamide applied groups.

In conclusion, the monomers used in biomaterial production seemed to affect the cell viability.

Keywords: Biomaterial, cerebellum, apoptosis, TUNEL method, Olympus cellSens dimension soft ware

Dyeing Of Polyamide Fabric With Rubia Tinctorium L. Using Different Mordants

Burcu Yilmaz Sahinbaskan[a*], Anil Goksu[b], Mahmure Ustun Ozgur[b]

[a]Marmara University
[b]Yildiz Technical University

*burcuyilmaz@marmara.edu.tr

Abstract:

Rubia tinctorium L. have been used for dyeing textile materials such as wool, silk and cotton in many parts of the world since ancient times. In this experimental work, unmordanted and mordanted polyamide fabric samples were dyed with Rubia tinctorium L. Unmordanted samples were dyed at pH 5 and 9. Other samples were mordanted with potassium aluminum sulphate, silver nitrate and tannic acid before dyeing process, respectively. Colour differences and fastness properties of dyed fabrics were investigated and compared with each other. Finally, mordanted fabric samples before dyeing process were dyed successfully dark colours. Adequate results in colour fastness to perspiration and rubbing tests (+4) were obtained.

Keywords: polyamide fabric, Rubia tinctorium L., mordant

Effect of Bending Stiffness on Analysis of Railway Overheads

Abdullah Demir[a*]

[a]Middle East Technical University

*abdemir@metu.edu.tr

Abstract:

Main concern of this article is static analysis of cables used in railway overheas. Bending stiffness of cable is taken as zero, theoretically. Many cable elements are formulated to simulate the behaviour of real cables, generally with zero bending stiffness. However it is known that there is always a bending rigidity for all cable types. Besides, bending stiffness of cable becomes very important in some cases. Fast motion of pantograph is one of them. In this study, the effect of bending rigidity on analysis of railway overheads considering pantograph is investigated.

Keywords: railway overheads, pantograph, structural cables

Effect of Elicitation on Biomass Production With Using Different Explant Sources on Sweet Violet (Viola odorata Linn)

Didem Tastekin[a], Begum Akyol[a*], Aynur Gurel[a]

[a]Ege University

*begumakyol.ege@gmail.com

Abstract:

Viola odorata L., which is also known as sweet violet, is an important ornamental plant with high seconder metabolite content in pharmaceutical area. The leaves and flowers of V. odorata L. are employed in perfume industry. V. odorata L. has different essential oils such as citronella, geraniol, salicylaldehyde, linalool and these secondary metabolites are used as anti-inflammatory, healing and soothing agents. In this study, it has been aid to specify appropriate sterilization procedure on petiole and leaf explants, establish callus regeneration protocol and determine effect of some elicitor treatments such as salicylic acid and salt on growth curve obtained through cell suspension culture under in vitro conditions. The different sterilization methods and medium composition have been used for callus culture. The most effective sterilization procedures were 1 min ethanol (70%), 5 min NaOCl (60%) for leaf explants; 1 min ethanol (70%), 10 min NaOCl (60%) for petiole explants. The sterilization success had been observed as 100% with these sterilization methods for both explants. The highest callus regeneration ratio (100%) was obtained on MS (Murashige and Skoog, 1962) medium supplemented with 2.5 mg/L BAP and 1.5 mg/L 2,4-D for both explant type. This callus medium was used for cell suspension culture. For elicitor treatments, NaCl (0, 15 g/L and 30 g/L) and salicylic acid (15 and 30 mg/L) were added to culture medium to make growth curves. 30 mg/L salicylic acid dose was determined as the most effective protocol for biomass production and the highest ratio was gained in 17 culture days. According to literature, there are some studies about sterilization methods, callus culture and micropropagation with V.odorata L., but there isn't any study about cell suspension culture and elicitation. This study is unique and these results will be instructive for some studies related with production of high seconder metabolite quantity.

Keywords: Viola odorata, biomass, callus regeneration, cell suspension culture, elicitor

Effect Of K-Fold Cross Validation Techniques On Libsvm Classification Performance For Rheumatoid Arthritis Disease Diagnosis

Ali Osman Ozkan[a*]

[a]Necmettin Erbakan Universitesi

*alozkan@konya.edu.tr

Abstract:

In this study, Doppler signals were recorded from the right and left hand ulnar arterial of 40 healthy volunteers and 40 rheumatoid arthritis (RA) patients. The eigenvector method, which is one of the subspace based signal processing methods, was applied to the obtained Doppler signals. The data were normalized using the z-score normalization technique and the diseased and healthy subjects were distinguished using the WEKA program's Library of Support Vector Machines (LIBSVM) classification algorithm. For the classification of the data set, k-fold cross validation method (considering 2-fold, 4-fold, 5-fold, 8-fold, 10-fold, 16-fold, 20-fold, 40-fold and 80-fold) was used to interpret and explain the results of classification accuracy, sensitivity, selectivity, ROC area value, and PRC area value medical diagnostic test.

Keywords: k-fold cross validation, LIBSVM, Doppler signal, Rheumatoid Arthritis

Effect Of Stress Conditions On Reproducibility Of Mesophilic Microorganisms In Compost Mixture

Fadime Ozdemir Kocak[a*], Levent Degirmenci[a]

[a]Bilecik Seyh Edebali University

*fadime.ozdemirkocak@bilecik.edu.tr

Abstract:

Mesophilic microorganisms are important in initial and final maturation stage of composting process. The amount of mesophilic microflora is crucial as their activity enhances reproducibility of thermophilic microorganisms responsible for decomposition of organic structure during composting. Traditional composting process involves mixing and constant humidification of compost mixture and the success of the resulting product predominantly depends on these procedures. However, composting is mostly conducted by farmers and most of them neglect either mixing or humidification of the mixture.

In the present study effect of mixing and humidification is investigated by applying three mixing and humidification cycles. Compost mixtures were turned on with time intervals of 0 (every day), 3 and 7 days. Humidification was conducted in the onset of compost preparation and total amount of water added to compost was altered as 1/1, ¼ and 2/1 (weight of water/weight of water free compost).

In order to determine the mesophilic microflora isolation was conducted to samples divided in two parts. The first part was directly inoculated on specific medium supplemented with specific antibiotics which were Gause medium (SM3)/Nalidicsic acid; Rifampycine; Cyclohexamide mixture, Nutrient Agar/Cyclohexamide, Tripticase Soy Broth Agar/Cyclohehamide and Luria Broth/ Cyclohexamide. The second part of the samples were inoculated after pretreatment at 60°C. The antibiotics used with SM3 were the same, other mediums were altered with rifampycine addition.

The obtained inoculants were examined via light microscope to determine morphological properties and dominant microorganisms common in applied mediums. Results indicated a dense Bacillus population despite pretreatment and antibiotics used for their inhibition. Actinomycetes and their homologous were observed in heat treated samples. Samples without heat treatment had low actinomycetes population. Mixing has a strong effect on inhibiting the formation of molds and fungus, however samples turned on every day and every 3 day had shown similar microflora.

Keywords: compost, mesophilic microorganisms, selective isolation

Effect of Walnut Shell Reinforcement on Adhesive Wear Behaviour of Polyprophelene (PP) Matrix Composites

Alp Eren Sahin[a], Beysim Cetin[a*], Tamer Sinmazcelik[a]

[a]Kocaeli University

*beysimcetin@hotmail.com

Abstract:

PP is largely preferred in automotive industry, mechanical engineering, electronics and packaging industry due to its low price and admissible mechanical properties. But poor thermal barrier performance and low modulus restricts its applications, predisposed to scratch damage surface of PP retains its use in optical and esthetic appeal parts. To overcome these inabilities of polymeric materials, they will be reinforced by particle and/or fibre materials. Walnut shell is bio based material which has no economical value or industrial usage. It is wasted or burned and used as heat source in winter. In this study polypropylene polymer is used as matrix material and reinforced with ground walnut shell particles size between 20 µm and 100 µm at various weight ratios (1, 3, 5, 10 %wt). Walnut Shell reinforced composite samples were melt mixed by twin screw extruder and samples were produced by injection molding method. Effect of walnut shell reinforcement on adhesive wear behaviour of PP material was charactiresed by ball on disc test method. Ball on disc tests were performed under normal load of 20 N and 0,13 m/s rotating speed along with 150 m sliding distance. According to test results %3 wt walnut shell filled PP composites showed best wear resistance values. Furthermore all walnut shell filled samples showed better adhesive wear resistance compared to pure PP samples.

Keywords: PP, Walnut shell, Thermoplastic composite, Adhesive Wear

Effects Of 5-Aza-2´-Deoxycytidine On Morphological Disorder And Adult Weight Of Achroia Grisella F. (Lepidoptera: Pyralidae)

Olga Sak[a*]

[a]Balikesir University

*altun@balikesir.edu.tr

Abstract:

The smaller wax moth, Achroia grisella F. (Lepidoptera: Pyralidae), is one of the economically important pests of wax in the world and is frequently used as a model organism to evaluate the effects of toxic substances on both target and non-target species. In this study, the possible deleterious effects of 5-Aza-2´-deoxycytidine (5-Aza-dC), an epigenetically-effective agent, on morphological disorders of F1 and F2 offspring and adult weight of F1 progeny were examined using A. grisella. Different doses of 5-Aza-dC (0.1, 0.5, 0.75, and 1.0 mg/ml) were added into the insect diet as water source in all bioassays and chemical-free diet were used as controls. The results did not reveal any prominent effect of 5-Aza-dC on morphological disorders of F1 and F2 offspring and dry weight of F1 females (except for 0.1 mg/ml dose) and males when compared to the control groups. However, treatment with 5-Aza-dC caused a considerable decrease in wet weight of F1 females and males at >0.1 mg/ml dose in general according to the controls. The wet weight loss of A. grisella may be attributed to the insufficient food supply because of 5-Aza-dC-induced decline in diet quality. Investigating the effects of substances such as 5-Aza-dC on invertebrates as well as vertebrates will help us to have a better understanding the potential impact ways of toxic materials in all organisms as they descended from a common origin.

Keywords: Achroia grisella, 5-Aza-2´-deoxycytidine, biological parameters, generations.

Effects Of Azadirachtin On Biological Parameters Of Galleria Mellonella L. (Lepidoptera: Pyralidae)

Aylin Er[a*], Deniz Taskiran[a], Olga Sak[a]

[a]Balikesir University

*altun@balikesir.edu.tr

Abstract:

Because of the known harmful effects of insecticides, researchers uncovered new methods of dealing with insect pests such as using ecologically innocent biopesticides. Unique among these biopesticides azadirachtin has attracted a great interest since it possesses anti-insect properties within a wide range of pest species. In this study we investigate whether the botanical insecticide azadirachtin alters the biological parameters of Galleria mellonella L. (Lepidoptera: Pyralidae).

Different concentrations of azadirachtin (1, 5, 10, 50, 100, 500, 1000, 3000, and 10000 ppm) was applied topically to the final instar larvae of G. mellonella to be tested for the insecticidal activity and evaluation of lethal concentrations (LC). Azadirachtin was tested in a series of concentrations above and below the LC50 values (1, 5, 10, 50, and 100 ppm) in developmental experiments. Five µl of each concentration was applied to seventh instars topically and observed daily until adult emergence. Time to reach to adult stage from azadirachtin application to last instars was recorded as adult emergence time. The time elapsed from adult emergence until death was recorded as adult longevity.

Treatment of azadirachtin gave a LD50 of 16.564 ppm and showed a concentration dependent mortality of last instars. Adult emergence time dramatically increased at 100 ppm whereas adult longevity decreased at sub-lethal concentrations but displayed no effects at doses greater than LD50. These findings demonstrate that azadirachtin, as a good candidate for the integrated pest control, has the potency to affect the life table parameters of the model insect G. mellonella.

Keywords: Galleria mellonella, azadirachtin, toxicity, emergence time, longevity.

Effects of Capsaicin on Ovarium Granulosa Cell Proliferation and Apoptosis

Berrin Zik[a*], Sabire Guler[a], Korhan Altunbas[b]

[a]Uludag University Veterinary Faculty Histology And Embryology Department
[b]University Of Afyon Kocatepe, Faculty Of Veterinary Medicine, Department Of Histology And Embryology

*bzik@uludag.edu.tr

Abstract:

Capsaicin, is pungent ingredient in red peppers. Despite many studies have examined the effects of capsaicin on different organs and systems, the studies of the effects on the ovary is very limited.

The aim of the present study, the possible proliferative and/or apoptotic effects of various doses and time periods in the application of capsaicin on primarily derived granulosa cells. In accordance with this purpose, identification procedure was followed for granulosa cells isolation from 30-day rat ovaries. The obtained granulosa cells were divided seven dose groups; control A (cell control), control B (vehicle (DMSO) control), 10, 50 , 100, 150 and 200 µM and two different time (24 and 48 hours) groups. As the results of dosage and time administration of capsaicin, the proliferative effects were examined by PCNA primary antibody and immunocytochemistry, immunofluorescence and western blot procedures were performed. In addition, the MTT cell proliferation assay was performed to support these findings. In order to examine the apoptotic effects of capsaicin, immunocytochemistry, immunofluorescence and western blot assays were performed by last elements in the apoptotic pathway; active caspase-3 and active PARP. As a result of the experiments, granulosa cell proliferation with the lower application doses of up to 50 µM, but after 100 µM and increased doses showed the apoptosis occur. Due to these effects were similar in 24 and 48 hours application time, 24 hours capsaicin application was observed to be sufficient for of the occurrence of the desired effects.

In consequence of the present study, low doses of capsaicin have proliferative effects on granulosa cells and the apoptosis was occurred when the dose increase. Because of these effects, low-dose capsaicin can be used in the continuity of the reproductive pattern and higher doses in development alternative treatment protocols on ovarian cancers.

Keywords: Granulosa cell, capsaicin, apoptosis, proliferation.

Effects of Dietary Fatty Acid Deficiency on Age- dependent Fecundity of Pimpla turionallae L. (Hymenoptera: Ichneumonidae)

Z. Ulya Nurullahoglu[a*]

[a]Biology Department, Faculty Of Science And Arts, Marmara University

*unurullahoglu@marmara.edu.tr

Abstract:

Pimpla turionellae is an endoparasitoid used for biological control of Lepitopteran pest species. The efficient biological control programs requires development of mass rearing techniques in laboratory condition. For this reason, we have to formulate artificial diets at high quality to improve the producing high numbers of parasitoids. Previous studies on different parasitoid species showed that they can be reared on a diet without fatty acids but addition of fatty acids to the diet increased high quality adults and fecundity. However P. turionellae larvae require fatty acids in their diet to produce normal adults. Besides of this, they need consumption of essential nutrients to provide ovariol development before ovipositon after adult emergence. A chemically defined synthetic diet containing amino acids, lipid, water-soluble vitamins, inorganic salt mixtures, sucrose, RNA and miscellaneous was firstly described for P. turionellae adults. Here, we examined the impact of fatty acid composition in the artificial diet on the age- dependent fecundity of the P. turionellae adult females. Females were provided with natural diet (honey and host pupae), a basic chemically-defined synthetic diet, or five different synthetic diets without palmitic, stearic, oleic acid, linoleic acid or linolenic acid separately, or all fatty acids. The effects of dietary fatty acid deficiency on age-dependent fecundity of the parasitoid were investigated. The results showed that the age-dependent fecundity increased from day 20 to 28 and then decreased on day 31. The fact that females fed on fatty acid free-diet had the lowest fecundity is an indication of the importance of fatty acids in oogenesis of P. turionellae. This study showed that P. turionellae females also require fatty acids in their diet for high fecundity.

Keywords: Pimpla turionellae, mass rearing, artificial diets, dietary fatty acids, age-related fecundity

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Effects of Four Different Soil Tillage Systems on Fuel Consumption, Labor Requirements, Field Capacity and Working Time in West Mediterranean in Turkey (part 2)

Onder Kabas[a*], Ilker Unal[a], K. Cagatay Selvi[b], Salih Sozer[a]

[a]Akdeniz University, Vocational School Of Technical Science, Antalya, Turkiye
[b]19 Mayis University, Faculty Of Agriculture, Department Of Agricultural Machinery, Antalya, Turkiye

*onderkabas@hotmail.com

Abstract:

The study presents comparison of four soil tillage systems in maize, during two summer seasons (2012 and 2013) under Mediterranean area conditions (South of Turkey) at the Bati Akdeniz Agricultural Research Institute, Antalya, Turkiye to determine the effect of four tillage system. Tillage systems were: (T1) conventional tillage "Plough + disc harrowing + float + pneumatic seeding machine", (T2) reduced tillage I "rotovator + float + pneumatic seeding machine", (T3) reduced tillage II "rotary tiller combination + pneumatic seeding machine" and (T4) no tillage "seeding by direct seeding machine" on the soil physical properties in the area. In this study, the highest field capacity in all the systems was achieved under the no tillage (T4) tillage system, while the lowest yield was achieved under the conventional system (T1) and the highest field working time was found in conversation tillage and the lowest value was determined in the no tillage system. The highest fuel consumption was measured in conventional system (T1) whereas the lowest value was found in no tillage system (T4) as 35.37 l ha-1 and 8.78 ha-1, respectively, the highest labor requirements was determined in conventional system (T1) as 6.87 h ha-1 and the lowest value was found in no tillage system (T4) as 1.62 h ha-1.

Keywords: maize, tillage, conversation, fuel consumption

Effects Of Maturity Time As Color On Some Mechanical Properties Of Beef Type Tomato For Transportation

Onder Kabas[a*], Ilker Unal[a], Aylin Kabas[b]

[a]Akdeniz University
[b]Bati Akdeniz Agriculturel Research Institute

*onderkabas@hotmail.com

Abstract:

Knowledge of effect of maturity time as color on mechanical properties of beef type tomato is important for long way transportation. In this research, some physical and mechanical properties of three beef type tomato grown in the Antalya region were determined based on the puncture tests. The tests were carried out at four maturity stage of green, light pink, pink and red colour. Size and sphericity were measured using the standard methods. Surface color of tomatoes were determined using a colorimeter and the mechanical properties such as puncture force and stress, puncture enery, deformation, strength and elastic modulus by texture analyzer. Howover, it was found that L*/a*/b* and C*/h color parameter can be good index for evaluating mechanical properties of beef type tomato.

Keywords: Beef type tomatoe, mechanical properties, puncture, maturity, colour

Effects of Postharvest 1-Methylcyclopropene Protab Applications on Fruit Quality of 'Caldesi 85' Nectarine During Cold Storage

Mustafa Sakaldas[a], Mehmet Ali Gundogdu[a], Engin Gur[a*]

[a]Canakkale Onsekiz Mart University

*engingur@comu.edu.tr

Abstract:

In this research, the effects of postharvest 1-methylcyclopropene (1-MCP) protab applications on fruit quality of 'Caldesi 85' nectarine cultivar during storage were evaluated. For this purpose, fruits harvested from Canakkale–Kepez province were treated 1-MCP (SmartfreshTM) with 156.25 ppb, 312.50 ppb and 625 ppb doses for 24 hours and were stored in plastic boxes at 0–1°C temperature and 90–95% relative humidity conditions for 25 and 50 days respectively. After each storage period, fruits were kept at 20°C-22°C conditions for 3 days as shelf life. After harvest and each storage period with shelf life, some quality parameters as flesh color, fruit firmness, malic acid, pH value, total soluble solids measured besides the rates of internal browning were calculated. Based on the results, most of the quality parameters were affected positively by 1- MCP (SmartfreshTM) applications with 625 ppb and 312.50 ppb doses respectively during the storage periods. Thus 1-methylcyclopropane applications were found effective at decreasing the rate of internal browning in nectarine fruits.

Keywords: 1-MCP, Caldesi 85,

Effects of Tiliacora Triandra Leaf Water Extract In High-Fat Diet Fed Mice

Urarat Nanna[a*], Jarinyaporn Naowaboot[a]

[a]Department Of Preclinical Science, Faculty Of Medicine, Thammasat University

*assist.prof.ae@gmail.com

Abstract:

Tiliacora triandra (T. triandra) leaf is widely used as an ingredient in Thai cuisine, but the activity of T. triandra leaf water extract (TTW) in the regulation of metabolic syndrome is still little known. To examine the effects of TTW in high-fat diet (HFD)-induced obese mice. Male ICR mice were induced to be obese by HFD feeding (45 kcal% lard fat) for 12 weeks. During the last 6 weeks of diet feeding, the obese mice were treated with TTW at 250 and 500 mg/kg/day. The biochemical parameters and histology analysis were measured at the end of treatment period. After 6 weeks of TTW treatment, the hyperglycemia, hyperinsulinemia hyperleptinemia and hyperlipidemia were significantly decreased. Hepatic lipid accumulation and adipocyte hypertrophy were also reduced. Serum adiponectin was increased in TTW-treated obese mice. TTW treatment could reduce the malondialdehyde in serum and liver tissue. Furthermore, the elevated serum inflammatory cytokines, tumor necrosis factor-α (TNF-α) and monocyte chemoattractant protein-1were reduced (MCP-1) by TTW. These results suggest that T. triandra leaf is a beneficial plant in alleviating hyperglycemia, hyperlipidemia, oxidative stress, and inflammation in the obese condition induced by HFD.

Keywords: Tiliacora triandra,Insulin resistance,Hyperlipidemia

Encapsulation Of Tulip Petal Anthocyanin Extract And Use In Food Model System

Osman Sagdic[a*], Muhammet Arici[a], Salih Karasu[a]

[a]Yildiz Technical University

*osagdic@yildiz.edu.tr

Abstract:

Tulip petal waste is important source of the anthocyanin and has potential use as a food colorant. In this study anthocyanin extracted from tulip petal and encapsulated by spray drier. Novelty of this study is the first attempt in a production of natural colorant from tulip petal and application of this colorant in food model system. Encapsulation parameters, namely drying temperature (120, 135, 150°C) and maltodextrin ratio (1/1, 2/1 and 3/1) were optimized to obtain maximum yield of anthocyanin. Response surface methodology, central composite design (CCD) was conducted to optimize encapsulation parameters. Then, encapsulated anthocyanin was added to apple juice and degradation kinetic of anthocyanin was calculated to determine potential use of encapsulated anthocyanin as a food colorant. For this aim, colored apple juice samples were held at different temperature for 21 days to determine anthocyanin degradation kinetic and shelf life. Sensorial analysis was carried out for colored and control apple juice sample. Encapsulation efficiency of the sample ranged from 93.06 % to 97.07% and optimum temperature and maltodextrin ratio was found as 135 °C and 3/1, respectively. Powder characteristics of the encapsulated material were determined by Scanning Electron Microscope (SEM). Sample prepared at optimum condition showed uniform distribution and has no crack with average particle diameter of 5.55 □m. Colored samples showed high redness value (a*) and acceptable sensorial prosperities. Significant change in redness index was observed at temperature of 50 °C while no change was observed at 4 °C during 21 days storage period. Half life value (t1/2) of the anthocyanin degradation was found 415.52 and 10.85 days for 4 °C and 50 °C respectively.

Acknowledgment

This study supported by TUBITAK TEYDEB by (Project number: 5130023)

Keywords: Tulip petal, encapsulation, anthocyanin, RSM.

Enhanced formic acid electrooxidation activity on Zinc core Palladium shell catalysts

Aykut Caglar[a*], Hilal Demir Kivrak[a], Ozlem Sahin[b]

[a]Yuzuncu Yil University, Chemical Engineering Department
[b]Selcuk University, Chemical Engineering Department

*berdanulas2@gmail.com

Abstract:

Formic acid electrooxidation on different metal surfaces has been widely studied not only because of its interest in the fuel cell field but also because it can be used as a model reaction to understand fundamental aspects of electrocatalytic reactions. Pd seems to be the most active electrocatalyst for the anodic oxidation of formic acid in solutions of low pH. However, Pd as an anodic catalyst is instable compared with Pt and slow deactivation was found to reduce the oxidation current during the oxidation of formic acid on a Pd electrode. To improve the electrocatalytic performance and the stability of a Pd catalyst, the Pd-based binary metallic catalysts such as PdPt, PdSn, PdCo, and PdIr have been investigated. In this work, we prepared CNT supported Zinc core Palladium shell catalysts by reducing zincchlroride on CNT and then reducing palladium on Zn/CNT by NaBH4 reduction method. Cyclic voltammetric (CV) and chronoamperometic (CA) methods were used to evaluate the catalytic activities of the ZncorePdshell catalysts towards formic acid electro-oxidation. One can conclude that formic acid electrooxidation activity of ZncorePdshell catalysts is higher than Pd catalysts.

Keywords: Key-words: Zinc, palladium, core-shell catalysts, formic acid electro-oxidation, and catalyst characterization.

Environmental Impact Of Car Combustion Emissions In Braila, Romania

Mihaela Picu[a*]

[a]Dunarea De Jos University Galati, Romania

*mihaelapicu@yahoo.com

Abstract:

This paper analyses the variation of some parameters specific to air pollution due to road traffic in Braila, Romania. In this paper were made a complete analysis of some pollutants factors due to traffic, by filling in the data presented by the automatic stations which monitor the air quality with data obtained from air analysis in several major junctions in the city, directly at ground level, using portable equipment; in this way was revealed the importance of direct measurements at street level, where people or other traffic partners are moving, thus influencing directly the quality of life. The concentrations variations of SO2, NO2, CO, and PM10 were studied. In our analysis we have taken into account the meteorological parameters. Measurements were made on 16h/day, 5day/week, between July 2015–July 2016. A complete analysis of pollutants due to traffic, by filling in the data presented by the automatic stations which monitor the air quality (at the height H1=17.5m) with data obtained from air analysis in several major junctions, directly at ground level (at the height H2=0m), using portable equipment. From measurements it was observed a constant and high enough exceedance of legal limits for these parameters, for the major crossroads of the city, at ground level. It has been found that the legal concentration has been exceeded. The average values of the pollutants concentrations are: a) for H1, cmax is lower than the value "good" of specific index and b) for H2, cmax is higher than the value "good" of specific index (SO2: with 66,64%; NO2: with 110.04%; PM10: with 230.85%; CO: with 82.14%). This leads to the conclusion that each local administration should take measures to reduce traffic in those crowded areas.

Keywords: air pollution, road traffic, pollutants concentration.

Environmental Usage Of P(Amps-Co-Aptmacl)-Lentinus Tigrinus (Bull.) Fr. Bio-Composite Hydrogel

Duygu Alpaslan[a*], Tuba Ersen Dudu[a], Ali Riza Kul[a], Nahit Aktas[a]

[a]Yuzuncuyil University

*alpaslanduygu@gmail.com

Abstract:

In this investigation p(AMPS-co-APTMACl)-Lentinus tigrinus (Bull.) Fr. composite hydrogels were synthesized by using 2-Acrylamido-2-methyl-propansulfonic acid sodium salt (AMPS) and 3-Acrylamidopropyl-trimethyl ammonium chloride (APTMACl) based the monomers and utilized for targeted dyes removal. In the environmental applications of composite hydrogels aimed removal from aqueous medium of Gallocyanine (G) textile dyes. Therefore in this study investigated effect on the absorption performance of initial dye concentration (mg/L), the pH of the media, and contact time (min). Ultra-Viole spectroscopy was used to quantify G dye during absorption studies. A comparison of kinetics models applied to the absorption of G dye on the composite hydrogels was utilized for the pseudo-first-order (Lagergren models), pseudo-second-order and intraparticle diffusion kinetic models. Moreover the most utilized absorption isotherms models like Langmuir and Freundlich were studied to obtain the best-fitted isotherms equation. Under specific experimental conditions, the maximum absorption capacities for G dye was calculated to be 27.93 mg/g.

Keywords: Lentinus tigrinus (Bull.) Fr., Hydrogels, Textile Dye.

Environmentally Friendly Superabsorbent Polymers And Their Application For Environmental Purposes

Tuba Ersen Dudu[a*], Duygu Alpaslan[a], Ahmet Kazankaya[a], Nahit Aktas[a]

[a]Yuzuncu Yil University

*tuba_ersen@hotmail.com

Abstract:

In the present study, p(DMAAm-co-CA) hydrogel was synthesized by using N,N-Dimethylacrylamide (DMAAm), citric acid (CA) as monomers and modified by hydrochloric acid (HCl) for targeted nitrogen fertilizer removal. p(DMAAm-co-CA)-HCl hydrogel was investigated swelling behaviors in deionize water and sensibility pH and were characterized using Fourier Transform Infrared Spectroscopy (FT-IR) and Thermal Gravimetric Analysis (TGA). In the environmental applications of p(DMAAm-co-CA) hydrogel aimed removal from aqueous medium of nitrogen fertilizer (urea and ammonium nitrate). Therefore in this study investigated effect on the absorption performance of initial fertilizer concentration (mg/L), the pH of the media, and temperature (°C). Ultra-Viole spectroscopy was used to quantify nitrogen fertilizer during absorption studies. The most utilized absorption isotherms models like Langmuir and Freundlich were studied to obtain the best-fitted isotherms equation. Moreover thermodynamic parameters were evaluated. Under specified experimental conditions, the maximum absorption capacities for nitrogen fertilizer (urea) were calculated to be approximately 159.5 mg/g.

Keywords: N,N-Dimethylacrylamide, urea, ammonium nitrate, modification

Essential Oils and Nutrition Physiology

Suleyman Ercument Onel[a*], Devrim Saripinar Aksu[a], Taylan Aksu[b]

[a]Mustafa Kemal
[b]Yuzuncu Yil University

*ercumentonel@gmail.com

Abstract:

Increased animal production in animal feeding is experiencing major economic losses due to the parallel illness problem, slowing growth and deaths. Therefore, the search for preventive and performance-improving feed additives against diseases in animal breeding is ongoing. Essential oils (EOs) have received attention in recent years as potential 'natural' alternatives for replacing antibiotic growth promoters (AGPs) in animal diets. EOs and their compounds have proven in vitro efficacy as antimicrobial, antioxidant, immunodulating and anti-inflammatory agents. These substances deserve an important place as feed additives that are generally considered as safe. The available in vivo data show that EOs could find use as natural growth promoters in animal diets by improving feed utilization, antioxidant status and serum lipid profile. However, the available evidence on the possible positive effects of these substances on nutrient digestibility and the function of the gut is rather limited. Essential oils could find application in cases where approved drugs or chemical substances are unwanted, for example, organic farming. The purpose of this paper is to provide an overview of our own published and unpublished data on the antibacterial, antioxidant, and lipid profile of thymol and cinnamaldehyde (TC blend), and to describe the effects of these products on gut microbiota, growth performance and carcass characteristics. The possible modes of action of EOs are discussed and areas for future research are proposed.

Keywords: Essential oil, nutrition physiology, animal performance

Estimation of The Reservoir Temperature of Geothermal Field in Ilica-Savsat (Artvin), Turkey

Fatma Gultekin[a*], Burhan Melih Subasi[a], Esra Hatipoglu Temizel[a], Arzu Firat Ersoy[a], Mehmet Ziya Kirmaci[a]

[a]Karadeniz Technical University

*fatma@ktu.edu.tr

Abstract:

In the study area where the hot water sources are found, the oldest unit is volcanic rocks and pyroclastics composed of Upper Cretaceous dacites and rhyodacites. The Paleocene-Early Eocene unit, which is characterized by flysch composed of limestone, sandstone, tuff and claystone alternations, is unconformably overlain by this unit. The Middle Eocene units in the vicinity are composed of volcanoclastics and andesite type volcanics. This unit is overlain by Lutetian units with turbiditic features in the form of mudstone-siltstone-sandstone alternation. The young rocks in the vicinity are sedimentary units consisting of sandstones and siltstones and Miocene and Pliocene units which give out basalt, andesite, trachybasalt, trachyandesite and pyroclastites.

The thermal waters in the Ilica-Savsat geothermal fields have outlet temperatures about 40°C in springs and wells. In this study, the area was investigated in terms of geothermal energy potential. The chemical properties of the waters were determined by sampling from hot and cold spring waters in the vicinity. The water types are Na-HCO3-Cl for hot water, Na-Ca-HCO3-Cl for cold mineral water, Ca-HCO3 for cold spring water and surface water respectively. The Na-K-Mg triangle diagram and silica geothermometers were used to determine the reservoir rock temperature. Reservoir temperature of the thermal water which is partially matured according to the Na-K-Mg triangle diagram is 50-150°C with silica geothermometers. For the purpose of determination the mixing ratios of the hot and cold groundwater applied the silica-enthalpy diagram. The cold water mixing ratio was determined as 70%. The Ilica (Savsat-Artvin-Turkey) geothermal field is classified in the low enthalpy geothermal field according to the determined reservoir rock temperature.

Keywords: Geothermometers, Reservoir temperature, Ilica-Savsat Geothermal Field, Turkey

Evaluation of Total Phosphorus Loads in the Eastern Black Sea Basin

Nail Erdogan[a], Rabia Koklu[b*], Bulent Sengorur[c], Selma Ayaz[a], Yakup Karaaslan[a]

[a]Tubitak Mam
[b]Sakarya University
[c]Kirklareli University

*rkoklu@sakarya.edu.tr

Abstract:

In this study, it is aimed to estimate the total phosphorus (TP) pollution loads which can reach to the water environment from point and diffuse pollutant sources in Eastern Black Sea Basin. Within the scope of the study, information on the urban wastewater infrastructure and solid waste management status of all the settlements over 2000 inhabitants in the basin was obtained. In addition, information about the individual industries that constitute the priority in terms of pollution load for the basin and the environmental infrastructure of all Organize Industrial Zones in the activity was collected. In this context, information and coordinates were obtained about the urban and industrial wastewater treatment plant discharge points, direct discharge points, deep sea discharge points and regular/irregular solid waste sites. Using the obtained data, basin population was estimated between 2017 and 2040 and TP loads were determined. According to the results, the highest values in the study area in terms of TP load were obtained in Ordu-Giresun and Trabzon waters. As a result of the estimations, the decrease in the TP loads from 2017 to 2040 was observed.

Keywords: total phosphorus load, pollution sources, Eastern Black Sea Basin

Extraction of Polycyclic Aromatic Hydrocarbons (PAHs) from Milk Samples

Sibel Kacmaz[a*], Pinar Yavuz[a]

[a]Department Of Food Engineering, Faculty Of Engineering, Giresun University

*sibel.kacmaz@giresun.edu.tr

Abstract:

Polycyclic aromatic hydrocarbons (PAHs) are a group of ubiquitous contaminants with significant toxicity that have potential mutagenic, genotoxic and carcinogenic properties. Sixteen of PAHs are even included in the list of priority pollutants by the USEPA (2006). They are present in all environmental components and may cause harmful effects near to and distant from their source. Humans can be exposure to PAHs mostly by the ingestion of contaminated food in which PAHs may accumulate in the lipid phase. Therefore, a primary dietary human food, like milk, which contains a high proportion of lipids (triacylglycerols, phospholipids, fatty acids and sterols), may be contaminated by PAHs. Therefore, reliable extraction and sample preparation methods are required to determine the contamination level of milk samples. In this study, extraction procedure was applied and evaluated for the determination of 4EU marker polycyclic aromatic hydrocarbons (PAHs; benz[a]anthracene, chrysene, benzo[b]fluoranthene and benzo[a]pyrene) in Turkish commercial milk samples. The extraction procedure is liquid–liquid extraction of PAHs (saponification of milk samples with NaOH ethanolic solution), a pre-concentration and determination by HPLC using a fluorescence detector.

The study was carried out totally twenty-seven commercial milk samples. In particular, samples of whole, semi-skimmed and skimmed pasteurized and UHT cow's and goat's milk and also cow's milks from local farm was examined. Samples of some "plant milk" such as soya, almond and Coconut milk were also investigated.

Keywords: Polycyclic aromatic hydrocarbons, Milk, Extraction of PAHs, HPLC Analysis

Gauge Bosons Anomalous Quartic Couplings Search At The CLIC

Salih Cem Inan[a*], Murat Koksal[a], Abdulkadir Senol[b]

[a]Cumhuriyet University
[b]Abant Izzet Baysal University

*sceminan@cumhuriyet.edu.tr

Abstract:

We have searched the anomalous quartic couplings of the gauge bosons at the Compact Linear Collider (CLIC). These couplings represent by the dimension-8 operators. This research was done for polarized and unpolarized electron (positron) beams. We have obtained the 95% confidence level (C. L.) sensitivity bounds on the anomalous parameters for various CLIC center-of-mass energies and integrated luminosities. The improved constraints on model parameters have been found compared to the current experimental sensitivity.

Keywords: Gauge bosons, anomalous couplings, CLIC

Genetic Damage And Diseases Induced By Radon

Merve Gunes[a*], Alper Gunes[a], Nurdane Ilbeyli[a], Bulent Kaya[a]

[a]Akdeniz University

*mgucler@gmail.com

Abstract:

Radon, which is atomic number 86 and symbol Rn, is chemical element in the group 8a of the periodic table. It is an odourless, tasteless and colourless noble gas and it occurs because of radioactive decay of natural uranium in rock, soil and water. Uranium (U-238) is found the low concentration throughout the rock and soil layers. U-238 is the initial source of the long radioisotope disruption series of many elements and is degraded until it becomes stable lead-206. Radon (Rn-222), which is a radioactive gas and is among the first products formed during the disruption, is dispersed the atmosphere and continues to degrade. Solid radioactive substances that form during the decay form the small radioactive aerosols that adhere to dust and water droplets in the air and they can enter the lungs by respiration. Radon is easily soluble in water, so exposure to Radon by contaminated water, earth's crust and building materials can cause significant health risks. Radon products are exposed to radiation at every step of the process, since deformation continues until it is stabilized. As a result of disruption in the respiratory tract, the radiation level increases in the bronchial epithelium. This causes damage to the lungs, and thus, causes cancer over time. People most affected by radon and radon products are most likely caused by the concentration of in-house radon. Entrance to the building of the Radon takes place from the building on which the building is located or from the surrounding soil, building materials used by the building, natural gas and water resources. Radon is the second factor after smoking, which increases the risk of lung cancer by creating DNA damage.

Keywords: Radon, radioactive, genetic damage

Genotoxicity Of Pmma/Nhap Nanocomposites

Serap Dogan[a*], Begumhan Yilmaz[a], Serap Celikler Kasimogullari[b]

[a]Balikesir University
[b]Uludag University

*sdogan@balikesir.edu.tr

Abstract:

Components of some nanocomposites ,which are used frequently for biomedical applications, can cause damages and genetic alterations in mammalian cells. Here, the aim of this study is to show the genotoxicity of nanocomposites synthesized with different molecular weights of Poly(methyl methacrylate) (PMMA) and different concentrations (1, 2.5 and 5%) of nanohydroxyapatite (nHAp). The genotoxicty was determined by micronucleus test. In this test, the healthy human lymphocytes were treated with cytochalasin B (3µg/ml) after 44 hours of incubation because it stops cytokinesis as an inhibitor of actin polymerisation required for cytokinesis and the 5 % Giemsa solution was used to stain the micronuclei (MN). The frequency of micronuclei and the nuclear division index (NDI) were calculated as parameters of the genotoxicity. Based on the test results, the nanocomposites composed of 5 % nHAp showed on average 4 fold decrease in micronucleus % compared to pure PMMA polymers after 24 and 48 hours of incubation. In conclusion, none of the nanocomposites synthesized in this study showed genotoxicity and nHAp addition reduced the genotoxic effect of pure polymers in a dose dependent manner.

Keywords: Genotoxicity, Micronucleus, PMMA, Nanohydroxyapatite, Nanocomposites

Genotoxicity Of Silver And Cobalt Nanoparticles In Drosophila

Merve Gunes[a*], Burcin Yalcin[a], Havva Ertugrul[a], Bulent Kaya[a]

[a]Akdeniz University

*mgucler@gmail.com

Abstract:

Nanomaterials which have superior physical and chemical properties are used in a wide range of fields from engineering to medicine. Silver nanoparticles are one of the most frequently used nanomaterials in various fields such as cosmetics, textiles and food, thanks to their strong antimicrobial activity. Additionally, cobalt nanoparticles are used for cancer treatments, magnetic resonance imaging, magnetic toner and ink, and protection from electromagnetic waves in mobile phones. The extensive use of nanoparticles, which have an important place in the industry, can cause significant health problems. Nanomaterials can enter the body from different points such as skin, lung and digestive system.

In this study, the genotoxic effects of AgNPs and CoNPs were investigated by using Somatic Mutation And Recombination Test (SMART) in Drosophila melanogaster. The effects of these chemicals were evaluated according to genetic changes (point mutation, deletion, non-disjunction and recombination) in wing imaginal disc cells that lead to the formation of mutant trichomes. CoNPs showed genotoxic effects in 1 and 10 mM concentrations and AgNPs induced the genotoxicity at all concentrations (1, 5, 10 mM) in trans-heterozygous flies (mwh/flr3).

Keywords: Silver nanoparticle, cobalt nanoparticle, SMART, Drosophila

Geochemistry And Sr-Nd-Pb-O Isotopic Compositions Of The Magmatic Rocks From Caykara (Trabzon) Intrusive Complex

Emre Aydincakir[a*], Cuneyt Sen[b], Faruk Aydin[b], Abdurrahman Dokuz[a], Orhan Karsli[a]

[a]Department Of Geological Engineering, Gumushane University, Gumushane
[b]Department Of Geological Engineering, Karadeniz Technical University, Trabzon

*aydincakir61@gmail.com

Abstract:

Caykara (Trabzon) Intrusive Complex is located eastern part of the Kackar Batolith. In the complex, Gundogdu-Bogali Pluton is Upper Cretaceous in aged and Uzuntarla and Egerler Plutons are Eocene in aged. Upper Cretaceous and Eocene aged Plutons in the study area are high-K calc-alkaline in composition and display metaluminous to peraluminous characteristics. The primitive mantle normalized multi-element variation diagrams of the studied samples show enrichment in LILE relative to HFSE and also negative Nb, Ta, P, Ti and positive Pb anomalies. Chondrite-normalized rare earth element (REE) patterns are [(La/Lu)N=8-10] and display negative Eu anomalies. When obtained initial data is plotted on tectonic discrimination diagram, as expected the tectonic setting of the plutons in subject was observed representing island arc environment. The Upper Cretaceous plutonic rocks are characterized by εNd(i) values range from -1.5 to –-9.7, whereas 87Sr/86Sr(i) values range from 0.7052 to 0.7119. Nd model ages are between 0.94 and 1.52 Ga. 206Pb/204Pb(i), 207Pb/204Pb(i) and 208Pb/204Pb(i) contents of samples change from 18.24 to 18.72, 15.59 to 15.66 and 37.93-38.64, respectively. The δ18O values in the investigated samples range from 4.0 ‰ to 6.7 ‰ and have similar ratios to I-type granitoides.

The Eocene plutonic rocks are characterized by εNd(i) values range from -0.4 to -6.0, whereas 87Sr/86Sr(i) values range from 0.7050 to 0.7143. Nd model ages are between 0.81 and 1.32 Ga. 206Pb/204Pb(i), 207Pb/204Pb(i) and 208Pb/204Pb(i) contents of samples change from 18.241to 18.57, 15.58 to 15.63 and 38.22-38.92, respectively. The δ18O values in the investigated samples range from 5.8 ‰ to 7.1 ‰ and have similar ratios to I-type granitoides.

*This work was supported by the Scientific and Technological Research Council of Turkey (TUBITAK, grant 114Y219).

Keywords: Caykara Intrusive Complex, Sr-Nd-Pb-O isotopes, Eastern Pontides, magmatism, geochemistry

Gps Static Positioning Accuracy Within Tusaga-Aktif Cors Network

Ibrahim Kalayci[a*], Taha Kagan Aydin[b], Sermet Ogutcu[a]

[a]Necmettin Erbakan University
[b]Seljuk Municipality

*ikalayci@konya.edu.tr

Abstract:

This study investigates the static GPS point positioning accuracy within TUSAGA-AKTIF Continuously Operating Reference Station (CORS) network in Turkey. Six CORS stations were selected to conduct the experiment. One CORS station was chosen to simulate the rover and the other five stations were chosen as fiducial (control) stations. A total of six independent baselines were formed between the control stations and rover station. Baseline processing and minimally constrained adjustment were performed sequentially for each baseline in survey epoch with Leica Geoffice 8.4 GNSS processing software. Ten consecutive days in 2005, from day of the year (DOY) 152 to 161, were chosen for processes. Each 24 hour rinex data of the stations were subdivided into mutually non-overlapping 2 hours sessions (00-02, 02-04, etc). A total of 600 processes were performed for six baselines with 2 hours occupation time. Assumed true coordinates of the CORS stations were computed by GIPSY/OASIS 6.4 research software based on 10 consecutive days (DOY 152 to 161) of 24 hour processed rinex data. Earth centered and earth fixed (ECEF) coordinate differences between the assumed true coordinates and the coordinates obtained from minimally constrained adjustment for the simulated rover station were computed for each processing sessions. These differences were transformed to topocentric coordinates (north, east, up). It is seen that two dimensional and vertical root mean square errors (rms) were calculated 6mm and 17mm respectively. It is observed that rover station accuracy does not depend on the control stations and baseline position.

Keywords: GNSS, CORS, ACCURACY

Heat Flow And Distribution Of B - Values In Aegean Sea

Ezgi Erbek[a*], Umit Yalcin Kalyoncuoglu[a], Mustafa Nuri Dolmaz[a]

[a]Suleyman Demirel University

*ezgierbek@sdu.edu.tr

Abstract:

The Aegean Sea has a complex tectonic structure and it is known as the deforming regions and rapidly extending provinces. The Hellenic trench located on the Aegean Sea is the most prominent tectonic structure. The intensity seismic activity and low heat flow are observed in the trench. In this study, we investigated the correlation between properties of seismicity and distribution of heat flow in the Aegean Sea. For this study; i) the heat flow values were calculated from magnetic data and distribution map of heat flow was drawn for the Aegean Sea, ii) properties of seismicity map of the study area were constituted of earthquakes occurred the period 1964-2016 for different depths. Properties of seismicity and heat flow values were correlated with each other and the earthquakes data were drawn on the distribution of heat flow map for the study area. In conclusion, we observed that the trench area is represented low heat flow, high seismicity. Also, the back-arc region where shows low seismicity is characterized with the higher heat flow (70-80 mWm-2) and the area exhibits relatively low seismicity and high b value except for the eastern part of the Aegean volcanic arc.

Keywords: Aegean Sea, b value, heat flow

Histopathological Effect Of Plumbago Indica Root On Hamsters.

Naruwan Saowakon[a*], Yanwarut Camchuen[a]

[a]Suranaree University Of Technology

*naruwan@sut.ac.th

Abstract:

Liver fluke is a major cause of trematode infection that can be associated with the induction of epithelial bile duct cancer, cholangiocarcinoma. Previous studies suggested that plumbagin was extracted from the Plumbago indica root, exhibited against trematode infection in animal. However, the toxicity of crude extract of P .indica has not been evaluated yet. This study aimed to evaluate the histopathological effect of P indica (PI) extract on organs in hamsters. Each three of female and male hamsters were divided into 4 groups and fed with PI at 100, 400, 1000 and 3000 mg/ kg bw for 24 h and 7 days. The histopathological changes of liver, spleen, kidney and reproductive organs were evaluated by H&E technique. The hamsters in all groups of PI treatment showed no signs and symptoms after 7 days of oral administration. Results of histopathology changes showed that hamster treated with PI at 1000 mg/kg bw showed slight glomerus swelling only 7-day after treatment. After 24 h, the diffused cell infiltration and hepatocytes hypertrophic formation were occurred in the PI treated with 3000 mg/kg bw. In contrast, the glomeruli and hepatocytes changes of PI treated group showed progressively reduced infiltration and mild arteriolar changes. Further investigations are recommended in the liver and kidney function tests. This finding may be develop in safety in vivo study in trematode infection.

Keywords: histopathology. Plumbago indica

Host Stage- Related Progeny Production, Sex Ratio And Longevity Of Dibrachys Boarmiae (Hymenoptera: Pteromalidae)

Z. Ulya Nurullahoglu[a*]

[a]Biology Department, Faculty Of Science And Arts, Marmara University

*unurullahoglu@marmara.edu.tr

Abstract:

Dibrachys boarmiae is a gregarious ectoparasitoid on prepupa and pupa of different Lepidopterous species. Gregarious ectoparasitoids are commonly prefered as biological control agents according to their high progeny production on one host. It is possible to rear this species on Galleria mellonella (Lepidoptera: Pyralidae) in laboratory conditions. Even though previous studies showed that D. boarmiae mostly prefers the prepupa and pupa of G. mellonella, in this study we examined the larva for parasitization and compared the some biological aspects to the individuals reared on other stages of the host. G. mellonella stock cultures were maintained under laboratory conditions at dark, 25± 2°C and 60± 5 relative humidity by rearing on Bronskill's artificial diet. Adult parasitoids fed on 25% honey solution at the same temperature and humidity while applying 12/12 h photoperiod. Fifty cocooned larvae, prepupae and pupae of G. mellonella were parasitized by D. boarmiae females for each treatment. After development of D. boarmiae, number of parasitoids and their sex ratio on each host were counted and adult longevity of each parasitoid was determined. It was found that the number of the parasitoid reared on one larva was higher while adult size and longevity were lower than the other groups. Sex ratio of parasitoids in all groups were found similar. This study showed that it is possible to rear D. boarmiae on larva besides prepupa and pupa of G. mellonella.

Keywords: Dibrachys boarmiae, mass-rearing, sex ratio, adult longevity, host stage

Hydrochemistry of the Waters in Ayder (Camlihemsin-Rize) Geothermal Field, Turkey

Esra Hatipoglu Temizel[a*], Fatma Gultekin[a], Arzu Firat Ersoy[a], Mehmet Ziya Kirmaci[a]

[a]Karadeniz Technical University

*hatipogluesra@gmail.cm

Abstract:

In the study area, volcanic sedimentary units consisting of andesite, basalt, dacite and pyroclastic rocks containing red limestone, sandstone and marl interbeds and magmatic rocks mostly appearing as granite-granodiorite are exposed. Magmatic rocks are cut by doleritic dykes in places. The slope debris of 10 m thickness, which outcrops on the bottom of the valley, is derived from steep slopes. In order to determine the chemical properties and relationship cold water of Ayder geothermal hot waters were performed in-situ measurements and sampling in hot waters, cold waters and surface waters in May and October 2016. According to in situ measurements, temperature in geothermal well water is 55°C, Electrical Conductivity (EC) value is 255 µS/cm, pH value is 9.2 and Dissolved Oxygen (DO) value is 1.9 mg/l. Measured temperatures in hot water springs are 20 - 31.7°C, EC values are 33 - 296 µS/cm, pH values are 8.16 - 9.33 and DO values are 8 - 0.35 mg/l. In cold water and surface waters, temperatures are 10.8°C and 7°C, EC 35 µS/cm and 19 µS/cm, pH 7.15 and 6.69, DO 10.3 mg/l and 13 mg/l respectively. In the study area, the thermal waters are Na-Ca-CO3-SO4, cold spring water is Ca- Na-HCO3, surface waters are Ca-HCO3 water types. The values of Al, As, Ba, Cd, Cs, Fe, Mo, Sr, Sb, Rb and Zn in the thermal waters are higher than those in cold waters.

Keywords: Hydrochemistry, Thermal Waters, Ayder Geothermal Field, Turkey

Identification of Uniaxial Tensile Test Flow Curve by Linear, Non-Linear and Numerical Analysis

Emre Esener[a*], Murat Ozsoy[b], Neslihan Ozsoy[b], Mehmet Firat[b]

[a]Bilecik Seyh Edebali University, Engineering Faculty, Department Of Mechanical And Manufacturing Engineering
[b]Sakarya University, Engineering Faculty, Department Of Mechanical Engineering

*emre.esener@bilecik.edu.tr

Abstract:

Determining plastic behavior of a material is a critical process for predicting manufacturing processes especially sheet metal forming, extrusion, rolling, and forging. Flow curve describes the plastic behavior of a material, and uniaxial tensile tests are perform to determine a flow curve. Strength coefficient (K) and hardening exponent (n) parameters can be obtained using a flow curve. These parameters can identicade the plastic behavior of the material. Generally, these parameters are determine by linear curve fitting methods. However, flow curve is a non-linear curve and converting the curve to a linear form by logarithmic functions induces an accuracy loss. This situation, causes non-sensitive predictive models.

In this study, determination of a uniaxial tensile test flow curve is processed with three different methodology. At first uniaxial tensile test will be performed with ASTM-E8 samples and dual phase steel (DP600) will be used as material with 1 mm gauge thickness. In the first method, universal calculation of flow curve will be applied. In second methodology, non-linear determination of flow curve will be performed by non-linear curve fitting. In the last method, numerical simulations will be used to predict flow curve of the material. As a result, all methodologies will be compared with the experimental results to determine the most sensitive flow curve of the material.

Keywords: Flow curve, tensile test, curve fitting, dual phase steel.

Immobilization of Alpha-Galactosidase on Sepabead EC-EA and Sepabead EC-HA Via Adsorption-Crosslinking Method and Its Advanced Characterization

Secil Onal[a], Evran Bicak Celem[b, C, D, E]

[A]ege University, Science Faculty, Biochemistry Department, Izmir-Turkey
[B]ege University, Science Faculty, Biochemistry Department, Izmir/Turkey
c
d
e

secil.onal@ege.edu.tr

Abstract:

α-D-Galactosidases(α-D-galactoside galactohydrolase, Mellibiase, EC 3.2.1.22) catalyse the hydrolysis of α-1,6-bounded D-galactose residues of basic and complex oligo- and polysaccharides. Enzyme immobilization technology is an effective means to perform enzyme reuse and to improve its stability. In the present study, we aimed to immobilize α-galactosidase on Sepabead EC-EA and Sepabead EC-HA by adsorption-crosslinking method and also to determine the characteristic properties of the enzyme. The enzyme was immobilized under optimized immobilization conditions on Sepabead EC-EA and HA with the activity yield of 43% and 55%, respectively. Characteristic properties of the free and immobilized enzymes were determined and compared. The maximum activity was observed at 65 C for EA and 65 C for HA immbilized enzyme. The optimum pH was found as pH 5.0 for both immobilized enzymes. Both enzymes were very stable in the range of pH 3.0-7.5 and 4-70 oC. The Km and Vmax values were calculated for free and immobilized enzymes. The operational stability of immobilized α-galactosidases were monitored for 30 h in a batch-stirred reactor. The immobilized enzymes showed high operational stability values that increase the reusability of immobilized enzymes in industrial applications. α-Galactosidases were stored at 4°C under the same conditions and the activity measurements were carried out for a period of 8 months. The free enzyme lost about 54 % of its initial activity over a period of 8 months, whereas immobilized enzymes lost only about 29 % (EA) and 33%(HA) of their activities over the same period of time. Various saccharides and chemicals were also examined for their effects on α-galactosidase activity. The immobilized enzyme has good properties for its various industrial applications.

Acknowledgement: Thanks to Ege University Research Foundation (Project ID: 2009 FEN 010) for financial support and Dr. P. Caimi (Resindion S.R.L.) for providing us Sepabead supports and technical help.

Keywords: α-Galactosidase, Immobilization, Adsorption, Crosslinking, Sepabead EC-EA, Sepabead EC-HA.

Implementation of Controller Area Network (CAN) and ZigBee Protocol for Precision Farming Application

Ilker Unal[a*], Salih Sozer[a], Onder Kabas[a], Mehmet Topakci[a]

[a]Akdeniz University

*ilkerunal@akdeniz.edu.tr

Abstract:

In precision agriculture technology, real-time data acquisition that comes from the different sensors and automation is very important to specify the characteristics of the machine, soil and plant. Wireless sensor network is a major technology that drives the development of precision agriculture. Sensor networks are used to provide integration of the variability such as temporal, spatial and predictive and the determination of the optimal agricultural management options. Recently, wireless sensor networks have been used to communicate between sensors and the central control unit. Wireless sensor networks are preferred due to the advantages such as cost, size, power, flexibility and deliverability, compared to wired sensor networks. However, many sensors that use in agricultural production may not be able to control as completely wireless. In this study, some wireless sensor network technologies were surveyed. In addition, a sample agricultural sensor network model that is created by the integration of the CAN (Controller Area Network) known as ISO 11783 and ZigBee wireless sensor network was designed. Finally, the data flow within designed network model between CAN data frame and the ZigBee data frame was described.

Keywords: Wireless sensor networks, ZigBee, ISO 11783

Improving The Legibility Of Topographic Maps

Fatih Temiz[a], Savas Durduran[a*], Asli Bozdag[b], Munevver Gizem Gumus[b]

[a]Necmettin Erbakan University
[b]Omer Halisdemir University

*ssdurduran@konya.edu.tr

Abstract:

Topographic Maps have long been produced in Turkey by the General Command of Mapping, using the most modern techniques available. Nowadays, in parallel with the development of computer technology, they are being produced to various scales. Topographic Maps are those that can best indicate the Earth's geographical objects and their association with each other. Topographic maps provide users with information, according to the scale of the map. For a map to be useable, the legibility and selectivity of the text is critical. In this context, in topographic maps it is necessary to ensure the criteria of "clarity" and "legibility" when users' requests are taken into consideration. In terms of ensuring these criteria, the Hierarchical Organization of Texts and Text Maps are crucial.

The aim of this study is to improve the legibility of topographic maps by working on the types of text that form the basic materials of typography. In this study, the font together with the font size and font color, which most easy to read on the topographical map and more commonly used, are determined. The text that is important for the user is highlighted on the map and complexity is avoided. This study will benefit users by increasing the visibility of topographic details on a map.

Keywords: Topographic Map, Text, Typography

In vitro Bioavailability of Different Monofloral Bee Pollens from Turkey

Selma Kayacan[a], Osman Sagdic[a*]

[a]Yildiz Technical University

*osagdic@yildiz.edu.tr

Abstract:

Nowadays, the preference of products rich in bioactive compounds is gradually increasing. Pollen is a bioactive food with high nutritional value, which is gathered from flowers by honey bees. In spite of its high nutritional value and bioactive properties, there is no standardization about bee products to put on market as qualified products in some countries. In this study, the bioactive properties and in vitro bioavailability of different bee pollens which are obtained from different regions were determined. Mustard, poppy, rabbit weed, and opium poppy were used in the study. To determine the bioactive properties of bee pollen; total phenolic content, total flavonoid content and total antioxidant capacity were performed. Total antioxidant capacity was carried out two different methods which were DPPH and CUPRAC methods. Total phenolic content and total flavonoid content were determined as spectrophotometrically. According to results; total phenolic contents of pollen samples were found between 6.22 and 13.41 mg GAE/g of dry matter and total flavonoid contents of pollen samples changed between 1.26 and 2.76 mg CAE/g of dry matter. The highest antioxidant capacity was obtained with CUPRAC method. The highest phenolic, flavonoid content and antioxidant capacity were found in mustard pollen, while rabbit weed had the lowest values for all analyses. According to bioavailability results, percentage of IN fraction of total phenolic content, total flavonoid content and total antioxidant activity of pollen samples were found between 2.52 and 3.42% mg GAE/g of dry matter, 0.14 and 1.87% mg CAE/g of dry matter, and 0.08 and 0.64% mg TEAC/g of dry matter respectively. Consequently, bee pollen is can be used as bioactive food supplement.

Keywords: bioactivity, bee pollen, bioavailability

In Vitro Sterilization And Multiplication Protocol Of Prickly Pear Cactus (Opuntia Ficus-Indica)

Merve Sezen[a*], Begum Akyol[a], Aynur Gurel[a]

[a]Ege University

*mervesezen04@gmail.com

Abstract:

Prickly pear cactus, Opuntia ficus-indica, has been used as human food, forage, mineral source and a cure for several illnesses for ages. This particular genus, has high contents of some important minerals such as potassium, calcium, magnesium and sodium. As the scientists discovered its antioxidant property, cactus pears have became more favoured fruit in the market. Opuntia ficus-indica provides convenience to use many different tissue culture methods such as micrografting and micropropagation by somatic organogenesis or embryogenesis in in vitro. The aim of this study was to determine the most suitable surface sterilization protocol and medium composition for multiple shoot regeneration of Opuntia ficus-indica. In accordance with this purpose, 1 cm of shoot tips and 1 cm2 cladode explants were cultured in Murashige and Skoog (MS, 1962) basal medium supported with different concentrations of 6-benzylaminopurine (BAP) (0.5, 1 and 10 mg/L) as plant growth regulator. In order to determined the most suitable surface sterilization protocol, 50 % NaOCl solution for different duration periods (3, 5 and 7 min) were tested. The most suitable sterilization procedure was obtained with 3 min NaOCl treatment for shoot tip explants. The number of shoots per explant was increased approximately 10-fold in MS medium which including 1 mg/L BAP according to control medium without growth regulators. At the same time, this medium composition gave the highest survival (66%) and rooting (7.4%) ratios. With these results, sterilization problems were minimized, explant viability and multiple shoot regeneration were maximized at the same time. These results provide more efficient protocol for multiple shoot regeneration of Opuntia ficus-indica.

Keywords: Opuntia ficus-indica, sterilization, multiple shoot regeneration, rooting

In Vitro Swelling Studies in Simulated Physiological Solutions and Biocompatibility of Environmentally Sensitive Hydrogels with Some Biochemical Parameters of Human Sera

Dursun Saraydin[a*], Yasemin Isikver[a], Huseyin Aydin[b]

[a]Cumhuriyet University, Science Faculty, Chemistry Department, Sivas, Turkey
[b]Cumhuriyet University, Medicine Faculty, Medicinal Biochemistry Department, Sivas, Turkey

*saraydin@cumhuriyet.edu.tr

Abstract:

In modern medicine, commonly used biomaterials originating from metals, ceramics and polymers have shown biocompatibility with blood, tissues, cells, etc., in the human body. Polymeric biomaterials are usually understood as polymeric materials and articles made from them which are used in medicine, biotechnology biomedicine, bioengineering, pharmaceutical, veterinary, food industry, agriculture and related fields. In this in vitro study, swellings and the biocompatibility of environmentally sensitive hydrogels such as N-isopropyl acrylamide/acrylamide and N-isopropyl acrylamide/acrylamide/carboxylic acids prepared by free radical polymerization in aqueous solutions has been investigated. Selected carboxylic acids for this study were acrylic, methacrylic, crotonic, itaconic, maleic, mesaconic and aconitic acid. The equilibrium fluid contentent of the hydrogels are investigated in simulated physiological fluids or crystalloid solutions such as HCl-KCl buffer (pH=1.1), universal buffer (pH=5.5), phosphate buffer (pH=7.4), urea, isotonic NaCl, isotonic KCl, 5% dextrose, 5% dextrose+isotonic NaCl, Ringer's lactate, human blood serum and human serum albumin solution at 37 oC.

For the analysis of biocompatibility, ES hydrogels are incubated in 5 different human sera and their biocompatibilities with some biochemical parameters such as post-prandial blood glucose, triglyceride, cholesterol, high-density lipoprotein, low-density lipoprotein, very low-density lipoprotein, blood urea nitrogen, creatinine, total protein, albumin, amylase, alkaline phosphatase, alanine transaminase, aspartate transaminase, lactate dehydrogenase, creatinine kinase, creatinine kinase-heart, total bilirubin, direct bilirubin, indirect bilirubin have been investigated at 37 oC. No significant differences in values before and after the test procedures have been found. It is therefore concluded that environmentally sensitive hydrogels are biocompatible for biochemical parameters of human sera.

Keywords: hydrogel, biomaterials, biocompatibility, swelling, human sera

In Vivo and ex-Vivo Studies of Dual Targeted Biomimetic Doxorubicin Nanocarrier in Mice

Guliz Ak[a*], Senay Sanlier[a]

[a]Ege University Faculty Of Science, Biochemistry Department, Izmir, Turkey

*gulizak@gmail.com

Abstract:

Ovarian carcinoma is the most common cause of death from a gynecologic malignancy. Doxorubicin is used for ovarian cancer treatment but therapy response could be lower because of drug resistance mechanism. Its usage is limited due to the side effects particularly cardiomyopathy and myelosupression. Biomimetic drug carriers like erythrocyte membrane vesicles have advantages about biocompatibility. Folate receptor has been shown to be expressed in more than 80% of ovarian cancer. Magnetic targeting provides accumulation of magnetic nanoparticles in the desired area with using external magnetic field. In our previous work doxorubicin loaded magnetic nanoparticles were synthesized, coated with erythrocyte membrane vesicles and folate ligand was anchored to the membrane surface for dual targeting. In vitro studies indicated that folate anchored erythrocyte vesicle coated magnetic nanoparticles (FVDSPMs) have biomimetic properties, lead to more toxicity via interaction with folate receptor. Therefore, in this work we aimed to investigate the biodistribution and targeting ability of the nanocarrier in healthy CD1 female mice. FVDSPMs and control groups were administrated to mice via tail vein and magnet was fixed to ovary region. Fluorescent signals of doxorubicin in mice were analyzed at 1. and 3. h through IVIS Spect and biodistribution of drug was investigated. After sacrification at the end of 3.h blood, liver, lung, spleen, kidney, colon, ovary, muscle were collected, analyzed under IVIS, homogenized and drug extraction was carried out. Doxorubicin analyzes were performed with HPLC. It was found that FVDSPMs were highly accumulated in folate receptor expressed- and magnet applied tissue (%32.89/ mg, %10.32/ mg, %9.28/ mg ovary, kidney and lung respectively). It can be suggested that FVDSPMs could have potential and also advantages against free doxorubicin for ovarian cancer therapy.

Acknowledgement: We would like to thank for financial support received from the Research Foundation of Ege University (Project ID: 2012 FEN 028).

Keywords: Doxorubicin, folate receptor, magnetic drug delivery system, erythrocyte vesicles, ovarian cancer

In Vivo Evaluation of Ultrasound-Mediated and Magnetic Targeted Nanobubble Formulations for Lung Cancer Treatment in Tumor-Bearing Mice

Senay Sanlier[a*], Guliz Ak, Fulden Bozkaya[b], Ayse Unal, Yeliz Yildirim[a], Habibe Yilmaz[a],Hayal Boyacioglu[a], Gokce Taniyan, Murat Yalcin[a]

[a]Ege University Faculty Of Science Biochemistry Department, Ege University Argefar
[b]Ege University Faculty Of Science, Biochemistry Department, Izmir, Turkey

*senay.sanlier@gmail.com

Abstract:

Lung carcinoma is the second most common cancer type both women and men. Pemetrexed is a folate antimetabolites and pazopanib is second-generation multi-targeted tyrosine kinase inhibitor. Both pemetrexed and pazopanib are using for lung cancer treatment and have many side effects such as chest pain, fever, hair loss, anemia etc. Ultrasound is a non-invasive technique with an external source. Magnetic targeting provides accumulation of magnetic nanoparticles in the desired area with using external magnetic field. There are lots of advantages ultrasound-mediated and magnetic targeted drug delivery system. In our previous studies, pemetrexed-peptide and pazopanib-peptide decorated magnetic nanoparticles were synthesized and loaded into liposome. Then nanobubble formulations were prepared from liposomes through extruder system. Obtained data indicated that nanobubbles have biocompatible and ultrasound susceptible properties, can lead to more cytotoxicity on cancer cells and can accumulate on target-tissue with magnetic targeting. In this work in vivo evaluation of lung cancer treatment potential of nanobubbles was aimed. Xenograft and orthotrophic lung cancer models were generated with A549-luc cells injection into male atypical nude mice. Tumor bearing mice groups were treated with iv injection or inhaler formulation, seperately, following magnet fixation and ultrasound application. All mice were imagined with IVIS Spect to observe tumor formation and tumor shrinkage after luciferin injection. After treatment, biochemical parameters (ALB, AST, CK etc.) were determined and examined statiscally. All animals received inhaler treatment showed positive response and it was found that especially inhaler formulations were lead to more tumor shrinkage than other drug forms. In conclusion, it can be said that as a inhaler formulation ultrasound-mediated and magnetic targeted nanobubble system has a great potential for lung cancer treatment.

Acknowledgement: We would like to thank for financial support received from The Scientific and Technological Research Council of Turkey (TUBITAK) (Project ID: 213M672).

Keywords: Pemetrexed, pazopanib, dual targeting, dual theraphy, nanobubble, lung cancer

Infrared Drying of Mushroom

Mustafa Burak Han[a], Habib Kocabiyik[a*]

[a]Agricultural Machinery Department, Faculty Of Agriculture, Canakkale Onsekiz Mart University

*kocabiyikh@comu.edu.tr

Abstract:

The effects of infrared radiation power (300, 400 and 500 W) and air velocity (1.0, 1.5 and 2.0 ms-1) on drying characteristics, drying time (DT), specific energy consumption (SEC) and quality parameters of button mushroom were investigated. Drying experiments of mushroom were carried out with continuous and intermittent infrared heating. DT and SEC varied between 174 and 255 min, 13.70 and 19.72 MJkg-1water at continuous drying, 393 and 564 min, 27.68 and 43.18 MJkg-1water at intermittent drying, respectively. They were also significantly affected by process variables. Shrinkage ratio was found between 17.44 and 36.74% for all drying conditions. Total colour change varied between 10.57 and 23.46 for continuous drying, 10.95 and 24.43 for intermittent drying, respectively. Total colour change ranged from 5.30 to 13.19. However, drying time was prolonged with increasing air velocity, while it was shortened with rising infrared power.

*Acknowledgment

The data used in this work comprise a part of the first author's master's thesis at the University of Canakkale Onsekiz Mart.

Keywords: Mushroom, infrared drying, drying time, specific energy consumption, shrinkage, total colour change

Infrared Stabilization Of Immature Rice Grain

Fatma Yilmaz[a], Necati Baris Tuncel[a*], Nese Yilmaz Tuncel[a]

[a]Food Engineering Department, Faculty Of Engineering, Onsekiz Mart Universitesi

*baristuncel@comu.edu.tr

Abstract:

Immature rice grains are one of the by-products of paddy milling process. They are yellow-green in color and contain remarkable amounts of bioactive compounds such as tocopherols, tocotrienols, gamma-oryzanol, sterols, and phenolics. Thus, they have a great potential for food applications. However, immature rice grains quickly become rancid and need to be stabilized for human consumption. In this study, immature rice grains were stabilized with a laboratory type infrared stabilization system. Independent experiments were conducted with medium and short wave infrared emitters which were both set at 1000 W, 1200 W, 1400 W, and 1600 W. However, the process times were different for each experimental condition due to the varying radiation intensities. The samples were stored for 3 months and free fatty acid (FFA) content was analyzed in every 15 days throughout the storage period. FFA content of the unprocessed immature rice grain increased from 5.49 % to 35.71 % during the storage period. On the contrary, the increase in FFA content of immature rice grains that were stabilized with medium wave infrared emitters at 1200 W for 10.12 min, at 1400 W for 7.10 min, at 1600 W for 4.01, 4.40, and 5.02 mins and with short wave infrared emitters at 1200 W for 10.12 min, at 1400 W for 7.10 min, and at 1600 W for 4.40 min was not significant. Although there was no statistically significant difference between short and medium wave infrared stabilization, FFA content of the grains stabilized with medium wave infrared emitters was lower at the end of the storage period. FFA content of the grains decreased with increasing infrared power.

This research is funded by the Scientific and Technological Research Council of Turkey (TÜBİTAK). Project No: 115O605

Keywords: immature rice, stabilisation, infrared, free fatty acid

Inhibition Of Polyphenol Oxidase Obtained From Sideritis Perfoliata Subsp. Athoa (Papan. & Kokkini)

Kadir Bozdemir[a*], Serap Dogan[b], Mehmet Emin Diken[b], Umran Alan[c], Mehmet Dogan[c]

[a]Department Of Molecular Biology & Genetics, Balikesir University, Balikesir, Turkey / Tissue R&D, Haya
[b]Department Of Molecular Biology & Genetics, Balikesir University, Balikesir, Turkey
[c]Department Of Food Engineering, Bulent Ecevit University, Zonguldak, Turkey

*kbozdemir@hayat.com.tr

Abstract:

In this study, a partial characterization of polyphenol oxidase (PPO) extracted from Sideritis perfoliata subsp. athoa (Papan. & Kokkini) has been described. Polyphenol oxidase of Sideritis perfoliata subsp. athoa was isolated by (NH4)2SO4 precipitation and dialysis. As result (NH4)2SO4 precipitation and dialysis processes, extracted PPO was used for the enzyme characterization. Optimized enzyme was used in the inhibition studies.

The effect of different inhibitors (ascorbic acid, glutamic acid and L-sistein) on partially purified Sideritis perfoliata subsp. athoa polyphenol oxidase activity was investigated spectrophotometrically by using 4-methyl catechol, pyrocatechol and pyrogallol as phenolic substrates. Finally, determined that ascorbic acid, glutamic acid and L-sistein showed competitive, semi-competitive and mixed type of inhibition againist polyphenol oxidase.

Keywords: Polyphenol oxidase, Sideritis perfoliata subsp. athoa, , inhibition.

Integrated Management System (Iso 9001, Iso 14001, Ohsas 18001) Application On Railway Vehicle Manufacturing Company

Asude Ates[a*], Serap Gunay[a]

[a]Sakarya University Environmental Engineering Department

*aates@sakarya.edu.tr

Abstract:

Rising competitive conditions make the control necessary to control companies risks in every area. Producing a qualitative product or giving a quality service is not enough for the companies, besides they should give respect to natural environment, the society and obtain a safe and healthy work environment for their workers. By this way, companies can improve their prestige in the sector. Applying Quality, Environment, Occupational Health and Safety Management Systems is the best way to have a control in those three different management areas. However, the difficulties encountered by organizations vary over the years, the activities in the supply chain become more complex in parallel with globalization, changes in the way businesses conduct usiness, increased expectations of customers and all parties involved, facilitating access to information and making the voice of today's society stronger. In this context, the ISO 9001 Quality Management System and ISO 14001 environmental management standards was published by ISO in September 2015. Ensure that management systems are integrated into the new revision in conjunction with the establishment of different and multiple management systems to ease the annex SL structure a draft that was created to make it attractive, more than one management system provides an opportunity for new concepts to overcome between. In this research, integrated quality, environment, occupational health and safety management systems are investigated with a railway vehicle production firm example. Quality, Environment and Occupational Health & Safety Management Systems necessary for their studies and to revise the influence of the sector have been revealed by research.

Keywords: Integrated Management System, Annex SL, ISO 14001:2015 And ISO 9001:2015 Revision

Investigation Of Antibacterial Activity Of Some Boron Compounds And Minerals On Tissues

Kadir Bozdemir[a*], Serap Dogan[b], Mehmet Dogan[c], Fatos Basbug[d], Semih Yesilkir[d]

[a]Department Of Molecular Biology & Genetics, Balikesir University, Balikesir, Turkey / Tissue R&D, Hayat Kimya San. A.S., Kocaeli
[b]Department Of Molecular Biology & Genetics, Balikesir University, Balikesir, Turkey
[c]Department Of Cemistry, Balikesir University, Balikesir, Turkey
[d]Tissue R&D, Hayat Kimya San. A.S., Kocaeli, Turkey

*kbozdemir@hayat.com.tr

Abstract:

Boron compounds are very commonly used in a wide range of industrial applications in a variety of ways. The production of boron compounds has substantially increased recently, as a result of increasing demand for these compounds in nuclear technology; in rocket engines as fuel; and in the production of heat-resistant materials, such as refractories and ceramics, highquality steel, heat-resistant polymers, catalysts, etc. Also boron products are used in the cleaning sector for various purposes. It is necessary to make our life easier to increase the use of boron minerals, which are found quite abundant. In this study, it was determined how the antibacterial activity changes when some boron compounds and minerals were applied to tissues (napkins and paper products). Antimicrobial activities of some boron compounds and minerals on tissues were determined by disc diffusion method and anti-adherence test using a gram negative (Escherichia coli ATCC-8739) and a gram positive (Staphylococcus aureus ATCC-6538) bacteria. The potential of the boron minerals for the development of antimicrobial paper was defined.

Keywords: Boron compounds and minerals, tissue, antibacterial activity.

Investigation of Karadag Fe-Cu Skarn Deposit (Gumushane, Turkey)

Ferkan Sipahi[a*], Ibrahim Akpinar[a], Abdullah Kaygusuz[a], Alaaddin Vural[a], Cigdem Saydam Eker[a]

[a]Gumushane University

*ferkansipahi@gmail.com

Abstract:

Karadag Fe-Cu skarn deposit is located in the NE Black Sea region of Turkey. The north eastern Black sea region of Turkey, known as Eastern Pontides, has numerous skarn, porphyry, epithermal and massive sulfide type deposits. The Karadag Fe-Cu skarn deposit is contained in carbonate rocks of the Late Cretaceous volcano-sedimentary series. The Eocene aged granitoid rocks have an metaluminous to peraluminous calc-alkaline properties and intruded Late Cretaceous limestones. Diopside, wollastonite, orthoclase, garnet, epidote, quartz, magnetite and hematite, and with lesser chalcopyrite and pyrite are determined as mineral paragenesis in Karadag Fe-Cu skarn deposit. Magnetite, pyrite and chalcopyrite formed in the first and second phases. Hematite is decomposed from magnetite and pyrite, and sometimes found as an alteration of mafic minerals. Magnetite is generally massive and sporadically banded. Pyroxene found with orthoclase in exoskarn zones. There are fewer amounts of the wollastonite, epidote and quartz together with garnet from exoskarn zones.

The presence of anhydrous minerals such as garnet (andradite) and clinopyroxene (diopside) are indicative of prograde stage, and the hydrous mineral such as epidote show that retrograde stage was developed later. Microthermometric data on quartz and calcite from exoskarn zone shows that the skarnization took place at 175°-430°C temperatures. The magnetite mineralization is characterized by homogenization temperatures of 210 to 405°C and with salinity range of 0.2 to 14.8 wt% NaCl equivalent.

The hydrous mineral such as epidote indicates that retrograde stage was developed. The Fe-Cu skarn deposit at Karadag formed under oxidized conditions according to the andradite and diopside and abundance of magnetite with minor pyrite.

Keywords: Granitoid, Fe-Cu skarn, Fluid Inclusion, Mineralization, Turkey

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Investigation Of The Methods Of Apparel Companies By Using Workshop Distribution To Subcontracting Workshop

Mahmut Kayar[a*], Oyku Ceren Bulur[a]

[a]Marmara Universtiy

*mkayar@marmara.edu.tr

Abstract:

Apparel companies use different methods when distributing workshop to subcontracting workshops. These methods can be listed as mathematical, statistical, artificial intelligence and hybrid models.In this study; firstly, general information about outsourcing method are explained. After that information which obtains as a result of a survey which was done in apparel companies will be appreciated.

Keywords: Apparel, outsourcing, workshop distrubution methods

Is It Possible To Prevent The Collapse Of Fish Stocks By The Evaluating Simple Overfishing Indicators? An Example: Seyhan Dam Lake.

Caner Enver Ozyurt[a*], Volkan Baris Kiyaga[a], Meltem Manasirli[a], Dursun Avsar[a]

[a]Cukurova University

*cozyurt@cu.edu.tr

Abstract:

Due to the collapse of fish stocks, commercial fishery at Seyhan Dam Lake is completely over in 2013. As a result, both financial and social problems have been experienced. In this study, it was evaluated whether it would be prevented the collapse of the pikeperch (Sander lucioperca) stock by following simple overfishing indicators. For this, the data of the sampling performed in Seyhan Dam Lake in 2008 was used. Catching was carried out with gillnets with 20-22 and 24 mm mesh size. With the data obtained; length distribution, length at first maturity, length-weight relationship, optimum length, optimum size and mega-spawner size were determined. Using these results, an assessment was made on the status of the pikeperch stock in terms of overfishing. For this species, length at first maturity, optimum length, optimum size and the lower limit of mega-spawner were determined as 26cm, 34cm, 30-38cm and 42cm respectively. It was also found that if fishermen would have used 32-34 mm mesh size instead of 20-22 mm, even if they caught the same number of fish, the biomass would have increased 58 times.

Keywords: Mega spawner, maturity, optimum size, overfishing, pikeperch

Isotopic Properties of Thermal Waters in Ikizdere (Rize) Geothermal Field, Turkey

Arzu Firat Ersoy[a*], Fatma Gultekin, Esra Hatipoglu Temizel[a], Mehmet Ziya Kirmaci[a]

[a]Karadeniz Technical University

*arzufirat@gmail.com

Abstract:

In the Ikizdere geothermal area a geothermal well having a depth of 266 m and a temperature of 70°C is used for heating and balneological purposes. The aim of this study is to determine the recharge and origins of hot water in the geothermal area. Geologically, it is mostly volcano-sedimentary rocks in the late Cretaceous age of the oldest units in the region. Late Cretaceous-Tertiary aged granitoids composed of granite and granodiorite type rocks are outcroped on a large part of the area. The temperature in the geothermal well is about 63°C, the electrical conductivity (EC) is 6913 µS/cm, the pH value is 7.2 and the dissolved oxygen (DO) value is 0.75 mg/l. In cold water and surface waters, EC are 22 and 17 µS/cm, pH 7.34 and 6.4, DO 11 and 12 mg/l respectively. In the study area, the hot waters are Na-Ca-HCO3 and the cold and surface waters are Ca-Na-HCO3 waters type. The δ18O, δ2H, δ13CVPDB and 34SCDT analyzes were carried out in the waters in the area. According to δD and δ18O values, hot waters have more negative deuterium values while cold waters are close to Local Meteoric Water Line (LMWL). This indicates that the recharging of hot water is from higher elevations than cold water. The δ13CVPDB values are -7.81‰ in hot waters and -22.13‰ in surface water. Dissolved inorganic carbon in hot waters is derived from fresh water carbonates and mantle CO2. 34SCDT values are 16.4‰ in hot waters, 8.0‰ in cold spring water and 4.2‰ in surface water. According to these values, the sulfur source in the hot waters is volcanic sulphide (SO2) and Cenozoic CaSO4, whereas it is magmatic rocks in cold waters.

Keywords: Thermal waters, Stable isotopes, Ikizdere Geothermal Field, Turkey

K-Essence Field In Fractal Framework

Mustafa Salti[a], Murat Korunur[b*], Oktay Aydogdu[a]

[a]Mersin Universty
[b]Munzur University

*muratkorunur@yahoo.com

Abstract:

After recent cosmological evidences, it has been concluded that the dark energy-matter distribution is responsible for the speedy expansion of the universe. In this work, making use of the non-flat fractal Friedmann-Robertson-Walker space-time model containing dark matter interacting with dark energy, we have studied how the fractal contribution affects the dynamics of k-essence scalar field dark energy model. The other aim of this investigation is to extend the previous studies given in literature one step further.

Keywords: Cosmology; Dark Matter; Scalar Field

Kinetic Investigation of Some Doping Agents such as beta-Blocker Receptors by Thermogravimetry

Dursun Saraydin[a*], Salih Cengiz[b]

[a]Cumhuriyet University, Chemistry Department, Sivas, Turkey
[b]Istanbul University, Institute Forensic Science, Cerrahpasa, Istanbul, Turkey

*saraydin@cumhuriyet.edu.tr

Abstract:

Doping refers to an athlete's use of prohibited drugs or methods to improve training and sporting results. Doping includes an athlete's use of forbidden drugs such as stimulants, hormones, diuretics, β-blockers, narcotics and use of forbidden methods. β-blocker is a class of medications that are particularly used to manage cardiac arrhythmias, and to protect the heart from a second heart attack after a first heart attack. β−blockers are competitive antagonists that block the receptor sites for the adrenaline and noradrenaline on adrenergic β−receptors. β−receptors are found on cells of the heart muscles, smooth muscles, airways, arteries, kidneys, and other tissues that are part of the sympathetic nervous system and lead to stress responses, especially when they are stimulated by epinephrine. Thermal analysis techniques cover all methods in which a physical property is monitored as a function of temperature or time. Thermogravimetry are useful techniques that have been successfully applied to reveal important information regarding, the physicochemical properties of drug and excipient molecules such as polymorphism, stability, purity, formulation compatibility among others, and assessing the drug degradation kinetics. There are definitive advantages to employing thermal analysis methods to attain varying views of the physicochemical properties of pharmaceuticals. The determination of the key physical and chemical properties of a new material is essential.

Therefore, the aim of this study was to evaluate the kinetics of oxprenolol, atenolol and metopronolol using thermogravimetry. The search of thermal degradation and kinetics were carried out to help understanding the solid-state characterization, evaluate the quality control and stability for β-blockers.

Keywords: DOPING AGENT, BETA BLOCKERS, TERMOGRAVIMETRI, KINETICS

Land Consolidation Studies In Turkey

Savas Durduran[a*], Asli Bozdag[b], Munevver Gizem Gumus[b], Ilker Kesen[a]

[a]Necmettin Erbakan University
[b]Omer Halisdemir University

*ssdurduran@konya.edu.tr

Abstract:

The structure of agricultural enterprises in Turkey is in the form of small, fragmented and scattered terrains. This situation away from modern agricultural management has led to the loss of time, labor and capital. Land consolidation studies have been applied as a method of rural area regulation in order to increase the productivity of agricultural enterprises and raise the living standards of the rural population in the transition to the modern agricultural production process.

In this study, firstly the land consolidation studies applied in Turkey and in the world are compared. Then, a Land consolidation application in the Adana province of Turkey is evaluated in terms of solving the problems of agriculture sector and rural population, to reach the appropriate size of the business and improvement of agricultural structure.

Keywords: Land Consolidation, Agricultural Reform, Land Consolidation in Europe

LDPE/calcium carbonate composites obtained through using various polymeric additives

Catalin Croitoru[a], Ionut Claudiu Roata[a*], Alexandru Pascu[a], Elena Manuela Stanciu[a]

[a]Transilvania University Of Brasov, Materials Science And Engineering Faculty

*r.i.claudiu@gmail.com

Abstract:

Calcium carbonate in its crystalline and amorphous form represents a great choice filler for low density polyethylene (LDPE), due to its excellent availability, heat resistance, fire retardant, color neutrality and so forth. One major bottleneck is represented by the limited compatibility between the inorganic and organic phase, due to their dissimilar structure, henceforth compatibilizers (coupling agents) should be used. In this work, various types of polymer coupling agents, such as maleated polyethylene and poly (ethylene-vinyl alcohol) have been employed for obtaining amorphous calcium carbonate reinforced LDPE composites. An improved wetting of the inorganic phase has been registered for both types of compatibilizers, registered in higher stability of the obtained composites and improved mechanical properties.

Keywords: LDPE, calcium carbonate, compatibilizers

Litter decomposition in eucalypt plantations and tropical forest fragments

Kever Bruno Paradelo Gomes[a*], Rosana De Carvalho C. Martins[b]

[a]Instituto Federal Of Brasília
[b]University Of Brasília

*keverbruno@hotmail.com

Abstract:

Fall and decomposition of leaf litter constitute an important entry route for nutrient cycling in land ecosystems. Both the amount and origin of leaf litter have an important relation with the formation of soil and maintenance of its fertility; thereby, quantification of its production and nature are important approaches to understand nutrient cycling in ecosystems. In general terms, the dynamics of leaf litter (production, accumulation, and decomposition) is regulated by multiple biological factors like age of trees, plant species, ontogeny, composition of the forest, and soil conditions. This study aimed to evaluate the production and the rate of litter decomposition in eucalypt plantations and tropical forest fragments in rainy and dry seasons in the region of São João Evangelista - MG. The work lasted 11 months and were used 10 litter collectors with sides of 50 cm – and 70 litter bags, all of them made of plastic screen. Five litter collectors were randomly placed at each area. Seven litter bags were placed nearby of each litter collector. There was a higher litter production in the forest fragment in the month of February. In the other months the litter production was higher in the eucalypts plantation. The was no difference between the rate of decomposition when comparing the two areas. The decomposition was affected by the time, only. The average time estimated for the decomposition of 100% of litter was 1398,08 days.

Keywords: Forest management, nutrient cycling, organic matter, primary productivity.

Microstructure and Mechanical Properties of Microalloyed Low Carbon Cast Steels

Ganwarich Pluphrach[a*], Karel Macek[b]

[a]Srinakharinwirot University
[b]Department Of Materials Engineering, Faculty Of Mechanical Engineering, Czech Technical University In Prague

*pganwarit@hotmail.com

Abstract:

The relationship between microstructure and mechanical properties of pilot-plant heats of MLCC steels as dependent on different mode of heat treatment is the main object of this work. The austenite and ferrite grain size of six as-cast microalloyed steels were investigated using Spektor's analysis in order to determine the size distribution. It was found that the computational ferrite grain size as the formalae presented in Table 2 had good correlation with the experimental ferrite grain size. The applying extended Hall-Petch relation had predicted yield strength and ITTBF of six MLCC steel/CR:air, the best one 22MnVNb6 showed the good results 424, 440, and 452 Mpa and -20, 14, 38 °C respectively. There is good correlation between the ferrite grain size as determined by means of standardized method (ISO 643) and that determined by Spektor's method.

Keywords: Microstructure, Mechanical Properties, Microalloyed Low Carbon Cast Steels, Hall-Petch Relation

Microwave-Assisted Oil Extraction: Effects on Oil Yield and Quality

Hatice Neval Ozbek[a*], Derya Kocak Yanik[a], Fahrettin Gogus[a]

[a]Gaziantep University

*haticeneval@gantep.edu.tr

Abstract:

Many extraction methods such as solvent extraction, supercritical fluid, mechanical pressing, ultrasound, etc. are used extensively in vegetable oil extraction. These extraction methods have some disadvantages, such as low yield (mechanical pressing), time consuming (Soxhlet), expensive (supercritical fluid) and high energy consumption. In recent years, new technologies and methods have been developed to eliminate these disadvantages and these methods are utilized in today's processes. In this context, using microwave energy for the extraction of main components has increased as it is economical, fast, efficient and environmentally friendly. The microwave heating mechanism differs from conventional heating. In conventional heating, heat energy is transmitted by conduction and convection, microwave energy is converted to heat energy by ionic conduction and dipole rotation. Thus, the microwave assisted extraction method provides fast, efficient and homogenous heating in the extraction medium. In recent studies, it has been reported that the microwave-assisted oil extraction increases the extraction efficiency and the oil quality. In addition, this method stands out among other methods with advantages such as low energy consumption, short processing time and lower solvent amount.

The aim of this review is to compare microwave-assisted extraction with conventional methods and show the effect of microwave extraction on oil quality by summarizing the microwave-assisted oil extraction studies in the literature.

Keywords: Microwave-assisted extraction, oil yield

Microwave-Assisted Synthesis And Characterizations Of Bismithiol Crown Ethers And Investigation Of Ion Pair Extractions

Baki Cicek[a*], Umit Calisir[b]

[a]Balikesir Universty
[b]Siirt Universty

*bcicek@balikesir.edu.tr

Abstract:

The synthesis and characterizations of macrocyclic crown ethers containing bismithiol aromatic ring were performed in this study. The complexation constants and selectivity factors of the bismithiol crown ethers were determined by extraction of Ag+, Ca2+, Zn2+, Fe3+, Cr3+, Co2+, Cd2+, Mg2+, Pb2+, Ni2+, Cu2+, Mn2+, Na+ and K+ metal salts which were carried out by the liquid-liquid (organic-water) ion pair extraction studies[1–3]. The nucleophilic substitution (SN2) reaction of ethylene glycol dihalide (Br, Cl etc.) derivatives with Bismithiol (1,3,4-thiadiazole-2,5-dithiol) dipotassium salt was performed with “ring closure” in nitrogen atmosphere. The synthesis reactions were performed under reflux condition with conventional heating and microwave (MW) irradiation. With Classic method, high diluted conditions were used. With Microwave-assisted method, all reactions performed with minimum solvent and in shorter reaction times; as a result, high single product rate were obtained. Macrocyclic bismithiol crown ethers were purified by recrystallization and characterized by melting point, FT-IR, LC-MS, 1H-NMR and 13C-NMR methods[1].

The synthesized compounds are Z1: (1,4,10,13)-tetrathia[4.4](2,5)-1,3,4-thiadiazolophane, Z2:(4,16)-dioxo-(1,7,13,19)-tetrathia[7.7](2,5)-1,3,4-thiadiazolo-phane, Z3: (4,7,19,22)-tetraoxo-(1,10,16,25)-tetrathia[10.10](2,5)-1,3,4-thiadiazolo-phane and Z4: (4,7,10,22,25,28)-hexaoxo-(1,13,19,31)-tetrathia[13.13](2,5)-1,3,4-thiadiazolophane. Metal selectivity of the originally obtained ligands was determined by liquid-liquid extraction of the ion pairs in two different concentrations (10-3M and 10-4 M) via ICP-AES and AES. Pb2+, Fe3+, Cu2+, Cd2+, Ag+ metal salt exhibit the best selectivity for all ligands where as, selectivity of K+ and Na+ ions is high in low concentrated solution while comparing the high one. For the competitive extraction, best selectivity results are observed in the following order: Cr3+, Cu2+, Fe3+, Cd2+ and Ag+ in 10-3M and Cr3+, Fe3+, Cd2+ and Ag+ in 10-4M [1].

Keywords: Bismithiol crown ethers, Microwave-Assisted Reactions, liquid-liquid ion pairs extraction, selectivity factor

Milk Somatic Cell Count in Holstein And Brown Swiss Cows And Quality Standards

Aliriza Sahin[a], Yeliz Yilmaz[b], Murat Cimen[b*]

[a]Provincial Directorate Of Food, Agricultural And Livestock
[b]Munzur University

*mcimen@munzur.edu.tr

Abstract:

In the study, 10 Holstein and 10 Brown Swiss cows that are grown at the plants under the name of Gespa Dairy Product and Food Industry Trade Company in Bursa were used as animal material. The daily milk samples during second week of early lactation period were collected from ten cows in both groups that have similar weight (Approximately 550 kg). In this research, differences between somatic cell counts (SCC) in milk of Holstein and Brown Swiss cows and quality standards were studied. The Milk SCC levels of cows in both groups were compared with the quality standards for European Union (max. 400000 cell/mL) using one-sample t test. Milk SCC levels in Holstein (81780 cell/mL) and Brown Swiss (95112 cell/mL) cows are desirable levels according to standards. The somatic cell count (SCC) is important to dairy producers both because counts that are too high can lead to poor milk quality and undesirable flavor. According to results in study, milk SCC levels in Holstein and Brown Swiss cows are favorable to standards.

Keywords: Milk, Somatic cell count, Holstein, Brown Swiss, Quality

Modification Of Isoniazid (Inh) Release By Variation Of Synthesis Parameters

Levent Degirmenci[a*], Nagihan Karakaya[a]

[a]Bilecik Seyh Edebali University

*levent.degirmenci@bilecik.edu.tr

Abstract:

Certain treatments are currently applied for curing Tuberculosis infection effecting especially the children Treatment of this disease is a long process and results in drug induced liver injury in case of an alcohol background of the patient is involved. Maintaining efficient control of drug dosage detoxified by the liver will sustain quality life for the patient. Controlled release of the drug to the body serve as an excellent solution for this problem. Isoniazid is mostly detoxified in the liver and hence controlled release of this material is very important to prevent liver injury and maintain an effective treatment at the same time.

In the present study silica nanospheres containing isoniazid (INH) was synthesized based on a modified Stober process. Synthesis parameters such as type of alcohol used as oil phase, tetra ethyl ortho silicate (TEOS) and ammonia (NH3) amounts, surfactant use and mixing time were altered and their effect on the release of INH was investigated. Results indicated lower amount of INH release when higher amount of TEOS was utilized in synthesis. Increase of TEOS amount in synthesis was also effective in the increase of the time of highest INH release. NH3 decreased the amount of INH release which was due to the changes in pore structure of the nanosphere. Scanning electron microscope (SEM) results clearly showed the necessity of surfactant use with smooth surfaces obtained with the samples where surfactant was utilized. Finally, mixing time was found to have a decreasing effect on the time of highest INH release and the amount of INH released from the spheres was also higher in the case of higher mixing time.

Keywords: isoniazid, nanosphere, silica, Stober process

Morphological Phylogenetic Analysis Of The Some Taxa Belonging To The Genus Thymus L. (Lamiaceae, Sect:Hyphodromi) In Turkey

Berna Sanon[a*]

[a]Balikesir University, Faculty Of Science And Letters,Department Of Biology

*sanonberna@yahoo.com

Abstract:

The study material Thymus L. is a problematic species due to its susceptibility to gynodio- logic, polymorphism and hybridization. In recent years many breeding trials have increased due to their chemical properties and the effects of essential oils. The most important source of monoterpenoid phenols is Thymus species. Thymol obtained from its species is a potent antiseptic and used medically.

In this study; included in the Hyphodromi section 15 taxa distributed in Turkey intended to make the morphological phylogenetic analysis. The inner group of the Thymus L. taxa in Turkey and isolation of one of Leontodon asperrimus an outer group aimed phylogenetic analysis of taxa belonging to this section. Relationships among the 15 taxa of the genus Thymus L. distributed in Turkey were analysed using 27 morphological. Before the phylogenetic analysis was performed using the PAUP 4.0b10 sofware. Analysis of the data set utilising maximum parsimony criterion is made using the link algorithm with Branch- and – Bound data set analysis of 134 (most parsimonious) that parsimony. This tree is made up of 1topology. Bootstrap analysis with the majority rule consensus algorithm generated a consensus tree supporting some branches.

As a result of this analysis 3 klad is supported by the 98-100%. Find result; to evaluate the morphology of the Hyphodromi, to compare morphological phylogeny with traditional classifications within sections, to determine the boundaries between section taxa and to analyze contradictions if any, to evaluate the condition of the Mentheae tribus of the Leontodon asperrimus genus selected as the outer group.

Keywords: Lamiaceae, Morphology, Phylogenetic Analysis

New colloidal techniques for the fabrication of manganese dioxide-carbon nanotube electrodes of supercapacitors

Igor Zhitomirsky[a*], Y.Liu[a]

[a]Mcmaster University

*zhitom@mcmaster.ca

Abstract:

Electrochemical supercapacitors based on MnO2 electrode materials are currently attracting significant interest due to the high specific capacitance obtained using environmentally friendly aqueous electrolytes and low cost of MnO2. A complicating factor in the application and commercialization of MnO2 electrodes for electrochemical supercapacitors is low electronic and ionic conductivity of MnO2. This problem was addressed by the fabrication of porous nanocomposite electrodes, containing well dispersed MnO2 nanoparticles and carbon nanotubes (CNT). Interface synthesis and liquid-liquid extraction method have been developed for the fabrication of agglomerate free MnO2 nanoparticles of controlled size. Advanced co-dispersants were used for efficient mixing of MnO2 and CNT. Another strategy was based on the use of chelating polymers as co-dispersants for MnO2 and CNT. The unique feature of this strategy is that chelating aromatic ligands of the monomers provide multiple adsorption sites for adsorption on MnO2 and CNT and impart electrical charges for electrosteric dispersion. The capacitive performance of MnO2-CNT composites, prepared by different methods was compared. Ni foams were used as current collectors for the fabrication of electrodes with active mass loading of 30-50 mg cm-2 and mass ratio of active material to current collector of 0.3-0.42. The capacitive behavior of the composite electrodes was studied in Na2SO4 electrolyte using cyclic voltammetry, chronopotentiometry and impedance spectroscopy. The use of new dispersants and advanced mixing techniques allowed for significant improvement in electrode performance. The electrodes showed high capacitance, high power-energy characteristics, low impedance and good cyclic stability during 5000 cycles. The composite electrodes were used for the fabrication of asymmetric capacitors with voltage window of 1.6V. We report capacitances, power-energy characteristics and cyclic behavior of electrodes, prepared using different methods.

Keywords: manganese dioxide, nanoparticle, carbon nanotube, composite, supercapacitor, energy

New Phthalazine Urea as Carbonic Anhydrase Inhibitors

Nurcan Berber[a*], Ahmet Ali Berber[a], Nahit Gencer[b], Mustafa Arslan[c]

[a]Canakkale Onsekiz Mart University
[b]Balikesir University
[c]Sakarya University

*aberber@comu.edu.tr

Abstract:

Majorities of the drugs used in humanmedicine are heterocyclic compounds. Common drugs such as Morphine, Lipitor, Penicillin, and nonsteroidal anti-inflammatory agents contain at least one heteroatom in their structure [1]. Phthalazine derivatives have been greatly used as therapeutic agents owing to their anticonvulsant, cardiotonic, vasorelaxant, anti-inflammatory properties [2], and antimicrobial activity [3]. In this study, inhibitory effects on the activity of purified human carbonic anhydrases (hCAs I and II) of a new series phthalazine substituted urea derivatives previously synthesized were evaluated. Activity percentage values of CA for different concentrations of each compound were determined by regression analysis. CA enzyme activity without a synthesized compounds solution was accepted as 100% activity.

Keywords: New Phthalazine derivatives, Carbonic anhidrases, hCAs I, hCAs II, Inhibitory effect

Nonlinear optical properties of asymmetric n-type double delta-doped GaAs quantum well

Fatih Ungan[a*], Serpil Sakiroglu[b], Juan Carlos Martinez Orozco[c], Ricardo León Restrepo Arango[d], Carlos Alberto Duque[d]

[a]Cumhuriyet University
[b]Dokuz Eylul University
[c]Universidad Autónoma De Zacatecas
[d]Universidad Eia

*fungan@cumhuriyet.edu.tr

Abstract:

In this work, we theoretically investigated the intersubband-related optical absorption coefficient and refractive index change in the asymmetric n-type double delta-doped GaAs quantum well. The confined energy levels and corresponding wave functions of this structure have calculated by solving the Schrödinger equation in the laser-dressed confinement potential within the framework of effective mass approximation. The analytical expressions of the linear and third-order nonlinear optical absorption coefficients and refractive index changes are obtained by using the compact-density matrix formalism and iterative procedure. The obtained results show that the optical absorption coefficient and refractive index change are significantly affected by the delta doping concentrations. Therefore, the delta doping concentrations can be used as a way to control the electronic and optical properties of the low dimensional semiconductor nano-structures.

Keywords: delta doped, nonlinear optical properties, quantum well

Nonlinear optical properties of double graded quantum well under intense laser field

Fatih Ungan[a*], Unal Yesilgul[a], Esin Kasapoglu[a], Huseyin Sari[a], Ismail Sokmen[a]

[a]Cumhuriyet University

*fungan@cumhuriyet.edu.tr

Abstract:

In this work, the effect of non-resonant intense laser field on the nonlinear optical absorption coefficient and refractive index change are theoretically investigated for a symmetric double graded quantum well. The confined energy levels and corresponding wave functions of this structure have calculated by solving the Schrödinger equation in the laser-dressed confinement potential within the framework of effective mass approximation. The analytical expressions of the linear and third-order nonlinear optical absorption coefficients and refractive index changes are obtained by using the compact-density matrix formalism and iterative procedure. Numerical calculations are presented for a typical GaAs/GaAlAs quantum well. The obtained results show that the optical absorption coefficient and refractive index change are significantly affected by the applied non-resonant intense laser field in the growth-direction of the structure. Therefore, the non-resonant intense laser field can be used as a way to control the electronic and optical properties of the low dimensional semiconductor nano-structures.

Keywords: intense laser field, double graded quantum well, nonlinear optical properties

Novel CNT supported vanadium core palladium shell formic acid fuel cell anode catalysts

Berdan Ulas[a*], Hilal Demir Kivrak[a], Ozlem Sahin[b]

[a]Yuzuncu Yil University, Chemical Engineering Department
[b]Selcuk University, Chemical Engineering Department

*berdanulas2@gmail.com

Abstract:

A direct liquid fuel cell is ideal for portable applications due to its high energy density. Recently, direct methanol fuel cells (DMFC) were concentrated by the researchers. However, there are some debuts preventing DMFCs commercialization. One can consider that formic acid is a good alternative fuel because of its higher theoretical open circuit potential (1.45 V) than that of methanol. Palladium (Pd)-based catalysts are commonly used in direct formic acid fuel cells (DFAFCs) due to their enhanced activity for the dehydrogenation process of the formic acid electrooxidation (FAO). Therefore, the study on Pd as an efficient catalyst for FAO remains an important topic. Pd bimetallic catalysts, such as Pd-Cu, Pd-Co, Pd-Ni, Pd-Pt, Pd-Ru, Pt-Bi, etc., were also intensively studied with respect to synthetic methods, compositions as well as nanostructures in order to achieve excellent performance. Core-shell or hollow structures, in which Pd atoms were deposited onto the surface of the non-noble core materials, have attracted extensive interest due to the combined considerations of activity and stability in structural designs. In this study, the synthesis and characterization of CNT supported vanadium core palladium shell catalysts were prepared by NaBH4 reduction method. These catalysts were characterized by advanced analytical techniques. Cyclic voltammetric (CV) and chronoamperometic (CA) methods were used to evaluate the catalytic activities of the prepared catalysts towards formic acid electro-oxidation. The electrochemical measurements showed that vanadium core palladium shell catalysts exhibited high electrocatalytic activity toward the oxidation of formic acid electro-oxidation compared to palladium. In conclusion, these catalysts could have potential usage for formic acid anode catalysts.

Keywords: Key-words: Vanadium, palladium, core-shell catalysts, formic acid electro-oxidation, and catalyst characterization.

Novel Polysulfobetaine Copolymer Hydrogels: Synthesis, Characterization and Swelling Behaviours of 3-dimethyl (methacryloxyethyl) ammonium propane sulfonate (DMAPS) / 2-(N-morpholino) ethyl methacrylate (MEMA) Gels

Fulya Taktak[a*], Zeynep Ilbay[a]

[a]Usak University

*fulya.taktak@usak.edu.tr

Abstract:

An important class of hydrogels which are based on polyzwitterionics having equal number of anionic and cationic residue in the same monomer unit have been attracted scientific concern. As well as that are used in drug delivery, tissue engineering, biosensors, they are promising material for removing inorganic / organic pollutants from waste water. In this study, a series of the 2-(N-morpholino) ethyl methacrylate /3-dimethyl (methacryloxyethyl) ammonium propane sulfonate (PMEMA/PDMAPS) copolymeric gels has been prepared using various molar ratios of MEMA and the zwitterionic monomer DMAPS. The structure of the gels was confirmed by using infrared spectroscopy. Equilibrium swelling capacity of this hydrogels were examined as a function of, co-monomer ratio, pH and salt concentration of aqueous solution. Results showed that the PMEMA/PDMAPS copolymeric gels with lower PMEMA, a more hydrophobic co-monomer, content exhibited higher swelling capacity. In the NaCl solution, the swelling ratios of copolymer gels increased with an increase in the concentration of the salt due to the antipolyelectrolyte effect. Furthermore, all of the hydrogels exhibited a sharper increase in swelling ratio at pH 2 while there is no appreciable swelling was observed at above pH 4. This behavior was probably sourced from increased PMEMA content of the gels. Due to the completely protonation of tertiary amine group on the PMEMA residue, the shielding effect of the excess cations on the hydrogel structure lead to a reduce the swelling capacity. The existing of zwitterionic character so having both anionic and cationic groups on the same polymer backbone that is given the adjustment of net charged of systems. Consequently, prepared novel polysulfabetaine hydrogels maybe a good adsorbent for both anionic and cationic pollutants.

Acknowledgement

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Keywords: Zwitterionics, polsulfobetaine, swelling behaviour

Obtaining and characterization of LDPE composites reinforced with amorphous calcium carbonate

Catalin Croitoru[a*], Alexandru Pascu[a], Ionut Claudiu Roata[a], Elena Manuela Stanciu[a]

[a]Transilvania University Of Brasov, Materials Science And Engineering Faculty

*c.croitoru@unitbv.ro

Abstract:

Semi-structural and structural applications of composites bearing thermoplastic matrix have lately gained an increased interest in the construction industry. Low density polyethylene (LDPE) is a prime choice when designing cost-efficient composites. Calcium carbonate is frequently used in conjunction with LDPE for improving the compression and impact resistance of this polymer. In this work, several batches of LDPE with 10% wt. amorphous calcium carbonate composites have been obtained by thermoforming, through varying the operational parameters of the process, namely pressing force and temperature. It has been determined that the best results have been obtained in terms of composite stability for the pressure of 20 MPa.

Keywords: LDPE, calcium carbonate, composites

On hilbert functions of tangent cones of certain toric varieties

Pinar Mete[a*], Esra Emine Zengin[a]

[a]Balikesir University

*pinarm@balikesir.edu.tr

Abstract:

Hilbert function of a local ring is one of the classical invariants in commutative algebra and algebraic geometry. Hilbert function of a local ring is the numerical function and the definition coincides with the definition of the corresponding associated graded ring. If the local ring comes from the localization, then the associated graded ring is the coordinate ring of the tangent cone of the variety.

In general, very little is known about the Hilbert function of a Cohen-Macaulay local ring, despite the fact that Hilbert function of a graded algebra is well-known by Macaulay's theorem.

Our main aim is to study the Hilbert function of a one-dimensional Cohen-Macaulay local ring associated to certain toric varieties in affine 4-space. We give the Hilbert function of the coordinate ring of the tangent cone of these varieties explicitly.

Keywords: Hilbert function of a local ring, certian toric varieties

Optical Comparison of MOCVD Grown GaN Layers on Flat and Patterned Sapphire Substrates

Ilkay Demir[a], Ismail Altuntas[a], Aliye Alev Kizilbulut[b], Baris Bulut[b], Sezai Elagoz[b]

[a]Cumhuriyet University
[b]Ermaksan Optoelectronics

*idemir@cumhuriyet.edu.tr

Abstract:

Gallium nitride (GaN) and its alloys with InN (InxGa1-xN) and AIN (AlxGa1-xN) have emerged as crucial semiconductor materials with applications to large (green, blue, and ultraviolet) portion of the electromagnetic spectrum as emitters and detectors and to high-power/temperature radio frequency electronic devices. Even there is large lattice mismatched and thermal coefficient difference between sapphire and GaN layer, almost all commercial nitride devices are grown on sapphire substrates. In the last years scientists have used different shaped patterned sapphire substrates to reduce dislocations of GaN. In this study we have compared the optical quality of MOCVD grown GaN layers on patterned and flat sapphire substrates by means of photoluminescence measurements.

Keywords: GaN, MOCVD, photoluminescence

Optimization of synthesis conditions of poly(N-isopropylacrylamide) based nanocomposite hydrogels by Taguchi method

Meltem Kasapoglu Calik[a*], Ebubekir Siddik Aydin[a], Murat Ozdemir[a]

[a]Department Of Chemical Engineering, Gebze Technical University

*meltem.kasapoglu@gtu.edu.tr

Abstract:

Polymer hydrogels are hydrophilic networks that can absorb, swell and retain aqueous fluids up to hundreds of times of their own weight. Polymeric hydrogels are widely used in a variety of industrial and consumer products such as diapers, contact lenses, mechanical absorbers, etc. Polymer materials have been filled with several inorganic nanoclays in order to increase water absorption capacities and mechanical properties. One of the main issues in preparing a mechanically robust polymer nanocomposite hydrogel is good dispersion of nanoclay particles in the polymer matrix. Hydrogels with high absorption capacities have been the interest of many researchers. Therefore, optimization of the synthesis conditions is of high importance to prepare hydrogels with high water absorbency.

In this study, pH and temperature responsive nanocomposite hydrogels based on sodium alginate (NaAlg) and poly(N-isopropylacrylamide) (PNIPA) crosslinked by nanoclay were prepared by free radical solution polymerization. The nanoclay was organically modified by using a cationic surfactant hexadecyltrimethylammonium bromide (HTAB) through cation exchange reaction in order to increase the interlaying distance and obtain a good dispersion in the polymer matrix. The Taguchi Orthogonal Array (OA) experimental design was used to minimize the number of experiments and optimize the synthesis conditions for the nanocomposite hydrogels. The water absorbency or swelling ratio and hardness were selected as the responses. The HTAB, nanoclay and NaAlg contents and immersion time of hydrogels in CaCl2 solution are important factors for the preparation of nanocomposite hydrogels. The Taguchi L9 orthogonal array with three factors and four levels was selected as the experimental design. Results were statistically analyzed through analysis of variance (ANOVA). The most effective factor controlling the swelling ratio and hardness was found to be NaAlg. The response values predicted by the Taguchi method are in good agreement with the experimentally determined swelling ratio and hardness value.

Keywords: HYDROGEL, NANOCOMPOSITE, SWELLING, TAGUCHI

Optimization With Response Surface Methodology Of Toluidine Blue Biosorption Conditions From Aqueous Solutions By Polyporus Squamosus (Huds.) Fr. Fungus As Biosorbent

Tuba Ersen Dudu[a*], Duygu Alpaslan[a], Sakir Isleyen[a], Nahit Aktas[a]

[a]Yuzuncu Yil University

*tuba_ersen@hotmail.com

Abstract:

The pollution of water by dyes and organic pollutants is cause increasing in the environmental problem. In this work, central composite design (CCD) in response surface methodology (RSM) was successfully applied to optimize the adsorption conditions of toluidine blue natural Polyporus squamosus (Huds.) Fr. fungus as a biosorbent. Firstly, the Polyporus squamosus (Huds.) Fr. fungus were powdered and stored in the desiccator. Then, the most important parameters affecting biosorption Toluidine Blue (TB) were determined as pH, initial toluidine blue concentration (Co), temperature (°T) and contact time (min). All experiments were carried out in batch system using 250 mL flasks containing 50 mL solution and with magnetic stirrer. The TB concentrations remaining in filtration solutions after adsorption were analyzed by using a UV visible spectrometric method at 640 nm. As a result, the optimum conditions were calculated with quadratic model. The results were confirmed with experiments.

Keywords: Biosorption, Toluidine Blue, Polyporus squamosus (Huds.) Fr., Response Surface Methodology.

Petrochemical characteristics of the adakite-like Eocene(?) andesites in the Altinpinar (Gumushane) area (Eastern Pontides, NE Turkey)

Emre Aydincakir[a*], Metmet Ali Gucer[a], Cem Yucel[c], Enver Akaryali[a]

[a]Gumushane University

*aydincakir61@gmail.com

Abstract:

In this study, petrographical and petrochemical data are presented for the adakitic Eocene(?) andesites in the Altinpinar (Gumushane) of the Eastern Pontide orogenic belt (NE Turkey). They are mainly consisting of amphibole, plagioclase (An22-61), opaque minerals (generally magnetite and pyrite), lesser K-feldspar (An2-31Ab19-39Or50-69) and pyroxene with secondary clay, sericite, calcite, chlorite, and devitrified with microlitic-porphyry and vitrophyric-porphyry textures with euhedral to subhedral amphibole and plagioclase crystals. Some of the hornblende aggregates, occurring in large plates, are often weathered and contain inclusions of plagioclase, accessory and opaque minerals. The amphiboles are exclusively Ca-type with CaB ≥ 1.5, Ti < 0.5 and (Na+K)A ≥ 0.5 apfu, and edenite in composition with Mg/Mg+Fe2+ = 0.59-0.71.

Petrochemically, these volcanics are of andesite and basaltic trachy-andesite composition with high SiO2 and Al2O3 contents ranging from 52.96 to 62.24 and 11.35 to 17.73 wt.%, respectively.They have generally high Mg# values ranging from 51 to 68 (except a few samples). Andesites are medium to high potassic calc-alkaline characters, and show enrichment in large-ion lithophile elements (LILEs) such as Sr, K, Rb, Ba and Th, comparing to HFSE elements. All samples are characterised by significant negative Nb and Ti anomaly with high Sr/Y and La/Yb ratios. Besides, the high field strength elements (HFSEs) such as Ti, Y and Yb are depleted. Chondrite-normalized REE patterns of the samples are concave upwards that indicating fractional crystallization during evolution of the magma. In general, REE content are moderately enriched in LREEs relative to HREEs (LaN/LuN = 8.26-13.50). The most of the samples also show slightly negative Eu anomalies (EuN/Eu* = 0.80–1.02). Petrochemical data suggests that the parental magma(s) of the Eocene adakite-like volcanic rocks probably derived from an enriched lithospheric mantle in a post-collisional geodynamic setting.

This study is supported by the Gumushane University BAP (project no: 16.F5114.02.02)

Keywords: Altinpinar andesites, adakite-like Eocene volcanism, Eastern Pontides, NE Turkey

Petrological constraints on the Oligocene volcanic rocks in the Enez area, SW Thrace

Aykut Guctekin[a*], Tuna Karatas[b]

[a]Department Of Geological Engineering, Kocaeli University, Tr-41380 Izmit, Turkey
[b]Kocaeli University (Erasmus Student In Charles University, Czech Republic)

*a_guctekin@yahoo.com

Abstract:

Hisarlidag shoshonitic volcanism in the vicinity of Enez to the southern Thrace is composed of intermediate and acidic lavas and voluminous pyroclastic materials. The composition of volcanic rocks ranges from basaltic andesite to dacite with silica contents ranging from 51 to 67 wt. %. The intermediate and acidic shoshonitic lavas are characterized by high SiO2 and K2O, low MgO and CaO contents. The rocks forming the lava suite display mainly hyalopilitic, porphyritic textures and are characterised by a range disequilibrium features in their phenocryst assemblages. In the chondrite normalized diagrams the rocks from the Hisarlidag volcanism, display uniform and sub-parallel light rare earth element patterns and show relatively enrichment in LREE. In the multi-element diagram normalized to N-MORB, volcanic rocks show a significant enrichment in LIL elements (Rb, Ba, Th, U and K) and LREE's and relatively depletion in HFS elements (Ta, Nb, Ti and Hf). According to fractionation vectors constructed on the basis of variations in trace element concentrations, shoshonitic rocks are represented by fractionation effects of plagioclase, orthopyroxene, K-feldspar, amphibole and clinopyroxene minerals. Likewise, studies to determine the procedure for the assimilation and fractional crystallization (AFC) demonstrate that magmas derived from metasomatized mantle source are contaminated by the crustal material in varying rates. Hisarlidag volcanism composed of shoshonitic intermediate extrusive rocks enriched in K exhibits similar geochemical properties to those of plate margins. Geochemical characteristics indicate that these volcanic rocks are likely to have originated by partial melting low degree partial melting of phlogopite bearing subcontinental lithospheric mantle.

Keywords: Thrace, shoshonitic series, magma mixing, mantle metasomatism

Phase State and Electrical Conductivity of Isotropic Micellar Phase L1 in Ternary Lyotropic System Based on HDTMABr+DDTMABr

Yasemin Altinay[a*], Arif Nesrullazade[a]

[a]Mugla Sitki Kocman University

*altinayyasemin@gmail.com

Abstract:

Lyotropic systems exhibit various types of physically isotropic phases and physically anisotropic mesophases. Structural units in such phases and mesophases are the isometric spherical and the anisometric disc-like and rod-like micelles. Lyotropic phases and mesophases are very sensitive to different external effects (concentrations, temperatures, electrical, and magnetic fields, surfaces, boundary conditions, flows, deformations etc). Therefore lyotropic systems display very interesting behavior in both state of phases and mesophases, and regions of lyotropic and thermotropic phase transitions.

In this work, phase state and electrical conductivity of isotropic micellar L1 phase in hexadecyltrimethylammonium bromide (HDTMABr) + dodecyltrimethylammonium bromide (DDTMABr) + water lyotropic system have been investigated. Various compositions of components have been used. Concentration region of L1 phase was determined. Temperature and concentration behavior of electrical conductivity for compositions under investigations have been studied. Mutual effect of amphiphile with short alkyl chain (DDTMABr) and long alkyl chain (HDTMABr) on phase state and electrical conductivity properties have been found.

Phase diagram for L1 phase and temperature and concentration dependencies of the electrical conductivity will be presented.

Keywords: Lytropic systems, amphiphiles, micelle, isotropic phase, anisotropic mesophase

Photogrammetric 3d Modelling For Cultural Documentation: Example Of Fasillar Hittite Monument

Gungor Karauguz[a*], Ibrahim Kalayci[a], Sermet Ogutcu[a], Abdullah Varlik[a], Huseyin Zahit Selvi[a]

[a]Necmettin Erbakan University

*karauguz@msn.com

Abstract:

Fasillar Hittite monument lies on a hillside next to the Fasillar village which is 16km east of Beysehir town. The monument has been carved on a basalt monolith block. It is a high relief monument. The monument was located at the intersection of the roads which are leading towards the south to Mediterranean. In this study, 3D modelling of the monument was covered. Close-Range photogrammetric technique was performed for creating representative 3D model. For creating 3D model with the exact size of the monument, Global Navigation Satellite System (GNSS) has been used. In this way, measurements which represent the real value can be obtained on the model with high accuracy. After creating 3D model, measurements were obtained as 7.90 meters length, 1.80 meters wide and 0.90 meters thickness. This study shows that producing 3D digital representative model of Fasillar monument is beneficial and cost effective way for preserving cultural heritages for the next generations.

Keywords: 3D Modelling, Photogrammetry, cultural heritage

Polyvinyltoluene /Kaolinite Nanocomposites: Preparation, Characterization and Thermal Properties

Yasemin Turhan[a*], Mehmet Dogan[a]

[a]Balikesir University

*yozdemir@balikesir.edu.tr

Abstract:

In this study, polyvinyltoluene (PVT)/kaolinite nanocomposites were prepared via solution intercalation method by using a new kind of modified kaolinite samples which had a larger interlayer spacing than the ordinarily kaolinite clay modified by dimethyl sulfoxide (DMSO), glutamic acid, succunimide and various surfactants. Several techniques like X-ray diffraction and attenuated total reflection-infrared spectroscopy, scanning electron microscopy and transmissing electron microscopy were used to characterize the prepared samples. X-ray diffraction (XRD) pattern results show intercalation of PVT in kaolinite clay indicated by an enlarged d-spacing. XRD and TEM results showed that kaolinite and modified kaolinite samples were intercalated into nanoscale and homogenously dispersed in the PVT matrix. Thermogravimetric analysis (TGA and DSC) indicated that addition of low amount of clay to the polymer matrix resulted in an increase in thermal stability. Glass transition temperature (Tg) of nanocomposite samples were increased between 1 and 28 oC higher than pure PVT. With the same clay content, the nanocomposites produced with modified kaolinite showed high thermal stability than the produced with natural kaolinite.

Keywords: Nanocomposite, PVT, kaolinite, characterization, solution intercalation method.

Potential effects of air pollution on greenhouse production activities

Sedat Karaman[a*], Zeki Gokalp[b]

[a]Gaziosmanpasa University
[b]Erciyes Universty

*sedat.karaman@gop.edu.tr

Abstract:

Greenhouses are off-season production facilities and thus it is quite significant to bring climate parameters into desired levels. Air pollution in greenhouse production sites has significant impacts on greenhouse plants. Existence of phytotoxic gases like ozone, nitrogen peroxide, ethylene, sulphur dioxide, fluorine and mercury vapors, herbicide and insecticide vapors and the chemical gases used in soil fumigation seriously affect plant growth and development and greatly alters plant quality. Impact levels of toxic gases are closely related to climate of the surrounding environment. The greenhouses located in crowded cities or close to intensive industrial regions are greatly exposed to ozone and other oxides. Industrial facilities release serious quantities of Sulphur dioxide to environment. In present study, potential effects of air pollution on greenhouse production activities were assessed and measures to be taken to minimize such effects of hazardous gases on plant growth and development were provided.

Keywords: Greenhouse, air pollution, plant growth, sulphur dioxide

Preparation of Gemcitabine Loaded Magnetic Trimethylchitosan Nanoparticles For Use As A Chemotherapeutic Agent

Senay Sanlier[a*], Ayse Unal[a], Guliz Ak[a], Devrim Yagmur Durur[a], Merve Kilincoglu[a], Selcihan Gokh[a]

[a]Ege University Faculty Of Science, Biochemistry Department, Izmir, Turkey

*senay.sanlier@gmail.com

Abstract:

Gemcitabine is a nucleoside analogue, used for chemotherapeutic treatment and is also an antineoplastic antimetabolite. Due to these properties, gemcitabine stops the activity of the enzyme which converts the nucleotide of the cytosine to the deoxygenation. Moreover, gemcitabine inhibits DNA synthesis at an advanced level Gemcitabine can be used for initial treatment of various carcinomas such as lung cancer, pancreatic cancer, bladder cancer and breast cancer. After administration of gemcitabine, a certain percentage of patients may experience serious and life-threatening complications, hematological toxicities such as neutropenia are often encountered In this study, we tried to develop a drug delivery system that could direct drugs to target cancerous tissue. Over the last two decades, nanoparticle-based therapeutic agents have been developed for use in cancer therapy. These nanoscale agents are more effective and provide more convenient application conditions. The aim of this study is preparation of magnetic trimethylated chitosan nanoparticle and loading of gemcitabine for targeted drug delivery. Biocompatibility of chitosan is an influence on the selection of chitosan for modification. We used one-step reaction for trimethylation because of degrees of quaternisation degree. Magnetic trimethyl chitosan nanoparticles were prepared by cross-linking method and tripolyphosphate was used as cross-linker. Gemcitabine was loaded onto magnetic nanoparticles via adsorption technique. Characterization studies such as FTIR and SEM were carried out. In addition in vitro drug release studies of nanoparticles and free form at pH 7 were performed. According to the data trimethylated chitosan nanoparticle has a potential for further analysis (in vitro, in vivo, ex vivo) as a chemotherapeutic agent.

Acknowledgement: We would like to thank for financial support received from the Research Foundation of Ege University (Project ID: 2013 FEN 031).

Keywords: Chitosan, trimethyl chitosan nanoparticle, magnetic drug delivery systems, gemcitabine, drug adsorption.

Probing for the anomalous electromagnetic moments of the tau lepton via electron-photon interactions at the CLIC

Ahmet Alper Billur[a*], Murat Koksal[a], Salih Cem Inan[a]

[a]Cumhuriyet University

*abillur@cumhuriyet.edu.tr

Abstract:

We have searched the anomalous electromagnetic moments of the tau lepton in electron-photon interactions with unpolarized and polarized electron beams at the Compact Linear Collider (CLIC). We have taken into account Compton backscattering photons and Weizsacker Williams photons. We have obtained 95% confidence level (C. L.) limits on the anomalous magnetic and electric dipole moments for various values of the CLIC integrated luminosity and center-of-mass energy. Improved constraints of the anomalous magnetic and electric dipole moments have been obtained compared to the current experimental bounds.

Keywords: tau lepton, anomalous electromagnetic dipole moments, CLIC

Proximate analysis of torrefied and pyrolyzed wood pellets using ft-nir spectroscopy

Ebubekir Siddik Aydin[a*], Meltem Kasapoglu Calik[a], Ozgun Yucel[a], Hasan Sadikoglu[a]

[a]Department Of Chemical Engineering, Gebze Technical University

*e.aydin@gtu.edu.tr

Abstract:

Alternative techniques are needed to rapidly characterize the effects of torrefaction, pyrolysis and gasification process parameters such as temperature and time on the biomass. Near infrared spectroscopy (NIRS) is a fast and non-destructive method of analysis that is becoming increasingly common in the vegetable, chemical and textile industries. NIR technology provides sufficient precision for solid and liquid systems without any pretreatment. In this study, torrefaction and pyrolysis applications were carried out in order to increase the fuel properties of the wood pellet used in the gasification process, and the effect of temperature and heat treatment time on the wood pellet were investigated. The heat treated wood pellet samples were analyzed using near infrared spectroscopy (NIRS) and it was aimed to quickly and efficiently determine the ash, volatile matter and fixed carbon values of the obtained solid product. Prediction results show that the regression coefficient (R2) varies between 0.59-0.97, 0.94-0.99 and 0.61-0.99 for ash, volatile matter and fixed carbon respectively. Root mean square error (RMSE) values also were determined in the range of 0.35-2.01, 0.69-2.53 and 0.81-4.99 for ash, VM and FC respectively. This study has shown that the NIR spectrometer can be an alternative to the traditional quantitative and qualitative analysis of biomass.

Keywords: Torrefaction, Pyrolysis, Proximate analysis, Biomass

Recent Studies On Foam Mat Drying Of Foods

Inci Cinar[a*]

[a]Kahramanmaras Sutcu Imam University

*icinar@ksu.edu.tr

Abstract:

Self improving food processing industry demands novel preservation techniques which provides higher nutritional, sensoral and microbial properties and longer shelf-life for processed foods. Drying, regardless of the technique being used, is one of the most common industrial preservation methods. Hot air drying, being a thermal process, involves high amounts of heat that might result in case hardening, shrinkage, low rehydration rates and color changes. Foam mat drying is based on stable foam generation from liquid or semi liquid food by the addition of gas and foaming agent and subsequent hot air drying to dried food powder. Heat and mass transfer rates of foam mat drying is higher due to larger surface area and porous nature of foam as compared to solid foods which in turn result in shorter drying time and higher food quality. Suitability to high sugar containing, viscous and heat sensitive foods, lower drying temperatures and higher rehydration rates are the major advantages of the foam mat drying. Recent study aims to summarize the fundamentals of foam mat drying, equipments, foaming agents, drying characteristics, effects of processing parameters on drying rates and the properties of foam mat dried powdered foods.

Keywords: foam mat drying, foaming agent, liquid food, drying rate, food powder

Regioselectivity Effect of Microwave Energy on the Nitration of Phenol

Basak Temur Ergan[a*], Mahmut Bayramoglu[a], Elif Sahin[a]

[a]Gebze Technical University

*btemur@gtu.edu.tr

Abstract:

Nitration of phenol compounds is an important chemical process that has wide applications in dye, pharmaceutical, agrochemical, explosive and plastic industries [1]. Classical nitration method usually requires the use of an excess of nitric acid and the assistance of strong acids such as concentrated sulfuric acid, which often leads to generation of excessive acid waste [2-4]. So, many of the typical nitration procedures are not eco-friendly and the treatment and disposal of the used mixed acid is expensive. Additionally, regioselectivity is also one of the important issues and typical orto/para isomer ratio is in the range of 1.4–1.5. From this point, the use of microwave (MW) and ultrasound (US) energy in organic synthesis is now well known to enhance reaction rate and yield as well as to influence the regioselectivity of the reactions.In this study, firstly, a multimode Microwave (MW) reaction system which can work under continuous MW power was designed. Then, nitration of phenols reactions were carried out with HNO3/Phenol mol ratio: 1.25 and 1.1 under same reaction conditions: Pnom= 600 W, TR = 68-90°C, t = 5-9 min, heating rate, 0.1-0.25°Cs-1. At the end of the reactions, para/ortho (p/o) ratios of nitrophenol product were determined by HPLC. Furthermore, conventional (CH) experiments were conducted also under the same conditions. Then, the methods were compared in terms of process performance and regioselectivity. According to results, yields and para-selectivities of product nitrophenol were higher than CH counterparts.

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Keywords: Microwave effect, Nitration of phenol, Regioselectivity Effect

Relation Between Lon Protease Enzyme And Antibiotic Production In Streptomyces Coelicolor

Zeynep Demir Oksuz[a], Sedef Tunca Gedik[a*]

[a]Gebze Technical University, Molecular Biology And Genetic Department

*sedeftunca@gmail.com

Abstract:

Streptomycetes are medically and biotechnologically important bacteria because they are the producers of a wide variety of bioactive compounds (anticancer agents, immunosuppressant drugs, herbicides etc.), including 75 % of the commercialized antibiotics.

To the best of our knowledge, effect of ATP dependent Lon proteases, which are one of the most important enzyme in protein degradation, on secondary metabolite production is not known and is an interesting subject waiting to be clarified.

In the present study, we constructed a recombinant strain by inserting one extra copy of lon gene into the Streptomyces coelicolor A(3)2 genome. For this, lon gene was amplified from S. coelicolor with its own promotor and transcriptional terminator regions by PCR. After verification by DNA sequencing, it was cloned into shuttle vector pRA. Then S. coelicolor A(3)2 protoplasts were transformed with this recombinant vector. Actinorhodin and undecylprodigiosin production by recombinant S. coelicolor grown in R2YE medium for 120 hour was determined according to Kieser et al. (2000). Preliminary results for the effect of extra copy of lon gene on the production of antibiotics by S. coelicolor were obtained in this study.

Keywords: Streptomyces coelicolor, lon protease, antibiotic production

Rheological Behaviour Of Polydimethyl Siloxane-Ulexite Pastes

Pinar Turan Beyli[a], Mehmet Dogan[a*]

[a]Balikesir University

*mdogan@balikesir.edu.tr

Abstract:

Many useful materials are highly viscous systems, often called soft solids. Mixes produced for plastic forming can be thought of as stiff pastes consisting of ceramic particles and a liquid. Such pastes commonly contain clay, oil or aqueous polymer solutions to give them plasticity. Rheological studies of pastes are required to develop novel extrusion applications, and to improve product quality and process optimization. This investigation aimed to form a stable composite material with unreactive polydimethyl siloxane and ulexite powder to increase their use in industries. For this purpose, different composite pastes have been prepared and solid:liquid ratio, particle size and temperature effects on the rheological properties of ulexite-polydimethyl siloxane pastes have been studied. The shear rate and shear stres datas were employed to the Power law, Casson, Bingham and Herschel-Bulkley models. Also, resulting ceramic composites have been characterized by DTA/TG, Scanning Electron Microscope (SEM) and XRD.

The silicon polymer used in this study which is pure silicon oil AK 100.000, a polydimethyl siloxane was mixed with ulexite powders with particle size between 0-50, 50-100 and 100-200 μm. The rheological properties of pastes were determined using high pressure capillary rheometer (Rosand RH10, Malvern). From the rheological measurements, we found that, all pastes exhibited non-Newtonian, pseudo-plastic behavior under all experimental conditions. At a certain particle size distribution, the shear viscosity of pastes increased with the increase of solid concentration. It was found that pastes behave as a shear thinning fluid between 30-75°C and it was successfully described by the Power-law model. The consistency coefficient of pastes increased greatly upon increasing the solid level and decreasing temperature. Also solid ulexite particles all covered with polydimethyl siloxane. A homogenous composite material was obtained. Because of ulexite particles, polydimethyl siloxane's flow behaviour changed and its stability was improved.

Keywords: Polydimethyl siloxane, ulexite, paste, rheology.

Salt effect on mineral content of tomato (Lycopersicon esculentum L.) seedlings under drought conditions

Melek Ekinci[a*], Selda Ors[a], Atilla Dursun[a], Ertan Yildirim[a], Metin Turan[b]

[a]Ataturk University
[b]Yeditepe University

*ekincim@atauni.edu.tr

Abstract:

Increased frequency of dry periods in many regions has resulted in the consecutive occurrence of drought and salinity on cultivated land and they affect plant growth and productivity. A good management of current resources according to quality and availability of water is to be a key for sustainable plant production. As a result of current situation, using low quality waters is considered for irrigation in the most part of the arid regions in the world. The aim of this research was to investigate salinity and drought stresses as well as their interactive effects on mineral content of tomato seedlings. Three different salt doses (0, 100, and 150 ml NaCl) and three drought levels (100%; D0, 75%; D1 and 50%; D2 of the water required to reach the field capacity) were applied to the plant seedlings in controlled greenhouse conditions. Both drought and salinity altered the mineral-nutrient relations by decreasing N, P, K, Fe and Z of the tomato seedlings in general but Na, Ca, B and Cl content of the seedlings were increased. The decrease in the content of N, P and K were prominently higher (24%, 24%, 23%, respectively) in severe drought stress treatment (D2) compared to the decrease (19%, 20%, 17%, respectively) in highest salt stress treatment (S2). The combined stress treatments (D2S2) caused more reduction in the content of N, P and K (36%, 27% and 34% respectively), however the decrement was still less destructive than the additive effect of individual stresses.

Keywords: plant nutrition, sodium, micro nutrients, salt stress

Sample Preparation for determination of polycyclic Aromatic Hydrocarbons (PAHs) from yoghurt samples

Sibel Kacmaz[a*], Mevlut Melemez[a], Pinar Yavuz[a]

[a]Department Of Food Engineering, Faculty Of Engineering, Giresun University

*sibel.kacmaz@giresun.edu.tr

Abstract:

Polycyclic aromatic hydrocarbons (PAHs) are lipid-soluble persistent compounds that have significant toxicity because of potential mutagenic, genotoxic and carcinogenic properties. PAHs can contaminate foods during smoking or drying processes as well as be the result of environmental contamination. The primary source of humans to PAH exposure mostly by intake of food such as oils, cereals, vegetables and also milk and milk product. Therefore, reliable extraction and sample preparation methods are required to determine the contamination level of milk and milk product samples. In this study, we applied and evaluated a sample preparation and extraction procedure for the determination of 4EU marker polycyclic aromatic hydrocarbons (PAHs; benz[a]anthracene, chrysene, benzo[b]fluoranthene and benzo[a]pyrene) from Turkish commercial yoghurt samples. The extraction procedure is liquid–liquid extraction of PAHs saponification of milk samples with NaOH ethanolic solution), a pre-concentration and determination by HPLC using a fluorescence detector. The study was carried out commercial yoghurt samples that manufactured by small- and large-scale dairy firms in Turkey. In total, seventeen yogurt samples that whole (3.5% fat), semi-skimmed (0.8 or 1.4 % fat) and skimmed (0.1% fat) which are widely consumed, were purchased from local Turkish supermarkets.

Keywords: Polycyclic aromatic hydrocarbons, yoghurt, Extraction of PAHs, HPLC Analysis

Scratch Behaviour of Walnut Shell Reinforced Polyprophelene(PP) Matrix Composites

Alp Eren Sahin[a], Beysim Cetin[a*], Tamer Sinmazcelik[a]

[a]Kocaeli University

*beysimcetin@hotmail.com

Abstract:

Usage of thermoplastic polymers in indistrual application increases day by day because of their renewable stracture, low density, easy formability and easy productibility. However low temperature resistance, elastic modulus values and dimentional stability restrict the thermoplastic polymers' indistrual usage. In order to cope with these inabilities particle and/or fiber reinforced termoplastic composites are produced. In this study polypropylene polymer is used as matrix material and reinforced with ground walnut shell particles size between 20 µm and 100 µm at various weight ratios (1, 3, 5, 10 %wt). Walnut shell reinforced composite samples were mixed by twin screw extruder and samples were manufactured by injection molding machine. Scratch behaviour of walnut Shell reinforced PP samples was examined by CSM micro scratch tester. Scratch tests were performed by 120° tip apex angle diamond conical indenter under normal load of 5 N and 30 mm/min scratch velocity along with 5 mm sliding distance. As a result of scratch tests, walnut shell reinforcement increase the scratch resistance of PP polymer and 10 %wt walnut shell reinforced samples showed the best resistance values. Average coefficient of friction values were not significantly affected by reinforcement of walnut shell. Acording to test results it is clearly seen that waste walnut shells will be utilized as a reinforcement material instead of using as a heat source.

Keywords: PP, Walnut shell, Thermoplastic composite, Scratch behaviour

Seafood Consumption and Buying Behaviors of Consumers Living in Malatya City Center, Turkey

Suat Dikel[a*], Gizem Saglamtimur[a]

[a]Cukurova University

*dikel@cu.edu.tr

Abstract:

This study presents results of the data analysis and the results of a consumer questionnaire of 18 questions into seafood products carried out in Malatya city center among September 2014 and November 2014. Responds of 500 consumers from different ages, genders and education degrees were analyzed. Survey showed that, the 60% prefer red meat, the 32% of the participants prefer to consume poultry product, and only the 8% percent of the participants prefer to consume sea food. The results showed the importance of fish consumption on human health was determined 56% of participants known to remarkably, 39% of moderately and 5% of slightly. On the other hand, while the 75% of survey participants prefer to consume sea food at home, others (25%) prefer to eat at a restaurant. In this study, promotion and market network of sea food products were found unsatisfactory by the consumers. One of the most obvious results of this study is to expose of consumer profile and perception and so that the probability of increase of sea food consumption by promotional activities.

Keywords: Seafood, Consumption. Malatya city

Search for anomalous tqgamma interactions through gamma-gamma collisions at the CLIC

Murat Koksal[a*], Salih Cem Inan[a], Ahmet Alper Billur[a]

[a]Cumhuriyet University

*mkoksal@cumhuriyet.edu.tr

Abstract:

Photon-photon reactions can provide an excellent opportunity to isolate the tqγ vertex. For this purpose, we have examined the potential of the single top quark production for the photon induced reactions to investigate the anomalous tqγ couplings in photon-photon collisions at the CLIC. We have obtained 95% confidence level limits (C.L.) on the anomalous couplings for various values of the center-of-mass energies and integrated luminosities. We have shown that the limits on anomalous couplings are more restricted with respect to current experimental limits.

Keywords: top quark, FCNC, CLIC

Search for extra dimension models in top-quark pair production via photon-photon fusion at the cern-lhc

Ahmet Alper Billur[a*], Salih Cem Inan[a]

[a]Cumhuriyet University

*abillur@cumhuriyet.edu.tr

Abstract:

We examine top pair production in photon collisions for the ADD and Randall-Sundrum models at the LHC. We find 95 % C.L. bounds on model parameters. Also, it was shown that, top quark spin asymmetry can be discerned from the standard model with extra dimension models.

Keywords: extra dimension models, photon induced reactions

Search for spin 3/2 excited leptons via photon induced reactions at the LHC

Salih Cem Inan[a*], Ahmet Alper Billur[a], Murat Koksal[a]

[a]Cumhuriyet University

*sceminan@cumhuriyet.edu.tr

Abstract:

In this work, we have examined spin 3/2 excited lepton contributions to lepton pair production processes for photon induced reactions at the Large Hadron Collider (LHC) with different integrated LHC luminocities and center of mass energies. We have used equivalent photon approximation (EPA) for photon distirubitions. We have found various confidence level (C. L.) limits on mass of the exited leptons. These calculations have been made for the different forward detector acceptance regions.

Keywords: Excited leptons, photon induced reactions, LHC

Search for the electromagnetic dipole moments of the top quark at the clic

Murat Koksal[a*], Ahmet Alper Billur[a], Alejandro Gutierrez-Rodriguez[b]

[a]Cumhuriyet University
[b]Universidad Autonoma De Zacatecas

*mkoksal@cumhuriyet.edu.tr

Abstract:

In this study, the anomalous magnetic and electric dipole moments of the top quark are examined at the CLIC. The future linear collider with the center-of-mass energy of 3 TeV and integrated luminosity of 2000 fb^-1 may put bounds on the electromagnetic dipole moments of the top quark of the order of O(10^-2 – 10^-1) at the 95 % C. L.

Keywords: Top quark, CLIC

Solar Energy Use In Greenhouses

Sedat Karaman[a*], Zeki Gokalp[b]

[a]Gaziosmanpasa University
[b]Erciyes University

*sedat.karaman@gop.edu.tr

Abstract:

Greenhouses provide the best conditions for plant growth and development in off-seasons. Heating is required in cold regions to provide these optimum conditions. However, heating costs constitute the greater portion of total production costs even in mild climates. Therefore, natural energy resources should be preferred in greenhouse heating in regions with available resources. Solar energy is quite available in almost everywhere and it is a free source. However, several technical and economic problems may be experienced in using solar energy for greenhouse heating. For solar energy to be used in greenhouse heating, solar radiation should be converted into heat energy and then this energy should be stored in somewhere for heating. In present study, potential use of solar energy in greenhouse heating was assessed, problems were put forth and possible solutions were provided for these problems.

Keywords: solar energy, greenhouse, solar radiation, heating

Some Physical Properties of Microencapsulated Fish Oil with Bay Leaf Extracts

Ahmet Faruk Yesilsu[a*], Gulsun Ozyurt[b]

[a]Central Fisheries Research Institute
[b]Cukurova Universitity

*beklevik@cu.edu.tr

Abstract:

Spray drying is one of the most effective procedures for getting better microcapsule properties in the production of encapsulated oils. However spray-drying of fish oil containing polyunsaturated fatty acids like EPA and DHA can be risky in terms of lipid oxidation, because of the increased temperatures used in this process. Therefore it is necessary to use the antioxidants to enhance the oxidative stability of the microencapsulated fish oil. Due to their high antioxidant activities, natural plant extracts such as rosemary, bay and sage etc. have been used instead of synthetic antioxidants. They are also in GRAS list and considered as safe by consumers. In this study, it was investigated that whether the bay leaf extracts affect some physical properties of microcapsules or not. To that end, anchovy oil was encapsulated with dairy-based wall materials with two ratios of liquid bay leaf extracts (BL1: 1000 ppm, BL2: 1500 ppm). The oil/water emulsions were prepared with the solution of lactose, caseinate and fish oil. As a control group, 250 ppm Butylated hydroxy toluene (BHT) was added to these emulsions. Spray-dryer inlet and outlet temperatures were optimized. Scanning electron microscopy (SEM) measurements were performed in order to observe the microcapsule morphology. Microencapsulation efficiency which is related to microsphere forming was calculated. Besides, colour measurement was evaluated to realise the effect of the extracts on the whiteness index.

SEM micrographs showed that none of the microparticles has any crackage or fissure. In addition to that "ballooning" was not seen in a large part of these particles. Although there is not any correlation with the extract concentration, BL1 samples have better microsphere formation and less agglomeration. Considering the statistical analysis, there were no effects of bay leaf extracts on encapsulation efficiency and the whiteness.

Keywords: Fish oil, bay leaf extract, spray drying, scanning electron microscopy

Some wild plants consumed as vegetables in Sanliurfa

Abdulhabip Ozel[a*], Islim Kosar[b]

[a]Harran University
[b]Gap Agricultural Research Inst., Sanliurfa, Turkey

*hozel@harran.edu.tr

Abstract:

This study was carried out to identify wild plants which are widely consumed as vegetables by local communities in Sanliurfa and neighboring provinces. The data were collected in different ways such as face to face interview with who collect these plants for direct consuming and marketing, and use for different purposes.

As results of study; evaluation was done through data which collected on characteristics of some plants usage fields, local and scientific names, and economic importance. It was determined some species (Gundelia tournefortii L., Ornithogalum narbonense L., Mentha pullegium L., Malva neglecta L., Nasturtium officinale R. Br., Anchusa azurea Miller., Arum dioscoridis Sm., Ferula orientalis L., Eryngium billardieri Delar., Capsella bursa-pastoris (L.)Medik. and Apium nodiflorum (L.) Lag. etc.) which are naturally grown and more intense in Sanliurfa.

Keywords: wild plants, usage areas

Specific Gravity Estimating Using Artificial Neural Network with Penetration and Penetration Index Parameters

Sercan Serin[a*], Sebnem Karahancer[b], Ekinhan Eriskin[b], Nihat Morova[b], Mehmet Saltan[b], Serdal Terzi[b]

[a]Duzce University
[b]Suleyman Demirel University

*s.serin33@gmail.com

Abstract:

Specific Gravity of the bitumen changes according to the ambient temperature. Different specific gravity values can be calculated at different temperature. Estimating models like Artificial Neural Network – ANN could be very useful to obtain the specific gravity value uniform. Specific gravity values obtained from Long-Term Pavement Performance – LTPP were estimated with artificial neural networks. Penetration and Penetration Index of binder were used for estimating the specific gravity of the bitumen. As a result, ANN get 84% of R2 between obtained and estimated values.

Keywords: artificial neural network, specific gravity, penetration, penetration index

Spectroscopic and Quantum Chemical Studies of (Z)-N -(3-(hidroksiimino)butan-2-ylidene)-4-metilbenzensulfonohidrazide

Feyizan Guntepe[a*], Murat Cinarli[a], Canan Kazak[a], Humeyra Bati[a]

[a]Department Of Physics, Faculty Of Arts And Sciences, Ondokuzmayis University

*feyizanguntepe@gmail.com

Abstract:

The structural and spectroscopic characterization of Schiff base ligand, (Z)-N -(3-(hidroksiimino)butan-2-ylidene)-4metilbenzensulfonohidrazide (HL) are presented in this paper. The optimized geometry and vibrational frequencies of the ligand have been calculated by using DFT/B3LYP method with 6-311G(d,p) and 6-311G+(d,p) basis sets. The calculated wave numbers are used to assign vibrational bands obtained in IR spectroscopy and find out to the manifestations of hydrogen bonding in the vstr(N–H) and vstr(O–H) vibrations. The UV-Vis absorption peaks of the ligand predicted by the timedependent DFT method matched quite well with experimentally observed UV-Vis bands. The molecular electrostatic potential and the energy profile with respect to rotations about the selected torsion angle τ (C5-S1-N3-N2) is also calculated.

Keywords: Crystal structure; DFT calculation; IR spectra; oxime; sulfonyl hydrazone

Structural Comparison Of Epitaxially Grown Gan Layer On Conventional Sapphire And Patterned Sapphire Substrates

Ismail Altuntas[a*], Ilkay Demir[a], A.Alev Kizilbulut[b], Baris Bulut[b], Sezai Elagoz[b]

[a]Cumhuriyet University
[b]Ermaksan Optoelektronics

*ialtnts@gmail.com

Abstract:

GaN-based materials including light emitting diodes, blue laser diodes, and high-power microwave transistors have received much attention over the past few years. An important problem of these structures is the high levels of structural defects, mostly dislocations, due to the lack of a suitable lattice-matched substrate So far, the substrate of choice has been mainly sapphire (Al2O3) substrates, which has a large lattice mismatch with GaN or AlN. As a result, (0001) GaN layers epitaxially grown on sapphire substrates include high concentrations of misfit and threading dislocations. In this study, epitaxial GaN layers have been grown on both conventional sapphire and patterned sapphire substrates by using an MOCVD system and high-resolution XRD scans are performed to compare the effect of patterned sapphire substrates on the dislocation density.

Keywords: PSS, GaN, MOCVD

Structural, electrical, thermal and mechanical properties and micro-hardness in Al-based Al-Sn-Mg ternary alloys

Canan Billur[a*], Fehmi Nair[b], Murat Balci[c], Mehmet Ari[c], Buket Saatci[c]

[a]Vocational School Of Sivas, Cumhuriyet University
[b]Department Of Mechanical Engineering, Erciyes University
[c]Department Of Physics, Erciyes University

*cbillur@cumhuriyet.edu.tr

Abstract:

In this study, we have investigated the structural, electrical, thermal, and mechanical properties and micro-hardness of three different samples of Al-Sn-Mg ternary alloys (Al-[x]at. %Sn-3.5at.% Mg) (x=2.5, 8.5, 14.5) with constant Mg concentrations. The electrical conductivity of the samples, depending on temperature, was measured using the four-point probe technique (4PPT). The temperature dependence of the thermal conductivities of the samples was shown using the Wiedemann-Franz (W-F) law with the data obtained from electrical measurements. Scanning Electron Microscope (SEM), X-ray diffraction (XRD), and Energy Dispersive X-ray Analysis (EDX) measurements were carried out to reveal the surface morphology, crystal structure, cell parameters, grain sizes, and chemical compositions. Tensile tests were carried out to determine the ultimate tensile strengths depending on the particle size of each component in the alloys. The results of the micro-hardness tests were found using a Vickers test machine for each component of the alloys.

Keywords: Electrical, thermal and mechanical properties, Micro-hardness, Crystal structure

Study of Central Anatolia by using Poisson Ratio Seismic Tomography Method with Earthquakes in 2016

Ibrahim Hakan Demirsikan[a*], Sakir Sahin[a]

[a]Suleyman Demirel Universty

*qqqhakanqqq@hotmail.com

Abstract:

In this study, Central Anatolia Region's crust structure and velocity distribution were investigated by the method of three-dimensional Poisson Tomography method developed by Zhao et al. (1992). Study area bordered with 35 N – 42 N latitude and 32 E – 38 E longitude and arrival time data generated by 1123 crustal earthquakes in 2016. The inversion results confirmed the major tectonic features detected by previous studies and revealed new structural hetergeneities related to active sismotectonics of the studied area. We checked Poisson Ratio Seismic Tomography values coherence with Earthquakes occurred in 2016. We decleared high Poisson Ratio anomalies in the active fault segments and volcanic fields in the study area. We found both big and micro earthquakes occour in the borders of the High Poisson Ratio anomalies and Low Poisson Ratio anomalies. The obtained Poisson Ratio Seismic Tomography values show us current seismotectonic activities which is under stress or potential earthquake area. These results from Poisson Ratio Seismic Tomography could be monitoring study to forecast earthquakes in the study area.

Keywords: Center Anatolia, Seismic Tomography, Poisson Ratio, Earthquakes.

Study of the Molecular Dynamics of 5- Fluorouracil (5-FU) and Human Serum Albumin (HSA) Interactions by Relaxation Times

Sibel Korunur[a], Bilgin Zengin[a*], Ali Yilmaz[b]

[a]Munzur University
[b]Batman University

*bilginzengin@munzur.edu.tr

Abstract:

The information on absorption, distribution, metabolism of drugs and also knowledge on the lifetime of drug in organs, is very important for the efficiency of a successful treatment. The most important factor for drugs injected to veins, is the binding affinity to human serum albumin. Human serum albumin (HSA) is the most abundant serum protein. The albumin has a binding capacity for many ligands, and it can bind drugs injected to vein. If the drugs bound to albumin are not dissociated, they may not reach to target tissue effectively. This knowledge implies that, the interaction between drug and albumin should be optimum for an effective treatment.

In this study, the interaction between human serum albumin (HSA) and anti-cancer drug 5-Fluorouracil (5-FU) was investigated depending on concentration and temperature. Drug-albumin interactions were investigated versus increasing drug concentration and temperature by 400 MHz NMR spectrometer. In this work, spectrums (peaks), chemical shifts and data related to T1 and T2 relaxation times of peaks were used. The results obtained from these data gave us useful information about molecular dynamics of drug-albumin interactions.

Keywords: Human serum albumin (HSA), 5-Fluorouracil (5-FU), T1 and T2 relaxation times

Synthesis And Characterization Of Bentonite/Poly(Ethylene Glycol)-Block-Poly(Propylene Glycol)-Block-Poly(Ethylene Glycol) Nanocomposite

Mehmet Kora Polat[a], Mehmet Dogan[a*], Pinar Beyli[a], Serap Dogan[a], Yasemin Turhan[a]

[a]Balikesir University

*mdogan@balikesir.edu.tr

Abstract:

In this study, Poly(ethylene glycol)-block-poly(propylene glycol)-blockpoly(ethylene glycol) (PEG-PPG-PEG)/bentonite and its modified samples‟ nanocomposites were synthesized by solution intercalation method. The modification of bentonite was made using cetyltrimethyl ammonium bromide (CTAB), 3-triethoxysilyl-propylamine (3-APT), N-[3-(trimethoxysilyl)propyl]-ethylenediamine (3-TMSPEDA), N-[3-(trimethoxysilyl)propyl]-diethylenetriamine (3-TMSPDETA), N,N–dimethylformamid (DMF) and dimethylsulfoxyl (DMSO). Bentonite and its nanocomposite products were characterized by FTIR-ATR (Fourier Transform Infrared Attenuated Total Reflection), XRD (X-Ray Diffraction) and TEM (Transmission Electron Microscopy). Thermal properties of nanocomposites were investigated by DTA/TG device. XRD, FTIR-ATR and TEM results showed that the modification of bentonite occurred by these modifiers; bentonite and its modified samples dispersed in polymer matrix; the interactions between clay and polymer occurred. From DTA/TG measurements it was found that, nanocomposites were more stable than polymers; TEM results compatibled with XRD results; and bentonite samples dispersed in nanoscale in polymer matrix.

Keywords: Bentonite, modification, nanocomposite, PEG-PPG-PEG, solution intercalation method.

Synthesis and Characterization of Epoxy Containing Hydrogel Membrane Adsorption System and Application to Reducing of Pollution Load in Chrome Tanning and Dyeing Process

Ahmet Aslan[a*], Safiye Meric Acikel[b], Raziye Hilal Senay[a], Sinan Akgol[a]

[a]Ege University
[b]Istanbul University

*ahmetaslan@gmail.com

Abstract:

Trivalent chromium is an important pollutant by a variety of industrial wastewaters like textile, leather tanning and metal industries. Especially the releasing non bounding Cr III ions in water can reduced to harmful Cr VI ions by the environmental factors (UV, temperature, etc.). So day by day trivalent chromium removal from waters gain importance. In advance processes such as ozonation, electrochemical and ultrasonic techniques, membrane filtration, photocatalysis and adsorption have been used for the heavy metal removal. Nowadays adsorption techniques by polymers have been popular studies because of simplicity of design, ease of usability and effectiveness. However hydrogel membrane systems, which are a separation technique, can adsorb various chemicals with their functional groups and can retain aqueous solutions of up to hundreds of times their own weight. In this presented work, p(HEMA-GMA) poly(hydroxyethyl methacrylate-co-glycidyl methacrylate) hydrogel membrane was produced by UV photopolymerization and the synthesized membrane was coupled with iminodiacetic acid (IDA) in order to chelate the Cr III ions at different concentrations of aqueous Cr III solution (1300-13000 ppm) at pH 4.3 (adjusted with HCl and NaOH), which was the optimum pH for Cr III chelate formation, at 25 oC and the Cr III adsorption capacity of p(HEMA-GMA)-IDA membrane was determined using a UV/Vis Spectrophotometer at a wavelength of 601 nm. Also characterization of p(HEMA-GMA)-IDA membrane was researched by SEM imagine, ATR-FTIR, Langmuir and Freundlich adsorption isotherms. Finally the results showed that p(HEMA-GMA)-IDA membranes was calculated as 361.21 mg/g (6.95 mmol/g) Cr III ions. So p(HEMA-GMA)-IDA membrane effectively be used for the removal of trivalent chromium from aqueous solutions. Then p(HEMA-GMA)-IDA-Cr(III) membrane was used for removing acid dye in the dyeing process effluents in laboratory conditions.

Keywords: Leather, waste water, chromium, HEMA-GMA

Synthesis And Characterization Of Imines From 3-Cholorobenzaldehyde

Onur Turhan[a*], Serap Akcan[a], Hilmi Namli[a]

[a]Chemistry, Sceince&Art Faculty,Balikesir University

*oturhan@balikesir.edu.tr

Abstract:

Imine (azomethine) functional groups (-CH=N-) which has carbon-nitrogen double bond,also known as Schiff Bases. Imines have enormous application in organic and medicinal chemistry. Some imine derivatives are known for their biological activities such as anti-HIV , antimicrobial , anticancer , insecticidal and hence are widely used.

In this study the imine compounds 2-((3-chlorobenzylidene)amino)phenol, 4-((3-chlorobenzylidene) amino)phenol and N-(3-chlorobenzylidene)-4-methylaniline were synthesized in one step by the condensation reactions of 3-cholorobenzaldehyde with 2-aminophenol, 4-aminophenol and p-toluidine separately in ethanol solution. The structures of imine compounds were characterized by Fourier transform infrared spectroscopy (FT-IR), proton nuclear magnetic resonance (1H NMR) and carbon nuclear magnetic resonance (13C NMR) spectroscopy. The structures of related compounds were also confirmed by analysis.

Keywords: Imines, Schiff Base, Organic synthesis, Characterization

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Synthesis and Characterization of Laccase Immobilized Cryogel Structures for Lignin Degredation

Ahmet Aslan[a*], Canan Altunbas[a], Ceren Turkcan Kayhan[b], Sinan Akgol[a]

[a]Ege University
[b]Izmir University Of Economics

*ahmetaslan@gmail.com

Abstract:

Lignin, the woody plant root and stem structure forming substances was known. Dead cells on the walls of aged cellulose plant environment were protected from improper. Lignin structure inhibited from attached to cellulose which was responsible for the hydrolysis of cellulose with cellulase itself from connecting substrate. Because of its durable construction when used as bait in terms of digestion and acts as a barrier to the production of biofuels from plant material and therefore must be removed. Various enzymes were for lignin degredation and one of these enzymes also constitutes laccase. Laccase (E.C.1.10.3.2.) enzyme which every molecule included four copper atoms was oxidoreductases.

In this study, IMEO [Trietoksi-3-(2-imidazolin-1-yl) propil silan] attached poly HEMA (Hydroxyethyl methacrylate) cryogels are used for immobilization of laccase. For this purposes, the cryogel is prepared by radical cryocopolymerization of HEMA as a monomer and N,N'-metilen-bis(akrilamid) (MBAAm) as a crosslinker. Then IMEO is attached by covalent binding onto poly (HEMA) cryogel via silanization activation. Synthesis of poly (HEMA)-IMEO cryogel characterization to be carried out by FTIR, SEM and swelling tests. Poly (HEMA)-IMEO cryogel, parameters binding activity of laccase (pH, concentration, temperature, flow rate, ionic strength) will be performed in a continuous system. Cryogenic laccase bound to the structure and not connected to the monitoring of pH and temperature profile ABTS (2,2'-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid) method will be used which will be developed laccase-linked poly (HEMA) -IMEO system with continuous water environment will be used for the removal of lignin waste in the system.

Keywords: Cryogel, laccase, lignin, lignin degredation, poly (HEMA)

Synthesis And Characterization Of Methyl And Hydroxy Substituted Aromatic Imines

Onur Turhan[a*], Fadime Erer[a]

[a]Chemistry, Sceince&Art Faculty,Balikesir University

*oturhan@balikesir.edu.tr

Abstract:

Imines include carbon-nitrogen double bond and also many of them used as Schiff Bases in coordination chemistry. Schiff base ligands are frequently synthesized and formed complexes with almost all metal ions. Many Schiff base complexes show excellent catalytic activity in various reactions at high temperature (>100 ◦C). Transition metal complexes containing Schiff base ligands play an significant role in the coordination chemistry related to enzymatic reactions and catalysis . Schiff bases are also important part of compounds in medicinal and pharmaceutical field. They frequently used in biological applications containing antibacterial and antifungal activity. In this study some aromatic imine compounds such as 2-methyl-N-(3-methylbenzylidene)aniline, 4-((3-methylbenzylidene)amino)phenol and 4-methyl-N-(3-methylbenzylidene)aniline have synthesized. All compounds were synthesized by the imination reactions of 3-methylbenzaldehyde with o-toluidine, 4-aminophenol and p-toluidine separately in ethanol media under reflux conditions. The structures of these Schiff Bases (imines) were characterized by FT-IR, 1H NMR and 13C NMR spectroscopy. All data completely supports related structures.

Keywords: Aromatic Imines, Schiff Base, Organic Synthesis, Characterization

Synthesis and characterization of poly(linoleic acid)-g-poly(methyl methacrylate)-g-poly(D,L-lactid) graft copolymers

Sema Alli[a*], Abdulkadir Alli[a]

[a]Duzce University

*abdulkadiralli@duzce.edu.tr

Abstract:

One-step synthesis of graft copolymers by ring-opening polymerization and free radical polymerization by using polymeric linoleic acid peroxide and polymeric linolenic acid peroxide is studied. Graft copolymers having the structure of poly(linoleic acid)-g-poly(methyl methacrylate)-g-poly(D,L-lactid) were synthesized from polymeric linoleic acid peroxide possesing peroxide groups in the main chain by the combination of free radical polymerization of methyl methacrylate and ring opening polymerization of D,L-lactid in one-step. The principal parameters such as monomer concentration, initiator concentration, and polymerization time that affect the one-step polymerization reaction were evaluated. The graft copolymers obtained were characterized by proton nuclear magnetic resonance (1H NMR), gel permeation chromatography (GPC), thermal gravimetric analysis (TGA) and differential scanning calorimetry (DSC) techniques. These characterization studies of the obtained polymers indicate graft copolymers easily formed as a result of combination free radical polymerization and ring opening polymerization in one-step.

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Keywords: Auto-oxidation, polymeric oil/oily acid, polymerization, biodegradeble

Synthesis And Characterization Of Poly(Vinyl Chloride) / Calcinated Sepiolite Nanocomposites

Yasemin Turhan[a*], Mehmet Dogan[a]

[a]Balikesir University

*yozdemir@balikesir.edu.tr

Abstract:

The nanocomposites of poly(vinyl chloride) have been synthesized by solution intercalation method using calcinated sepiolite clay. Sepiolite, which has 2:1 layered structure, was thermally activated at 150, 400, 900 oC. The structural characterization of polymer/clay nanocomposites has been evaluated by X-ray diffraction (XRD), scanning electron microscopy (SEM) and transmission electron microscopy (TEM). The interactions between clay and polymer were also determined by attenuated total reflection-infrared spectroscopy (FTIR-ATR). The thermal properties of polymers and nanocomposites were determined by thermogravimetry (TG), differential thermogravimetry (d[TG]) and differential scanning calorimetry (DSC). From XRD analyses, it was determined that sepiolite and calcinated products were generally dispersed in PVC matrix. XRD analyses were also confirmed with SEM and TEM analyses. TEM analyses have showed that morphology of poly(vinyl chloride) nanocomposites, which have been prepared with sepiolite were dispersed in polymer matrix at nanoscale. FTIR-ATR analyses have showed that there were important interactions between polymer matrixes and clays. From TG/d[TG] analyses, in general, it was found that nanocomposites were thermally more stable than its pure polymer.

Keywords: Sepiolite, PVC, nanocomposite, characterization, solution intercalation method.

Synthesis of 3-(pyridin-2-yl)-[1,2,3]triazolo[1,5-a]pyridine from decomposition of tosylhydrazone and their Cu(II) complex

Murat Cinarli[a*], Humeyra Bati[b], Murat Tas[c]

[a]Ahi Evran University
[b]Ondokuz Mayis University
[c]Giresun University

*murat.cinarli@ahievran.edu.tr

Abstract:

Since the report of Bamford and Stevens , a number of papers have been published on the decomposition of tosylhydrazones.Triazolopyridine structures are fundamental building blocks for numerous pharmaceutical and functional materials.Traditionally, [1, 2, 3]triazolo[1, 5-a]pyridines have been synthesized by the oxidative cyclization of 2-pyridyl ketone hydrazones by using at least a stoichiometric, if not an excess, amount of oxidants such as Pb(OAc)2 , copper salts , MnO2, hypervalent iodine Ag2O and Ni peroxide . in this work, In this study, 3-(pyridin-2-yl)-[1,2,3]triazolo[1,5-a]pyridine was obtained as a result of degradation of tosylhydrazone in basic medium. As a result, the octahedral complex formed between the 3-(pyridin-2-yl)-[1,2,3]triazolo[1,5-a]pyridine and Cu(II).

This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: AHILAB.E2.17.003

Keywords: decomposition of tosylhydrazone, sulfonyl hydrazone

Synthesis Of Organic Ligands From Various Alkyl Chains By The Mannich Reaction To Prepare Langmuir-Blodgett Thin Films

Umit Cakir[a*], Yusuf Akbay[b], Mehmet Dogan[a], Halil Ibrahim Ugras[b]

[a]Balikesir Universty
[b]Duzce University

*ucakir@balikesir.edu.tr

Abstract:

In this work, some new organic derivatives with various alkyl chains using the different starting materials were synthesized by the Mannich reaction under nitrogen atmosphere. The ligands synthesized are 3-((p-tolylimino)methyl)phenol (A1) from p-toluidine and 3-hydroxybenzaldehyde; 4-hydroxy-3-(piperidin-1-ylmethyl)-2H-chromen-2-one (A2) from 4-hydroxycoumarin, paraformaldehyde and piperidine; 4-(tert-butyl)-2-(piperidin-1-ylmethyl)phenol (A3) from tert-butyl, paraformaldehyde and piperidine; 4-hydroxy-3-((isopropyl(methyl)amino)methyl)-2H-chromen-2-one (A4) from 4-hydroxycoumarin, paraformaldehyde and N-isopropylmethylamine; 1-((4-hydroxy-2-oxo-2H-chromen-3-yl)methyl)pyrrolidine-3-carboxylic acid (A5) from 4-hydroxycoumarin, paraformaldehyde and L-proline; 1-(5-(tert-butyl)-2-hydroxybenzyl)pyrrolidine-3-carboxylic acid (A6) from 4-tert-butylphenol, paraformaldehyde and L-prolin; 4-(tert-butyl)-2-((isopropyl(methyl)amino) methyl)phenol (A7) from 4-t-butylphenol, paraformaldehyde and N-isopropylmethylamine. These compounds were primarily characterized using FTIR-ATR and NMR instruments.

The thin layer film properties of the synthesized organic compounds were investigated by Langmuir-Blodgett (LB) technique. The Langmuir-Blodgett (LB) technique, which allows the orientation and placement of molecules in thin films of controlled thickness, has been used as a possible tool to electronic, magnetic and conducting properties. By means of the LB technique it is possible to transfer the monolayer from the water surface onto a solid substrate, and a well-oriented monomolecular film is formed. Langmuir films were formed at the air-water interface. KSV Nima device was used to make LB films and glass was used as sub-glass. In the experiments, firstly, isotherm graphs of organic compounds were obtained on glass surface. Glass surfaces were characterized by FTIR-ATR and atomic force microscopy by coating with organic molecules at different thicknesses using pressure values determined from these isotherm graphs. FTIR-ATR spectra and AFM images show that the characteristic peaks of each organic compound, and the surface are covered by organic molecules, respectively.

Keywords: Synthesis, Mannich reaction, Langmuir-Blodgett technique, thin film, characterization.

Synthesis, Characterization And Agricultural Application Of Modified P(Dmaam)-Naoh Hydrogel

Duygu Alpaslan[a*], Tuba Ersen Dudu[a], Yusuf Uzun[b], Nahit Aktas[a]

[a]Yuzuncuyil University, Engineering Faculty, Department Of Chemical Engineering, Van, Turkey
[b]Yuzuncu Yil University, Faculty Of Pharmacy, Department Of Professional Pharmaceutical Sciences, Van,Turkey

*alpaslanduygu@gmail.com

Abstract:

In this investigation nonionic p(DMAAm)-NaOH hydrogel was synthesized by using N,N-Dimethylacrylamide (DMAAm) as monomers and modified by sodium hydroxide (NaOH) for targeted nitrogen fertilizer removal. Synthesized nonionic p(DMAAm)-NaOH hydrogel was investigated swelling behaviors in deionize water and sensibility pH and were characterized using Fourier Transform Infrared Spectroscopy (FT-IR) and Thermal Gravimetric Analysis (TGA). In the environmental applications of nonionic p(DMAAm)-NaOH hydrogel aimed removal from aqueous medium of ammonium nitrogen fertilizer. Therefore in this study investigated effect on the absorption performance of initial fertilizer concentration (mg/L), the pH of the media, and temperature (°C). Ultra-Viole spectroscopy was used to quantify nitrogen fertilizer during absorption studies. The most utilized absorption isotherms models like Langmuir and Freundlich were studied to obtain the best-fitted isotherms equation. Moreover thermodynamic parameters were evaluated. Under specified experimental conditions, the maximum absorption capacities for ammonium nitrogen fertilizer were calculated to be approximately 305.3 mg/g.

Keywords: N,N-Dimethylacrylamide, ammonium nitrogen fertilizer, absorption

Taurine supplementation in perinatal period attenuates hyperglycemia-induced renal injury in the offspring from maternal diabetic rat

Nuntiya Somparn[a*]

[a]Thammasat University

*nuntiya_tom@hotmail.com

Abstract:

Maternal diabetes (DM) could induce perinatal programming of renal injury in the offspring. Diabetic nephropathy the most common complication found in diabetes. Recently, it has been reported that taurine administration prevented the occurrence and development of diabetic nephropathy. In the present study, the effects of taurine on kidney was determined by measure the protein expression of an early kidney injury markers, neutrophil gelatinase-associated lipocalin (NGAL) and intercellular adhesion molecule (ICAM-1) as well as serum oxidative stress markermalondialdehyde (MDA) were studied in the offspring of diabetic rats. Maternal diabetic rat model was established by a single intraperitoneal injection of streptozotocin (STZ) after 1 day of pregnancy. Taurine treated groups were received 3% taurine in drinking water during pregnancy and lactation. The male offspring from 4 dams (non-DM, non-DM+T, DM, DM+T groups) were studied at 4 weeks-age. For the results, fasting blood sugar was significantly increased and insulin was significantly decreased in offspring from diabetic mother compared with offspring from non-diabetic mother. In Offspring from maternal diabetic rats, perinatal treatment with taurine significantly decreased fasting blood sugar and restored insulin level compared with those from non-treated group. Offspring from maternal diabetic rats were complicated with oxidative stress and renal endothelial dysfunction: increased serum MDA increased ICAM-1 proteins expression, whereas NGAL was not altered, in the kidney compared with offspring from non-diabetic mother. In offspring from diabetic mother, perinatal treatment with taurine significantly attenuated elevation of serum MDA and over expression of ICAM-1 compared with those from non-treated group. In conclusion, perinatal taurine supplementation improves hyperglycemia-induced renal injury induced by experimental maternal diabetic rat model and this effect might be associated with restored insulin level and antioxidant property.

Keywords: Taurine,Diabetic, Renal injury, NGAL

Taxing Agricultural Land and Production in Turkey

Remziye Ozel[a*]

[a]Harran University

*rozel@harran.edu.tr

Abstract:

The major aim of most governments in developing countries is to stimulate and guide their economic and social development. The most important instrument by which resources are marshaled is through the implementation of an effective tax policy. Agricultural taxation is an important instrument of devolepment policy. Because agriculture is important. As the largest economic sector in most devoloping countries, agriculture plays a key role in Turkey's economic and social development. The tax system provides a major means of transferring resources out of agriculture. Agricultural activities are difficult to tax, especially in low income countries, where most agricultural activities are organized on a smallscale basis. Therefore, a negative relationship could be expected between the share of agriculture sector and tax revenue.

This study analyses the taxation of agricultural sector and tax conformity in the area of agriculture in Turkey. Therefore, in this study it was examined tax and agriculture and the current regulations and the determinants of tax revenue within theoretical and conceptual frameworks in Turkey. Difficulties in taxation of agricultural income have been identified and it has been determined that a more active inspection and operation mechanism is needed in taxation methods. In the actual method, the basis of the balance sheet should be expanded by keeping the tax base broader. Thus, taxation on pure income will provide a fairer tax rate.

Keywords: Taxing Agriculture, Tax system, Turkey

The Assessment of Sea Snails and Symbiotic Bacteria Associated with These Organisms as Resource of Natural Antimicrobial Substance

Serpil Ugras[a*], Sebnem Uzmez[a]

[a]Duzce University

*serpilkus@gmail.com

Abstract:

Antibiotics that treatment of diseases in humans is seen as a miraculous key, these substances were used incorrectly in many areas and finally, development of bacterial resistance against these substances was observed. Today, it was increasingly became a major health problem in worldwide. So, the researchers indicate a great effort for the development of alternative antimicrobials. In recent years, researches for the discovery of new antimicrobial substances was focused on marine macroorganisms and microorganisms, especially, associated with macroorganisms. In this study, the capacity of the antimicrobial substance of sea snails (Rapana venosa) and symbiotic bacteria associated with these organisms in Akcakoca, located in the Western Black Sea Region. This marine organisms R. venosa were collected. The shells were broken and soft bodies of the sea snails and homogenized. Firstly, bacterial isolation was performed from these samples. And then, the samples were immersed separately in the different solvents as acetone, hexane and ethanol. The extracts obtained from each solvent were filtered. The filtrates were evaporated and resolved in DMSO. The samples were used for the experimental work. The antibacterial effect of the extracts and isolates (twenty bacterial strains) was tested against indicator bacteria with agar well diffusion method. Result of the study, tissue extracts have been found to have inhibitory activity against many indicator bacteria as Salmonella typhimirium ATCC 14028, Klebsiella pneumonia ATCC 13883, Proteus vulgaris ATCC 13315, Staphylococcus aureus ATCC 25923, Yersinia pseudotuberculosis ATCC 911, Escherichia coli ATCC 35218 but the analysis showed that the bacteria isolated from tissue of the sea snails did not have inhibitory activity against indicator bacteria.

Acknowledgements: This work was supported by Duzce University grant (Project Code DU.BAP-2015.11.04.294).

Keywords: Antimicrobial substance, Rapana venosa, Sea snail, Symbiotic bacteria

THE Effect of Coagulation Bath Type on Mechanical and Electrical Properties of Wet Spun Graphene Fiber

Melik Oksuz[a*], H.Yildirim Erbil[a]

[a]Chemical Engineering Department, Gebze Technical University, Kocaeli, Turkey

*moksuz@gtu.edu.tr

Abstract:

Graphene fiber is good candidate for many applications such as wearable electronic devices, smart textiles and sensors. Wet spinning method was found to be the most suitable to produce graphene fiber because of easy scale-up possibilities. The main objective of this work is to determine the effect of solvent type and surfactant used in the coagulation baths. Five different solvents (isopropanol, acetone, n-propanol, ethyl acetate and tetrahydrofuran) and 0.5 mg/ml aqueous solutions of cationic surfactants (cetyl trimethylammonium bromide, and dodecyl trimethylammonium bromide, DTAB) were used in this work. 13 mg/ml of GO dispersion was synthesized from graphite flakes by the modified Tour method and injected into these coagulation baths and GO fibers were dried at room temperature (surfactant containing fibers were washed with deionized water). Dry GO fibers were converted to graphene fibers by reduction with hydriodic acid. Tensile strengths, Young's modulus, elongations at break and electrical conductivities of graphene fibers were measured. Graphene fibers obtained by using aqueous DTAB coagulation bath resulted in the highest tensile strength (174 MPa) and Young modulus (23 GPa) values, however their electric conductivity was found to be almost half of those obtained by using solvent baths. Among the used solvent baths, the highest mechanical resistance was obtained when isopropanol (tensile strength: 163 MPa, Young's modulus:18.3 GPa, and electrical conductivity: 88 S/cm) and n-propanol (tensile strength: 162 MPa, Young's modulus:19.5 GPa, and electrical conductivity: 90 S/cm) were used as the coagulation bath. Since, the diffusion coefficient of water present in the GO dope solution is lower in the propanol solvents than that of the other solvents, then less porous fibers are formed by the slow rate of solvent exchange giving denser graphene fiber structures having better mechanical properties.

Keywords: Graphene Fiber, Wet Spinning Method, Diffusion Coefficient, Coagulation Bath

The Effect Of Infrared Stabilization On Tocopherol, Gamma-Oryzanol, Thiamine And Riboflavin Contents Of Immature Rice Grains

Fatma Yilmaz[a], Necati Baris Tuncel[a*], Nese Yilmaz Tuncel[a]

[a]Food Engineering Department, Faculty Of Engineering, Onsekiz Mart University

*baristuncel@comu.edu.tr

Abstract:

Immature rice grains are chalky and slender rice grains which are undesirable by products of milling process due to reducing head rice and total milling yield. However, they contain various health-promoting components such as tocopherol, gamma-oryzanol, and phenolics. They are prone to rancidity mainly because lipolytic activity and therefore generally used as feed. In order to utilize these by-products as food, stabilization has to be employed. In this study, immature rice grains were stabilized with infrared radiation (either with medium wave or short wave infrared emitters) at varying conditions and stored for 3 months. Then, 10 efficient stabilization conditions were chosen which resulted in the lowest free fatty acid content at the end of the storage period. Tocopherol, gamma-oryzanol, thiamine, and riboflavin content of immature rice grains, which were stabilized at the selected conditions, were determined in order to understand the effects of infrared stabilization. Solely α-tocopherol was found in immature rice kernels among tocopherol homologs. The amount of α-tocopherol ranged between 4.56 and 10.95 mg/kg. It was observed that tocopherol content increased with increasing radiation intensity. This result was attributed to the increased extractability or accessibility of tocopherols when exposed to intense heating. On the other hand, gamma-oryzanol content of the grains ranged between 269.56 and 336.30 mg/kg and the effect of infrared stabilization on gamma-oryzanol content was insignificant ($p>0.05$). Although thiamine and riboflavin contents significantly affected by infrared stabilization ($p<0.05$), control and stabilized samples had very similar amounts of thiamine and riboflavin which ranged between 0.57-1.45 mg/kg and 0.53-0.87, respectively. Nevertheless, a linear decreasing trend was observed in thiamine content of short wave infrared stabilized grains.

This research is funded by the Scientific and Technological Research Council of Turkey (TUBITAK). Project No: 115O605

Keywords: immature rice, stabilization, infrared, tocopherol, B vitamins

The First-Principles Study On The Tac

Hulya Ozturk[a*], Ebru Karatas[a], Cihan Kurkcu[a]

[a]Ahi Evran University

*hozturk@ahievran.edu.tr

Abstract:

Ab initio calculations are performed to investigate structural properties of the TaC material. This material crystallizes in the NaCl-type structure with space group Fm-3m at ambient conditions. A structural phase transition from this structure to the monoclinic structure with space group P21/m was observed at 500 GPa and another phase transition from this monoclinic structure to the orthorhombic structure with space group Cmcm was observed 600 GPa. These phase transitions were also studied by total energy and enthalpy calculations.

Keywords: TaC; Structural Phase Transition; Ab-initio

The impact of fish protein isolate addition on the physical properties of chicken frankfurter during cold storage (4°C)

Cagin Gayde[a*], Elif Tugce Aksun[a], Esmeray Kuley Boga[a], Gulsun Ozyurt[a]

[a]Cukurova University

*beklevik@cu.edu.tr

Abstract:

Fish protein isolates prepared with pH shifting methods have great potential as an ingredient in recent years. Although it is anticipated that the addition of fish protein isolates (FPI) enhance the nutritional value, there is scarce information about the effect of fish protein isolate on physical properties of processed food during storage. Therefore, the object of this study was to determine the effect of FPI on physical properties of chicken frankfurter-type sausages during cold (4°C) storage. For this purpose, chicken sausage dough was divided into 4 groups; the control group is without any FPI addition, and for the other 3 groups chicken sausage dough were substituted by 10%, 20% and 30% with FPI. The lightness value of the control and 30% FPI groups declined at the end of storage. The same decrease was observed in 10% and 20% FPI groups up to the 33th day of storage, but there were no significant differences after that point till the end of the storage. Initially, the hardness value of the control group (3251.23g) was lower than the other groups (4234.19-4408.27g). The weakening rate of 30% FPI group was significantly higher than the other groups. While the initial hardness value of 30% FPI group was found as 4246.87 g, it was reduced to 2587.16 g at the end of the storage. There were no significant differences between groups in terms of chewiness (2024-2097gmm), springiness (0.88-0.90mm), adhesiveness (-2.57-2.96gs), resilience (0.19-0.21g) and cohesiveness (0.65-0.69) values until the 27th day of storage. Results of texture measurement showed that textural deterioration increased with storage time. At the end the least textural deterioration was observed in 20% FPI group. However, texture feature of 10% FPI group was the most close to control group.

Keywords: frankfurter, colour, texture, fish protein isolate, pH shifting method

THE Production of Wet Spun Graphene Fiber with Different Reduction Methods

Melik Oksuz[a*], H.Yildirim Erbil[a]

[a]Chemical Engineering Department, Gebze Technical University, Kocaeli, Turkey

*moksuz@gtu.edu.tr

Abstract:

Flexible and lightweight graphene fibers with ease of functionalization have attracted interest for applications such as wearable electronic devices, smart textiles, sensors and super-capacitors. Wet spinning method is the most common due to enabling scale-up possibilities. This method is comprised of two steps. Firstly, graphene oxide (GO) fiber is obtained in a coagulation bath by injecting GO dispersion, then taken out and dried. Secondly, GO fibers are converted into electrically conducting graphene fibers using chemical reduction or thermal annealing method. The aim of this study was to determine the effect of different chemical reduction agents on the electrical and mechanical properties of graphene fibers. GO was synthesized from graphite flakes using the modified Tour method. GO fibers were produced by injecting aqueous dispersion of GO (13 mg/ml) into coagulation bath (isopropanol). After drying, GO fibers were reduced by different reduction agents including vitamin C, hydrazine monohydrate, hydriodic acid and hydriodic acid/acetic acid mixture at temperatures ranging 40-90 °C. Tensile strengths, Young's modulus and elongations at break of the fibers were measured. In addition, electrical conductivities of reduced graphene fibers were measured using a four-probe resistivity instrument. It was determined that the reduction methods significantly affected the mechanical and electrical properties of graphene fiber. In general, electric conductivities of graphene fibers ranged from 9 to 120 S/cm. Their tensile strengths, Young's modulus and elongation at break values ranged from 33 to 203 MPa, from 4.2 to 22.0 GPa and from 2.4 to 4.6 %, respectively. It was found that most effective reduction agent was found to be hydriodic acid/acetic acid mixture resulting in 120 S/cm electric conductivity, 203 MPa tensile strength, 4.6% elongation at break and 22.0 GPa Young's modulus.

Keywords: Graphene Oxide Fiber, Graphene Fiber, Wet Spinning Method, Reduction Agents

The Structure of Agricultural Machinery Manufacturing Industry in South Marmara Development Agency

Bahaddin Zayim[a], Habib Kocabiyik[a*]

[a]Agricultural Machinery Department, Faculty Of Agriculture, Canakkale Onsekiz Mart University

*kocabiyikh@comu.edu.tr

Abstract:

In this study, the structure of agriculture machine production industry was determined in South Marmara Development Agency region. Face-to-face survey was conducted with 34 companies in the region. It was aimed to determine the general information of companies; the status of production planning, the tools and machines produced, the sources of the materials used in production, the feature of energy consumption, financial and marketing, customer services after sale and problems with sector. Companies of the region have occurred from micro-sized about 52.94%, 29.41% of small-scale and 17.65% of medium-sized. The numbers of employed engineers in per enterprise were determined as 0.53 in all sized enterprises. While ratio of production by order was 91.18 %, production by annual planning was 35.30%. There was no spare part production in 88.23% of the companies. 79.41% ratio of the firm have got web page. Ratio of online sales in the sector was 50%. The companies in 58.83% have not got research and development unit. In addition, while the companies about 52.95% joined national fairs in a year, this ratio was decreased to 14.70% for international fairs.

Acknowledgment

The data used in this work comprise a part of the first author's master's thesis at the University of Canakkale Onsekiz Mart.

Keywords: Agriculture machinery, Agricultural machinery manufacturing industry, manufacturing capacity, marketing

The Urban Transformation With New Legal Regulations

Fatih Taktak[a*], Mahir Serhan Temiz[a]

[a]Usak Universty

*fatih.taktak@usak.edu.tr

Abstract:

The our country and in the world, cities is needed projects and applications for renewal, transformation, resettlement and improvement due to reasons such as economic reasons, inadequacy in social development, excessive population accumulation, wrong place selection and natural disasters. The world and our country, many project application examples are available. They are varied in their purpose, form of implementation, organizational patterns and outcomes. In the process of reclaiming troubled areas of cities; not only a spatial transformation is also being studied at the same time to ensure the social and cultural development.

In this context, the process of urban transformation in our country has been evaluated from the perspective of new legal regulations. In the study, firstly, What is the urban transformation very briefly, it was focused on the historical development of urban transformation in the Turkey and world. Secondly, Past legal regulations and current legal regulations regard to urban transformation are examined. And finally, the new legislation has been critically treated.

Keywords: Urban Transformation, Legal Regulations, Historical Development

The usage of Aspergillus sp. biomass for imidacloprid removal

Sevgi Ertugrul Karatay[a*], Gonul Donmez[a]

[a]Ankara University

*sertugrul@ankara.edu.tr

Abstract:

In todays world the pesticides which are used to manage insects and diseases important tools in agriculture. Among them imidacloprid is being used widely owing to its effectiveness in controlling pests. It belongs to the neonicotinoid class of synthetic organic insecticides and is widely used to manage a wide range of plant pests like mealy bugs, aphids and whiteflies for many years in agriculture. However, continuous exposure to pesticides may cause serious problems for non-target organisms. For example imidacloprid, has been reported to be the cause of fish deaths, reproductive failure in birds, illness in humans, impacts on soil microbial diversity, and even to decrease in pollinating insects population. Some physical and chemical methods of remediation like land filling and incineration have been implemented for persistent pesticide pollutants but they lead to leaching and toxic emissions respectively. Therefore, there is a need to develop low-cost, easily available and environmentally friendly methods. Among them biological methods are often considered as the most economical and ecofriendly alternative process when compared with the other processes. Especially aerobic bioremedial procedures are taken as the promising procedures in pollutant removal, since they leave much lower amount of toxic residues. Within this context it seemed important to attempt to search for the most efficient microorganisms in imidacloprid treatment.

The present study reports the usage of four different fungal biomass which belong to Aspergillus sp., Rhizophus sp., Tramates sp., Penicillium sp. for imidacloprid removal in minimal salt medium containing 1 g/L glucose. Samples were analyzed for imidacloprid using HPLC. In the presence of 30.0 ppm imidacloprid it was observed that all of the tried fungal biomass had tolerance for imidacloprid at the end of seven days incubation time. However among them Aspergillus sp. could remove the pollutant as 35.7% at pH 6.

Keywords: pesticide, bioremoval, fungi

Thermal Tolerance and Growth Performance of Nile Tilapia (Oreochromis niloticus) and Hybrid Tilapia (Oreochromis niloticus x Oreochromis aureus) Acclimated to Three Temperatures

Suat Dikel[a*], Serhat Turkmen[b]

[a]Cukurova University
[b]Universidad De Las Palmas De Gran Canaria Marine Aquaculture Las Palmas De Gran Canaria Spain

*dikel@cu.edu.tr

Abstract:

Critical thermal minima (CTMin) and maxima (CTMax) values were determined for the Nile tilapia and hybrid tilapia (Oreochromis niloticus x Oreochromis aureus) juveniles at three different acclimation temperatures (24, 28 and 32oC). 270 fry (1-2 g) were equally distributed between four treatments each with three replicates for 30 days. At the end of the trail, the CTMin of Nile tilapia juveniles at these acclimation temperatures were 9.12, 10.06 and 11.11 °C. The CTMin of hybrid juveniles were 9.60, 10.25 and 11.94 °C respectively, at 0.3°C cooling rate. The CTMax values of the groups were 39.77, 41.30 and 42.49 °C for Nile tilapia and 39.79, 41.34 and 42.66 °C for hybrids at the respective acclimation temperatures. The findings showed that temperature has been significantly affected the CTMin and CTMax values of the O.niloticus and hybrids ($p<0,001$). The area of the thermal tolerance polygons over three acclimation temperatures for two genera were calculated to be 249.117 and 246.181°C². The acclimation response ratio (ARR) values of Nile tilapia and hybrids were ranging from 0.35 to 0.36 and 0.25 to 0.34 respectively. O. niloticus appears to be more sensitive to low temperatures than hybrids and its cold tolerance zone ranged from 9.12 and 11.11°C.

Keywords: Tilapia, Critical thermal minima, Critical thermal maxima, Acclimation response ratio, Thermal tolerance polygon

Thymol release kinetics of sodium alginate based nanocomposite hydrogels

Meltem Kasapoglu Calik[a*], Murat Ozdemir[a]

[a]Department Of Chemical Engineering, Gebze Technical University

*meltem.kasapoglu@gtu.edu.tr

Abstract:

Hydrogels are three-dimensional hydrophilic networks that can absorb large amounts of water or biological fluids without dissolving. Hydrogels are mostly studied for the drug release and targeted delivery of bioactive substances in pharmaceutical, food and biomedical applications. Release kinetics studies are usually necessary to quantify and control the release of drugs and active agents effectively. Mathematical models based on molecular diffusion and rate kinetics provide a means to describe transport processes.

In this study, nanocomposite hydrogels based on sodium alginate (NaAlg) and poly(N-isopropylacrylamide) (PNIPA) crosslinked by inorganic nanoclay were synthesized by free radical solution polymerization. Thymol (5-Methyl-2-(propan-2-yl)phenol) was chosen as the antimicrobial agent. Thymol was incorporated into the hydrogels by immersing dried nanocomposite hydrogels into the aqueous thymol solution. The release behavior of thymol from the nanocomposite hydrogels containing different amounts of nanoclay was studied at pH=8 and 5°C. The concentration of thymol in the release medium was assayed by an UV-VIS spectrophotometer (Perkin Elmer Lambda 35, Waltham, MA, USA) at 277 nm based on the previously build calibration curve (R2=0.9991) in which the absorbance was plotted against known concentrations of thymol. Thymol transport mechanism and the effect of nanoclay content on thymol release kinetics were studied. The thymol transport mechanism was studied by fitting the experimental data to Higuchi, Ritger-Peppas and Peppas-Sahlin models. The thymol release mechanism was found to be non-Fickian (anomalous), and the release rate of thymol can be controlled by changing the nanoclay content in the hydrogels. Results showed that prepared nanocomposite hydrogels could be used as the drug delivery system in the pharmaceutical industry and as the antimicrobial releasing system in the food industry.

Keywords: Hydrogel, Nanocomposite, Release Kinetic

Treatment of Paper and Pulp Industrial Wastewater by Fenton Processes

Yeliz Asci[a], Sefika Kaya[a*]

[a]Eskisehir Osmangazi University

*sefikakaya@ogu.edu.tr

Abstract:

Nowadays, the pollution of water resources from the industries has become a serious environmental problem. Chlorine compounds which are difficult to dissolve biologically, which are used for bleaching in the paper and pulp industry, significantly increase the COD and color content of the wastewater. Chemical treatment is applied before biological treatment for removal of toxicity and organic charge from this type of wastewater. This study was performed to investigate the removal of COD and color from paper and pulp industry wastewater using the Fenton process. Optimal values of some parameters such as the pH, concentration of Fe(II) and H2O2 and temperature were investigated. pH of between 1.5 and 5, concentrations of Fe(II) and H2O2 between 50 and 400 mg/L and temperature between 20 and 50oC were chosen. It was found that pH of 3, Fe(II) and H2O2 concentrations of 250 mg/L and the temperature of 35oC were provided the best results. Removal of COD and color were achieved 57 and 70% respectively.

Keywords: Removal, fenton process, wastewater, paper and pulp.

U-Pb Geochronology, Petrochemistry and Sr-Nd-Pb Isotop Geochemistry of the Eocene Dikes in The Southern Part of Eastern Pontides (NE, Turkey)

Cem Yucel[a*], Emre Aydincakir[a], Mehmet Ali Gucer[a], Enver Akaryali[a]

[a]Gumushane University

*cemyucel@gumushane.edu.tr

Abstract:

U-Pb zircon age, major, trace element and Sr-Nd-Pb isotopic datas are presented for the Eocene volcanic rocks outcropped in Gumushane area of the Eastern Pontide orogenic belt (NE, Turkey). The studied volcanic rocks characterized by dikes emplacement mainly basalt, basaltic andesite and basaltic trachy-andesite in composition. Petrograhycially, they represented by presence of plagioclase (An42-97), clinopyroxene (Wo4-41En42-63Fs17-33), hornblend (Mg#= 45-78) phenocrysts and magnetit/titanomagnetite and apatite microphenocrysts with microloitic porphyritic, hyalo-microlitic porphyritic, glomeroporphyritic and poikilitic textures in lesser extent. U-Pb zircon (LA-MC-ICPMS) dating reveals that the volcanic rocks persisted for 45.89 ± 1.1 Ma, corresponding Middle Eocene (Lutetian). The volcanic rocks show calc-alkaline affinities and have high K contents. They are enriched in large ion lithophile (LILE) and light rare earth elements (LREE), with pronounced depleted of high field strength elements (HFSE). The chondrite-normalized REE patterns (LaN/LuN= 2-5) show low to medium enrichment, indicating similar sources for the volcanic rocks. Initial 87Sr/86Sr values vary between 0.7045 and 0.7054, while initial 143Nd/144Nd values change between 0.51258 and 0.51264. Initial 206Pb/204Pb values vary between 18.38 to 18.71, 207Pb/204Pb values 15.56 to 15.66 and 208Pb/204Pb values 38.41 to 38.81. The main solidification processes involved in the evolution of the volcanics consist of fractional crystallization with minor amounts of crustal contamination ± magma mixing. All evidence supports the conclusion that the parental magma(s) of the studied volcanic rocks probably derived from an enriched lithospheric mantle, previously metasomatized by fluids derived from subducted slab in a post-collisional geodynamic setting.

Keywords: Eastern Pontides, Sr-Nd-Pb isotopes, U-Pb zircon geochronology, Gumushane, Turkey

Use Of Solar Energy For High Altitude Telecommunication Balloons

Oznur Kayhan[a*], M. Alaittin Hastaoglu[a]

[a]Gebze Technical University - Chemical Engineering Department

*okayhan@gtu.edu.tr

Abstract:

Solar energy is the important energy resource for high altitude balloons (stratospheric balloons) which are unmanned and usually filled with helium or hydrogen which are lighter than air, generally reaching between 18.000-36.500 m or higher. However, up to now there was no balloon control model available that could carry large payloads at constant altitude without using ballast. A novel model of stratospheric balloon using transport phenomena (momentum, mass and heat transfer) and a gas compress-release system to keep it at constant altitude for a long time such as 485 days has been developed [1]. Such a system would have a huge potential since it could provide cheaper platform for experiments, telecommunication and observation for municipal, commercial, military and educational use than is currently available. High altitude operation for long durations requires a renewable based energy system and solar energy is one of the most critical aspects for power system design of high altitude balloons. This type of power system is a solar panel (photovoltaic array) combined with energy storage system. This work involves energy production by solar panel, its storage and use for long-life high altitude balloons. The results indicate that latitude and longitude of the balloon, time of the year affects the amount of solar radiation and the power output of the photovoltaic array. During the daytime, solar panel converts solar energy into electrical energy and during the night the energy storage system can provide power to the high altitude balloon.

[1] Kayhan, O., Hastaoglu, M. A., “Modeling of Stratospheric Balloon Using Transport Phenomena and Gas Compress-Release System”, Journal of Thermophysics and Heat Transfer, 28, 3, 2014, 534-541.

Keywords: High altitude balloon, solar energy, photovoltaic panel, energy storage

Medicinal Plants Commonly Used in Anatolian Folk Medicine

Belgin Cosge Senkal[a*], Cuneyt Cesur[a], Tansu Uskutoglu[a]

[a]Bozok Universitya

*bcosgesenkal@gmail.com

Abstract:

In times when medicine has not developed, the method people used to treat their diseases with their own special efforts is regarded as folk medicine. The public is constantly applying for various practices to treat existing diseases since ancient times. One of these practices is to make medicines from plants. Anatolia is a place where many peoples have settled and various civilizations have been established. For this reason, it has a rich culture and civilization. Also, folk medicine and medicines is a part of this richness. A large number of medicinal plants (Ecbalium elaterium, Sideritis sp., Salvia sp., Lauris nobilis, Malva neglecta, Tilia sp., Urtica dioica, Melissa officinalis, Foeniculum vulgare etc.) are used in Anatolian folk medicine. This wealth of Anatolia having more than ten thousand plant species diversity is of great importance for human health and treatment. Thousands of plant species that the medical aspect has not been discovered at present are held to promise great for diseases that are not yet treatable.

Keywords: Folk medicine, medicinal plants, Anatolia

A Study On The Grafting Of Different Table Grape Varieties On Different Rootstocks

Sadettin Gursoz[a*], Mehmet Ilhan Odabasioglu[a], Bekir Erol Ak[a]

[a]Harran University

*sado@harran.edu.tr

Abstract:

The use of new varieties in the newly established vineyard in the Sanliurfa province in recent years has increased significantly. Although saplings used in new vineyard were taken from different locations of Turkey, vineyards produced in nurseries in the Sanliurfa location is mostly preferred. This study was carried out in 2013 and it was aimed to determine the sapling combination performance of Red Globe, Honusu and Hatun Parmagi, which are used for table grape varieties and 99 R, 140 Ruggeri rootstocks vaccine sapling combinations. In the study, after callusing the shoots to create condition of the scion, the length of the shoots formed from the scion after callusing, level of root development, shoot development level, the site of graft's callus development level, coefficient of affinity I. class sapling efficiency and in the final stage of sapling yield was investigated. It was found that there was no difference between the rootstocks in terms of folding performance of the rootstock combinations examined in folding room. It has been determined that there is an inversely proportional relationship between root forming conditions in the rootstocks and decaying conditions in the rootstocks. Parallel results were obtained in terms of shoot development level and root development level. It was found that the best combination in terms of first class sapling production is 140 Ruggeri / Red Globe.

Keywords: Grape rootstock, grafting, affinity level, first-class sapling

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Effects Of Flavour Blend And Xylose On Acrylamide Formation In Different Cookie Recipies

Muhammet Arici[a*], Tulin Yakici[b]

[a]Yildiz technical University
[b]International Flavors and Fragrances Inc.

*muarici@yildiz.edu.tr

Abstract:

In this study, 9 different recipies were prepared in order to investigate the effects of flavour blend, xylose and caramel flavour that are important flavour components especially for flavour formation in bakery on acrylamide formation. Recipes were prepared by considering the different sugar and fat contents, different protein resources (whole egg powder: WEP, whey powder: WP) and also additional amino acids (glycine and lysine) and asparaginase enzyme in order to decrease the acrylamide formation. All cookie recipes were baked at 190±10oC for 5 minutes in same conditions. Acrylamide analyses results showed that flavour blend and xylose were increased the acrylamide concentration in each recipe. Recepies prepared with 50% and 100% sugar removal decreased the acrylamide due to decrement in sugar levels and 50% fat reduced recipe decreased the acrylamide due to reduced lipid oxidation and using WEP, WP showed less acrylamide than skimmed milk powder whereas addition of glycine and lysine reduced the acrylamide due to the competition with asparagine the main precursor of acrylamide and finally addition of asparaginase enzyme showed the biggest acrylamide reduction up to 93% as it destroys the asparaginase. This study shows that the alterations in flavour recepies result in the decrement of the acrylamide content of bakery products.

Keywords: Acrilamide, Asparaginase, Biscuits, Maillard reaction

Physicochemical, Phenolic And Anthocyanin Characterization Of The Tulips Waste As A Potential Of Natural Colorant

Muhammet Arici[a*], Osman Sagdic[a], Salih Karasu[a], Mustafa Cam[b], M. Zeki Durak[a]

[a]Yildiz Technical University
[b]Erciyes University

*muarici@yildiz.edu.tr

Abstract:

Tulip flowers (Tulipa gesneriana L.) are used as ornamental flower grown their bulb. Tulip petals are considered as an important plant waste after obtaining their bulb. Aim of this study was to investigate potential use of tulip waste as a natural colorant. For this aim, physicochemical properties namely water activity (aw), pH, color (L*, a*, b*) and antioxidant capacity value (DPPH%), anthocyanin and phenolic profile of the 15 different Tulip species were investigated. Significant differences were observed from the physicochemical properties results. Generally samples consisting of higher total phenolics showed higher DPPH values. Individual phenolic distribution varied according to Tulip species and quercetin glucoside and quercetin 3 rhamnoside were found to be as major phenolic compound. Total anthocyanin content (TAC) significantly differed from sample to sample and ranged from 16.496 to 2173.652 mg/kg. Species of the Quen of Night showed highest TAC value. Delphinide and cyanide derivatives was found as major anthocyanin compound. This study suggested that tulip petal had considerable amount of anthocyanin and could be utilized as a natural colorant.

This work is supported by TUBITAK (Project number: 5130023)

Keywords: Tulip petals, anthocyanin, phenolic, colorant, delphinidin, cyanidin

A Histopathological Study of Hexamitosis in Farmed Rainbow Trout (Oncorhynchus mykiss) Fry in Turkey

Oznur Diler[a], Oznur Gormez[a], Abdullah Diler[b]

[a]Aquaculture
[b]Fishing And Processing Technology

*oznurgormez@sdu.edu.tr

Abstract:

The intestinal infection of fish by many parasites can cause severe morbidity and mortality The hexamitosis, caused by Hexamita salmonis is the most frequent internal flagellate parasitosis of fish, particularly in the young salmonids. In this study, the flagellated parasitic protozoan H. salmonis were found in the upper intestine in large numbers in the farmed rainbow trout fry in Isparta-Turkey. In histological examinations, invasion of the intestine epithelium by the parasites and severe necrotizing of enteric mucosal epithelium and perforation of the serosal surface was observed.

Keywords: Oncorhyncus mykiss (rainbow trout), Hexamita salmonis, parasites

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Determination of mineral matter change of wild sour apple (Malus sylvestris MILLER) naturally found in Bayburt province according to different drying methodes

Ozlem Cakir[a*], Kubra cakiroglu[a], Hilal Yildiz[b], Ayla arslaner[a]

[a]Bayburt University, Bayburt, Turkey

[b]Nevsehir Haci Bektas Veli University, Nevsehir, Turkey

*hilalyildiz@nevsehir.edu.tr

Abstract:

Most of the edible wild fruit species grown in our country are used by local people for different purposes. One of the most important of these species is the apple known to have been used since ancient times. Apple, which is used both freshly and as a raw material in many food products, has an important share in the Turkish and the world fruit production. In this research, sour apple (Malus sylvestris MILLER), which is abundantly found in Bayburt province and added to tea by the people of the province due to its aromatic properties, was first dried using lyophilization, infrared drying, oven drying and room temperature drying methods then the mineral contents of the product were compared at the end of the process. While Fe, Mn, Zn could not be detected in samples, Ca values measured in the lyophilized, oven dried, infrared dried and room temperature dried apple samples were 2332.71, 2092.34, 1589.54 and 1186.99 ppm, respectively, Ca value was found to be 365.94 ppm in fresh apples. The Mg value was the highest in the lyophilized dried apples with a value of 792.94 ppm, and the lowest with a value of 541.64 ppm in the dried apples under room conditions. The content of Cu was found to be between 10.37 ppm (lyophilized apple) and 2.22 ppm (Infrared dried apple). Similarly, Na and K values were the highest in the lyophilized apples with 3544,20 and 10564,30, respectively. The lowest values were found in the infrared dried apples. The statistical difference between the drying methods and the mineral matter content was determined ($p<0.05$).

Keywords: Bayburt, Malus sylvestris, mineral matter

Variation of Nutrient Compositions Depent on Seasonal, Size and Sex of Freshwater Crayfish (Astacus leptodactylus Eschscholtz, 1823) from Lake Eğirdi

Seval Bahadir Koca[a*], Nalan Ozgur Yigit[a], Ibrahim Diler[a], Esra Argun Uzunmehmetoglu[a]

[a]University of Suleyman Demirel

*sevalkoca@sdu.edu.tr

Abstract:
Single and multiple effects of single and together of seasonal variation, sex and length on proximate composition and fatty acid profiles of freshwater crayfish (Astacus leptodactylus Esch, 1823) (total 160) caught from the Lake Eğirdir, were investigated on a factorial level. According to the results of biochemical analysis, effects of seasons and interaction of sex/length were determined on crude protein levels. Crude ash levels changed depending on sex and seasons, moisture levels changed depending on seasons/length interaction. There were no effects interactions from these three factors on the crude fat level.Linoleic acid (C18:2 n6, LA), linolenic acid (C18:3 n3, α-LNA), aracidonic acid (C20:4 n6, ARA), eicosapentaenoic acid (C20:5 n3, EPA) and docosahexaenoic acid (C22:6 n3, DHA) were found to be dominant fatty acids in polunsaturated fatty acids (PUFAs) in freshwater crayfish. Bilateral interaction were significant on α-LNA, ARA, EPA, DHA, PUFA and HUFA while together effects of three factors were remarkable on LA and MUFA.

Keywords: Keyword: freshwater crayfish, Astacus leptodactylus, biochemical composition, fatty acid

VIRTUAL VIDEO PRESENTATIONS

A Fully Integrated Ultra-Low Power LNA in 65nm Cmos Technology Suitable For Sensor Network Applications

Hakan Dogan[a*]

[a]Istanbul Sehir University

*hakandogan@sehir.edu.tr

Abstract:

Ultra-low power and low cost transceiver design has been the focus of both the research and development community recently. These designs are mostly aimed for IoT applications, medical sensor technologies (Personal/Body Area Networks-PAN/BAN) and sensor networks for smart homes/cities. These solutions are used in large numbers and usually require autonomous operation for long periods of time, hence they need to be cheap and the need to replace or charge the power source must be minimized. In order to reduce the power dissipation with the same current amount, usually the supply voltage is reduced in such designs. CMOS is the preferred technology for low power and low cost solutions since it is widely available and suitable for high integration.

In this work, an ultra-Low power LNA to be used in the above mentioned applications is presented. The fully-integrated LNA is designed in 65nm digital CMOS technology and uses two on-chip spiral inductors at the input for matching and at the output for resonating the load capacitor. The design uses a native device (zero threshold) for the cascode transistor, which enables the use of a reduced supply voltage of 0.5V and the amplifier only consumes 100 µW. Simulated voltage gain at the operation frequency of 2.4GHz is 22.6dB and the Noise Figure at the same frequency is 4.95dB. The design achieves mostly resistive matching at the center frequency with a S11 value less than -20dB. IIP3 for the LNA is -16dBm, which is suitable for such ultra-low power applications.

Keywords: CMOS, LNA, Ultra-Low Power, Sensor Networks, IoT, 2.4GHz

An Experimental Study For Different Shaped Aluminum Fins In Air Cooled Concantrated Photovoltaic Thermal (C-PVT) System

Gokhan Omeroglu[a], Ilhan Volkan Oner[b*]

[a]Ataturk University, Engineering Faculty, Erzurum, Turkey
[b]Ataturk University, Pasinler Vocational School, Erzurum, Turkey

*ivoner@atauni.edu.tr

Abstract:

Today, as clean energy sources increase in importance from day to day, the necessity of using energy in maximum efficiency is of great importance. Solar energy is at the forefront of clean energy sources. The amount of energy that reaches earth with radiation from the sun is much higher than the amount of energy used in the world. For this reason, studies on solar energy continue to increase today. There are two types of solar energy utilization systems: thermal and photovoltaic. The aim of this study is to convert the heat generated by absorbance of solar radiation during the working regime of photovoltaic systems, which reduce the electrical efficiency of the system, into useful energy. When this process is carried out, the heat transfer surface area of the photovoltaic system has been increased by means of aluminum fins fixed to the installed setup, and high heat transfer rates have been reached with forced convection. The surface temperature of the regular photovoltaic unit was about 120ºC, while the photovoltaic voltage was 14V. After the system was started, the voltage has risen approximately to 19V. In addition to the achieved increase in electrical efficiency, relatively high level of thermal energy, the amount of which varies with the shape and the surface area of the aluminum fins, was obtained.

Keywords: Concantrated Photovoltaic Thermal (C-PVT) System, Air Cooled

Biodegradation Of Aromatic Compounds Under Mixed Electron Acceptor Conditions

Abdullah Kizilet[a], Ozer Cinar[b*], Amar Cemanovic[c]

[a]Kahramanmaras Sutcu Imam University
[b]Yildiz Technical University
[c]Istanbul Technical University

*ozercinar@gmail.com

Abstract:

A critical step in aromatic compound biodegradation is cleavage of the benzene ring. The nature of the ring cleavage reactions and many of the peripheral reactions leading to them, as well as many reactions involved in the aerobic and anoxic electron transport chains (ETC), depend on the oxidation state of the environment in which biodegradation is occurring. If molecular oxygen is present, then many of the peripheral and ring cleavage reactions are oxidative and involve molecular oxygen as a reactant. In addition, different types of cytochrome oxidases involved in the aerobic ETC are expressed, depending on the level of dissolved oxygen (DO) in the environment. On the other hand, if molecular oxygen is absent, the ring cleavage reactions are reductive and require a different set of enzymes. Different peripheral reactions are also required. In addition, the expression of the nitrogen oxide reductases involved in the anoxic ETC is strongly dependent upon the oxidation state of the environment and the nitrogen oxides present. During biodegradation of aromatic compounds under mixed electron acceptor conditions, microorganisms prefer oxygen over nitrate because of its higher energetic efficiency. In addition, oxygen is preferentially used by cytochrome oxidases rather than by oxygenases because of the higher affinity of cytochrome oxidases for oxygen.

Keywords: Aromatic compounds, Benzoyl-CoA reductase, Benzoic acid, nitrite reductase, nitrate reductase

Degration and Stabilization of Organic Solar Cells

Efe Cetin Yilmaz[a], Muhammet Kaan Yesilyurt[a], Ilhan Volkan Oner[a*], Ahmet Numan Ozakin[a]

[a]Ataturk University

*ivoner@atauni.edu.tr

Abstract:

Recently, Organic solar cells (OSC) have been increasingly utilized all over the world. The changes made in the organic components of the organic solar cells enable them to exhibit good features such as mechanical flexibility, lightness and high power generation efficiency even under lower light intensities. However, operational stability is an important parameter for organic solar cells. Despite the aforementioned advantages of organic solar cells, degradation in operational environments limits their use in harsh conditions. Studies have shown that the organic layer and the cathode layer of the OSCs are degraded by external factors, and this adversely affects the operational stability and productivity of OSCs considerably.

The overall efficiency of an organic solar cell is defined as a function of life cycle and efficiency of energy generation. Therefore, the shorter the life cycle becomes, the lesser the overall efficiency of OSCs gets. Recent studies are focused on improving the operational stability and power generation efficiencies of OSCs by reducing the effects degradation induced by external factors, such as climatic conditions and thermal fatigue. The purpose of this study is to assess how organic solar cells work, how they degrade from external factors, such as water and water vapor, and how these parameters affect the operational stability as well as the efficiency of the organic solar cells.

Keywords: degradation, efficiency of organic solar cells, stability, life-cycle of oscs

DFT/TDDFT ANALYSIS of [Mn(CO)3(bpy)L]X TYPE PhotoCORMs

Elvan Ustun[a*]

[a]Ordu University

*elvanustun77@gmail.com

Abstract:

Carbon monoxide (CO) known as a toxic gas is synthesized endogenously in a certain ratio in human body and the ratio of the carbon monoxide increases in case of illness [1]. The studies show that endogen increase of the CO amount in a tissue plays role in eliminating the problem and regulating the intracellular functions [2]. Therefore, exogenous CO supplement can be an effective therapeutic way in solving the problem. Safe transmission of appropriate amount of CO to the tissue is crucial, and one of the most promising candidates for this mission is metal carbonyl complexes. There are various ways to ensure CO-release, one of which is to irradiate some complexes with UV-light with certain wavelength. These kinds of dark-stable and light-sensitive complexes are called as photoCORMs [3]. Irradiation into the low-lying MLCT bands may give rise to photodissociation of carbonyl ligand. An understanding of the photochemistry of transition metal compounds requires knowledge of the properties of molecular orbitals, spectra and appropriate excited states. DFT also played a crucial role in the characterization of the excited states [3]. The time-dependent DFT approach (TDDFT) offers a rigorous route to the calculation of electronic excitation spectra.

DFT/TDDFT analysis of [Mn(CO)3(bpy)L]X (bpy: 2,2-bipyridyl; L: N-benzylbenzimidazole, N-4-methylbenzylbenzimidazole, N-2,4,6-trimethylbenzylbenzimidazole; X: SO3CF3, PF6) complex has been made with ORCA package program by BP86 and B3LYP functional for obtaining the optimized geometries, electronic transitions that promote CO-release.

This work by Scientific and Technological Research Council of Turkey (TUBITAK, Project No: 112T320) is gratefully acknowledged.

Keywords: PhotoCORMs, manganese carbonyl complexes, DFT/TDDFT

Manganese Carbonyl Complexes with Imidazole Ligands as New Photoactivatable CO-Releasing Molecules

Elvan Ustun[a*], Mutlu Sonmez Celebi[a]

[a]Ordu University

*elvanustun77@gmail.com

Abstract:

The odorless, tasteless, and colorless gas CO is one of the most tested molecules in mammalian metabolism pathways. CO was defined as a “silent killer” due to its stronger affinity for hemoglobin than oxygen. In fact, CO is naturally produced in living organisms by the action of heme oxygenase enzymes. It has been also shown to have an appreciable role in preclinical animal models of cardiovascular disease, inflammatory disorders, and organ transplantation [1, 2]. Safe transmission of appropriate amount of CO to the tissue is crucial, and one of the most promising candidates for this mission is metal carbonyl complexes. The work on CO intensified, metal carbonyl complexes which have been accepted major for storing and transporting CO are antiinflammatory, antiapoptotic, and antiproliferative, protects tissues against hypoxia or ischemia–reperfusion injury, and causes vasodilatation [2]. Synthesis new metal carbonyl complexes having more advantageous half-life and more totally released CO have gained significant attention. There are various ways to ensure CO-release, one of which is to irradiate some complexes with UV-light with certain wavelength [3]. These kinds of dark-stable and light-sensitive complexes are called as photoCORMs and manganese derivative carbonyl complexes are promising candidates for photoactivatable CO releasing complexes. [Mn(CO)3(bpy)L]PF6 [bpy:2,2-bipyridyl, L:N-phenylimidazole, N-4-chlorophenylimidazole] type manganese complexes with benzimidazole derivative ligands have been synthesized. The structures of the compounds were enlightened by 1H-NMR, 13C-NMR, IR, LC-MS, and elemental analysis. CO-releasing properties have also been analyzed.

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Keywords: PhotoCORMs, manganese carbonyl complexes, CO-releasing molecule

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