# Proceedings of the International Conference on Technology and Science

**Volume 2**
Techno-Science 2019

**Editor**
Afşin GÜNGÖR

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Ali AKYÜZ

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**International Conference on Technology and Science**

**November 14-16, 2019**
Burdur

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Prof. Dr. Afşin Güngör Dean of Bucak Technology Faculty

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Cihanşah AĞ Akdeniz University
Bilgen TAŞDOĞAN Aksaray University
İbrahim BAŞARAN Turkish-German University

**Invited Speakers**

| | |
|---|---|
| Dr. Abdülkadir Balıkçı | Chairman of TÜBİTAK MAM Energy Institute, Turkey |
| Dr. Mehmet Günal | Ankara Hacı Bayram Veli University, Turkey |
| Dr. Mehmet Karagül | Burdur Mehmet Akif Ersoy University, Turkey |
| Dr. Yılmaz Şimşek | Akdeniz University, Turkey |
| Dr. Serdar Altınok | Ankara Hacı Bayram Veli University, Turkey |
| Dr.Faraz afshari | Erzurum Technical University |
| Dr. Atta Ullah | Pakistan Institute of Engineering and Applied Sciences, Pakistan |
| Dr. Shaharin A.B. | Sulaiman Universiti Teknologi Petronas, Malaysia |
| Dr. Feng Xin | Tianjin University, China |
| Dr. Kishore Kumar Devarepally | Univerzita Hradec Kralove, Czechia |
| Dr. Jan Loskot | Univerzita Hradec Kralove, Czechia |
| Dr.Farzad Afshari | University of Turkish Aeronautical Association, İran |
| Murat Çataklı | Deutsche Gesellschaft für Sonnenenergie e.V. LV Berlin-Germany |
| Dr.Ceren Karaman | Pamukkale University, Turkey |

**Congress Journals**

Materiali In Tehnologije / Materials And Technology (SCI-E)
Tehnički glasnik / Technical Journal (E-SCI)
International Journal of Renewable Energy Development (IJRED) (E-SCI)
Journal of Mehmet Akif Ersoy University Economics and Administrative Sciences Faculty (MAKU IIBFD) (E-SCI)
Turkish Journal of Agriculture - Food Science and Technology(International Index)
International Advanced Researches and Engineering Journal (International Index)
Journal of Energy Systems
Scientific Journal of Mehmet Akif Ersoy University (Techno-Science) (SJMAKEU)
Journal of Applied Sciences of Mehmet Akif Ersoy University (MAKUFEBED)
International Journal of Automotive Science and Technology (IJASTECH)
El-Cezeri Journal of Science and Engineering (ECJSE) (TR-Dizin)

**Congress Language**

English and Turkish

**Congress Webpage**

www.techno-science.org

**Congress Venue**

Burdur Mehmet Akif Ersoy University Lavanta Tepesi Hotel / Burdur

# SCHEDULE OF SESSIONS

*Session 1, Hall 1, November 14, 2019 (Thursday)*

| | |
|---|---|
| *09:30-10:00* | *Keynote address* |

*Session 2, Hall 1, December 14, 2018 (Thursday)*

| | |
|---|---|
| *10:00-12:30* | *Dr. Afşin Güngör*<br>*Akdeniz University, Engineering Faculty, Antalya,Turkey* |
| | *Dr. Abdülkadir Balıkçı*<br>*Chairman of TÜBİTAK MAM Energy Institute, Turkey* |
| | *Dr. Yılmaz Şimşek*<br>*Akdeniz University, Faculty of Science Department of Mathematics, Antalya,Turkey* |
| | *Dr.Ceren Karaman*<br>*Pamukkale University, Chemical Engineering,Denizli,Turkey* |
| *Chair* | *Dr. Yılmaz Şimşek* |

*Session 3, Hall 1, November 14, 2019 Thursday*

| | |
|---|---|
| *13:30-14:30* | *Effect of blending ratio and catalyst loading on co-gasification*<br>*Dr. Shaharin A.B. Sulaiman*<br>*Sulaiman Universiti Teknologi Petronas, Malaysia* |
| | *Overview of computational fluid dynamics modeling and simulation of biomass particles*<br>*Dr. Atta Ullah*<br>*Pakistan Institute of Engineering and Applied Sciences, Pakistan* |
| | *Kinetics on ultra-deep catalytic hydrotreating of diesel*<br>*Dr. Feng Xin*<br>*Tianjin University,China* |
| *Chair* | *Dr. Afşin Güngör* |

*Session 4, Hall 1, November 14, 2019 (Thursday)*

| | |
|---|---|
| *14:40-15:40* | *Investigation of graphene and tin selenide related materials for their potential application in dye sensitized solar cells*<br>*Dr. Kishore Kumar Devarepally*<br>*Univerzita Hradec Kralove, Czech Republic* |
| | *Analysis of soot microparticles in the environment by using Raman spectroscopy*<br>*Dr. Jan Loskot*<br>*Univerzita Hradec Kralove, Czech Republic* |
| | *Integration of renewable energy resources in energy management systems in buildings*<br>*Murat Çataklı*<br>*General Manager, Çataklı Energy, Germany* |
| *Chair* | *Dr. Bekir Can Lütfüoğlu* |

*Session 5, Hall 1, December 14, 2019 (Thursday)*

| | |
|---|---|
| *15:50-16:50* | *ID: 125 Size-based Separation of Solid Particles in Air by a Phononic Crystal Linear Waveguide*<br>*Huriye Çiçek* |
| | *ID: 113 Computer simulation of thermo-acoustic interaction*<br>*Fatih Selimefendigil, Hakan F. Öztop* |
| | *ID: 114 Control of forced convection of nanofluid in a cavity with inlet and outlet ports by using an adiabatic obstacle and magnetic field effects*<br>*Fatih Selimefendigil, Hakan F. Öztop* |
| | *ID: 333 Biogas and Electrical Energy from Animal Manure: The Case of Burdur Province*<br>*Kazım Kumaş, Ali Akyüz, Onur İnan* |
| | *ID: 188 Anchoring energy of a nematic liquid crystal display*<br>*Presenter: Rıdvan Karapınar* |
| | *ID: 192 Thermodynamic Analysis of A Geothermal Power Plants Using CO2*<br>*Presenter: Arif Emre Özgür* |
| | *ID: 181 Suction Pipe Diameter Determination for a Heat Pump Using R32*<br>*Presenter: Arif Emre Özgür* |
| *Chair* | *Dr. Onur Karaman* |

*Session 6, Hall 1, December 14, 2019 (Thursday)*

| | |
|---|---|
| *17:00-18:00* | *ID: 168 Investigation of Cooling Performance of Nanofluids on Unmanned Air Vehicles*<br>*Mustafa Kılıç, Mehmet Yanardağ* |
| | *ID: 163 Evaluation of Public Transportation Based Optimization System at Signalized Intersections*<br>*Çagdas Kara, Kemal Armağan* |
| | *ID: 162 A Review for Sensitivity Analyses on Isparta State Highways According to Mechanistic Empirical Pavement Design Method*<br>*Kemal Armağan, Mehmet Saltan, Serdal Terzi, Nevzat Kıraç* |
| | *ID: 307 Performance Analysis of Pakistan Super League Players Using Principle Component Analysis Approach*<br>*Ishrat Riaz, Noureen Mushtaq, Mir Muhammad Jillani, Dr.Uzma Nawaz* |
| | *ID: 161 A Review for The New Technological Developments in Highway Pavements*<br>*Kemal Armağan, Sadik Alper Yildizel, Mehmet Uzun, Gokhan Calis* |
| | *ID: 218 Effects Of Refrigerants On The Coefficient Of Performance (Cop) Of Vapor Compression Refrigeration System*<br>*Bayram Kılıç, Osman İpek* |
| *Chair* | *Dr. Mustafa Kılıç* |

*Session 7, Hall 1, November 15, 2019 (Friday)*

| | |
|---|---|
| *09:15-10:30* | *ID: 210 In vitro Study of Cytotoxic Activity of ZnO-PEG-DOX on SaOS-2 Cells*<br>*Ayca Tas, Gülsen Güclü, Nese Keklikcioglu Cakmak, Yavuz Silig* |
| | *ID: 246 Investigation of Anticancer Effect of Micronized Zeolite Clinoptilolite on Saos-2 Cell Line*<br>*Gülşen Güçlü, Neşe Keklikçioğlu Çakmak, Ayça Taş* |
| | *ID: 209 Anti-Cancer Activity of ZnO-PEG-PTX Nano-Carrier-Based Drug on Osteosarcoma Cell Lines*<br>*Gülşen Güçlü, Ayça Taş, Neşe Keklikçioğlu Çakmak, Yavuz Siliğ* |
| | *ID: 150 Investigation of The Antitumor Properties Of 5- Amino-4-Hetarylazo-3-Methyl-1h-Pyrazole By Molecular Docking Study*<br>*Barış Sezgin, Çiğdem Karabacak Atay, Bülent Dede, Tahir Tilki* |
| | *ID: 178 Use of 2,2-dimethyl-5-(p-tolydiazenyl)-1,3-dioxane-4,6-dione in heavy metal removal by the method of liquid-liquid extraction*<br>*Mahri Nurmyradova, Bülent Dede, Tahir Tilki, Çiğdem Karabacak Atay* |
| | *ID: 266 Eco-friendly synthesis of zinc oxide nanoparticles using Zingiber officinale root extract and its biosensing application*<br>*Presenter: Soner Dönmez* |
| *Chair* | *Dr. Ali Akyüz* |

*Session 8, Hall 1, November 15, 2019 (Friday)*

| | |
|---|---|
| *10:45-11:50* | *ID: 294 Anti-metastatic activity and anti-proliferative activity of biologically synthesized silver nanoparticles on human colon adenocarcinoma cell line HT29*<br>*Çiğdem Aydın Acar, Suray Pehlivanoğlu* |
| | *ID: 149 Theoretical Investigation of Toxicity and Druglikeness Properties of 2-((2-amino-4,6-dimethylpyrimidine- 5yl)diazenyl)benzoic acid*<br>*Merve Gökalp, Çiğdem Karabacak Atay, Tahir Tilki, Bülent Dede* |
| | *ID: 179 Theoretical pharmaceutical similarity and pharmacokinetic properties of 5,5-dimethyl-2-(p-tolyldiazenyl) cyclohexane- 1,3-dione*<br>*Shahodat Irmuminova, Tahir Tilki, Çiğdem Karabacak Atay, Bülent Dede* |
| | *ID: 123 The Effect of Crack on The Natural Frequency and Critical Buckling Load For A Thin Plate*<br>*Özgür Sayer, Hasan Öztürk, Can Gönenli* |
| | *ID: 121 Orman Yolları Erozyon İlişkisinin Değerlendirilmesi*<br>*Nilüfer Yazici, Ahmet Alper Babalik, İbrahim Dursun* |
| | *ID: 117 Fashion Classification Using 2-Channel Deep Convolutional Neural Network*<br>*Ahmet Ali Süzen, Remzi Gürfidan, Kıyas Kayaalp* |
| *Chair* | *Dr. Melike Şişeci Çeşmeli* |

*Session 9, Hall 1, November 15, 2019 (Friday)*

| | |
|---|---|
| *14:00-15:00* | *ID: 173 A Comparative Finite Element Stress Analysis Of Isotropic Matrix And 3D Printed PLA Material*<br>*Koray Özsoy* |
| | *ID: 206 Effects of Heat Treatment Procedure on Mechanical Properties of Metastable Beta Titanium Alloys*<br>*Nihal Yumak* |
| | *ID: 185 Toz Metalurjisi Yöntemi ile Üretilmiş Al/B4C Takviyeli Aluminyum Metal Matriksi Kompozit Malzemelerin Sabit Yük Altında Aşınma Direncinin İncelenmesi*<br>*İsmail Topcu* |
| | *ID: 251 A Review of Indoor and Outdoor Solar Drying Methods for Wastewater Treatment Sludges*<br>*Hayriye Işıl Ünlü, Emine Sayılgan* |
| | *ID: 212 Phase stability of in situ synthesized MAX phase*<br>*Bilge Yaman Islak* |
| | *ID:334 Determination of Biogas Energy Potential from Agricultural Wastes in Isparta*<br>*Kazım Kumaş, Ali Akyüz, Nurullah Gültekin, Onur İnan* |
| | *ID: 299 The Estimation of Global Solar Radiation for Burdur City*<br>*Recep Külcü* |
| *Chair* | *Dr. Recep Külcü* |

*Session 10, Hall 1, November 15, 2019(Friday)*

| | |
|---|---|
| *15:10-16:10* | *ID: 101 Extreme Learning Machine for Local Range for Fine Image Registration*<br>*Mohamed Galaleldin Ali Elobaid, Yavuz Şenol* |
| | *ID: 290 Analysis of Energy Consumption in Micro-drilling Processes*<br>*Sevim Büşra Arkin, Tuğçe Tezel, Volkan Kovan* |
| | *ID: 289 Nickel Based Super Alloys Used in the Field of Energy and Technological Expectations*<br>*Nazli Askin Arikan, Volkan Kovan, Tuğçe Tezel* |
| | *ID: 282 Dielectric properties and ac conductivity of the Au/n-Si (MS) capacitor with different rate Gr-doped PVA interlayer*<br>*Yosef Badali* |
| | *ID: 297 Burdur İlinin Hayvan Gübrelerinden Biyogaz ve Kompost Üretim Potansiyelinin İncelenmesi*<br>*Furkan Bural, Recep Külcü* |
| | *ID: 298 Havuç dilimlerinin farklı mikrodalga güç yoğunluklarında kurutulması*<br>*Anıl Albayrak, Recep Külcü* |
| *Chair* | *Dr. Erkan Dikmen* |

*Session 11, Hall 1, November 15, 2019(Friday)*

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|---|---|
| *16:20-17:30* | *ID: 115 CFD investigation of pulsating nanofluids flow over a cam-shaped tube bank*<br>*Ünal Akdağ, MelikeYukselturk, Selma Akcay* |
| | *ID: 102 The idea of an Engine Running both Four-Stroke and Six-Stroke: A Simple Mechanism Proposal with an Innovative Approach*<br>*Emre Arabacı* |
| | *ID: 120 Nano katkıların polimerlerin yük altında eğilme (HDT) sıcaklık değerlerine etkisi*<br>*Alim Kaştan* |
| | *ID: 269 Kömür bazlı bir termik santralinin ekserji analizi*<br>*Arzu Şencan Şahin, Erkan Dikmen, Ebru Bayraktar* |
| | *ID: 187 Yakın Geleceğin Öncü Teknolojileri: Nanoteknoloji ve Yapay Zekâ*<br>*Melike Şişeci Çeşmeli,İhsan Pençe* |
| | *ID: 312 Elektro Lif Çekim Yöntemi İle Biyobozunur Polikaprolakton (PCL) Nanoliflerin Optimizasyonu ve Üretimi*<br>*Mustafa Geysoğlu, Funda Cengiz Çallioğlu* |
| | *ID: 279 Biyouyumlu Polivinilpirolidon (PVP) Esasli Nanoliflerin Üretimi*<br>*Hülya Kesici Güler, Funda Cengiz Çallioğlu* |
| *Chair* | *Dr. Ünal Akdağ* |

*Session 12, Hall 1, November 16, 2019 (Saturday)*

| | |
|---|---|
| *09:00-10:00* | *ID: 259 Removal and Classification of Micropollutants*<br>*Bahar İkizoğlu* |
| | *ID: 148 Estimation of jumping performances of soccer players by using Artificial Neural Network*<br>*Emre Çomak, Özlem Kılıç* |
| | *ID: 196 Effect of Blending Ratio during Co-Combustion of Chicken Manure and Turkish Lignite with Thermogravimetry*<br>*Remzi Akman, Selin Armakan, Sema Yurdakul, Barış Gürel, Murat Varol, Habib Gürbüz* |
| | *ID: 103 Effects of various fire retardants on fire and technological properties of oriented strandboard*<br>*Nadir Ayrılmış* |
| | *ID: 106 Nanocellulose as a green and sustainable material for biocomposite industry*<br>*Nadir Ayrılmış* |
| | *ID: 256 İçme sularında Mineral Bazlı Sağlık Risk Yaklaşımı*<br>*F. İlter Türkdoğan, Bahar İkizoğlu* |
| *Chair* | *Dr.Sema Yurdakul* |

*Session 13, Hall 1, November 16, 2019 (Saturday)*

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|---|---|
| *10:10-11:10* | *ID: 237 Türkiye'de Üretilen Bazi Tarim Makinalarinda Kullanilan Malzemeler ve İmalat Yöntemleri*<br>*Deniz Yilmaz* |
| | *ID: 219 Renewable Energy: An Essential Resource due to the Environmental Effects of Fossil Fuels*<br>*Bahar İkizoğlu* |
| | *ID:335 Determination of N and P Pollution from Animals for Burdur,Turkey*<br>*Kazım Kumaş, Ali Akyüz, Onur İnan* |
| | ID: 108 Effect of tree species used in the core layer on technological properties of three-layer fibreboard<br>*Nadir Ayrılmış, Turgay Akbulut* |
| | *ID: 277 Hava Fazlalik Katsayisi Değişiminin Fuzel Yağı/N-Heptan Kullanilan Bir Hcci Motorda Yanma Karakteristiklerine Etkisinin Deneysel İncelenmesi*<br>*Bilal Aydoğan* |
| | *ID:342 Health Information Systems Technician Programs and Their Current Status*<br>*Erkan Atalay* |
| *Chair* | *Dr. Nadir Ayrılmış* |

*Session 14, Hall 1, November 16, 2019 (Saturday)*

| | |
|---|---|
| *11:20-12:20* | *ID: 195 Effect of Temperature and Holding Time on Pine Wood and Rose Pulp Torrefaction*<br>*Büşra Çetinkaya, Kamil Ekinci, Mihriban Civan, Sema Yurdakul* |
| | *ID: 265 Redesign of Development Board for Engineering Education*<br>*Kemal Erdoğan* |
| | *ID: 264 Güneş Kolektörlerinde Farklı Örtü Malzemelerinin Kullanımı*<br>*Çisil Timuralp, Zerrin Sert* |
| | *ID: 227 Investigation of efficiencies of linear and SMPS power supplies in thermoelectric cooler systems*<br>*Osman Yeler, Yalçın Bulut, Mehmet Feyzi Köseoğlu* |
| | *ID: 228 Investigation of thermal and hydraulic performance of evaporative cooler with thermoelectric cooling cabinet*<br>*Mehmet Fevzi Köseoğlu, Anıl Gündüz* |
| | *ID: 280 Analysis of Perceived Service Quality and Customer Satisfaction in the Aviation Sector with Artificial Neural Networks*<br>*Sedat Metlek, Tülay Özkan* |
| *Chair* | *Dr. Ali Akyüz* |

*Session 15, Hall 1, November 16, 2019 (Saturday)*

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|---|---|
| *12:30-13:30* | *ID: 306 Rasyonel Davranıştan Eko-İnovatif Davranışa Yönelik Eğilimler*<br>*Gözde Toprakcı Alp,İhsan Pençe,Azim Doğuş Tuncer,Afşin Güngör* |
| | *ID: 305 Enerji ve Çevre Politikalarının İşgücü Piyasası Açısından Analizi: TR61 Bölgesi Örneği*<br>*Gözde Toprakcı Alp* |
| | *ID:346Testing of New design of Mesh-coupled Axial Blade Distributor for Swirling Fluidization Operation*<br>*Muhammad Yasin Naz, Shazia Shukrullah, Shaharin Anwar Sulaiman, Afsin Gungor* |
| | *ID: 111 Effect of tilt angle on PV front glass and tedlar temperature*<br>*Faraz Afshari, Adnan Sözen, Ataollah Khanlari,, Ceylin Şirin, Yaşar Can Bilge, Afşin Güngör* |
| | *ID:315 Molecular imprinted sensor including gold nanoparticles/polyoxometalate/ two-dimensional hexagonal boron nitride nanocomposite for epinephrine recognition*<br>*Onur Karaman,Ceren Karaman, Necip Atar, Mehmet Lütfi Yola* |
| | *ID: 133 Thermal performance improvement of an indirect solar dryer with flush-seamed tube-type absorber with use of aluminum wool*<br>*Adnan Sözen, Fikret Şinasi Kazancıoğlu, Azim Doğuş Tuncer, Ataollah Khanlari, Yaşar Can Bilge, Ceylin Şirin, Afşin Güngör* |
| | *ID: 220 The investigation of main electrical parameters and conduction mechanisms of Al/p-Si (MS) structures with various Zn3%-PVA interfacial layer thickness*<br>*Yosef Badali* |
| | *ID-332- Reaction Cross-Section Calculations of Fe Isotopes at Alpha Induced Reactions*<br>*Hasan Özdoğan, Mert Şekerci, Abdullah Kaplan* |
| *Chair* | *Dr.Hasan Hüseyin Aksu* |

*Session 16, Hall 1, November 16, 2019 (Saturday)*

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|---|---|
| *13:45-14:45* | *ID: 155 The Prediction of Ash-Related Issues during Agro-Waste Combustion in Fluidized Beds*<br>*Zuhal Akyürek, Afşin Güngör* |
| | *ID:320 Comparison of Neutron Measurement Using Different Materials*<br>*Onur Karaman* |
| | *ID:322 Doğu Akdeniz'de Enerji Hâkimiyet Mücadelesi ve Türkiye'nin Rolü*<br>*Afşin Güngör* |
| | *ID:325 The Future of Fossil Energy Sources and The Change of Global Energy Policies*<br>*Beste Şimşek, İhsan Pence, Muhammed Yasin Naz, Afşin Güngör* |
| | *ID: 309 An Econometric Study of Environmental Degradation, Energy Consumption and Economic Growth for Pakistan*<br>*Raima Nazar, Sajid Ali* |
| | *ID: 213 Testing of a solar air heater made with scrap metal elbows: utilization of recycled materials*<br>*Azim Doğuş Tuncer, Adnan Sözen, Faraz Afshari, Ceylin Şirin, Ataollah Khanlari, Afşin Güngör* |
| | *ID: 291 Beta Tipi Stirling Motorunda Soğutucu Kanallara Rejeneratör Yerleştirilmesi*<br>*Mehmet Erdem, Yaşar Önder Özgören, Fatih Aksoy, Hamit Solmaz, Mustafa Babagiray* |
| | *ID: 292 Biyodizel Yakıtına Eklenen Nanopartikül İçeren Katkıların Motor Performansı ve Egzoz Emisyonlarına Etkilerinin Araştırılması*<br>*Hamit Solmaz, Elif Sürer* |
| *Chair* | *Dr.Ahmet Uyumaz* |

*Session 1, Hall 2, November 14, 2019 (Thursday)*

| | |
|---|---|
| *14:30-15:30* | *Dr. Mehmet Karagül* |
| | *Dr. Yılmaz Şimşek* |
| | *Dr. Mehmet Günal* |
| | *Dr. Serdar Altınok* |
| | *Dr. Şükrü Apaydın* |
| | *Dr. Celal Taşdoğan* |
| *Chair* | *Dr. Mehmet Karagül* |

*Session 2, Hall 2, November 14, 2019 (Thursday)*

| | |
|---|---|
| *15:40-16:40* | *ID: 104 Causality Relatıonshıp Between Renewable Energy Consumptİon, CO2 Emission And Economic Growth: Selected G20 Countries*<br>*Tuğba Akdoğan* |
| | *ID: 132 Energy consumption, capital accumulation, employment and economic growth: The case of post-Soviet Era Central Asian Countries: A Panel ARDL Approach*<br>*Hasmet Gokirmak, Fuat Sekmen* |
| | *ID: 143 Financial Development and Renewable Energy Consumption*<br>*Utku Ölmez, Alper Aykut Ekinci* |
| | *ID: 211 Küresel Kamusal Mal Olarak Çevrenin ve Çevre Vergilerinin Türkiye ve Avrupa Birliği Ekseninde İncelenmesi*<br>*Cemil Altun* |
| | *ID: 238 Factors Affecting Energy Supply Security in Turkey: An Ardl Approach*<br>*Uğur Ursavaş*, Volkan *Bektaş* |
| | *ID: 263 Yenilenebilir Enerji Yatırımları Kaynağı Olarak Türkiye Karbon Vergisinin Uygulanabilirliği Üzerine Bir İnceleme*<br>*Bilgen Taşdoğan* |
| *Chair* | *Dr. Ceren Karaman* |

*Session 3, Hall 2, November 14, 2019 (Thursday)*

| | |
|---|---|
| *16:50-17:50* | *ID: 141 Sürdürülebilir Kalkınma Aracı Olarak Yeşil Vergileme: Türkiye'nin Yeşil Vergi Ajandası*<br>*Şükrü Apaydın, Koray Pirçekli* |
| | *ID: 142 The Causality Relationship between Foreign Direct Investments and Renewable Energy*<br>*Alper Aykut Ekinci, Utku Ölmez* |
| | *ID: 131 Money, Income, Prices, Employment, and Causality: The Turkish Experience*<br>*Hasmet Gokirmak, Fuat Sekmen* |
| | *ID: 160 Döviz Kurundaki Dalgalanma ve Ekonomik Büyüme: Türkiye Örneği*<br>*Bülent Bayraktar, Hasan Memiş* |
| | *ID: 223 The Link Between Financial Market Volatility And Macroeconomic Variables: European Union Stock Markets Case*<br>*Özlem Öztürk Çetenak, Özkan Haykir* |
| | *ID: 159 Kırgızistan'da Yozlaşma ve Ekonomik Büyüme*<br>*Fuat Sekmen, Galip Afşin Ravanoğlu* |
| *Chair* | *Dr. Şükrü Apaydın* |

*Session 4, Hall 2, November 15, 2019(Friday)*

| | |
|---|---|
| *09:15-10:15* | *ID: 275 Vermikülit ilavesinin epoksi zemin kaplamalarının ısıl iletkenliğine etkisi*<br>*Presenter: İbrahim Kırbaş* |
| | *ID:118 Rfid Teknolojisi Kullanilarak Alişveriş Arabasi Takip Sistemi*<br>*Kıyas Kayaalp, Ahmet Ali Süzen, Remzi Gürfidan* |
| | *ID: 119 Sokak Hayvanları İçin Akıllı Yemek Konteynırı Tasarımı*<br>*Remzi Gürfidan, Ahmet Ali Süzen, Kıyas Kayaalp* |
| | *ID: 124 Determination of Binding Materials Used in A Hammam Structure Built in 15th Century*<br>*Adem Solak* |
| | *ID: 122 İklim Değişikliği ve Havza Yönetimi*<br>*Nilüfer Yazici, Ahmet Alper Babalik, İbrahim Dursun* |
| | *ID: 176 A numerical modelling for internal solitary waves via general form of the Gardner equation*<br>*Turgut Ak* |
| | *Herkes için Makine Öğrenimi: Sera Gazı Salınımı Tahmini*<br>*İhsan Pençe, Melike Şişeci Çeşmeli* |
| *Chair* | *Dr. İhsan Pençe* |

*Session 5, Hall 2, November 15, 2019(Friday)*

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|---|---|
| *10:30-11:45* | *ID: 300 Sivas Cumhuriyet Üniversitesi Merkez Kampüsü'nün Karbon Ayak İzi Açısından Değerlendirilmesi*<br>*Meltem Sarioğlu Cebeci, Halil Ateş, Rasim Onur Güler* |
| | *ID: 328 Anaerobic Codigestion of Sludge with Food Waste: Kinetic Models*<br>*Meltem Sarioğlu Cebeci, Turgay Bişgin, Halil Şenol, İlknur Şentürk* |
| | *ID: 183 Çok duvarli karbon nanotüpler ile güçlendirilmiş Al/ÇDKNT metal matriks kompozitlerin mekanik davranişlarinin incelenmesi*<br>*İsmail Topcu* |
| | *ID: 267 Farklı Kurutma Sıcaklıklarının Portakal Kabuğunun Kuruma Kinetiğine Etkisinin Belirlenmesi*<br>*Mahmut Burak Uysal, Sami Gökhan Özkal* |
| | *ID: 268 Effect of Different Drying Techniques on Drying Behavior of Peach*<br>*Özlem Zambak, Sami Gökhan Özkal, Osman Çörekçi* |
| | *ID: 278 Geridönüşüm Dokusuz Yüzeylerin Gürültü Azaltma Katsayısı ve Ortalama Ses Yutum Katsayısı Değerlerinin Karşılaştırılması*<br>*Ayşe Özkal, Funda Cengiz Çallioğlu* |
| *Chair* | *Dr. Ali AKYÜZ* |

*Session 6, Hall 2, November 15, 2019(Friday)*

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|---|---|
| *14:00-15:00* | *ID: 226 Keçi sütünden üretilen süzme yoğurdun akış davranışına sıcaklığın etkisi*<br>*Sami Gökhan Özkal, Özlem Zambak* |
| | *ID: 287 Experimental Investigation of Variation of the Surface Quality of Workpiece Along the Cutter Tool Forehead Profile from the Center to the Periphery in the End Milling Process*<br>*Eyüp Sabri Topal, Tuğce Tezel* |
| | *ID: 288 A Novel Approach to Heat Sink Manufacturing*<br>*Tuğçe Tezel* |
| | *ID: 184 Farkli çeliklerin MIG ve TIG kaynak birleştirmelerinde ITAB bölgelerindeki mekanik davranışların incelenmesi*<br>*İsmail Topcu* |
| | *ID: 146 An example of Traditional Turkish Architecture: Architectural properties and wooden structures of an old building house in Beylerli Village (Denizli - Çardak)*<br>*Taner Dizel, Kadir Özkaya* |
| | *ID:347 Alfa ve Beta Tip Stirling Motorlarına Rejeneratör Eklenmesi Durumunda Isıl Verimlerindeki Değişimin Analizi*<br>*Afşin Güngör, Cihanşah Ağ, Osman Özyurt, Yasin Aslan* |
| | *ID: 234 Atık Tekstillerden Elde Edilen Kumaşların Kalite Değerlendirmesi*<br>*Bekir Yitik, Erkan Atalay* |
| *Chair* | *Dr.Sami Gökhan Özkal* |

*Session 7, Hall 2, November 15, 2019(Friday)*

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|---|---|
| *15:10-16:10* | *ID: 189 Exhaust content of a single cylinder diesel engine fuelled by biodiesel-diesel blends*<br>*Ibrahim Aslan Reşitoğlu* |
| | *ID: 174 Estimation Of Gps Based 2-Axis Solar Tracking System Water Output Temparature Value By Machine Learning Algorithms*<br>*Atılgan Temir, Hamdi Sayin, Bekir Aksoy, Koray Özsoy* |
| | *ID. 172 Design and Manufacturing of Horizontal and Vertical Wind Turbine With 3D Printing Technology*<br>*Aydın Turgut, Zekeriya Kaya, Koray Özsoy, Bekir Aksoy* |
| | *ID. 139 Effect of Seismic Isolation System on The Response of A Bridge Pier*<br>*Fevzi Sarıtaş, Adem Solak* |
| | *ID: 326 Finite Element Analysis of Various Composite Honeycomb Cores Under Tensile Loading*<br>*Berkay Ergene* |
| | *ID: 112 Cfd Analysis on Fin and Baffle Configurations in Solar Air Collector*<br>*Faraz Afshari, Ataollah Khanlari, Adnan Sözen,Ceylin Şirin, Azim Doğuş Tuncer, Afşin Güngör* |
| | *ID: 348 İki Beta Tip Stirling Motorunun Performans Analizi ve Birbirlerine Göre Kıyaslanması*<br>*Afşin Güngör, Cihanşah Ağ, Osman Özyurt, Yasin Aslan* |
| *Chair* | *Dr. Ali AKYÜZ* |

*Session 8, Hall 2, November 15, 2019(Friday)*

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|---|---|
| *16:20-17:20* | *ID: 225 Design of Three-Degree of Freedom Industrial Robot Arm and Manufacturing With Fdm*<br>*Hilmi Cenk Bayrakçı, Abdullah Burak Keşkekçi, Gökhan Yıldırım, Hayri Kurt* |
| | *ID:338 HBYS Yazılımları ve Güncel Çalışmalar*<br>*Erkan Atalay* |
| | *ID:339 Toprak İşleme Makinelerinde Güç Ölçümü*<br>*Erkan Atalay* |
| | *ID: 191 After-treatment Applications to Remove Pollutant Emissions Arising from Vehicles*<br>*Ibrahim Aslan Reşitoğlu* |
| | *ID : 346 Endüstriyel Mekanizma Örneği Olan Üç Boyutlu Yazıcılarda Üretim Optimizasyonu*<br>*Gökmen Atlıhan, Berkay Ergene, İsmail Ovalı* |
| | *ID: 190 Air Pollution from Vehicles Used in Transportation Sector*<br>*Ibrahim Aslan Reşitoğlu* |
| *Chair* | *Dr. Hilmi Cenk Bayrakçı* |

*Session 9, Hall 2, November 15, 2019(Friday)*

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|---|---|
| *17:30-18:30* | *ID: 171 An Academic View To Suv Car Preferences: Car Selection With Multi-Criteria Decision Making Techniques*<br>*Adnan Abdulvahitoğlu, Aslı Abdulvahitoğlu* |
| | *ID: 336 Sterilization and disinfection of drinking water using UV light*<br>*Onur İnan, Kazım Kumaş, Melike Şişeci Çeşmeli,Ali Akyüz,* |
| | *ID: 170 Facility Location Selection With Multi-Criteria Decision-Making Techniques: An Application In Internal Security Sector*<br>*Adnan Abdulvahitoğlu, İrfan Macit, Melik Koyuncu* |
| | *ID: 236 Lifle Güçlendirilmiş Kompozit Yapı Hazırlamada Kullanılacak Fonksiyonelleştirilmiş Kumaşların Mikrodalga Enerjisi Tabanlı Bir Yaklaşımla Hazırlanması Ve Karakterizasyonu*<br>*Selçuk Poyraz* |
| | *ID: 243 Microwave Energy-based Carbonization and Characterization of Conducting Polymers Covered by Simultaneously Grown Carbon Nanotubes and Metal Oxide Nanowires for Energy Storage Applications*<br>*Selçuk Poyraz* |
| | *ID 349 Iso Yük Konteynerinin Dara Ağırlığının Hafifletilmesinin Enerji Verimliliği ve Karbon Ayak İzi Açısından Sağlayacağı Avantajlar*<br>*Afşin Güngör,Deniz Kayıkçı, S. G Gültekin* |
| *Chair* | *Dr. İhsan Pençe* |

*Session 10, Hall 2, November 16, 2019(Saturday)*

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| *09:00-10:00* | *ID: 135 Evrişimsel Sinir Ağları ile İşaret Dili Tanıma*<br>*Nazan Kemaloğlu, Onur Sevli* |
| | *ID: 136 Evrişimsel Sinir Ağları ile Bal Arısı Irklarının Tahminlenmesi*<br>*Onur Sevli* |
| | *ID: 231 Convolutional Neural Network Based Detection and Classification of Drones Using Gramian Angular Field Transformation*<br>*Ozan Demir, Özgül Salor* |
| | *ID: 242 Control of The Electric Wheelchair By Neck Movements*<br>*Okan Bingöl, Onur Mahmut Pişirir, Mert Mehmet Altay, Bayram Doğdu* |
| | *ID: 241 Interpreter for Speech-Impaired: Smart Glove*<br>*Okan Bingöl, Onur Mahmut Pişirir, Selda Ayırkan, Yusuf Kahraman* |
| | *ID: 151 Comparison of spike noise removing performances of different filters for low level sensor data*<br>*İsmail Kırbaş* |
| *Chair* | *Dr.İsmail Kırbaş* |

*Session 11, Hall 2, November 16, 2019(Saturday)*

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|---|---|
| *10:10-11:10* | *ID: 221 Several High Concern Risk Assessment and Management Approaches for Software Development Projects*<br>*Mustafa Batar, Ali Hakan Işık, Ulaş Birant Kökten* |
| | *ID: 222 Çok Kriterli Karar Verme Yöntemi ile Araç Seçimi*<br>*Mustafa Batar, Esra Sertgöz, Ali Hakan Işık* |
| | *ID: 175 Optimal control of a nonlinear continuous stirred tank reactor with metaheuristics*<br>*Burhanettin Durmuş, Asım Gökhan Yetgin* |
| | *ID: 203 Kaotik Yüklü Sistem Arama Algoritması*<br>*Serdar Özyön* |
| | *ID: 153 Rolling bearing content failure classification using machine learning algorithms*<br>*Ayhan Dükkancı, İsmail Kırbaş* |
| | *ID: 152 Effects of ALLOY 718 (INCONEL) super alloy cutting parameters on surface roughness*<br>*İsmail Kırbaş, Gültekin Basmacı, Mustafa Ay* |
| *Chair* | *Dr.Asım Gökhan Yetgin* |

*Session 12, Hall 2, November 16, 2019(Saturday)*

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|---|---|
| *11:20-12:20* | *ID: 201 Rüzgâr Enerji Santrallerinin (RES) Ekonomik Güç Dağıtımında Maliyet Üzerine Etkilerinin Yüklü Sistem Arama Algoritması ile İncelenmesi*<br>*Serdar Özyön* |
| | *ID: 202 Yenilenebilir Enerji Üretim Birimleri İçeren Çevresel-Ekonomik Güç Dağıtımı Probleminin Yüklü Sistem Arama Algoritması ile Çözümü*<br>*Serdar Özyön* |
| | *ID:258 Yeşil Büyüme ve Türkiye*<br>*Ümit Koç* |
| | *ID: 126 Analysis of the Effect of Rotor Slot Type on Torque Ripple in Induction Motors using Finite Element Method*<br>*Asım Gökhan Yetgin, Burhanettin Durmuş* |
| | *ID: 293 Emme Havası Giriş Basıncı ve Sıcaklığının Homojen Dolgulu Sıkıştırma İle Ateşlemeli (HCCI) Bir Motorda Yanma ve Performansa Etkileri*<br>*Hamit Solmaz, Ahmet Uyumaz* |
| *Chair* | *Dr.İsmail Kırbaş* |

*Session 13, Hall 2, November 16, 2019(Saturday)*

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|---|---|
| *12:30-13:30* | *ID: 283 Neden Teknolojik Tekillik?*<br>*Çilem Koçak, Utku Köse* |
| | *ID: 284 Üniversite Öğrencilerinin İnternet Kullanımının Araştırılması*<br>*Çilem Koçak, Tuncay Yiğit* |
| | *ID: 255 Büyük Boyutlu Verilerin Sınıflandırılması İçin Melezleştirilmiş Bir Boyutsal Küçültme Yöntemi*<br>*Emrah Hancer* |
| | *ID: 286 Production of Copper - Magnesium Alloy Contact Wire For High Speed Railway Catenary Systems*<br>*Orhan Akyüz, Özgür Tokdemir, Halil Göker* |
| | *ID: 261 An overview of the medical waste disposal of Turkey*<br>*Onur İnan, Kazım Kumaş, Ali Akyüz* |
| | *ID: 314 Sleep Apnea Detection with Respiratory Modulated ECG signal*<br>*Mehmet Feyzi Aksahin, Yiğit Ali Üncü* |
| | *ID: 313 Detection of Cervical Neoplastic Changes Using Telecentric Imaging*<br>*A. Yiğit Üncü, Taner Danişman, Özer Birge, S. Mehmet Bakir, Mehmet Göksu, Tayyup Şimşek, Murat Canpolat* |
| *Chair* | *Dr. Ali Akyüz* |

*Session 14, Hall 2, November 16, 2019(Saturday)*

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| *13:45-14:45* | *ID:317 Graphene Aerogel: A Promising 3D Material for Electrochemical Energy Storage Systems*<br>*Ceren Karaman,Onur Karaman* |
| | *ID:319 Comprehensive Investigation of Applications of Liquid –to-Air Membrane Energy Exchangers in Building HVAC Systems*<br>*Ceren Karaman,Onur Karaman* |
| | *ID:323 Graphene Aerogel Based Phase Change Composite for Energy Harvesting Systems*<br>*Ceren Karaman,Onur Karaman* |
| | *A Novel Polyoxometalate/Reduced Graphene Oxide Nanocomposite For Fuel-Cell Application*<br>*Onur Karaman, Ceren Karaman* |
| | *ID: 331 Analysis of Drilling Operation Carbon Fiber Reinforced Composite Under Cryogenic Cooling Conditions*<br>*Oğuz Çolak,Lokman Yünlü* |
| | *ID: 330 Additive Manufacturing of Scara Robotic Arm With Using ABS-CF Material and Novel Topology Optimization*<br>*Oğuz Çolak,Efecan Karaman,Lokman Yünlü* |
| | *ID: 321 Turkey's Energy Productivity And Policies In The Energy Axis*<br>*Beste Şimşek,Melike Şişeci Çeşmeli,Muhammed Yasin Naz, Afşin Güngör* |
| | *ID: 332 Effect Of Diflubenzuron On The Development Of Chick Embryo*<br>*Shazia Parveen Tasveer ishtiaq, Faryal Anwar, Maryam Saeed, Sana Farooq, Kainat Sardar, Rafia Kanwal, Dr.Sumaira Kanwal* |
| *Chair* | *Dr. Emrah Hancer* |

*Session 1, Hall 3, November 14, 2019(Thursday)*

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|---|---|
| *14:30-15:30* | *ID: 180 Performance Investigation of A Gas Engine Driven Heat Pump*<br>*Arif Emre Özgür* |
| | *ID: 128 Investigation of Modal Parameters on Steel Model Bridge Using EFDD Method*<br>*Azer A. Kasımzade, Sertaç Tuhta, Hakan Aydın, Furkan Günday* |
| | *ID: 127 Extraction Of Modal Parameters On Steel Structure Using EFDD*<br>*Azer A. Kasımzade, Sertaç Tuhta, Furkan Günday, Hakan Aydın* |
| | *ID: 169 Influences of Lubricant Fluid with Nanoparticle Additive on the Load Capacity of a Hydrostatic Journal Bearing*<br>*Abdurrahim Dal, Mustafa Kılıç, Azim Doğuş Tuncer,Afşin Güngör* |
| | *ID: 167 Enhancing Thermal Performance of Cooling Tower by Using Swirling Jets*<br>*Mustafa Kılıç, Mehmet Öztatar, Azim Doğuş Tuncer, Afşin Güngör* |
| | *ID:344 The statistical mechanical properties of atoms that are modeled by the Woods-Saxon and generalized Woods-Saxon potential energies*<br>*Bekir Can Lütfüğlu* |
| *Chair* | *Dr. Mustafa Kılıç* |

*Session 2, Hall 3, November 14, 2019 (Thursday)*

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| *15:40-16:40* | *ID: 295 3D yazıcı ile takı tasarımında görsel kaliteyi iyileştirme uygulamaları*<br>*Özgün Can, Hülya Arabacı* |
| | *ID: 109 Antibacterial activity of natural spices on multi drug resistance E. coli isolated from water supplies of Southern Punjab Pakistan*<br>*Maryam Zain, Tuba Sabir* |
| | *ID:343 Beçin Yöresi Tarihi Yapılarında Kullanılan Bağlayıcı Malzemelerin Deneysel Olarak İncelenmesi; Büyük Hamam Örneği*<br>*Adem Solak* |
| | *ID: 138 Lunar Concrete Production Studies*<br>*Sadık Alper Yildizel, Gökhan Calış, Mehmet Uzun* |
| | *ID: 137 Concrete pavement and Roller Compacted concrete*<br>*Gökhan Calış, Sadık Alper Yildizel, Ülku Sultan Keskin* |
| | *ID: 182 Mevcut Bir Şeker Fabrikasının Kojenerasyon Sistemin Termodinamik Analizi*<br>*Fatma Kadriye Düden Örgen, Arzu Şencan Şahin, Erkan Dikmen* |
| | *ID: 197 Tek Etkili Absorbsiyonlu Soğutma Sisteminin Termoekonomik Analizi*<br>*Fatma Kadriye Düden Örgen, Arzu Şencan Şahin, Erkan Dikmen* |
| *Chair* | *Dr. Ali Akyüz* |

*Session 3, Hall 3, November 14, 2019 (Thursday)*

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| *16:50-17:50* | *ID: 304 Bilişsel Stilin Çalışan Performansı Üzerindeki Etkisi: Teknoloji ve AR-GE Sektöründe Detaylı Bir Analiz*<br>*Gözde Toprakcı Alp, Azim Doğuş Tuncer, Dr. Shaharin A.B. Sulaiman, Afşin Güngör* |
| | *ID: 140 Economic Growth and the Impact of Energy Consumption on Environmental Degradation: A Study on G-20 Countries*<br>*Anil Bolukoglu, Ebru Topcu, Alper Aykut Ekinci* |
| | *ID: 239 Impact of CO2 Emission and Oil Prices on Renewable Energy Production in Turkey*<br>*Volkan Bektaş, Uğur Ursavaş* |
| | *ID: 204 Carbon Footprint and Sustainable Development: The Case of Turkey*<br>*Volkan Han, Gazi Polat* |
| | *ID: 166 The Impact of Trade On Renewable Energy Consumption: An Empirical Investigation For Different Income Levels*<br>*Mert Topcu, Utku Ölmez* |
| | *ID: 199 Biyogaz ve Yapay Zeka ile Daha Yaşanılabilir Bir Dünya*<br>*Sümeyye Çelik, Melike Şişeci Çeşmeli* |
| *Chair* | *Dr. Emre Arabacı* |

*Session 4, Hall 3, November 15, 2019 (Friday)*

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| *09:15-10:15* | *ID: 244 Ceviz kabuğu biyokömürünün sulu çözeltilerden arsenik gideriminde kullanımı*<br>*Ayten Ateş* |
| | *ID: 245 Sulu Çözeltilerden Arsenik Giderimi İçin Bitkisel Atık Karışımlarından Üretilen Biyokömürlerin Karakteristikleri*<br>*Ayten Ateş* |
| | *ID: 217 Sürekli Sistemde Atık Çam Talaşı Kullanılarak MR GRL'nin Adsorpsiyonla Arıtımı*<br>*İlknur Şentürk, Muhammed Reha Yildiz* |
| | *ID: 164 Düzenli Depolama Alanlarında Oluşan Depo Gazından Enerji Eldesi*<br>*İlknur Şentürk, Başak Yıldırım* |
| | *ID: 240 Deri Sanayi Atıksuları Arıtma Prosesleri*<br>*Berk Köker, Meltem Sarioğlu Cebeci, İlknur Şentürk* |
| | *ID: 274 Whichever is more toxic to the liver and kidney; Methotrexate or Artichoke?*<br>*Şükriye Yeşilot* |
| *Chair* | *Dr. Neşe Keklikçioğlu Çakmak* |

*Session 5, Hall 3, November 15, 2019 (Friday)*

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|---|---|
| *10:30-11:45* | *ID: 230 Sulu Çözeltilerden Arsenik Gideriminde Fındıkkabuğu Biyokömürünün Kullanımı*<br>*Ayten Ateş* |
| | *ID: 247 Investigation of The Cytotoxic Effect of Acrylamide on L-929 Fibroblast Cells*<br>*Ayca Tas, Gülsen Güclü, Nese Keklikcioglu Cakmak* |
| | *ID: 248 Rheological characterization of boric acid aqueous solutions*<br>*Neşe Keklikçioğlu Çakmak* |
| | *ID: 249 Anti-Cancer Activity of Chitosan-Functionalized Graphene Oxide on Prostate Cancer Cell Lines*<br>*Neşe Keklikcioğlu Çakmak, Gülşen Güçlü, Ayça Taş, Yavuz Siliğ* |
| | *ID: 207 Grafen oksit nanotaşıyıcı tabanlı Dosetaksel'in farklı sıvılarda kararlılığının incelenmesi*<br>*Nese Keklikcioglu Cakmak* |
| | *ID: 165 Sivas'ta Enerji Üretimi Amacıyla Yenilenebilir Enerji Kaynaklarının Kullanımı*<br>*İlknur Şentürk* |
| *Chair* | *Dr. Ayten Ateş* |

*Session 6, Hall 3, November 15, 2019 (Friday)*

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| *14:00-15:00* | *ID: 224 Determining Mixing and Compaction Temperatures of Bitumen Modified by Nano Particles*<br>*Sebnem Karahancer* |
| | *ID: 193 Curcumin: Chemical Structure and Relationship with Various Diseases*<br>*Elif Feyza Topdaş* |
| | *ID: 208 Stress response in dairy cows treated with laparotomic omentopexy or laparoscopic abomasopexy*<br>*Kursad Yigitarslan, Nuri Yavru, Sirri Avki* |
| | *ID: 296 Thermographic Evaluation of the Effectiveness of Gingival Index, Papillary Bleeding Index and Plaque Index Used in Determining the Degree of Gingival Inflammation in Dogs*<br>*Kursad Yigitarslan, Candemir Ozcan, Bekir Cetintav* |
| | *ID: 158 Sustainable Use of Woody Biomass for Energy in Mediterranean Region of Turkey*<br>*Zuhal Akyürek, Afşin Güngör* |
| | *ID: 308 Energy Inflation Dynamics In Pakistan: Role Of Structural Determinants and Implications*<br>*Fouzia Yasmin, Hina Ali, Misbah Latif* |
| *Chair* | *Dr. Ali Akyüz* |

*Session 7, Hall 3, November 15, 2019 (Friday)*

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| *15:10-16:10* | *ID: 232 Examination of Hydrogen Production Potential of Isparta Province with Wind Energy*<br>*Fatih Yılmaz* |
| | *ID: 233 Thermodynamic performance assessment of gas turbine-based hydrogen and power production plant*<br>*Fatih Yılmaz* |
| | *ID: 147 Investigation of the effect of waste automotive tire as recycling material in the production of Laminated Veneer Lumber (LVL)*<br>*Kadir Özkaya, Taner Dizel, Hasan Özgür İmirzi* |
| | *ID: 198 Solitary wave solutions and their interactions for the modified equal width equation*<br>*Bilge İnan* |
| | *ID: 110 Design Software for Single-Phase Iron-Core Shunt Reactors*<br>*Atilla Dönük, Ali Can Erüst* |
| | *ID: 116 Future trends for Turkey's energy balances using fractional nonlinear grey models with optimization*<br>*Presenter: Utkucan Şahin* |
| *Chair* | *Dr. Emre Arabacı* |

*Session 8, Hall 3, November 15, 2019 (Friday)*

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| *16:20-17:20* | *ID: 186 Importance and Use of Hybrid-Electric Vehicles in Turkey*<br>*Bayram Kılıç, Emre Arabacı, Osman İpek* |
| | *ID: 129 Artificial Intelligence / Deep Learning Practices in Archeology And Museum*<br>*Deniz Kayıkçı* |
| | *ID: 215 Kompakt İpliklerden Dokunmuş Kumaşlar: Boya ve Yıkama Proseslerinin Kopma ve Yırtılma Mukavemetine Etkisi*<br>*Bekir Yitik,Sevil Yılmaz Aykul* |
| | *ID:346Landslide detection using digital elevation model and satellite images*<br>*Azimollah Aleshzadeh, E. Vural Yavuz* |
| | *ID: 214 Rink ve Kompakt İpliklerden Dokunmuş Kumaşlarda Hava Geçirgenliği ve Boncuklanma Performanslarının Değerlendirilmesi*<br>*Sevil Yilmaz Aykul, Bekir Yitik* |
| *Chair* | *Dr.Bekir Yitik* |

*Session 9, Hall 3, November 15, 2019 (Friday)*

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| *17:30-18:30* | *ID: 303 Çalışma Hayatında Y ve Z Kuşağının Motivasyonel Farklılıkları*<br>*Gözde Toprakcı Alp,Azim Doğuş Tuncer, Dr. Shaharin A.B. Sulaiman,Afşin Güngör* |
| | *In the Textile Industry Occupational Health and Safety Practical Application*<br>*Nazire Mazlum, Bahar İkizoğlu* |
| | *ID: 281 The investigated electrical parameters of the Au/n-Si (MS) capacitor with different rate Gr-doped PVA interlayer*<br>*Yosef Badali, Şemsettin Altındal* |
| | *ID337:Ulusal ve Uluslararasi Bilgisayar Olimpiyatları*<br>*Melike Şişeci Çeşmeli, İhsan Pençe* |
| | *ID: 144 Statistical analysis of the wind energy potential of Western Mediterranean Region, Turkey*<br>*Ataollah Khanlari, Adnan Sözen, Fatma Polat, Ceylin Şirin, Fatma Kadriye Düden Örgen, Azim Doğuş Tuncer, Afşin Güngör* |
| | *ID: 154 Reduction in Greenhouse Gas Emissions through Biogas Production from Olive Residues in Turkey*<br>*Zuhal Akyürek, Afşin Güngör* |
| *Chair* | *Dr. Zuhal Akyürek* |

*Session 10, Hall 3, November 16, 2019(Saturday)*

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|---|---|
| *09:00-10:00* | *ID: 257 Kumaşlarda Dikiş Performansının İncelenmesi*<br>*Sevil Yilmaz Aykul, Bekir Yitik* |
| | *ID: 235 Tekstil İşletmelerindeki Fiziksel Testler Laboratuvarlarının Çalışma Alanları Bakımından Uygunluğunun İncelenmesi*<br>*Bekir Yitik, Erkan Atalay* |
| | *ID: 253 Batimetri Verileriyle Eğirdir Gölü Eski Sınırının Yorumlanması*<br>*Hasan Hüseyin Aksu, Füsun Yiğit Fethi* |
| | *ID: 254 Yağış Ölçümlerinde Hatalar: Isparta Örneği*<br>*Hasan Hüseyin Aksu* |
| | *ID: 285 Production of Copper - Magnesium Alloy Messenger Wire For High Speed Railway Catenary Systems*<br>*Orhan Akyüz, Özgür Tokdemir, Halil Göker* |
| | *ID: 260 Evsel Kati Atiklarin Gazlaştirma Teknolojisi İle Bertarafi: Antalya Örneği*<br>*Abdülkadir Koçer, Ercüment Aksoy,İsmet Faruk Yaka, Afşin Güngör* |
| *Chair* | *Dr. Hasan Hüseyin Aksu* |

*Session 11, Hall 3, November 16, 2019(Saturday)*

| | |
|---|---|
| *10:10-11:10* | *ID: 310 Food Security in Pakistan: Analyzing the Role of State in Providing Healthy Food*<br>*Hina Ali, Fouzia Yasmin* |
| | *ID: 250 Effects of Bacterial Cellulose on Color Removal from Anionic and Disperse Dyes*<br>*Emine Sayılgan, Aytül Sofu, Gözde Karacan, Burcu Oktar* |
| | *ID: 229 Thermoelectric Generator Application in Turbocharged Systems*<br>*Ali Gürcan, Gülay Yakar* |
| | *ID:301 Penye İpliklerin Fiziksel Özelliklerinin İplik Numarası ve Penye Makinesi Besleme Ünitesi Çene Aralığına göre Belirlenmesi ve Yapay Sinir Ağları Metodu ile Optimizasyonu*<br>*Bekir Yitik* |
| | *ID: 273 A Parameters Analysis of Sine Cosine Algorithm on Travelling Salesman Problem*<br>*Mehmet Fatih Demiral* |
| | *ID: 194 The Particle Size Dependence of Activation Energy for The Selected Waste Wood Samples*<br>*Zeliha Ekinci, Mihriban Civan, Sema Yurdakul* |
| *Chair* | *Dr. Sema Yurdakul* |

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| | |
|---|---|
| *11:20-12:20* | *ID: 157 Hydrogen Production from Gasification of Corn Stalk*<br>*Zuhal Akyürek, Muhammad Yasin Naz, Farzad Afshari, Afşin Güngör* |
| | *ID: 216 Experimental study on airfoil angles in horizontal axis wind turbine*<br>*İbrahim Ateş, Faraz Afshari, Azim Doğuş Tuncer, Bayram Şahin, Ataollah Khanlari, Afşin Güngör* |
| | *ID: 327 Uluslararası Öğrenci Başarılarını Değerlendirme Programı (PISA) 2015 Sınavına Türkiye'de Katılan Öğrencilerin Bireysel, Ailesel ve Okula Ait Değişkenlerin Fen Başarısını Yordama Durumunun İncelenmesi*<br>*Esma Yitik, Ekber Tomul* |
| | *ID: 252 Akdeniz Bölgesi'nde Motorlu Kara Taşıtların İl Esaslı İncelenmesi*<br>*Hasan Hüseyin Aksu* |
| | *ID. 134 Investigation of the wind energy potential of Gallipoli Peninsula*<br>*Ataollah Khanlari, Azim Doğuş Tuncer, Fatma Kadriye Düden Örgen, Ceren Çelebi, Umut Aydemir, Afşin Güngör* |
| | *ID: 262 A short assessment for biomedical equipment technology and biomedical engineering educations in Turkey*<br>*Onur İnan, Kazım Kumaş, Ali Akyüz* |
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*Session 13, Hall 3, November 16, 2019(Saturday)*

| | |
|---|---|
| *12:30-13:30* | *ID: 107 Ceramic Glaze Design With Water-Repellent Function*<br>*Orhan Can Canagir, Mehmet Orhan* |
| | *ID: 270 Kesme Donatısı Yetersiz Betonarme Kirişler İçin Farklı Kesme Donatısı Yerleşiminin Numerik Olarak İncelenmesi*<br>*Yasin Onuralp Özkılıç, Ceyhun Aksoylu, Musa Hakan Arslan* |
| | *ID: 177 Influence of pavement surface temperature on pedestrian comfort*<br>*M.Kemal Gökay, Anıl Kocas* |
| | *ID: 205 Time effects on rock properties: Conceptual approach*<br>*M.Kemal Gokay* |
| | *ID: 271 Farklı Açılı Yerleştirilen Kesme Donatısının Kiriş Davranışı Üzerine Etkisinin Numerik Olarak Araştırılması*<br>*Yasin Onuralp Özkılıç, Ceyhun AKSOYLU, Musa Hakan Arslan* |
| | *ID: 272 Farklı Kesme Açıklığına Sahip Basit Mesnetli Betonarme Kirişlerin Davranışlarını İncelemek Üzere Numerik Çalışma*<br>*Ceyhun Aksoylu, Yasin Onuralp Özkılıç, Musa Hakan Arslan* |
| | *ID: 276 Biomechanical Models Used in Human Weight Lifting Motion Analysis*<br>*Melih Canlıdinç, Mustafa Güleşen* |
| *Chair* | *Dr.Bekir Yitik* |

Session 14, Hall 3, November 16, 2019(Saturday)

| | |
|---|---|
| *13:45-14:45* | *ID:316 Graphene-Based Ionizing Radiation Sensors*<br>*Onur Karaman, Ceren Karaman* |
| | *ID:324 Recent Advancement of Electromagnetic Interference Shilding Novel Metalic Materials*<br>*Onur Karaman, Ceren Karaman* |
| | *ID: 329 Arkeoloji ve Müzeolojide Derin Yapay Zeka: Evrensel Parça Tanima ve Eşleştirme Sistem Modeli Önerisi*<br>*Deniz Kayıkcı* |
| | *ID:341 Mineral-Based Health Risk Approach in Potable Water*<br>*F. İlter Türkdoğan, Bahar İkizoğlu* |
| | *ID.340 Dijital Görüntü İşleme ile Tarimsal Hastaliklarin İzlenmesi*<br>*Erkan Atalay* |
| | *ID: 156 Emission Assessment of Agro-Waste Combustion in 1 MWth FBC*<br>*Zuhal Akyürek, Afşin Güngör* |
| | *D: 200 Utilization of CuO/water nanofluid in a tube type heat exchanger*<br>*H. İbrahim Variyenli, Adnan Sözen, Emine Yağız Gürbüz, Ataollah Khanlari, Mert Ökten* |
| *Chair* | *Ataollah Khanlari* |

**ABSTRACTS PROCEEDINGS**

# AKADEMİK TEŞVİK UYGUNLUK BİLDİRİMİ*

## İLGİLİ MAKAMA

14-16 Kasım 2019 tarihinde Burdur Mehmet Akif Ersoy Üniversitesi Lavanta Tepesi Hotel'de düzenlenen Uluslararası Teknoloji ve Bilim Konferansı (International Conference on Technology and Science), yeni akademik teşvik yönetmeliğinde belirtilen *"Tebliğlerin sunulduğu etkinliğin uluslararası olarak nitelendirilebilmesi için en az beş farklı ülkeden konuşmacının katılım sağlaması esastır. Tebliğlerin değerlendirilmesinde tebliğin ilgili etkinlikte sunulmuş ve bunun belgelendirilmiş olması (etkinlik programı ve etkinliğe katılım sağlandığını gösterir belge) esastır. Ayrıca, değerlendirme için tebliğin elektronik veya basılı olarak etkinlik tebliğ kitapçığında yer alması ve yayınlanmış tam metninin sunulması gerekir."* şeklindeki kriterlerini karşılamaktadır. Konferansa 6 farklı ülkeden (Pakistan, Almanya, Çekya, İran, Malezya, Çin) alanında uzman bilimadamları bildirilerini sunmak üzere konuşmacı olarak katılmışlardır.

Saygılarımızla.

Prof. Dr. Afşin GÜNGÖR
Konferans Başkanı

* *For Turkish participants only.*

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**for all their support.**

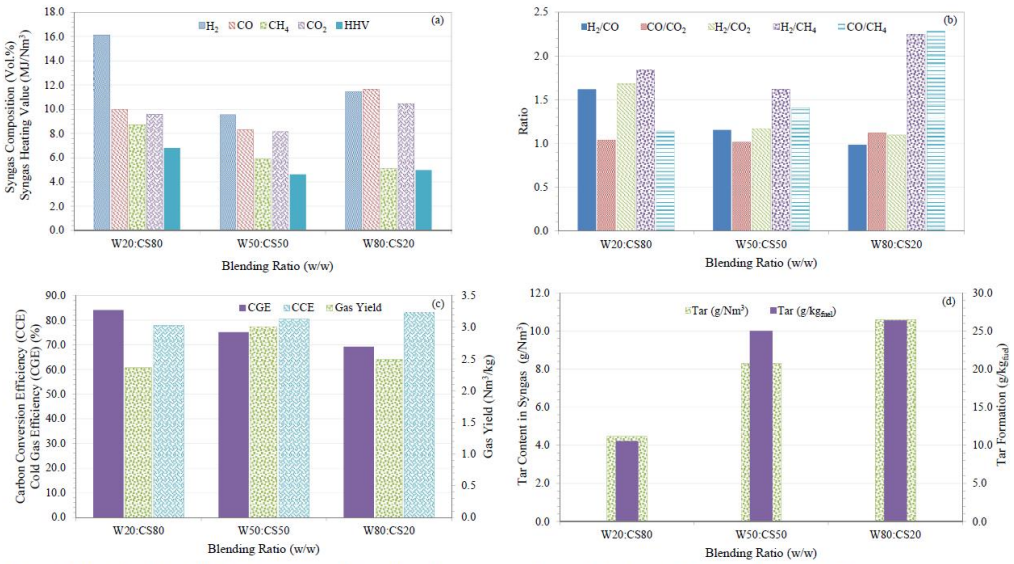
# ABSTRACTS PROCEEDINGS

# Effect of blending ratio and catalyst loading on co-gasification

Shaharin A.B. Sulaiman

Universiti Teknologi PETRONAS, Malaysia

**Graphcial Abstract:**




Effect of blending ratio (BR) on syngas quality and performance of co-gasification at 800°C and AFR 3 LPM

- OPF has potentials to be utilized as solid biofuel for combustion and gasification
- Malaysia has sufficient OPF supply to sustainably generate heat and power through gasification
- Co-gasification is a new interest with its own capability
- More researches need to be conducted to discover the true potentials and practicality of OPF gasification technology in Malaysia

***Keywords :*** Biomass, gasification, power plant

# Kinetics on ultra-deep catalytic hydrotreating of diesel

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**Abstract:** For protecting globe environment, especially reducing the air pollution, the ultra-deep desulfurization and denitrogenation of diesel produced from the atmospheric and vacuum distillations, as well as the fluid catalytic cracking unit are crucial to minimize their emissions. In order to scale up the trickle bed reactor, a normal reactor used in refinery, and optimize its operation, we establish a kinetic model for such ultra-deep catalytic hydrodesulfurization, hydrodenitrogenation and aromatic hydrosaturation of diesel over $NiMo/Al_2O_3$ catalyst. All of the experimental data were collected from the high throughput setup of 16 micro-packed bed reactors at temperature from 300 °C to 360 °C, pressure from 4.4 MPa to 7.4 MPa, liquid hourly space velocity from 0.75 $h^{-1}$ to 12 $h^{-1}$ and volumetric ratio of hydrogen to oil around 300. In the rate laws the initial concentration of sulfuric species is more than 10000 ppm, which is divided into two regions, meanwhile the competitive adsorptions of $H_2S$, nitrogenous compounds, aromatics and the virtually refractory compounds are included in to eliminate sulfur to below 10 ppm. Combining the genetic algorithm and the least square regression, we fit experimental data well and estimate all kinetic parameters. Furthermore, we determine an optimal operation interval of the trickle bed reactor using the developed model.

***Keywords***: *Ultra-deep hydrodesulfurization; Micro-packed tricked bed reactor; Kinetic model; Parameter estimation*

# Overview of computational fluid dynamics modeling and simulation of biomass particles

Atta Ullah

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**Abstract:** Biomass is very important as a renewable energy source due to its low emission and usability. Thermochemical conversion of biomass is very complex and multi-scale. Therefore, numerical methods play an important role in understanding the detailed mechanisms. Computational fluid dynamics has an important role both as an academic and as a design tool. There are many studies that use computational fluid dynamics to simulate biomass conversion systems. In this talk, it is aimed to give information about the simulations of biomass systems and computational fluid dynamics by focusing on drag models used in the framework of Eulerian method.

***Keywords***: *Computational fluid dynamics, modeling, biomass*

# Analysis of soot microparticles in the environment by using Raman spectroscopy

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**Abstract:** The necessity of clean air is becoming progressively important for mankind in recent years. Besides undesirable gaseous and liquid substances, also particulate matter (PM) present in the atmosphere is a significant component of air pollution. These microparticles are of interest, because they can affect both the environment and human health unfavorably. In this work, Raman spectra of soot microparticles from different sources were measured to characterize their structure and composition. These analyses were complemented by using scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy (EDS). The main objective of this research is to find whether it is possible to distinguish the soot generated during the burning of coal from the soot formed by combustion of diesel and petrol, respectively. From our results, it is found that the mentioned methods can determine the probable source of soot imissions in the air, e.g. whether the imissions in a particular place originate from a coal power plant, or from road transportation. For this purpose, discarded air filters which are widely used in hydrometeorological stations for imission concentration measurements are investigated in our research. The described method of soot analysis is a cheap and fast way to obtain information useful for estimating soot imissions and for taking appropriate measures to reduce them in polluted locations.

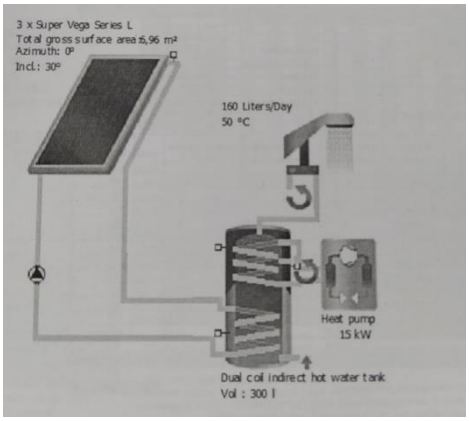
***Keywords***: *Microparticles, soot, Raman spectroscopy, SEM*

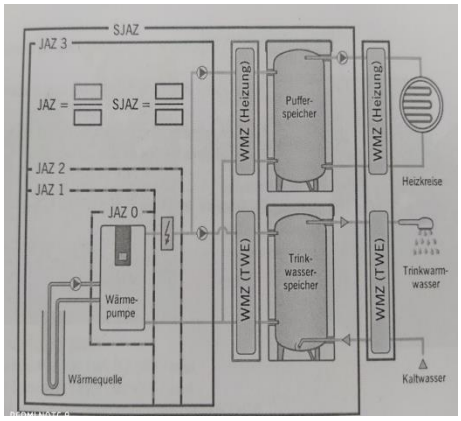
# Integration of renewable energy resources in energy management systems in buildings

Murat Çataklı

Deutsche Gesellschaft für Sonnenenergie e.V. LV Berlin-Germany

**Graphcial Abstract:** The main purpose of electricity generation from day radiation is to consume, self-consumption. The objective of self-consumption is to promote the use of self-consumption solutions in industrial, detached and residential buildings.




***Keywords***: Renewable energy, energy management systems

# Investigation of graphene and tin selenide related materials for their potential application in dye sensitized solar cells

Kishore Kumar Devarepally

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**Abstract:** With the growing demand for tapping renewable sources for energy harvesting, the solar energy has emerged as champion with many potential applications developed using disruptive technologies and effective application of advancements in material science with nano approach. This presentation is a compilation of experimental studies performed to enhance the performance of dye sensitized solar cells (DSSC) using low cost, easy to synthesize, and earth abundant materials such as graphene and graphene related materials, tin selenide and its related materials. Techniques such as screen printing and doctor blade method have been explored as a part of this research. In this presentation, we have focused on the synthesis and characterization of graphene quantum dots using graphene oxide (GO) as precursor and studied their application in flexible polymer DSSCs using binder free TiO2 paste prepared at room temperature. Also, the optimization of binder free TiO2 paste preparation is discussed. GO counter electrodes are prepared by screen printing and DSSC are fabricated with GO and investigated as an alternative to platinum counter electrode in terms of cost and performance. Similar to GO, we performed a detailed investigation of tin selenide as counter electrode in DSSC.

***Keywords***: *Graphene oxide, SnSe, counter electrodes, flexible PEN substrates and FTO glass substrates*

# Eco-friendly synthesis of zinc oxide nanoparticles using *Zingiber officinale* root extract and its biosensing application

Soner DÖNMEZ

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**Abstract:** Synthesis of nanoparticles by means of eco-friendly approaches has attracted much attention due to the widespread biomedical application and environmental issues. The present study states an eco-friendly approach for the synthesis of zinc oxide nanoparticles using Zingiber officinale root extract as a reducing/capping agent. The prepared ZnO nanoparticles were characterized using UV-visible spectroscopy (UV-vis) and field emission scanning electron microscopy (FE-SEM) with energy dispersive X-ray spectroscopy (EDS), The biosensor was fabricated by mixing carbon paste an ZnO nanoparticles (ZnO/CPE) for the determination of glucose. Then, glucose oxidase enzyme was immobilized to ZnO/CPE by cross-linking with glutaraldehyde. Determination of glucose was carried out by the oxidation of enzymatically produced $H_2O_2$. After some optimization parameters were carried out, amperometric responses of glucose were monitored dependent on glucose concentration

***Keywords***: *Zingiber Officinale, ZnO, Biosensor*

# Air Pollution from Vehicles Used in Transportation Sector

İbrahim Aslan RESITOGLU

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**Abstract:** Climate change began to affect the habitat, nature and life very seriously. It's threatening the whole world. The world is warming up. Undoubtedly, global warming is caused by pollutant emissions released to the environment. These pollutant emissions formed the air pollution damages human health and environment. Especially the high consumption of petroleum pollutes the atmosphere. The vehicles used in transportation sector are in the main sources consumed the petroleum and caused air pollution.

This study focuses on the pollutants (CO, HC, PM, NOx, $SO_2$) from vehicles. The formation of these pollutants, the reasons in formations, their negative effect on human health and environment are addressed. Especially NOx and PM emissions as the biggest problem for vehicles are examined in detail.

***Keywords***: *Climate change, Air pollution, Pollutant emissions, NOx, PM*

# After-treatment Applications to Remove Pollutant Emissions Arising from Vehicles

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**Abstract:** Many countries in the world suffer from air pollution from vehicles. To prevent these pollutants is one the most important endeavors of executives. Many policies, regulations and standards have been generated to control and limit the pollutant emissions from vehicles. This situation enforces the researchers and automobile manufacturers to develop new technologies to met desired emission values from vehicles. These technologies are divided into pre-treatment emission control technologies and after-treatment emission control technologies. Although remarkable reductions in pollutants emissions were obtained with the use pre-treatment emission control technologies such as electronic injection systems, exhaust gas recirculation (EGR), engine modifications , the desired emissions values determined by standards (Euro, Tier etc) could not be met. To meet desired emissions values is possible with the use aftertreatment technologies in vehicles. This paper aims to provide an insight to widespread aftertreatment emission control systems used in vehicles. Catalytic converters, oxidation catalysts, particulate filters and selective catalytic reduction (SCR) systems are scrutinized in this study. The performance of these systems, conversion efficiencies, diversities, troubles are discussed clearly.

***Keywords***: *Pollutant emissions, After-treatment control, Catalytic converters, SCR, Catalyst*

# Kaotik Yüklü Sistem Arama Algoritması

Serdar ÖZYÖN

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**Özet:** Optimizasyon algoritmaları, sayısal yöntemlerle çözümü mümkün olmayan ya da çözümleri uzun süreler alan problemlerin, kabul edilebilir sürelerde, uygun bir çözümünü elde edebilmek için literatürde sıklıkla kullanılmaktadır. Son yıllarda giderek artan oranda optimizasyon algoritması tasarlanmakta ve literatüre kazandırılmaktadır. Bunun yanında tasarlanan birçok algoritma birbirleri ile büyük benzerlikler göstermektedir. Bu yüzden araştırmacılar güçlü ve kararlı optimizasyon algoritmaları üzerinde çeşitli metotlarla çalışmalar yapmaktadırlar. Bu çalışmalardaki amaç, algoritmayı daha güçlü, daha hızlı ve daha kararlı hale getirmektir. Söz konusu metotlardan biri de birçok algoritmaya uygulanmış ve iyi sonuçlar elde edilmiş olan algoritmaların başlangıç popülasyonları oluşturulurken rastgele sayı üretiminde, kaotik sayı üreteçlerinin kullanılmasıdır. Bu çalışmada güçlü bir optimizasyon algoritmalarından biri olan ve birçok problemin çözümünde başarıyla kullanılmış yüklü sistem arama (CSS) algoritmasına, farklı yapıdaki beş farklı kaotik sayı üreteci entegre edilerek kaotik yüklü sistem arama (CCSS) algoritmaları önerilmiştir. Önerilen bu algoritmaların performanslarının değerlendirilmesi ve hangi kaotik yapının CSS algoritması ile daha uyumlu olduğunun belirlenebilmesi için beş adet unimodal test fonksiyonunun çözümü yapılmış ve elde edilen sonuçlar değerlendirilmiştir. Önerilen algoritmalarda, ilk popülasyondaki parçacıklar oluşturulurken, ilk parçacık arama uzayında rastgele konumlandırmıştır. Diğer parçacıklar ise ilk parçacığın konumuna bağlı olarak, kaotik haritalama yöntemleri kullanılarak konumlandırılmıştır. Yani bireyler arama uzayında rastgele değil, belirli bir kaotik düzene göre dağılmışlardır. Seçilen üç kaotik metot Duffing, Gauss/Mouse, Henon, Icmıc ve Ikeda haritalama metotları olarak belirlenmiştir. Çalışmada çözümü yapılan test foksiyonları ise Sphere, Schwefel's No: 2.22, Schwefel's No: 1.2, Schwefel's No: 2.21 ve Rosenbrock fonksiyonlarıdır. Bütün fonksiyonlar 30 boyut için 30'ar kez çözülmüş ve istatistiki sonuçlar ve grafikler verilmiştir.

***Anahtar Kelimeler:*** *Rastgele sayı üreteci, Kaotik sayı üreteçleri, Test fonksiyonları, Yüklü sistem arama (CSS) algoritması, Kaotik yüklü sistem arama (CCSS) algoritması.*

# Thermal performance improvement of an indirect solar dryer with flush-seamed tube-type absorber with use of aluminum wool

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**Abstract:** Day by day demand for developing renewable and clean energy systems increases. Solar energy is an easy accessible renewable energy source which is widely utilized in different applications. Solar air collectors are widely utilized in various applications like air preheating and drying. In this study, the effect of the using aluminum wool on thermal performance of indirect solar dryer has been investigated. In this regard, solar air collectors with aluminum wool and without aluminum wool have been integrated to the dryer and the performance tests have been done. The experiments have been done at 0.010 kg/s and 0.013 kg/s air mass flow rates and also onion has been dried as a sample. Experimental results showed that using aluminum wool modification has significant effects on improving efficiency of collector and also decreasing drying time. It should be indicated that using aluminum wool increased the collector efficiency in the range of 8-10%.

***Keywords***: *Indirect solar dryer, aluminum wool, performance improvement, tube-type absorber, solar drying*

# Investigation of the wind energy potential of Gallipoli Peninsula

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**Abstract:** Long-term measurements are required before installing wind turbines. Continuous wind is an important indicator of its efficiency. In this study, wind energy potential of Gelibolu Peninsula in Turkey which has historical and geopolitical importance, has been investigated. In this study, the obtained data form 7 different measurement stations in 2018 have been analyzed. The analyzed dada has been provided from Turkish General Directorate of Meteorology. The obtained data are valid for 10 m height. Two different wind turbines have been utilized in the analysis. It can be stated that off-shore wind turbine installation in the region will have higher energy generation potential. This study also indicates the significance of on-shore and off-shore wind energy analysis.

***Keywords***: *Wind energy, Gelibolu Peninsula, Measurement, wind turbine*

# Testing of a solar air heater made with scrap metal elbows: utilization of recycled materials

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**Abstract:** In this study, solar air heaters are designed by combining scrap metal elbows which used in many applications. Two solar air heaters have been manufactured from 6 pieces of scrap metal elbows with 95 mm diameter and 1 mm thickness. One of the solar air heaters has been filled with aluminum wool. Both solar air heaters have been experimented in four different mass flow rate. Experimentally obtained results indicated that outlet temperature of solar air heater filled with aluminum wool was higher than the other heater's outlet temperature as 35%. In this study, it is aimed to demonstrate that solar thermal systems can be produced by recycling scrap materials

***Keywords***: *Solar air collector, scrap metal elbow, recycling, solar energy.*

# The Need For Sustainable Energy As A Result of Global Warming

Bahar IKIZOGLU

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**Abstract:** The aim of this study is to evaluate alternative renewable energy sources for the prevention of global warming and climate change caused by the increase of greenhouse gases in the atmosphere as a result of increased anthropogenic activities from the perspective of sustainable development.

Increasing population and industrialization, uncontrolled and insensible land use, reduction of green areas (deforestation), the use of fossil fuels and other factors increase the amount of greenhouse gases ($CO_X$, $NO_X$, $SO_X$, $CH_4$, etc.) and thus increase the heat in the atmosphere.

Climate change that occurs as a result of global warming due to the increase in greenhouse gases in the atmosphere shows itself though drought, desertification, and erosion, decrease in agricultural product diversity and potential, increase in daily maximum and minimum temperatures, decrease in fresh water quality and quantity, destruction of aquifers as a result of reduced rainfall, changes in flora and fauna due to increase in sea and river temperatures, and decrease in species diversity. Overall, the entire ecosystem is affected.

Sustainable development aims to leave a livable environment for future generations by preserving human health and natural balance, continuously improving economic development, and combining rational management of natural resources with environmentally friendly technologies. In this study, renewable energy sources (biomass, hydrogen, geothermal, solar, etc.) are evaluated in terms of sustainability and an assessment is made with respect to leaving a livable environment for future generations.

***Keywords***: *Global warming, climate change, renewable energy, sustainability*

# The investigated electrical parameters of the Au/n-Si (MS) capacitor with different rate Gr-doped PVA interlayer

Yosef Badali

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**Abstract:** In this study, main electrical parameters of the Au/n-Si (MS) capacitor with different rate Gr-doped PVA interlayer were extracted from the forward bias I-V and reverse bias $C^{-2}$-V characteristics (at 1 MHz) and compared to see the effect of interfacial organic layer with different rate of graphene. Experimental results show that the electrical parameters such as doping concentration of donor atoms ($N_d$), barrier height (BH), series resistance (Rs), surface states ($N_{ss}$) and ideality factor (n) a strong function of the doping rate of Gr in PVA and applied bias voltage. Additionally, the obtained value of BH from the reverse bias C-V measurements are higher than their obtained from the forward bias I-V measurements. Such discrepancy between of them was attributed the nature of used calculation method and voltage dependent of BH. The energy dependent ($E_c$-$E_{ss}$) of density of $N_{ss}$ was obtained from the forward bias I-V data by considering voltage dependent ideality factor n(V) and effective barrier height ($\Phi_e$) for each diode. The voltage dependent profiles of $R_s$ was also obtained from both the C/G-V measurements at 1 MHz using Nicollian-Brews method and I-V measurement using Ohm's law. All the experimental results reveal that the %3Gr-PVA interlayer has the best performance compared to other in terms of low $D_{it}$ and low $R_s$. Thus, it can be used successfully instead of traditional an interfacial layer in terms of low cost, easy fabrication processes and flexibility.

***Keywords:*** Capacitor; MPS structure; Energy dependent profile of $N_{ss}$; I-V and C-V characteristics;.

# Effect of Temperature and Holding Time on Pine Wood and Rose Pulp Torrefaction

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Abstract: Due to some technical problems such as low grindability, low energy density, high handling cost and varied combustion characteristics, the use of woody biomass in combustion systems is not as efficient as desired. In order to eliminate these problems, torrefaction which is the thermal pre-treatment method is applied to the biomass. Torrefaction is the slow decomposition of the hemicellulosic or lignocellulosic part of the biomass typically at the temperatures of 200–300 °C in the inert atmosphere. During the process, biomass fuel cannot absorb the water during the storage stage and its weight is decreased by 20-25% while its energy density increased nearly 25-30%.

In this study, raw pine wood and rose pulp was torrefied at three different torrefaction temperatures (250, 270 and 290 oC) for three holding times (15, 30 and 60 min) to evaluate the energy yield, mass yield and energy density ratios and fuel characteristics. According to the proximate analysis results, the percentage of fixed carbon increased with both torrefication temperature and holding time. Results indicated that a high temperature and long holding time produced the torrefied sample with low mass and energy yields. Energy yields of torrefied rose pulp and pine wood samples were also in the range of 70% to 90% and 73% to 94%, respectively. Furthermore, because of the torrefaction, carbon content and Higher Heating Value (HHV) of the biomass samples were increased on the other hand volatile content of the samples were decreased.

***Keywords***: Torrefaction, Energy Yield, Mass Yield, Rose pulp, Pine wood

**Acknowledgement:** This study was supported by Turkish Scientific and Technological Research Council (TÜBİTAK) with a project number 118Y247.

# Dielectric properties and ac conductivity of the Au/n-Si (MS) capacitor with different rate Gr-doped PVA interlayer

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**Abstract:** Both the frequency and voltage dependence of the the main electric parameters such as doping concentration of donor atoms ($N_D$), Fermi energy level ($E_F$), depletion layer width ($W_d$) and barrier height ($\Phi_B$) of this sample were obtained from the linear parts of reverse bias $C^{-2}$ vs V plots as function of frequency. While the values of $E_F$, $W_d$ and $\Phi_B$ increase with increasing frequency, $N_d$ decreases. In addition, the voltage dependent profiles of $R_s$ of the structure and $D_{it}$ were obtained from the forward and reverse bias impedance measurements by using high-low frequency capacitance ($C_{HF}$-$C_{LF}$) and Nicollian-Brews methods, respectively. Both the values of $R_s$ and $D_{it}$ decrease with increasing frequency almost as exponentially. The obtained low values of $R_s$ and $D_{it}$ show that the used of (%3 Gr-PVA) interlayer considerably enhances the performance of MS structure and it can be used as an alternative dielectric material to replace the conventional insulator layer.

***Keywords***: Au/(%3 Gr-PVA)/n-Si capacitor; Frequency dependent; Impedance spectroscopy method

# Effect of Blending Ratio during Co-Combustion of Chicken Manure and Turkish Lignite with Thermogravimetry

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**Abstract:** According to Food and Agriculture Organization of the United Nations (FAO), the chicken stock of Turkey is about 343 million tons in 2017. Therefore, excessive amount of poultry litter is produced in Turkey every year. Although poultry waste has significant adverse effects on the environment, these wastes are usually used as a fertilizer in Turkey. Thermochemical conversion is one of the important disposal techniques for the poultry waste because of the energy recovery. Combustion/co-combustion which is a thermochemical method is widely used in the literature. In this study, in order to verify the effect of biomass during the co-combustion with Turkish lignite, thermo gravimetric analysis (TGA) of chicken manure was performed under the air environment. Effect of the blending ratio on the thermal kinetic constants and co-combustion characteristics was examined during the study. To calculate thermal kinetic constants The Flynn-Wall-Ozawa method was applied. The activation energies of the samples were ranged from 47.94 kj/mol (Turkish lignite) to 98.39 kj/mol (25% lignite+75% chicken manure). The activation energies of the blends were decreased with the increasing lignite content. Furthermore, thermal properties of the blends were affected by lignite content and a synergy between coal and chicken manure samples were also observed.

***Keywords**:* Chicken manure, TGA, Co-combustion, Turkish Lignite

**Acknowledgement:** This study was supported by Turkish Scientific and Technological Research Council (TÜBİTAK) with a project number 218M440.

# Sivas Cumhuriyet Üniversitesi Merkez Kampüsü'nün Karbon Ayak İzi Açısından Değerlendirilmesi

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**Özet:** Karbon ayak izi, ürün ve işlemlerin yaşam boyunca çevreyi kirleticilikleri ile ilgili olup insan faaliyetlerinin çevreye verdiği zararın birim karbondioksit veya karbon cinsinden ölçülen miktarıdır. Karbon ayak izi enerji ile ilgili bir tanım olduğu için karbon ayak izinin azaltılması aynı zamanda enerji tüketiminin azaltılması veya optimizasyonu anlamına gelmektedir. Dolayısıyla yakın zamanda şirketler, kurumlar ve kuruluşlar kendi karbon ayak izini hesaplayacaktır. Karbon ayak izi insan aktivitelerinin sonucu oluşan bir kavram olduğunda, üniversiteler gibi insan nüfusunun fazla olduğu kurumlarda ayak izinin hesabı önem teşkil etmektedir. Bu çalışmada Sivas Cumhuriyet Üniversitesinin Merkez Kampüsü incelenmiş ve çeşitli kaynakların karbon ayak izi hesaplanmıştır. Bu hesaplama yapılırken kampüsün yakıt kullanımından kaynaklı doğalgaz kullanımı, üniversite yönetimine ait araç filosu, üniversitenin tüketmiş olduğu elektrik, su verileri ve kampüste oluşan atık miktarı ile akademik, idari ve öğrencilerin ulaşımdan kaynaklı emisyonları dâhil edilmiştir. Ulaşımdan kaynaklı karbon ayak izi tahmini için iki çeşit yaklaşım geliştirilmiştir. Yaklaşım-1'de akademik, idari personele ve öğrencilere anket uygulaması yapılırken, iv yaklaşım-2'de kampüse giriş-çıkış yapan araç sayıları gişelerden ortalama olarak belirlenmiştir. Yaklaşım-2'ye göre karbon ayak izi 246.000,3494 ton $CO_2$ehesaplanmıştır. Yaklaşım-2 sonuçlarına göre, enerji tüketimi kampüs ayak izinin en büyük bileşeni, ikinci olarak ise kampüs ulaşımıdır. Bu nedenle enerji ve ulaşım açısından karbon ayak izinin azaltılması sürdürülebilir bir kampüs yaşamı için önemlidir.

***Anahtar kelimeler**:* *Karbon Ayak İzi, Enerji ve Çevre, $CO_2$ emisyon, Kampüs, Sivas*

# The Particle Size Dependence of Activation Energy for The Selected Waste Wood Samples

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**Abstract:** In this study, the effect of sample size on the thermal decomposition characteristics of selected waste wood samples was examined in air atmosphere. The study aimed to perform Thermo Gravimetric Analyses (TGA) of five waste wood samples, namely, pine, window frame, wooden parquet, and two different types of furniture, and to compare the TGA results of these samples with three different particle sizes (< 300 µm, 300 µm–850µm, and 850 µm–2.36 mm). The TG analyses were performed with an air flow rate of 20 mL/min and at three heating rates of 10 °C/min, 40 °C/min, and 80 °C/min selected to investigate the effect of heating rate on thermal decomposition characteristics of waste wood samples.

Although different relationships were detected between particle size and activation energy in previous studies, it was found in this study that particle size considerably affected the activation energies of the samples. The activation energies of the chemically treated samples were found to be higher with increasing sizes. However, untreated pine samples displayed an opposite pattern. Consequently, in addition to the effects of particle size, the chemical content of the samples also had an impact on the alteration of the kinetic mechanisms and thermal decomposition properties of the samples and it must be taken into consideration during the design of combustion processes.

***Keywords***: Waste wood, Thermo Gravimetric Analysis, Particle size, Thermal decomposition, Activation Energy

# The investigation of main electrical parameters and conduction mechanisms of Al/p-Si (MS) structures with various $Zn_{3\%}$-PVA interfacial layer thickness

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**Abstract:** In order to determine the influence of $Zn_{3\%}$-PVA interfacial layer thickness on the electrical and dielectric behavior of Al/p-Si (MS) structure, the $Zn_{3\%}$-PVA interfacial layer with 0, 10, 20, 30, 50 nm thickness was deposited on the silicon wafer via electrospinning method. The main electrical parameters of prepared structures such as reverse saturation current ($I_0$), barrier height ($\Phi_{B0}$), rectifying rate ($RR$), ideality factor ($n$), series and shunt resistances ($R_s$ and $R_{sh}$) were found from the $I$-$V$ measurements at room temperature to determine the best one structure. Experimental results show that these parameters are strong functions of interlayer thickness and observed a good linear relation between $\Phi_{B0}$ and n as $\Phi_{B0}$=(-0.129$n$+0.96) eV. In the ideal case ($n$=1), the value of mean barrier heights ($\bar{\Phi}_{B0}$) was found as 0.831 eV. When the obtained results were compared in respect of interfacial layer thickness, the MS structure with 20 nm interlayer thickness show the best results. The energy ($E_{ss}$-$E_v$) dependent profile surface states ($N_{ss}$) was also obtained from the forward bias ($I$-$V$) data by taking into account voltage dependent barrier height ($\Phi_B$ ($V$)) and ideality factor ($n$ ($V$)) for each structure and compared each other. In addition, to determine the possible current-conduction mechanism Ln ($I$) vs $V$ plot was drawn for all structure.

***Keywords***: MPS structures; Thickness dependent; Rectifying rate; Surface states, Series resistance

# Analysis of the Effect of Rotor Slot Type on Torque Ripple in Induction Motors using Finite Element Method

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**Abstract:** Induction motors are the most widely used motors in industry and home applications due to their robust structure, cheapness, low maintenance and high efficiency. The torque-speed characteristic, which is one of the most critical parameters of induction motors, is highly influenced by rotor slot structures. Therefore, slot type and slot sizing should be performed properly to maximize motor performance during the design process of the induction motor. Induction motors have more than 30 rotor slot types, and each of these slot types has different advantages and disadvantages.

In the design stage of the induction motor, the choice of rotor slot structure as well as other parameters (external dimensions, winding structure, core material selection, etc.) is of great importance, while effects such as torque ripple, acoustic noise and mechanical vibrations should be taken into consideration topics for motor designers.

In this study, the effects of torque ripple in induction motors and the changes of torque ripple in different rotor slot structures are investigated. The analyses are performed using Maxwell RMxprt program. Firstly, static motor models were created and analyzed in RMxprt program. Afterwards, 2-D models of the motors are created and analyzes are carried out to obtain torque ripple changes. 6 different slot geometries are used in rotor slot structure. Other parameters of the motor are kept constant. Rotor slot geometry with minimum torque ripple and the best performance criteria are determined from the motor models. A 90 kW, 3-phase, squirrel cage induction motor is used as the motor model

***Keywords***: *Induction motor, Torque ripple, Finite element method, Rotor slots type*

# Artificial Intelligence / Deep Learning Practices in Archeology And Museum

Deniz Kayikci

Araştırmacı (Arkeolog), Antalya Büyükşehir Belediyesi, Kent Tarihi ve Tanıtımı Dairesi Başkanlığı.

**Abstract:** We see that the technologies developing with Industry 4.0 are rapidly spreading to our daily lives. While new products are added to smart products every day, new developments are taking place especially on the axis of artificial intelligence even now. In recent years, breakthrough innovations have emerged as a result of the combination of machine learning and the power of deep learning algorithms with the power of embedded system GPUs with parallel processing power.

It is possible to say that the developments in artificial İntelligence/deep learning in recent years have spread to Archeology, cultural and artistic life and museums naturally. The processing of big data in archeology and museums with deep learning methods making them meaningful and makes this hard work very easy, at the same time it is also used especially in object recognition and visitor studies. It also saves time and labor.

In this study, both the recent developments in artificial intelligence and deep learning are examined and an evaluation of these methods in the context of archeology and museology is made. The assessment convey the current situation and provide insight into how future implementation areas could be established.

***Keywords***: *Artificial İntelligence, Deep Learning, Reinforcement Learning, Big Data, Computer Vision, GAN Algorithm, Archaeology, Museology.*

# Economic Growth and the Impact of Energy Consumption on Environmental Degradation: A Study on G-20 Countries

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**Abstract:** With the sustainable development approach gaining popularity, it is important that countries prefer environment-friendly policies in their growth and development processes. Therefore, it has become a necessity to determine the factors that cause environmental degradation. In this context, the aim of this study is to determine the effect of economic growth and energy consumption on environmental degration in G-20 countries over the period 1991–2014 using Panel ARDL and Dynamic Fixed Effects approaches. In the study, environmental degradation is measured by total carbon dioxide (CO2) emission, energy consumption is measured by fossil and renewable energy consumption, and economic growth is measured by per capita GDP. The findings showed that economic growth has a positive and significant effect on environmental degradation both in the short and long term. However, the relationship between energy consumption and environmental degradation varies according to the type of energy used. Fossil energy consumption has a positive and significant effect on environmental degradation, while renewable energy consumption has a negative and significant impact on environmental degradation in the short and long term. Therefore, G-20 countries should implement policies that support the consumption of renewable energy and encourage the reduction of fossil energy consumption in order to minimize environmental degradation in economic growth processes.

***Keywords***: *Economic Growth, Energy Consumption, Environmental Degradation, G-20 Countries*

# Landslide detection using digital elevation model and satellite images

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**Abstract:** Landslides are one of the biggest hazards that cause losses in lives and property. Researchers have been striving for years to minimize of these losses. Field observations have always been essential for detecting, monitoring and analyzing landslides. A comprehensive landslide inventory data considerably helps in hazard and risk assessment. Aerial photographic interpretation is often used to generate this data set, but this method can be time consuming and expensive. Satellite images, when used alone, are unreliable at detecting most types of landslides. This study in the Uzundere District of Erzurum Province aims to detect landslides using a digital elevation model (DEM) and satellite imagery. In this context, we use DEM derivatives including slope, aspect, flow direction, curvature and plan curvature and normalized difference vegetation index (NDVI), brightness and textural features obtained from satellite imagery. This study consists of (1) image processing; (2) feature optimization; and (3) landslide detection. Land cover/use change detection plays a key role in the conduct of this research. In the final step, validation of the results was carried out by comparing those extracted ones with a manually defined landslide inventory map including 42 landslide events.

***Keywords***: *landslide, digital elevation model (DEM), satellite imagery, Uzundere*

# Küresel Kamusal Mal Olarak Çevrenin ve Çevre Vergilerinin Türkiye ve Avrupa Birliği Ekseninde İncelenmesi

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**Abstract:**

Küresel kamusal mal (KKM) tartışmaları özellikle sanayileşme ve rekabetin yoğunlaştığı 1950 sonrası dönemde literatürde ön plana çıkarılmakta ve örnekleri farklılaşmaktadır. Keynezyenizm ile beraber Antarktika'nın yönetimi, uluslararası sular, KKM kapsamında iken, günümüzde çevre kirliliği, salgın hastalıklar, terör, finansal kriz gibi küresel zararlılar KKM kapsamında ele alınmaktadır. KKM finansmanı farklı bir tartışma konusu yaratmaktadır. Kamu mallarının finansmanı vergiler ile sağlandığı için, KKM'ın finansmanının da küresel vergileme ile sağlanması gerekmektedir. Küresel vergileme ise, ülkelerin egemenlik haklarının ihlali gerekçesiyle uluslar üstü bir vergi otoritesi oluşturulmasını engellemektedir.

Bu çalışma kapsamında, çevrenin korunmasına yönelik çevre vergilerinin Türkiye ve Avrupa Birliği (AB) ekseninde incelemesi yapılacaktır. Çalışma kapsamında AB ve Birleşmiş Milletler 'in çevrenin korunmasına yönelik çözüm önerileri ele alınmıştır. Hem AB, hem de Türkiye'de çevre vergileri uygulamaya konulmuştur. Söz konusu bu vergilerin toplam GSYH ve toplam vergi gelirleri içerisindeki payları kıyaslandığında Türkiye'nin sahip olduğu oranlar AB ortalamasından yüksek çıkmaktadır. Buna rağmen Türkiye'nin çevre politikaları konusunda AB ve bazı OECD ülkeleri tarafından eleştirilmesi izaha muhtaç bir konu olmaktadır.

Çevre açısından yapılan çalışmalar neticesinde yeni teknolojilerin kullanımı teşvik edildiği, hatta uluslararası anlaşmalar kapsamında ülkelerin uyuma zorlandığı görülmektedir. Türkiye'nin konu ile ilgili taahhüt ve sorumluluklarını yerine getirdiği AB ekseninde yapılan kıyaslamalarla ortaya konulmaktadır. Türkiye'ye çevre kapsamında yöneltilen eleştiriler göz önünde bulundurulduğunda çevreyi koruma amacıyla mı yoksa yeni teknolojiler için pazar arayışı amacıyla mı yapıldığı ise tartışma konusu olmaktadır.

***Keywords:*** Çevre, Çevre Vergileri, Küresel Kamusal Mal, Avrupa Birliği

# The Causality Relationship between Foreign Direct Investments and Renewable Energy

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**Abstract:** Foreign direct investments contribute to economic development with the capital they carry to countries. In addition to the capital they carry, they contribute indirectly to economic growth by providing an increase in production technology, management information, labor force development etc.

In this frame, the aim of this study is to examine the link between foreign direct investment (FDI) and renewable energy as primary energy source in G20 countries, OECD member countries and World over the period 2005-2017 using a bootstrap panel Granger Causality Analysis.

The results of the analysis showed that there is a bidirectional causality relationship between direct foreign investment and renewable energy consumption for the G20 and the world, and for OECD there is a one-way causality relationship from renewable energy consumption to direct foreign investments.

***Keywords***: *Energy Consumption, Foreign Direct Investments, Renewable Energy,G20,OECD*

# Influence of pavement surface temperature on pedestrian comfort

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**Abstract:** Cladding applications of roads have been started in early civilization times of human history. Roads and pavements have gradually been covered by aggregated rocks, asphalt or concrete to obtain comfort in urban life. Increased areas of covered roads and pavements at modern urban life have resulted local air temperature increases around these covered ground surfaces. Temperature differences of city centers (0.5-2.0 $^{o}$C higher during summer times) with respect to countryside have been recorded and their reasons have gradually been researched also in environmental base studies. Main reasons of higher urban area temperatures which have been supplied through these studies are airflow obstructers in urban areas, asphalt-concrete roads, buildings and claddings of pavements. Covering materials, (rock plates, asphalt or concrete blocks) which increase urban air temperature in minor amounts (during summer times) are preferable materials in current human comfort situations. Any decrease obtained for urban air temperature has influenced air conditioning costs of houses and flats in those areas. In this research study, different cladding materials (concrete, asphalt and rock types) were set to measure their surface temperature increases due to daytime sun exposures. Test results were then compared with respect to measured soil ground surface temperatures. Surface temperature differences in tested materials have also be discussed to offer suitable pavement materials for urban areas.

***Keywords***: *Pavements, Surface temperature of pavements, Urban air temperature.*

# Time effects on rock properties: Conceptual approach

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**Abstract:** Rock mass types and their property differences have shaped civilization in different applications. Cavities in rock masses might be one of the living spaces for humans. Then they learn how to excavate tuffs to organize underground cities. Raw material exploration have forced humans to understand rocks and mineral contents to facilitate them for different usage in daily life. Capturing general properties of rock masses have been complex procedures and there are always many uncertainties due to natural characteristics of rock masses. Defining rock properties through laboratory and in-situ tests have not been full realized. Rock engineers have offered several criteria and classification procedures to describe rocks in engineering terms. In order to define rock masses, engineers have obtained rock behavior data for certain cases at defined time periods. In general, rock properties have been assumed stable for the tested period of time. In this study, time effects on rock mass properties have been evaluated conceptually. Engineers have known practically that, rock strength, rock fractures, rock colors etc. have been diminished in time. What can be the effects of time on rock properties? Can it be predictable by certain tests? Are conceptual approaches valuable asset for rock engineers? Evaluations of the concept have been discussed in this study to clarify time effects on certain rock properties.

***Keywords***: *Rock mass properties, Time effects, Change in rock properties, Time for rock related processes.*

# Anti-Cancer Activity of ZnO-PEG-PTX Nano-Carrier-Based Drug on Osteosarcoma Cell Lines

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**Abstract:**

**Objective:** Osteosarcoma (OS) is an uncommon disease containing less than 1% of cancers diagnosed in worldwide, it is the most frequent primary malignant bone tumor in adolescents and young adults. In this study, we aimed to detect the cytotoxic activity of the ZnO-PEG-PTX (Zinc Oxide-Polyethylene Glycol-Paclitaxel) nanocarrier-based drug on the osteosarcoma cell lines is Saos-2.

**Materials &Methods:** ZnO nanoparticle were prepared by a solution combustion synthesis method, then ZnO nanoparticle was coated with PEG and PTX drug was loaded on ZnO-PEG nanocarrier system. The synthesized ZnO, ZnO-PEG, PTX and ZnO-PEG-PTX nanocarriers were applied to Saos-2 osteosarcoma cell line and its cytotoxic effect was determined by MTT method. Saos-2 cells were treated with different concentrations of drugs (5–100µg/ml) for 24, 48 and 72 hours.

**Results &Conclusion:** In this study, characterization analysis of ZnO, ZnO-PEG, PTX and ZnO-PEG-PTX, nanocarrier system is consistent with the literature. The effects of ZnO, ZnO-PEG, PTX and ZnO-PEG-PTX on Saos-2 cell line were compared with the control group and IC50 values were found for 24,48 and 72 hours. In our study, the effects of the ZnO-PEG-PTX nanotransmitter system on the Saos-2 cell line were shown to inhibit growth in cancer cells when compared with the control group and PTX.

***Keywords***: Osteosarcoma, Saos-2, Nanoparticle, ZnO, Paclitaxel

# Investigation of Modal Parameters on Steel Model Bridge Using EFDD Method

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**Abstract:** Ambient vibration tests are conducted to the model bridge to identify its natural frequencies, mode shapes and damping ratios. The signals collected from the tests are processed by operational modal analysis (OMA) and then dynamic characteristics of the bridge model are estimated using Enhanced Frequency Domain Decomposition method (EFDD).The dynamic characteristics obtained from EFDD method. In this study, the dynamic characteristics of a steel model bridge with a bolt connection constructed in a 6.10m span and 1.88m height laboratory were determined by operational modal analysis methods. In the study, firstly, acceleration meters were placed at certain points of the system and the environmental vibration recordings and dynamic characteristics were determined by operational modal analysis method. As known OMA methods (such as EFDD) is supposed to deal with the ambient responses. For this purpose, experimental modal analysis of a model steel bridge for dynamic characteristics was evaluated. Enhanced Frequency Domain Decomposition (EFDD) is used for the output only modal identification. As a result of meticulous measurements, the modal parameters (frequency, period, mode shapes and also damping ratio) of the first 3 modes of the steel model bridge were obtained in the laboratory. It can be concluded that the dominant frequency of the steel model bridge was obtained as 5.747 Hz and the dominant period of the steel model bridge was obtained as 0.174 Sec. In the first 3 modes, mode shapes and damping ratios are examined. Also damping ratio evaluated in first mod 1.975 percent. Together with all these studies, modal parameters of the steel model bridge were determined.

***Keywords:*** Dynamic Characteristic, Steel Model Bridge, Operational Modal Analyse, EFDD Method, Sap2000

# EXTRACTION OF MODAL PARAMETERS ON STEEL STRUCTURE USING EFDD

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**Abstract:** In recent years, the world has suffered from earthquakes. Therefore, in the last century, many innovations in the field of earthquake engineering and calculation methods to represent different facts have been developed. It is known that the common aim of all studies in this field is to provide more reliable structures. It is also desirable that these structures are economically advantageous as well as reliable structures. Accordingly, many experimental methods have been discovered in recent years. In this study, operational modal analysis output only method which is one of these methods is used. Operational modal analysis is based on the estimation of modal parameters of the structure using ambient vibrations. It also has several parameter estimation methods. Enhanced Frequency Domain Decomposition method (EFDD) is the most basic of these methods and also damping is obtained. Therefore, in this study, Enhanced Frequency Domain Decomposition (EFDD) method was used to estimate modal parameters. As a result of meticulous measurements, the modal parameters (frequency, period and mode shapes) of the first 3 modes of the steel test structure were obtained in the laboratory. While all these studies were conducted, it was accepted as a reference in previous studies. Thus, the reliability of the study was ensured. In the light of all these findings, the dominant frequency of the benchmark steel structure was obtained as 3.476 Hz and the dominant period of the benchmark steel structure was obtained as 0.288 Sec. In the first 3 modes, mode shapes are examined. Also damping ratio evaluated in first mod 2.566 percent. Together with all these studies, modal parameters of the benchmark steel structure were determined

***Keywords:*** OMA, EFDD, Modal Parameters, Ambient Vibrations, Steel Structure

# Effects of ALLOY 718 (INCONEL) super alloy cutting parameters on surface roughness

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**Abstract:** Alloy 718, alias INCONEL, is a high-strength, corrosion-resistant nickel chromium material used at -252° to 705°C. It is an austenitic nickel-base super alloy which is used in applications requiring high strength to approximately 760°C and oxidation resistance to approximately 982°C. In addition, the alloy exhibits excellent tensile and impact strength even at cryogenic temperatures. In this study, Alloy 718 was processed at various cutting speeds (100-220 rpm) and using three different cooling techniques (dry cut, MQL and CO2 ) and the factors affecting surface roughness were analysed using Taguchi, RSM and ANOVA methods. However, the interaction of the factors affecting the surface roughness is also shown graphically. The measurements and analysis results show that the cutting parameters that minimize surface roughness are obtained with high cutting speed and high MQL values

***Keywords***: *Alloy 718, surface roughness, cutting parameters, RSM, ANOVA.*

# Rolling bearing content failure classification using machine learning algorithms

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**Abstract:** Bearings are widely used to prevent friction in the machines and to ensure more efficient operation of the machines. Some of the working bearings fail to complete their life prematurely. One of the most important of these faults is the introduction of foreign matter into the bearing. Foreign material entering the bearing may vary depending on the sector in which the bearing is used. After the material enters the bearing, the bearing failure is deemed to have occurred and if the action is not taken, the bearing continues until it breaks down. The time from the entry of the first substance to the disintegration of the bearing may vary depending on the operating conditions of the bearing, the amount of material entering, the type and shape of the material. In this study, four different bearing groups were formed and four different items were added to each group. The vibration data of the bearings with artificial failure was recorded and a data set was formed. Vibration data were converted into vectors and signal similarity analysis was performed. Material content classification was carried out using different machine learning techniques. Performance analysis was performed for the results obtained and the techniques were compared over the accuracy and precision parameters.

***Keywords***: *Bearing failures, classification, fault diagnosis, machine learning.*

# Comparison of spike noise removing performances of different filters for low level sensor data

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**Abstract:** Today, many electronic devices have sensors / transducers used to measure different physical quantities. Transducers measure temperature, pressure, humidity etc. and convert physical quantities into electrical current or voltage. However, the electrical current or voltage generated by the sensors or transducers is often very low in millivolts. This causes the sensor data to be affected by external influences such as electric or magnetic fields. They produce noise and distortions on the original signal. Sudden and abnormal increases called spikes in the measured signal level cause unhealthy measurements. In order to prevent this unwanted effect, some data smoothing techniques and digital filters are commonly used. Our main objective in this study is to find the most suitable filter or data smoothing method that can clean the spikes successfully without disturbing the original signal. For this purpose, we compared spike removal performances of different filters such as median, mov-median and Savitzky-Golay for the simulated noisy sensor data.

***Keywords***: *Spike removing, median filtering, noisy sensor data, digital filters, data smoothing*

| **Nomenclature** | |
|---|---|
| ANN | Artificial Neural Network |
| MSE | Mean Square Error |
| PSNR | Peak Signal Noise Ratio |
| SGF | Savitzky –Golay Filter |

# A Review for Sensitivity Analyses on Isparta State Highways According to Mechanistic Empirical Pavement Design Method

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**Abstract:** In the sensitivity analyses of the mechanistic-empirical pavement design, it is important to first evaluate the material properties to be used in pavement modeling to quantify the deformations that occur in the highway pavements. For comparing the effect of these deformations, sensitivity analyses are needed. In the sensitivity analysis, the results are evaluated separately for each of the factor affecting the deterioration obtained. In this study, AASHTO Pavement Design ME program have used for pavement analyses. First, climate zone has defined due to Enhanced Integrated Climatic Model (EICM) within program. Then the traffic data of Isparta state roads between 2013 and 2017 have been examined and three road parts have chosen for analyses due to traffic flow and proper data. To compare the results of the sensitivity analyzes, 45 analyzes were performed for each selected part of the road. Terminal IRI, Permanent deformation in asphalt and total pavement, total fatigue cracking, total transverse cracking and thermal cracking have defined as distress type. For all distress types totally 135 sensitivity analyses have performed, and these obtained results have compared with eachother within this research.

***Keywords***: *Mechanistic-empirical design, pavement, sensitivity analyses.*

# Evaluation of Public Transportation Based Optimization System at Signalized Intersections

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**Abstract:** Today, with the rapid increase in population and vehicle ownership, traffic density becomes a problem especially in urban areas. Traffic congestion affects the life in city centers where population and mobility are high. The most important problem in urban traffic is the changes in traffic flows at the intersections. At this point, it is necessary to effectively plan and control the signal patterns and durations applied at intersections. Arrangements in this regard generally include minimization of delays or tail lengths occurring at junction arms. Delays and queue lengths are measured by delays and queues per vehicle. However, the number of passengers using intersections and those in the vehicle is ignored. It is possible to establish more qualified signaling systems by participating in the calculation and analysis of passenger amount in vehicles such as buses, minibuses, school buses and by calculating the delays per driver or passenger. In this study, traffic counts were performed for a sample intersection in Eskisehir. Occupancy rates are also determined for private and public transportation vehicles. The average number of passengers in the vehicle is reflected in the data entries in the Synchro 10 micro simulation program. Optimization based on vehicle occupancy and simulations that optimize vehicle delays are compared. In addition, studies on this subject are examined and its applicability within the framework of intelligent transportation systems such as adaptive junction systems and automatic vehicle counting systems have been discussed.

***Keywords:*** Signal optimization, public transport, intelligent transportation systems

# Thermographic Evaluation of the Effectiveness of Gingival Index, Papillary Bleeding Index and Plaque Index Used in Determining the Degree of Gingival Inflammation in Dogs

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**Abstract:** Various index systems are used in dental and gingival examinations, which in turn lead to reliability and reproducibility problems in clinical trials. However, it is difficult to evaluate healty gingiva objectively. In this study, it was aimed to determine which grading system from Gingival Index, Papillary Bleeding Index and Plaque Index used to determine the degree of gingivitis in dogs is more effective index for gingival inflammation by comparing with gingival thermal data. The material of the study consisted of 500 teeth and gums belonging to these 500 teeth of 17 dogs of different breeds over 2 years of age. The temperature of free gingiva, attached gingiva and alveolar mucosa of each tooth were recorded with thermographic evaluation which is a novel technology in this research field. Gingival thermal images of the dogs under volatile anesthesia were taken with Trotec® EC060V thermal camera. Plaque grades determined by periodontal probe were recorded according to Plaque Index and bleeding degrees were recorded according to Gingival Index and Papillary Bleeding Index. Mean temperature differences in levels of indexes are statistically analyzed and nonparametric correlations between indexes and gingival temperatures are investigated. Bleeding Index was found to be a more effective grading system in determining gingival inflammation compared to Gingival Index and Plaque Index. It was concluded that determining the degree of gingival inflammation is a more effective method only by considering the degree of bleeding and thermal imaging camera is an objective, reliable and reproducible method to detect gingivitis in dogs

***Keywords***: *Dog, gingivitis, thermography*

# Anaerobic Codigestion of Sludge with Food Waste: Kinetic Models

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**Abstract:** Large quantities of waste activated sludge can be produced with the growth of wastewater generation plants. Anaerobic technology allows to co-digestion of nutrient-rich and high COD waste.

The aim of this study was to investigate the effects of anaerobic disintegration of wastewater treatment plant sludge (WS) and vegetable wastes (VW) from Sivas Cumhuriyet University refectory. Batch experiments were added under mesophilic conditions (37 ± 1 ° C) and eleven different VW / WS ratios and methane production potentials were evaluated by standard BMP test. Logistic model and modified Gompertz model were used to estimate methane yield and evaluate kinetic parameters. It was shown that the systems where VW and WS are fragmented together are more stable. Modified Gompertz model ($R^2$: 0,884-0,999) showed better fit to the test results

As a result, according to the characterization of the sludge from the wastewater treatment plant, it is recommended that the sludge be dried and evaluated as well as integrated management of the treatment sludge with organic wastes (vegetable waste).

***Keywords***: Sewage sludge, biogas, integrated waste management, kinetics, vegetable waste

# Biomechanical Models Used in Human Weight Lifting Motion Analysis

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**Abstract:** One of the actions frequently performed by workers in industrial production processes is the manual lifting from the ground or at a certain level. Various methods , such as biomechanical, physiological and physical assessments, can be used to appropriately measure and minimize the risks of musculoskeletal diseases associated with the tasks of employees involving weight-lifting movements. In this study, biomechanical models used in the analysis of manual weights lifting (manual material lifting) are presented. When examining biomechanical models, the usability, applications and limitations of static and dynamic models are explained. Studies in this direction are still ongoing and will contribute to future studies.

***Keywords***: *Manual material handling, biomechanical model, muscuskeletal system*

# Antibacterial activity of natural spices on multi drug resistance E. coli isolated from water supplies of Southern Punjab Pakistan

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**Abstract:** The greatest challenges faced by today's world are multidrug resistant pathogens and antibiotic toxicity. The in vitro antibacterial activity of total 12 extracts of natural spices were scrutinized by disk diffusion method against water contaminating bacteria as substitute to antibiotics in search of bioactive components of spices. Spices were selected because plants have been a source of medicines since ancient times and increasing usage of these herbal extracts by world. Water samples of Southern Punjab Pakistan were analyzed and Enterobacteriaceae family members *E.coli, Salmonella, E.aerogens* were isolated and identified from these water samples. Spices antibacterial activity was checked against these strains and compared with the activity of antibitics. Spices ethanolic extract showed good antimicrobial activity as compared to aqueous extract. Aqueous extract were weak in showing antimicrobial activity. Results were showing that spices contain high amount of secondary metabolites and these metabolites have high antimicrobial activity and can be used as substitute to antibiotics

***Keywords***:

# Orman Yolları Erozyon İlişkisinin Değerlendirilmesi

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**Özet:**

Orman yolları ormancılık faaliyet ve hizmetlerinin sürdürülebilmesi ile her türlü orman ürününün ekonomik olarak taşınmasına hizmet eder. Orman yollarının oluşturduğu orman yol ağının düzenli ve kapsamlı olması halinde, başta koruma olmak üzere her türlü orman ürününün orman dışına taşınarak kıymetlendirilmesini sağlamak mümkün olmaktadır. Orman yollarının çevresel etkilerine verilen önem her gün biraz daha artmakta, orman yollarının yetişme ortamı, heyelanlar, erozyon ve akarsu hidrolojisi üzerindeki olumsuz etkilerine ilişkin araştırmalar öncelik kazanmaktadır. Orman yollarının inşaatı ile koruyucu bitki örtüsü ve organik madde tabakaları ortadan kaldırılan geniş alanlar yüzeysel erozyona açık duruma gelmekte, orman yollarının kazı şevleri hem yüzeysel akışı, hem de sığ yeraltı akışını kesintiye uğratarak kenar hendeklerinde toplamakta, büyük miktarlarda toprak ve kaya kazılıp alınmakta ve çoğunlukla kitle hareketlerine maruz kalan dengesi bozuk şevler oluşturulmaktadır. Bunun sonucunda, yol yapımının ardından derelerdeki sediment taşınımı, yol yapımından öncekine oranla yüzlerce kat artmaktadır. Doğrudan doğruya yol yüzeyine düşen yağış, toprağa sızamadan yüzeysel akışla kenar hendeklerinden yolun aşağısındaki yamaçlara gitmektedir. Ayrıca, derelerde pik akımlar artmakta, dere suyunun sıcaklığı yükselmekte, yol yüzeylerindeki ve kenar hendeklerindeki erozyondan ve kazı şevlerindeki göçmelerden kaynaklanan materyal, dere yataklarına ulaşan sediment miktarını arttırmaktadır. Bu aksaklıklar nedeniyle bu çalışmada; orman yollarının erozyonla olan ilişkisi ortaya konulmaya çalışılmıştır. Bu anlamda da orman yolları, orman yollarının sınıflandırılması ve standartları, ülkemizde orman yollarının durumu ve değerlendirilmesi, erozyon ve sedimentasyonun belirlenmesi, orman yolları-erozyon ilişkileri ve sediment tuzakları konularında bilgiler verilmeye çalışılmıştır. Orman yollarının yapılması sırasında alınması gereken önlemler konusunda öneriler getirilmiştir.

***Anahtar Kelimeler:*** Küresel ısınma, İklim değişikliği, Havza, Havza yönetimi.

# Factors Affecting Energy Supply Security in Turkey: An Ardl Approach

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**Abstract:** This study examines the effects of renewable energy consumption, oil prices and economic growth on energy supply security risk in Turkey. In this context, the short run and long run relationship between variables has been tested for 1980-2016 by using ARDL approach. The empirical findings show that the variables in the study are cointegrated indicating the existence of long-run relationship among them. However, while the effect of oil price and economic growth on energy supply security risk is positive in the short and long run; the effect of renewable energy consumption is negative in the long run.

***Keywords***: Energy supply security, economic growth, renewable energy consumption, energy import.

# The Link Between Financial Market Volatility And Macroeconomic Variables: European Union Stock Markets Case

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**Abstract:** The relationship between financial market volatility and macroeconomic factors has been extensively examined in the financial economics literature. It is commonly believed that stock market volatility which is defined as the variability of the stock return in a specific period is one of the main indicators of the stock market quality. Stock market volatility reacts instantly to the news which releases the public as efficient market hypothesis states. Therefore, stock market volatility consists the real information and can be used as a tool to understand the economic situation of the country. In this study, we investigate the link between financial market volatility and selected macroeconomic variables for 10 stock markets. We choose 9 European Union countries' stock markets (Germany, French, UK, Italy, Spain, Portugal, Australia, Netherland, and Sweden) as well as the Turkish stock market. GDP growth rate, inflation and interest rate are used as macroeconomics variables and we employ panel unit root test and Panel Causality analysis to identify the link between each individual macro variables and stock market volatility using annual data over the period between 2000 and 2018. Stock market volatility is constructed by the standard deviation of prior year stock market return.

***Keywords***: *Financial market, volatility, macroeconomic variables*

# A Parameters Analysis of Sine Cosine Algorithm on Travelling Salesman Problem

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**Abstract:** Sine Cosine Algorithm (SCA) is a new trend meta-heuristic proposed in 2016 by Mirjalili, likewise Black Hole Algorithm (BHA), Grey Wolf Optimizer (GWO), Whale Optimization Algorithm (WOA), Artificial Atom Algorithm ($A^3$) and Physarum-Energy Optimization Algorithm (PEO) proposed in 2013, 2014, 2016, 2018 and 2019, respectively. Due to new ideas in SCA, a few of publications have been published on SCA. SCA was applied on continuous and discrete optimization problems. In addition, there exist remarkable implementations of SCA in the field of engineering, science and technology. In this work, a parameters analysis of SCA has been done on a group of classical travelling salesman problem (CTSP) and randomly generated TSP (RTSP). In order to do parameters analysis, major parameters have been changed gradually. For classical TSP, symmetric data has been taken from TSPLIB (TSP Library in net) and random data was generated for some datasets. The results are given as best, mean solutions and deviation from optimal ones for CTSP and RTSP. Besides, figures and tables demonstrate the effect of parameters for solving TSP. After adequate experimentation based on trial-and-error methodology, optimal parameters and best ever solutions have been found. As a result, the findings indicate that major parameters of SCA influence the performance of that algorithm significantly.

***Keywords***: *Sine Cosine Algorithm, Meta-heuristics, Travelling Salesman Problem*

# Rüzgâr Enerji Santrallerinin (RES) Ekonomik Güç Dağıtımında Maliyet Üzerine Etkilerinin Yüklü Sistem Arama Algoritması ile İncelenmesi

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**Özet:** Elektrik enerjisi, enerji türleri arasında en çok ihtiyaç duyulan türlerden biridir. Bunun bir nedeni de farklı enerji türlerine kolaylıkla dönüştürülebilmesidir. Giderek artan elektrik enerjisi ihtiyacının karşılanması için çoğunlukla fosil kaynaklı yakıtlar kullanılmaktadır. Bu yakıtların ömürlerinin giderek azalması ve tükenecek olmalarından dolayı, yenilenebilir enerji üretim sistemleri ile elektrik enerjisi üretimi büyük önem kazanmıştır. Yenilenebilir enerji üretim sistemleri arasında en yaygın olanı rüzgâr enerji santralleridir. Günümüzde rüzgâr enerji santrallerinin (RES) kullanımı giderek artsa da bu sistemler birçok uygulamada yerel yükü beslemek üzere konumlandırılmışlardır. Elektrik mühendisliği alanındaki araştırmacılar için büyük bir öneme sahip olan ekonomik güç dağıtımı problemi, sistem kısıtları altında en düşük yakıt maliyeti ile sistemin talep ettiği gücü karşılamak olarak tanımlanır. Sistemde sadece termik üretim birimleri varsa bütün üretim birimleri için en uygun üretim değerlerini bulmak ve iletim hattı kayıplarını hesaplamak gerekir. Yapılan çalışmada termik üretim birimleri bulunan bir güç sistemine, yerel bir yükü beslemek üzere bir RES yerleştirilmiş ve sistemin aynı yük talebi için maliyet ve iletim hattı kayıpları üzerinde bu üretim biriminin etkisi incelenmiştir. Çalışmada konveks olmayan yakıt maliyeti fonksiyonlarına sahip, valf nokta etkili ekonomik güç dağıtım probleminin optimizasyonu yüklü sistem arama (CSS) algoritmasıyla yapılmıştır. Örnek sistem olarak belirlenen 14-bara 5-generatörlü güç sistemi, CSS algoritması ile iki kez çözülmüştür. İlk çözümde sistemdeki güç talebi sadece termik üretim birimleri tarafından karşılanırken, ikinci çözümde ise sistemdeki bir yük barasına, o baradaki yükü besleyecek RES eklenmiştir. Her iki çözüm içinde bulunan en iyi maliyet değerleri ve iletim hattı kayıpları karşılaştırılmış ve sonuçlar tartışılmıştır. Problemin çözümünde iletim hatlarının kayıpları B kayıp matrisleri kullanılarak yaklaşık hesaplanmıştır

***Anahtar Kelimeler**: Rüzgâr enerji santralleri (RES), Termik üretim birimleri, Ekonomik güç dağıtımı, Yüklü sistem arama (CSS) algoritması, B-kayıp matrisleri.*

# Döviz Kurundaki Dalgalanma ve Ekonomik Büyüme: Türkiye Örneği

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**Abstract:** Bu çalışma döviz kurundaki dalgalanmanın doğrudan yabancı yatırımlar üzerindeki etkisini Türkiye için analiz etmekte ve 1980-2018 dönemini kapsamaktadır. Çalışmada ARDL tahmin yöntemi kullanılacak ve döviz kurundaki dalgalanmanın doğrudan yabancı yatırımlar üzerindeki kısa ve uzun dönem etkisi incelenecektir. ARDL yöntemi değişkenlerden birinin düzeyde durağan iken diğerinin birinci farkı alındıktan sonra durağan olması halinde uygulanan bir tahmin yöntemidir. Burada en uygun gecikme uzunluklarının belirlenmesi son derece önemlidir. Çalışmanın metodoloji kısmında niçin ARDL yöntemi seçildiği ayrıntılı olarak anlatılacaktır. Çalışma sonucuna göre ülke paramız olan Türk Lirasının değer kazanması halinde doğrudan yabancı yatırımlarda bir artış oluyorsa hükümetin bu durumu destekleyecek bir döviz kuru rejimi uygulaması gerektiği vurgulanacaktır.

***Keywords***: *Döviz kurundaki dalgalanma, yabancı yatırımlar, ARDL yöntemi*

# Anti-metastatic activity and anti-proliferative activity of biologically synthesized silver nanoparticles on human colon adenocarcinoma cell line HT29

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**Abstract:** The incidence of colon cancer is still increasing with the inadequacy of traditional treatment methods. Therefore, in addition to traditional treatments, new protocols are constantly being investigated. Silver nanoparticles synthesized using plant extracts have shown therapeutic applications and make it to be a good anti-cancer candidates. The present work was aimed to evaluate the anti-metastatic and anti-proliferative activity of biosynthesized silver nanoparticles from rosehip extract on the human colon adenocarcinoma cell line HT29. The biological synthesis of silver nanoparticles (R-AgNPs) was carried out using rosehip aqueous extract. R-AgNPs were characterized by various analytical techniques such as UV-visible spectrophotometer and scaining electron microscopy (SEM). HT29 colon cancer cells were treated with various concentrations of R-AgNPs (0-20 $\mu$g/mL) for 48 h. We found that R-AgNPs inhibited the growth in a dose-dependent manner using MTT assay. Anti-metastatic potential of R-AgNPs were studied on HT29 cells using scratch assay and colony forming assay. R-AgNPs showed the ability to inhibit metastasis of HT29 cells in dose-dependent manner. The synthesized R-AgNPs are remarkable candidates for treatment of colon cancer cases.

***Keywords***: *Silver nanoparticles, Colon cancer, HT29, Metastasis*

# Estimation of jumping performances of soccer players by using Artificial Neural Network

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**Abstract:** Surface electromyography (SEMG) can be defined as a sum of electrical signals composed by moving parts as muscles in human body. Thus, SEMG has been frequently used in sport science researches. Some mathematical such as Least Squares Regression (LSR) and machine learning based models such as Artificial Neural Networks (ANN) and Support Vector Machines (SVM) have been used to predict the output values of various problems with respect to SEMG data. This study examines ANNs' fitting performance over predicting the jump height of soccer players. In our experimental study, EMG data were acquired from twelve volunteered male soccer players whose average age was 17 year, average height was 175 cm and averaged body mass was 67 kg. SEMG data were provided by EMG electrodes located on right and left limbs' Vastus Lateralis (VL) while soccer players were performing counter movement jump. Five values were acquired from each player including test jumping, jumping after one, two, three and four minute recovery duration. Then these data were exposed to filtering, rectification and normalization processes, respectively. ANN model indicated reasonable results for jump height prediction.

***Keywords***: *Artificial Neural Networks, Jump Height Prediction, EMG, Vastus Lateralis*

# In the Textile Industry Occupational Health and Safety Practical Application

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**Abstract:** According to the ILO (International Labour Organization) Convention No. 161, assess risks in the workplace every employer, employee, work environment and protect the health, improve the practices, and schedule the job, train employees, must work on taking a record of all applications. In the preamble of the ILO Constitution, the protection of workers against disease and injury brought about by employment, social justice is an essential element in creating**.** This responsibility to employees and the community, we need to show that the moral stance**.** Criminal cases against local laws and the ILO fall into and we need to take the necessary precautions to avoid the criminal process. Because of the hazards, occupational accidents and diseases severity will be high, our economic resposibility will also be heavy . Textile sector is leader in the exports of our country and also employment is very important in terms of economy. The intense competition and working environment in the textile sector brings along occupational accidents and diseases. Intensive organic dust causes bisinozis , working together a large number of the machines that generates noise hearing loss and we know that these machines running by vibration causes occupational health deases like white finger in textile sector. ILO C No.148, wants protection for employees against to air pollution, noise and vibration. The organic dust accumulate in dust channels in between machines, has capabilty of igniting than gunpowder. For fire safety that needs to be very careful, very dangerous, and constitutes a situation with very high risk potential. ILO R No.167 necessitated fire protection of employees. In this presentation, Occupational Health and Safety status on the scale of a textile company, compliance with legal and company standards " The Hazards of Fire and Emergency, The Hazards of Working At Height, The Hazards of Health, The Hazards of Electricity, The Mechanic Hazards, Ergonomic Hazards and The Organizational / Management Hazards " with the inspection issues are identified and recommendations for action are presented.

***Keywords***: *Textile industry, Workplace hazard inspection, Safety management*

# Whichever is more toxic to the liver and kidney; Methotrexate or Artichoke?

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**Abstract:** Methotrexate (MTX), a folate antagonist, is an antineoplastic drug. MTX has side effects such as nephrotoxicity or hepatotoxicity. In this study, we used artichoke extract which is known to have protective properties to reduce these damages. A total of twenty-four male Wistar albino rats were equally divided into four groups. Rats were received a single injection of MTX (20 mg/kg, i.p.) with or without Artichoke extract pretreatment (1,5 g/kg, orally). One half of kidney and liver tissues were investigated for histopathological examination by light microscopy. To biochemical examination, the other half of renal and liver tissues were also obtained to determine lipid peroxidation product malondialdehyde (MDA) and activity of antioxidant enzymes such as superoxide dismutase (SOD), catalase (CAT). MTX administration increased MDA production and decreased SOD and CAT levels in the kidney and liver tissues when compared to the control group. Morphological damage in all MTX administrated rats were severe in the kidney and liver tissues. Artichoke extract treatment didn't prevent MTX-induced nephrotoxicity and hepatotoxicity. As a result of our study, we found that the artichoke dose from literature couldn't protect MTX-induced hepathotoxicity and nephrotoxicity. On the contrary, the amount of Artichoke extract used in our study has similar side effects with MTX on liver and kidney in rats.

***Keywords***: *Methotrexate, Artichoke, Hepatotoxicity, Nephrotoxicity, Rat*

# Yenilenebilir Enerji Yatırımları Kaynağı Olarak Türkiye Karbon Vergisinin Uygulanabilirliği Üzerine Bir İnceleme

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**Abstract:** Dünya ekonomileri, ikinci sanayi devrimi sonrası endüstrileşmenin getirdiği ciddi çevresel dışsallıklarla yüzleşmeye başlamıştır. Dışsallıkların sanayileşme yani, ekonomik büyüme ile paralel seyretmesi, özellikle teknoloji öncüleri olan ekonomilerin ciddi çevresel maliyetler yaratan bu süreci 1990'a kadar göz ardı etmesine neden olmuştur. 1990'lara kadar sanayileşme sonucu yaşanan çevresel maliyetler çeşitli yöntemlerle çözülmeye çalışılmıştır. Örneğin, kamu müdahalesini içeren yöntemler vergileme salım ticareti, doğrudan kontroller ve standartlar ve tarafların karşılıklı anlaşması üzerine dayanan piyasa odaklı çözümler literatürde detaylı ele alınmıştır.

Fakat konu tarafların ötesinde küresel bir problem haline geldiğinde, çözüm ve tedbir yolları biraz daha farklılaşmaktadır. örneğin yaygın bir çevre problemi olan ve doğası gereği küresel nitelik kazanan gaz salınımları, tarafların zarar tazmini ötesinde kirliliğin önlenmesi açısından önem taşımaktadır. Bu doğrultuda ülkeler toplanarak başta (1992) Birleşmiş Milletler İklim Değişikliği Çerçeve Sözleşmesi (BMİDÇS) ve (1997) Kyoto Potokolü (KP) olmak üzere anlaşmışlar ve kirliliğe neden olan emisyon gazlarının 1990 yılı seviyesine çekilerek küresel ısınma derecesinin 2 ℃'de sabitleneceği hesaplamışlardır. Ülkelerin özellikle kirliliğe neden olan fosil yakıt kullanımını yenilenebilir enerji kaynakları ile ikame etmeleri ve ülke karbon ayak izlerini emisyon ticaretleri ile mümkünse sıfırlamaları önerilmiştir.

Bu doğrultuda özellikle teknoloji lideri sanayileşmiş ekonomiler; Almanya merkezli Avrupa Enerji Borsası, Birleşik Krallık denetiminde Avrupa Vadeli İşlem Borsası, ABD'de kurulu Bölgesel Sera Gazları Girişimi, Chicago İklim Vadeli İşlem Borsası ve Kaliforniya Sera Gazı Emisyonları Üst Sınır ve Piyasa Esaslı Zorunlu Mekanizmaları, Quebec Üst Sınır ve Ticaret Sistemi, Tokyo Üst Sınır ve Ticaret Sistemi, Kazakistan Emisyon Ticaret Sistemi, Avustralya Temiz Enerji Düzenleme Karbon Fiyatlandırma Mekanizması ve Yeni Zelanda düzenlemeleri şeklinde emisyon ticaret merkezleri oluşturmuştur. Diğer grup ülkeler ise; öncelikle teknolojilerini yenileme, ardından emisyon azaltımlarını kurulu piyasalar aracılığı ile gerçekleştirmeye başlamışlardır.

Diğer grup ülke kapsamında yer alan Türkiye'de de özellikle yenilenebilir teknoloji yatırımları üzerinden gaz salınımını azaltmayı hedeflemektedir. Bu çerçevede Türkiye'nin GSYH'nın %1,2'sine denk gelecek büyüklükte ek bir karbon vergisi toplayıp bu kaynağı yeni enerji yatırımlarına yönlendirmesi öngörülmektedir. Bu politika ile Türkiye'nin geçici bir süre büyüme ve istihdam rakamlarında görece düşük ilerlemelerin kaydedilmesi, sonrasında 2 ℃ hedefi ve eski oranlaran tekrar yakalanacağı belirtilmektedir. Bu çalışma ise Türkiye hedefi için öngörülen ilave kaynak büyüklüğünün yaratılma ihtimalini, vergi kapasitesi ve vergilendirilebilecek kaynaklar çerçevesinde ele almaktadır.

***Keywords:*** Karbon vergisi, yenilenebilir enerji, emisyon ticareti, çevre kirliliği, çevre sözleşmeleri

# THE EFFECT OF CRACK ON THE NATURAL FREQUENCY AND CRITICAL BUCKLING LOAD FOR A THIN PLATE

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**Abstract:** Steel plates are widely used in a wide variety of engineering applications such as automotive, aerospace and civil engineering structures, and they are subjected to dynamic loads. In this study, the effect of crack on natural frequency and critical buckling load for a thin plate have been investigated numerically by using the finite element method. A thin plate based on the Kirchhoff's thin plate theory is modelled by using the principles of finite element method. it is assumed that the boundary condition of the thin plate was fixed on one side and the other sides were free. The thin plate is divided into square plate elements. These square plates have 4 nodes and each nodes have one translational and two rotational degrees of freedom, so these square plates have 12 degree of freedom. Moreover, by changing the position of the crack on the thin plate, it is examined the effect of the crack position on natural frequency and critical buckling load. It has been observed from the results that the effect of crack increases where the deformation of the thin plate's mode shapes under the free vibration decreases. Thus, the natural frequency and critical buckling load reducing at points which are the crack.

***Keywords***: *Natural frequency, critical buckling load, finite element method, cracked thin plate*

# Removal and Classification of Micropollutants

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**Abstract:** Micropollutants are organic or metallic substances which may have adverse effects on organisms and/or the environment due to toxic, persistent and bio-accumulation properties. Metals and radioactive elements, disinfectants, pharmaceuticals and personal care products, hormones, pesticides, hydrocarbons, and other pollutants are members of this group.

The sources of the micropollutants can be scrutinized in 2 categories of point resources and non-point resources. Point sources include urban sewage network, industrial wastewater, hospital activities, mining activities, and direct emissions, while non-point sources include agricultural activities, atmospheric spills, maritime transportation, and spills due to accidents. The presence of micropollutants in the environment could be reduced by clean production systems in industries (chemical recycling, using biodegradable chemicals), controlled drug and pesticide use, reduction of the use of personal care products and determination of treatment technologies with less toxic and high removal efficiency with adequate technologies. Since the existing treatment facilities in Turkey are not designed for the removal of micropollutants, micropollutant removal is at a low rate in treatment plants. Micropollutant concentrations in water are usually between ng / L and µg / L.

Due to the increase in the consumption of these pollutants with the population increase, it is very important for Turkey to conduct research and conduct applications on the reduction of micropollutants in existing aqueous environments.

The present study aimed to investigate the types of micropollutants, alternative treatment methods and removal performance of each treatment method on different micropollutants.

***Keywords***: *Micropollutants, sources, treatment, removal efficiency*

# THE IMPACT OF TRADE ON RENEWABLE ENERGY CONSUMPTION: AN EMPIRICAL INVESTIGATION FOR DIFFERENT INCOME LEVELS

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**Abstract:** The literature looking into the impact that trade has on total energy consumption is well documented. However, we do not know much about how trade affects renewable energy consumption. Given this knowledge, the goad of this study is to investigate the role of trade on renewable energy consumption for 3 different panel groups with respect to income level. To this end, we use annual observations spanning from 1990 to 2017. Pedroni cointegration results indicate that variables are cointegrated in the long-run, regardless of the income level. FMOLS results show that renewable energy consumption increases with trade affects in high- and middle-income countries. In the low-income countries, however, trade does not have a statistically significant impact on renewable energy consumption. In addition, the coefficient on trade variable in high-income countries is higher than that in middle-income countries. These findings address that income level matters in determining the impact that trade has on renewable energy consumption. Policy implications depending on these results are also discussed.

***Keywords***: *Trade, renewable energy consumption, panel data*

# An example of Traditional Turkish Architecture: Architectural properties and wooden structures of an old building house in Beylerli Village (Denizli - Çardak)

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**Abstract:** Traditional Turkish architecture differs from other architectural structures in terms of general characteristics, original style, building materials and fittings. The characteristics of traditional Turkish architecture differentiate a Turkish House from other architectures due to both the design of the house and the original elements of the furniture used in the house and the traditional lines. In concept of the Traditional Turkish House; Although the houses generally show similar features, these buildings show some changes in material, construction and plan according to the culture of life and climatic conditions.

Traditional Architectural Structures continue to exist in settlements far away from the city centers without losing their texture. However, as a result of the decrease in the population and lack of living in the houses, they face problems of neglect and apathy. In addition, due to harsh climatic conditions, many houses are experiencing collapses and fires. Traditional Turkish Houses are abandoned by the municipalities and governorships of the city where they are located. Researchers have a great responsibility to introduce traditional architectural structures and raise awareness on this subject. With this responsibility, studies are carried out to reveal and examine the traditional structures around Denizli.

In this study; It is aimed to give information about the general architectural structure and wooden reinforcement elements of BADEM Family in Beylerli Village of Çardak District of Denizli Province which is one of the examples of traditional Turkish architecture. In addition, these architectural works are aimed to be transferred to the next generations by bringing them into the literature.

***Keywords***: *Çardak Houses, Wooden Constructions, Traditional Turkish House*

# Effect of tree species used in the core layer on technological properties of three-layer fibreboard

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**Abstract:** Medium density fibreboards (MDFs) were produced from coarse fibers in the core layer and fine fibres were produced in the face layers. Pine or beech wood fibres were used in the core layer while pine wood fibres in the surface layers of MDFs. Different sizes of fibers were used in the core layers of MDFs by adjusting defibrator gap distance from 0.4 mm to 2 mm. Physical properties such as thickness and dimensional stability, and mechanical properties of the MDFs such as internal bond strength, bending strength, and modulus of elasticity were determined according to European Standards. Based on the tests results, it was determined that tree species used in the core layer affected significantly the properties of MDFs. Technological properties of MDF panels having coarse pine fibres in the core layer were found to be better than ones having coarse beech fibres in the core layer.

***Keywords***: Three-layer fibreboard, medium density fibreboard, technological properties, coarse wood fibre, wood species

# Nanocellulose as a green and sustainable for biocomposite industry

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**Abstract:** Cellulose is a polysaccharide composed of a linear chain of β-1,4 linked d-glucose units, which is the most abundant organic polymer on Earth. Nanocellulose is defined as term refers to the cellulosic materials with defined nano-scale structural dimensions. Lignin and hemicellulose are extracted from plant fibers to produce nanocellulose. Nanocellulose can be mainly categorized into three main types; nanocrystalline cellulose (CNC), nanofibrillated cellulose (NFC), and bacterial nanocellulose (BNC). Nanocrystalline cellulose, also known as cellulose nanocrystals, nanocrystal of cellulose, or cellulose nanowhiskers, is nanocellulose with high strength, which is usually extracted from cellulose fibrils by acid hydrolysis. The amorphous parts are hydrolyzed by acid and crystalline parts still maintained. The special attention is the size of nanocellulose fiber which generally contains less than 100 nm in diameter and several micrometers in length. The nanocellulose has unique properties including high modulus, high-specific surface area, sustainability, low thermal expansion coefficient, outstanding reinforcing potential and transparency. CNC and NFC are extremely strong comparing with other materials. As a results of the recent developments in the nanotechnology in the last deceade, nanocellulose have have garnered much attention for their use in biocomposites, biofilms, medicine, coatings, thermoplastic and thermosetting resins. In this study, a mini review on the recent developments in the nanocellulose technology was carried out.

***Keywords***: Nanocellulose, biocomposite, polymer composite, green composites, automotive industry

# Investigation of the effect of waste automotive tire as recycling material in the production of Laminated Veneer Lumber (LVL)

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**Abstract:** The increase in consumption in the world caused the problem of waste. Today, waste materials are threatening the health of the world. In developed countries, technological developments and increasing environmental awareness minimize the use of natural resources and put pressure on the production of advanced technology products using waste materials. Therefore, many countries have started to develop waste policies against this problem and have implemented many projects for the reuse of waste materials in the industry.

With the growth of the automotive industry in the last 50 years, one of the most important waste problems is used tires. The main component of the tires is rubber. Because of the crosslinked polymer property, rubbers cannot deform in any way unless they are external effect. The complex chemical structure of tires makes recycling difficult. Nowadays, waste tires are used as filling material in many areas from construction to insulation due to their advantages such as low unit weight, insulating property and high toughness. However, despite this variety of use, the amount of waste tires is increasing with the increase in the number of vehicles used. The existing areas of use as recycling are not sufficient to eliminate these wastes.

In this study; The usage possibilities of waste tires in forest products industry were investigated. For this purpose, wood veneers are used that produced from woods of scotch pine (Pinus silvestris L.), beech (Fagus orientalis L.) and Juniper (Juniperus foetidissima Wild.), commonly found in Turkey and having commercial value of the forest products industry. Powder rubber was mixed into urea formaldehyde glue (UF) and PVAc glue, commonly used by furniture manufacturers, in different percentages (0%, 10%, 20%, 30%) and then these mixtures were pressed with wood veneers and LVL sheets were produced by lamination method. The produced samples were tested the bonding strength. According to this, 10% rubber + UF glue mixture applied beech wood has the highest adhesion strength.

***Keywords***: *Laminated Veneer Lumber (LVL), Recycling, Waste Tire, Rubber*

# In vitro Study of Cytotoxic Activity of ZnO-PEG-DOX on SaOS-2 Cells

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**Abstract:** Osteosarcoma, as a type of malignant tumor derived from malignant interstitial cells, has some osteoid features such as frequent systemic metastasis. The development of resistance to chemotherapeutic drugs used in cancer treatment has been the focus of interest of new drug development scientists for many reasons such as the failure of the drug to reach the target tumor site. For this purpose, ZnO-PEG nano carrier system was synthesized and doxorubicin (DOX) drug was loaded on this system. Anticancer activity was then determined on SaOS-2 cell lines. In our study, the effects of the ZnO-PEG-DOX nano composites on the SaOS-2 cell line were shown to inhibit growth in cancer cells when compared with the control group and DOX.

***Keywords***: Osteosarcoma, ZnO, DOX, SaOS-2

# The Prediction of Ash-Related Issues during Agro-Waste Combustion in Fluidized Beds

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**Abstract:** Biomass is a promising energy source to reduce the use of fossil fuels for energy generation and to mitigate greenhouse gas emissions. Embodiment of biomass combustion technologies in energy system can play significant role in sustainable development. Agro-waste is readily available in huge amount all over the world Applications of biomass in combustion systems may create operational problems related to ash effects. Hence, reliable prediction of combustion characteristics related to biomass ash behavior is essential for reactor designers and plant operators for successful operation. In this regard, the ash behavior during fluidized bed combustion of agro-wastes was predicted in terms of slagging, fouling and agglomeration of bed material through use of empirical indices for biomass and low rank coals in this study. The results showed that agro-wastes under consideration contain substantial amounts of alkali, falling within the range of certain or probable slagging/fouling. The use of fuel additives or water leaching can decrease the alkali concentrations and can reduce the slagging/fouling potential due to alkali.

***Keywords***: *Agro-waste, ash, slagging, fouling, agglomeration, fluidized bed combustion.*

# Emission Assessment of Agro-Waste Combustion in 1 $MW_{th}$ FBC

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**Abstract:** Biomass is one the most important renewable energy carrier worldwide. As biomass is a diverse, carbon neutral and sustainable energy supply, the utilization of biomass is expected to rise tremendously in the coming decades. Biomass can be classified as woody residues agricultural residues, organic industrial wastes, livestock manures and energy crops that are cultivated for energy purposes. Biomass can be used to meet energy needs for electricity generation, residential and commercial buildings' heating, industrial process heating, transportation, etc. Future of bioenergy sector depends on the availability of biomass resources and development in conversion technologies. Fluidized bed combustion is a favorable technology due its fuel flexible feature for biomass utilization. High volatile matter content of biomass enhances the combustion efficiency. In this study, a numerical model has been developed for 1 $MW_{th}$ fluidized bed combustion system burning different kinds of agricultural residues such as wheat straw, corn stalk, rice husk, almond shell, cotton stalk, sugarcane bagasse in order to evaluate the atmospheric emissions. In comparison with low calorific value lignite, biomass has shown lower $NO_x$ and $SO_2$ emissions. $CO_2$ emissions from biomass can also be regarded as zero due to the renewable nature of biomass.

***Keywords***: *Agro-waste, fluidized bed, combustion, emission, environment.*

# Hydrogen Production from Gasification of Corn Stalk

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**Abstract:** Gasification is a remarkable waste to energy technologies for energy production. It is a thermo-chemical process that converts organic waste into energy through partial oxidation of the fuel. The gasification of solid fuel generates energy in the form of a combustible syngas gas. Syngas or in other terms, producer gas, is composed of carbon monoxide, hydrogen, and methane along with a significant amount of the inert gas carbon dioxide. Different gasification agents can be used in gasifiers such as air, steam, CO2, etc. Biomass in general has high hydrogen and volatile matter contents, which promotes gasification process. In this paper, a modeling study was conducted in order to investigate the hydrogen production potential of corn stalk in downdraft gasification system. The numerical model developed for air-steam gasification and 100 % carbon conversion in gasification process was assumed. Air to fuel and steam to fuel ratio was 0.05 due to high oxygen content in corn stalk. The gasifier temperature was taken as 877 °C in the developed model. According to the modeling results, the ratio of hydrogen content in the producer gas from corn stalk gasification has obtained as 41.96 %. Corn stalk can contribute to renewable energy generation in order to reduce global greenhouse gas emissions.

***Keywords***: *Corn Stalk, gasification, hydrogen, renewable energy, environment.*

# Sustainable Use of Woody Biomass for Energy in Mediterranean Region of Turkey

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**Abstract:** Biomass is the most favorable resource to produce renewable energy and to alleviate the waste management problems worldwide. There are many conventional energy technologies available for conversion of biomass to useful energy and a variety of products. Gasification is one of the promising technologies for energy generation from solid fuels. In Turkey, abundancy of biomass from agricultural residues, forestry residues, animal waste, energy crops and waste derived from industrial processes indicates their potential for renewable energy production. In this study, forestry residue gasification was investigated through different gasifiers and the energy production potential of forestry residues in the Mediterranean Region of Turkey has estimated. In gasification process, syngas is the main product, which mainly consists of hydrogen, carbon monoxide, methane, nitrogen and carbon dioxide. Syngas can be utilized as renewable fuel input in internal combustion engines, turbines and gas boilers. Syngas energy potential of forestry residues by using air as the gasifiying agent have evaluated in up-draft fixed bed, down-draft fixed bed, bubbling and circulating fluidized bed systems. The results of the analysis revealed that down-draft gasifier has shown the highest annual energy production potential of 312.54 MW from forestry residues. Bioenergy production from indigenous forestry residues can be regarded as a sustainable route for energy production in Turkey.

***Keywords***: *Forestry residues, gasification, renewable energy, waste management, Turkey.*

# Reduction in Greenhouse Gas Emissions through Biogas Production from Olive Residues in Turkey

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**Abstract:** Global energy supply becomes challenging due to continuously growing population and industrial activities worldwide. Biomass power is able to generate carbon neutral electricity from renewable organic waste. It is one of the promising solutions for energy production and protecting environment from anthropogenic emissions. One of the conventional technologies used for recovering the energy from biomass is anaerobic digestion, which is used to produce biogas. Anaerobic digestion of agricultural residues is of interest to decrease the greenhouse gas emissions and to contribute sustainable development. Biogas systems are considered as a reliable route to convert organic wastes into renewable energy and valuable by- products through a series of biological processes. By upgrading, biogas becomes bio-methane, which is a renewable substitute for natural gas. In this study, impact of biogas production from olive residues on reduction of carbon dioxide emissions in Turkey has estimated. The theoretical results revealed that Turkey has annual 1.03 Million tons of $CO_2$ emission reduction potential. Biogas can be an effective solution especially in rural areas in Turkey to support green energy sector, the agricultural development and public prosperity.

***Keywords***: *Biomass, renewable energy, carbon dioxide emissions, sustainable development, waste management, Turkey.*

# Experimental Investigation of Variation of the Surface Quality of Workpiece Along the Cutter Tool Forehead Profile from the Center to the Periphery in the End Milling Process

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**Abstract:** The cutting speed for end milling tools decreases from the maximum to the center and achieves to zero on the center point. In this case, it is inevitable to observe the varying surface quality depending on the cutting speed changing along the tool width. In this study, the variation of the surface quality of workpiece along the cutter tool forehead profile from the center to the periphery in the end milling process was investigated depending on the distance from the center. Milling tests were carried out in two separate conditions and surface roughness values were measured at different distances from the center to the periphery. Surface roughness values have been increased by four times in the center according to the periphery.

***Keywords***: *Milling; surface roughness; cutter tool*

# A Novel Approach to Heat Sink Manufacturing

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**Abstract:** The studies on electronic cooling systems have generally focused on the thermal performance of heat sinks and the effect of the production technique has remained in the background. However, given the advantages of new production techniques, an increase in heat sink performance can be observed. In particular, thanks to the enhanced design freedom provided by additive manufacturing technologies, it is possible to improve the thermal properties of a heat sink to be designed and manufactured. Furthermore, due to the flexibility of the heat sink geometry produced by the additive manufacturing, the limiting aspects of conventional production methods can be overcome. Thus, heat sink which can only be produced in limited geometries by conventional methods can be produced in the desired geometry.

In this study, the usability of additive manufacturing in heat sink design and manufacturing are investigated. In particular, copper and an aluminum alloy (AlSi10Mg) heatsink produced using direct metal laser sintering (DMLS) were investigated. The ability to produce complex geometry heat sink which cannot be produced by conventional method has been demonstrated.

***Keywords***: *Heatsink design, heatsink manufacturing, DMLS, heatsink performance*

# Nickel Based Super Alloys Used in the Field of Energy and Technological Expectations

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**Abstract:** Nickel based super alloys can be defined as high cost special alloys because of their high strength and durability in high temperature environments. The reason for this high cost, expensive alloying elements and there are generated under vacuum. Parts with super alloy origin are expected to have a long service life, high strength and reliability at high temperatures. For this reason, nickel based super alloys are indispensable materials for the gas turbine industry on behalf of today's high temperature applicatıons.

There have been certain developments in the turbine industry in order to increase thermal efficiency and produces high power at high temperatures. Therefore, the usability of nickel based super alloys in the field of energy needs to be examined in more detail. Particularly in our country, the need for parts exposed to high temperature effects is raising in both steam and gas turbine power plants. The main reason for, this is economic operation of gas turbine systems with higher temperatures additionally higher resistance in line with growing energy demand.

In this study, the composition, manufacturing methods, new generation alloys and technological expectations of super alloys, single crystal super alloys used in gas turbine blades are investigated. Looking at the results of this study, higher propulsion and engine efficiency are among the expectations in today's gas turbine industry. However, it is among the aims to save fuel while rising engine efficiency. In this respect, it comes to leading in high temperature strength materials used.

***Keywords***: Energy, Nickel Based Super alloys, Gas Turbine, Single Crystal Super alloys

# Analysis of Energy Consumption in Micro-drilling Processes

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**Abstract:** Nowadays, manufacturing technologies are especially focused on macro-sized parts. As the size of technological devices and equipment decreased, micro manufacturing was needed. Micro-processing can be done in the production of micro-sized products and devices. Among these, micro drilling is one of the most basic micro-processing techniques and has emerged in line with market needs. Particularly in aerospace, electronics, medical and other technological fields, micro-drilling operations with diameters ranging from several microns to several hundred microns (drilling of diameters between 1 μm and 1 mm) can be performed.

In recent years, energy consumption has been a feature of the performance indicator for sustainable production. The manufacturing industry is under economic and ecological pressure due to raising energy costs. Therefore, the amount of energy consumption is important in the micro processing.

In this study, current developments in micro drilling process which is preferred in micro processing field, contribution of micro drilling techniques on sustainable energy consumption and cost saving are investigated. As a result of the study, the effect of micro processing varies according to macro-scale processes. Power distribution in micro-scale processing is higher than in macro-scale processing. Fast production process will reduce energy consumption and increase cost. For this reason, only the cost is taken into consideration in micro drilling process and it is concluded that 35% of production cost can be saved.

***Keywords***: *Micro machining, Micro drilling, Energy consumption*

# EFFECT OF SEISMIC ISOLATION SYSTEM ON THE RESPONSE OF A BRIDGE PIER

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**Abstract**: This study is aim to reveal the effectiveness of seismic isolation system for a pier from a multispan bridge structure. The reinforced concrete pier system was seismically isolated by laminated rubber bearings including steel-reinforced plates. Under effects of strong ground motions, the pier responses are analytically investigated in terms of supporting system of the superstructure. There are two cases for the considered study: The first one is that the superstructure is fixed connected to the pier and the latter is considered with an isolator connection. Seismic responses are displayed for both cases under effects of recorded strong ground motions. Finally, the effect of isolator usage is discussed for base responses and displacements in bearing and superstructure as well. Results are obtained comparatively and illustrated for the both cases. Although the isolated system has lower stiffness, the bearing provides more energy dissipation capacity thereby lower base shear forces and higher superstructure-displacements are presented by computations and graphics.

**Keywords:** Rubber bearing, pier, concrete, seismic

# Beçin Yöresi Tarihi Yapılarında Kullanılan Bağlayıcı Malzemelerin Deneysel Olarak İncelenmesi; Büyük Hamam Örneği

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Özet: Kültür miraslarımız olan tarihi yapıların restorasyon çalışmalarında, herhangi bir uygulamadan önce disiplinler arası bir çalışma ile yapıların mevcut halinin detaylı incelenmesi gereklidir. Bu incelemenin en önemli aşamalarından biri olan yapının inşasında kullanılan bağlayıcı malzemelerin özellik ve bileşimlerinin analiz edilmesi bu çalışmanın temel amacıdır. Çalışma kapsamında Muğla ili Milas ilçesinde bulunan Beçin antik kentindeki Büyük Hamam yapısının duvarlarında kullanılan duvar örgü ve sıva harçları incelenmiştir. Bu tarihi yapıdan alınan harç numunelerinde, laboratuar ortamında parlatılmış yüzeylerinde stereo mikroskopla petrografik incelemeler yapılmıştır. XRD, TG/DTA, XRF, birim hacim kütle, kütlece su emme, hacimce su emme, özgül kütle, kompasite, porozite, asit kaybı ve tek eksenli yükleme deneyleri yapılmış ve elde edilen sonuçlar değerlendirilmiştir. Yapılan analizler sonucu, harçların temel fiziksel, mekanik ve hidrolik özellikleri ile mikro yapıları, ham madde kompozisyonları, ham maddelerin mineralojik ve kimyasal özellikleri belirlenmiştir. Çalışma sonunda yapıda kullanılan duvar örgü ve sıva harçlarında kullanılan bağlayıcı malzemenin saf kireç harcı olduğu belirlenmiştir. Harçların hidrolik özellik göstermediği, ayrıca basınç dayanımlarının da düşük olması incelenen örneklerin hidrolik özellikte olmadığından dolayı yani harçların saf kireç harcı olmasından kaynaklanabileceği düşünülmektedir.

***Anahtar Kelimeler:*** Tarihi yapı, bağlayıcı malzeme, kireç harçları, hidrolik özellik, dayanım.

# RELATIONSHIP BETWEEN RENEWABLE ENERGY CONSUMPTION, CO2 EMISSION AND ECONOMIC GROWTH: SELECTED G20 COUNTRIES

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Abstract: In this study, the relationship between economic growth and renewable energy consumption and carbon emission amounts was tested for selected G20 countries using panel data analysis methods considering horizontal cross-section dependence and structural breaks for selected G20 countries. In the study, the stationarity of the series was tested with Levin, Lin ve Chu, Breitung, Im, Presan ve Shin, ADF-Fisher, Fisher Phillips-Peron unit root tests and the existence of the cointegration relationship between the series was tested by the Johansen fisher cointegration method and it was found that there was a cointegration relationship between the series. Then, the direction of this long-term relationship was determined with the help of Dumitrescu-Hurlin Panel Causality Test. According to the findings, renewable energy consumption and carbon emissions in selected G20 countries are positively correlated with economic growth in the long run and this is an economically expected situation.

***Key words:*** Sustainable Development, Economic Growth, Renewable Energy Sources, CO2 Emission.

# A numerical modelling for internal solitary waves via general form of the Gardner equation

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**Abstract:** Solitary waves are finite-amplitude waves, and they consist of a single isolated wave whose speed is an increasing function of the amplitude. Typically, internal solitary waves are a generally croping out feature in the flows of coastal seas, fjords and lakes. In this work, a numerical modelling is developed to investigate some physical aspects of internal solitary waves. In this context, finite element method is applied to general form of the Gardner equation. Stability of the applied method is analyzed based on von Neumann theory. Then, propagation of the solitary waves and evolution of solitons are observed successfully. The effect of nonlinearity on these problems is investigated in detail.

***Keywords***: Internal solitary waves, Finite element method, Gardner equation

# Mineral-Based Health Risk Approach in Potable Water

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**Abstract:** Since drinking water is one of the most important factors for human health, whether the water is hygienic and suitable for consumption is controlled based on its mineral content. Excessive or deficient mineral content is known to lead to various cancers and/or other diseases. In living organisms, effects on health arise as a result of the activity of pollutants that reach to target organs in the cells after exposure to high concentrations of pollutants. In human health risk assessment, which determines the likelihood of these health effects, initially the exposure should be assessed. Exposure assessment entails the quantitative and qualitative determination of the volume, frequency, and duration of the exposure and internal dose. Exposure can occur through three main paths that include consumption (oral), breathing, and skin absorption. Lifetime Average Daily Dose (LADD) is used as an exposure measurement to determine an individual's daily exposure levels. In the present study, only oral exposure was scrutinized. The aim of the present study was to determine the mineral content of the drinking water, the exposure by drinking the water, and the cancer and non-cancer risk levels for the population of Istanbul exposed by drinking the tap water.

In the survey conducted based on the above-mentioned aim, consumers were asked about their water consumption habits, and target substance concentrations in the utilized drinking water were determined. The findings were analyzed with the SPSS software.

The distribution of drinking water consumption of Istanbul residents and the distribution of exposure to nitrate and chlorine content were determined. Furthermore, non-cancer risk levels were determined for two above-mentioned pollutants. Whether the mineral concentration, exposure, and health risk levels differed between drinking water sources (tap water and bottled water) was analyzed. The findings demonstrated that non-cancer risk (HQ) value determined by the EPA was HQ <1.

***Keywords***: *Potable water, risk, nitrat, chlorine*

# CFD investigation of pulsating nanofluids flow over a cam-shaped tube bank

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**Abstract:** In present study, laminar pulsating flow heat transfer of nanofluids over a bank of cam shaped tube is investigated numerically. The cam shaped-tube banks with staggered arrangement and the flow is considered two dimensional. The momentum and energy equation for laminar incompressible flow are solved using a finite volume method. The nanofluids used were $Al_2O_3$-water and the performance was compared with base fluid water. In this paper, effects of parameters such as Reynolds number, pulsating amplitude, and frequency are analyzed while the geometrical dimensions are kept constant. The instantaneous temperature and velocity profile were obtained from the simulations and the heat transfer performance was discussed. The results show that, heat transfer enhancement is significantly affected by the pulsating parameters. It has been observed that, while the amplitude and frequency increasing, the heat transfer also increases, but this increase causes a slight increase in the friction factor. As a result of the study, the parameters providing the optimum thermo-hydraulic performance are determined for pulsating nanofluids flow over a flat tube bundle. The results are given as a function of dimensionless parameters.

***Keywords***: *Cam Shaped tube bundle, Pulsating flow, Nanofluids, Heat transfer enhancement*

# International Student Achievement Assessment Program Examination (PISA) 2015 Of The Students Who Participated in Turkey, Individual, Familial, And School Related Variables, Examining The State Of The Science Of Success With The Procedure

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**Abstract:** This research, International Student Achievement Assessment Program in Turkey (PISA) individual students participating in the exam in 2015, aims to determine the relationship between science achievement with family and variables of school. PISA 2015 data set was used in the study. The sample of the study was 5895 students (159 students were excluded from the study because they were not suitable for analysis). In this relational survey type, the dependent variable is science achievement. Independent variables are; individual variables (gender, language spoken at home, early childhood education and care time, school feeling, test anxiety, motivation, science self-efficacy, epistomological beliefs, science activities, enjoyment of learning science), family variables (parents' emotional support, home cultural assets, home education resources, economic, social and cultural status index), school variables (discipline conditions in science classes, teacher support in student elective science classes, science teaching and learning exercises based on inquiry, teacher oriented science teaching, interest in wide science subjects, instrumental motivation, teacher justice). According to the results of Hierarchical Multiple Linear Regression, the language spoken at home, age of starting pre-school education, test anxiety, motivation, science self-efficacy, epistemological beliefs, science activities, learning to enjoy science, home cultural assets, home education resources, economic, social and cultural It can be said that variables such as status index, discipline conditions in science classes, science teaching and learning exercises based on inquiry, teacher guided science teaching, teacher justice variables are significant predictors of science achievement. It can be said that there is no significant relationship between science achievement and gender, school feeling, parents' emotional support, teacher support in student elective science classes, interest in broad science subjects, instrumental motivation variables. According to the findings reached by the variable most predictive science achievement in Turkey, economic, social and cultural status index. Based on this result, it is thought that in our education system, policies and regulations that will eliminate the economic, social and cultural differences arising from the families of each student should be made.
data.

***Keywords:*** International Student Assessment Program (PISA), Science Literacy, Economic, Social and Cultural Status Index.

# Vermikülit ilavesinin epoksi zemin kaplamalarının ısıl iletkenliğine etkisi

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**Abstract:** Epoksi termosetler grubundan kimyasal bir reçinedir. Suya, asite ve alkaliye karşı direnci çok iyidir. Zamanla özelliklerini kaybetmez. Genellikle iki komponentli olan Epoksi sistemi, epoksi reçinesi ve bir kürlenme ajanından meydana gelir. Epoksi, genel olarak, beton zeminlerin partiküler bir kaplama düzlemi oluşturulmak sureti ile korunması ve çevresel etkilere karşı dayanıklı hale getirilmesi (donam-çözünme, kirlenme, kimyasal etkiler ve yük etkisi gibi), tamiri ve dekoratif bir görünüm verilmesi amacıyla kullanılan bir ürün grubudur. Bu özelliklerinden dolayı, çok geniş bir alanda; sağlam, dekoratif, sıhhi, kimyasal ve fiziksel dayanımları çok yüksek, hem uygulama ve hem de sonraki kullanım ömrü içinde insan sağlığına zararsız zeminlerin imalatında her geçen gün daha da artan bir taleple kullanılmaktadır.

Çok geniş bir uygulama alanına sahip epoksi zemin kaplamaları laboratuvar, okul ve hastane zeminlerinin kaplamasında da kullanılmaktadır. Mekanik ve fiziksel dayanım özelliğinin iyi olması ile bilinen epoksilerin, zemin kaplamalarında enerji kayıplarını azaltmak ısıl iletim katsayıları ile ilgili iyileştirmelerin yapılması ile mümkün olacaktır. Bu çalışmada epoksi kaplı zeminlerden olan ısı kayıplarını en aza indirmek için epoksi içine çeşitli oranlarda vermikülit ilavesi yapılmış ve ısı iletim katsayısı belirlenmeye çalışılmıştır.

***Keywords***: *Epoksi, Epoksi zemin kaplama, Vermikülit, Isı iletim katsayısı*

# Performance Analysis of Pakistan Super League Players Using Principle Component Analysis Approach

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**Abstract:** Where there is sport there is statistics and cricket is no exception to this. The game of cricket has a wide wealth of complex statistical data associated with the game. This study provides an outstanding application of Principle Component Analysis in evaluating the performance analysis of Cricket data. This study probes the systematic covariation among various dimensions pertaining to batting and bowling capabilities of Players of Pakistan Super League PSL T-20 (2016-2017) using the advanced statistical technique Principle Component Analysis. In the present study PCA is used to rank the batsmen and bowlers of PSL based on their contributions to their teams during these competitive seasons. The findings of this study showed the best top ten ranked batsmen and bowlers who performed well during the series also we can concluded that batting capability dominates over bowling capability. This conclusion coincides with the general opinion of several cricketing enthusiasts and experts. This research is a first study in Pakistan that highlights the features of PSL.

***Keywords***: *T-20,Batting,Bowling,PCA,PSL,Ranking*

# Food Security in Pakistan: Analyzing the Role of State in Providing Healthy Food

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**Abstract:** It is not just the quantity of the food that offer nourishment to the human body but the hygienic and pure food keeps a person appropriate in health. The need of the day is to analyze the concerns about food safety. The economists are concerned about the healthy food provisions. In Pakistan the governments allocate a very small amount of funds for the sector and a minor and insignificant amount is allocated to ensure the safety and hygiene of the food available for consumption. The unhygienic food consumption led to the increase in extent of diseases resulting an increase in death rates. The research endeavors to aim found the intake of unhealthy food have dual impact one is by affecting the health conditions of the individuals and the productivity level of the individuals. Furthermore, the cost of government was also estimated in provision of the healthy food to everybody. The cost of monitoring the supply of healthy food to people is a challenge to the economy. It was recommended to ensure the supply of safe and hygienic food throughout the country in the best and cost-effective approach

***Keywords***: *Contaminated Food, Efficiency, Growth of GDP, Health Diseases, Death Rate, Monitoring Costs, Food Supply*

# Energy Inflation Dynamics In Pakistan: Role of Structural Determinants And Implications

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**Abstract:** Current study endeavors to examine the determinants of the energy inflation in Pakistan. Energy inflation is playing an important role in development of an economy. This study at hand used time series data for the 1991 to 2017 to run the analysis. The ADF is applies for the checking of the unit root while the ARDL was utilized for the empirical estimations. The role of various factors in explaining energy inflation, such includes as board money, taxes, oil prices, energy import and GDP has been examined. Increase in the demand of energy in economic activities in developing countries indicates a demand for energy hence the energy inflation. The results show that the energy inflation is mainly determined by the EIM, GDP, M2, OP and Tax in Pakistan. The government of Pakistan must keep the view on these factors to control the inflation and to to enhance the welfare in our country.

***Keywords***: *Energy, Pakistan, inflation*

# An Econometric Study of Environmental Degradation, Energy Consumption and Economic Growth for Pakistan

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**Abstract:** In any country, sustainable economic growth cannot be attained without sustainable environment conditions. CO2 emissions and consumption of energy are the major causes of environmental degradation. This study elaborates the long-run relationship among environmental degradation, consumption of energy and economic growth for Pakistan. Annual time series data is used for the year 1975 to 2017. In this study, gross domestic product is used as a dependent variable while CO2 emissions, consumption of energy, FDI, trade openness and population growth rate are taken as independent variables. ARDL approach is used for analysis of data which indicates long-run association among variables. The results indicate that consumption of energy, CO2 emissions and population growth have negative effect on growth while FDI and trade openness have positive impact on economic growth.

***Keywords***: *Energy Consumption, Environmental Degradation Economic Growth*

# Utilization of CuO/water nanofluid in a tube type heat exchanger

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**Abstract:** The thermal conductivity of the working fluid is an important parameter to be taken into attention in the achievement of the efficiency of the heat exchangers along with other design parameters. This paper shows the heat transfer characteristics of CuO/water nanofluids in an experimental study on the performance of a parallel flow tube type heat exchanger. CuO/water and water have been utilized as working fluids in hot side for screening differences in the achievement of the performance of the heat exchanger. The nanofluids have been prepared in 0.5 % and 1 % (wt/wt) concentrations. Moreover, surface active–agent Triton X-100 has been used to avoid inconstancy and to improve stability of the CuO/ water solution. The experiments have been done in different flow rates to find out the effects of nanofluid using. Experimental results showed a maximum increment of 4.5% and 8.4% in overall heat transfer coefficient utilizing CuO/water at 0.5% and 1% concentrations, respectively.

***Keywords***: *Nanofluid, CuO, Thermal Performance, Heat Exchanger*

# Determination of Binding Materials Used in A Hammam Structure Built in 15th Century

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**Abstract:** Suitable restoration of historical buildings such as hammams which is a special kind of Turkish structure requires determination of binding materials used in the construction. In this study, masonary mortar (MM) and plaster mortar (PM) used in a hammam built in 15th Century. Petrographic properties of mortars with polished surfaces have been made by use of stereo microscope in laboratory environment. XRD, TG/DTA, XRF, unit weight, water absorption by weight, water absorption by volume, density, compactness, porosity, acid loss, compressive strength measurements were made comprehensively. At the end of the study, it was determined that the binding material used in the wall and plaster mortars used in the building was pure lime mortar. It is thought that the mortars do not exhibit hydraulic properties, and that their compressive strength is low, which may be caused by the fact that the mortars being pure lime mortar are not hydraulic.

***Keywords:*** Binding Material, Lime Mortar, Microstructure, Physical and chemical characterization, Hydraulic properties

# Analysis of Drilling Operation Carbon Fiber Reinforced Composite

# Under Cryogenic Cooling Conditions

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**Abstract:** Carbon fiber reinforced plastic composites are becoming widely used as preferred lightweight structural components in aerospace, automotive, medical and transportation design. The discontinuous structure of the carbon fiber reinforced composites and their high strength values make these parts difficult to machinability. The formation of cutting forces due to material discontinuity in machining affects adversely the cutting tool wear and machining surface quality. The high temperature generated during machining triggers tool wear, reducing tool life and increasing machining costs. In order to minimize this temperature effect, one of the innovative cooling technologies is the use of carbon dioxide gas-based (up to -45 degrees) cooling technology under cryogenic conditions. In this study, drilling of carbon fiber reinforced composite materials under CO2 cryogenic cooling conditions were examined. Cryogenic cooling conditions are preferred because it is a green, sustainable cooling technology in machining. Tests were carried out according to L9 Taguchi test design method under dry drilling, 5 bar CO2 cooling conditions and 10 Bar CO2 conditions. Experimental data on drilling parameters such as trust force, torque, delamination factor, are presented and analyzed comparing dry drilling with cryogenic cooling of CFRP composite material. The findings demonstrate that cryogenic cooling helps enhancing the surface integrity characteristics of produced hole. However, cryogenic cooling generates larger thrust force, torque, and thus larger delamination factor. In this study, tungsten carbide cutting tools with Poly Carbon Diamond (PCD) coating were used in drilling process experiments

***Keywords:*** Drilling, Cryogenic Machining, Carbon Fiber Reinforced Plastic Composites

# Additive Manufacturing of Scara Robotic Arm With Using ABS-CF Material and Novel Topology Optimization

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**Abstract:** The purpose of using robotic technology is to reduce errors and human efforts. Scara robot is having an application in various department of engineering such as production, material handling etc. SCARA robotic arm is famous for its characteristics like high speed, good accuracy; less maintenance and repeatability in pick and place operation which is required in assembly. This case study is concern with design, manufacturing and analysis of mechanical structure of SCARA with using novel material and design technology. Structural topology optimization techniques make it possible to construct structural parts that can be mitigated and provide the necessary mechanical capabilities using artificial intelligence based optimization technology. Optimized design of SCARA robots in accordance with additive manufacturing technology has been realized. The mechanical loads to the SCARA robot were redesigned using the topology optimization method. High volume industrial Fused Deposation Additive Manufacturing method was used to determine the mechanical properties of high performance ABS-CF thermoplastic composite material under different production conditions. Optimal mechanical conditions finite element based topology optimization was entered into the software material library. Topological design is very important for sustainable design as lightweight robotic structural parts enable the robot to be produced more efficiently and to operate at less energy levels.

***Keywords:*** Scara Robot, Additive Manufacturing, Topology Optimisation, Thermoplastic Composite

# Yenilenebilir Enerji Üretim Birimleri İçeren Çevresel-Ekonomik Güç Dağıtımı Probleminin Yüklü Sistem Arama Algoritması ile Çözümü

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**Özet:** Elektrik mühendisliği için çözümü büyük bir öneme sahip ve literatürde birçok çalışmada ele alınan çevresel-ekonomik güç dağıtımı problemi, sistem tarafından talep edilen gücü, sistem kısıtları altında en düşük yakıt maliyeti ve emisyon miktarı ile karşılamak olarak tanımlanır. Elektrik enerjisi ihtiyacının karşılanması için genellikle tükenebilir fosil kaynaklı yakıtların kullanılması hem yakıt maliyetini hem de çevreye salınan emisyon miktarlarını ciddi oranda artırmaktadır. Bu maliyet ve emisyon değerlerini azaltmanın diğer bir yolu da elektrik enerjisi üretimi için yakıt maliyeti ve emisyon miktarı sıfır olan yenilenebilir enerji üretim sistemlerinin kullanılmasıdır. Bu sistemlerden en önemli ikisi rüzgâr ve güneş enerjisi üretim sistemleridir. Günümüzde rüzgâr ve güneş enerjisi üretim sistemlerinin kullanımı giderek artsa da bu sistemler birçok uygulamada yerel yükü beslemektedir. Bu çalışmada termik üretim birimleri bulunan bir güç sistemine, rüzgâr ve güneş enerjisi üretim birimleri eklenerek sistemin aynı yük talebi için maliyet, emisyon ve iletim hattı kayıpları hesaplanmıştır. Çalışmada çevresel-ekonomik güç dağıtım probleminin optimizasyonu yüklü sistem arama (CSS) algoritmasıyla yapılmıştır. Örnek sistem olarak belirlenen IEEE 30-bara 6-generatörlü güç sistemi, CSS algoritması ile iki kez çözülmüştür. İlk çözümde sistemdeki güç talebi sadece termik üretim birimleri tarafından karşılanırken, ikinci çözümde ise sistemdeki iki yük barasına, o baralardaki yükü besleyecek rüzgâr ve güneş enerjisi üretim birimi eklenmiştir. Problemin çözümünde birbirinden farklı birimdeki hem yakıt maliyeti hem de emisyon miktarının aynı anda minimizasyonu yer aldığından, bu iki amaç ağırlıklı toplam metodu ile tek bir amaç fonksiyonunda birleştirilmiştir. Örnek güç sisteminin iletim hattı kayıpları B-kayıp matrisleri kullanılarak yaklaşık hesaplanmıştır. Her iki çözüm içinde bulunan maliyet değerleri, emisyon miktarları ve iletim hattı kayıpları karşılaştırılmış ve sonuçlar tartışılmıştır.

***Anahtar Kelimeler**: Çevresel-ekonomik güç dağıtımı, Yenilenebilir enerji üretim sistemleri, Yakıt maliyeti, Emisyon miktarı, Yüklü sistem arama (CSS) algoritması.*

# Size-based Separation of Solid Particles in Air by a Phononic Crystal Linear Waveguide

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**Abstract:** Non-contact manipulation of inorganic and biological materials is required in areas such as materials technology, life sciences (Separation of circulating tumor cells, etc.) and the pharmaceutical industry. The aim of the study is contactless separation of millimeter sized airborne objects under the effect of acoustic radiation forces in a two- dimensional phononic crystal waveguide. Millimeter size particles in free fall along the waveguide experience large lateral acoustic radiation forces so that they can be differentiated with respect to their diameters. These have enabled a flexible, adaptable and sensitive means of separation with low power usage. Simulations based on the finite element method were used to track particle trajectories. Size-based separation of fused silica spheres with diameters up to 2 mm is demonstrated. Experimental data obtained by employing an ultrasonic source operating at 20 kHz validated numerical data. The proposed scheme can be employed in industrial processes where contact- free separation of particles is crucial.

***Keywords***: *Acoustic Radiation Force, Phononic Crystal, Waveguide, Finite Element Method, Particle Separation*

# Future trends for Turkey's energy balances using fractional nonlinear grey models with optimization

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**Abstract:** This study aims to forecast Turkey's final energy consumption, total energy supply and domestic production in total energy supply using grey prediction models and its extensions. For this purpose, grey model GM(1,1), optimized grey model OGM(1,1), nonlinear grey model GM(1,1,α), optimized nonlinear grey model OGM(1,1,α), nonlinear grey Bernoulli model NGBM(1,1), optimized nonlinear grey Bernoulli model ONGBM(1,1), fractional grey model FAGM(1,1), optimized fractional grey model OFAGM(1,1), fractional nonlinear grey Bernoulli model FANGBM(1,1) and optimized fractional nonlinear grey Bernoulli model OFANGBM(1,1) are used. The prediction and forecasting procedures are applied for the period 2006-2017 and 2018-2023, respectively. The optimized fractional nonlinear grey Bernoulli model (OFANGBM(1,1)) gives the highest prediction performance with having the lowest mean absolute percentage error (MAPE) value which is 1.486% and 4.071% for Turkey's total energy supply and domestic production in total energy supply, respectively. The OFANGBM(1,1) shows that Turkey's final energy consumption, total energy supply and domestic production in total energy supply are estimated as 163.4 Mtoe, 206.7 Mtoe and 36.5 Mtoe in 2023 with the average annual growth rates of 6.68%, 6.19% and 1.71% from 2018 to 2023, respectively. It is also obtained that the share of the domestic production in total energy supply will decrease by 2023 for all grey prediction models. Therefore, it is suggested that Turkish Government should reduce the use of natural gas and oil, which increase dependence on foreign sources, and increase the share of renewable energy sources in energy supply.

***Keywords***: *Forecasting; energy balances; grey prediction model; optimization.*

# A Review for The New Technological Developments in Highway Pavements

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**Abstract:** Roads have important role in contributing to the economic development and growth in a country together with the social benefits. For this reason, they have a vital role on the development of the national growth. Even though its length in the world is 16.3 mil. km, the need of their new construction and maintenance is always a must depends on each country.

On the other hand, global changes are forcing all industries to work under sustainability approach, where asphalt industry is not excluded, and the decision makers are publishing regulations day by day for protecting environment and human health and relief for this aim. Under those circumstances the parts are looking for the new techniques and materials, serving sustainability, meaning that by optimizing between technical improvements and economic solutions taking care of the environment and human health. In this point of view, the value of the usage of any "right", product, production, techniques, facility, fund is getting more and more important for every stakeholder.

In this paper, firstly the new technological developments in highway pavements have discussed. Then these developments have evaluated under the sustainability approach.

***Keywords***: *Asphalt pavement, durability, sustainability, technological developments.*

# Extreme Learning Machine for Local Range for Fine Image Registration

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**Abstract:** Image registration is the process that aligns a set of images obtained from various sensors, different view of points or different time in one coordinates system. Image registration with neural network using image features, is a scheme that used to estimate the geometrical transformation parameters namely (scaling, rotation and translation). The use of neural networks in image registration helps to overcome the complexity of Image registration, especially when the images are noisy. In this paper, we propose ensemble extreme learning machine and ensemble online-sequential extreme learning machine to overcome the disturbance effect of the noise, improve the accuracy and robustness of the estimation of the geometrical transformation parameters. In this study a discrete cosine transform features have been used in the presence of the Gaussian noise. The experimental work was performed to cover the local range for fine registration. The results of the experimental work were obtained using ensembling extreme learning machine, ensembling online–sequential extreme learning machine, radial basis function neural network and feedforward neural network. The results showed that the two schemes of extreme learning machine neural network give accurate and robust results in the presence of the noise than the other schemes. Beside that extreme learning machine is fast and easy in the implementation.

***Keywords***: Image registration, Affine transformation, Extreme learning machine, Neural networks, Discrete cosine transform.

# Phase stability of in situ synthesized MAX phase

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**Abstract:** The Mn+1AXn phases are ternary compounds and have hexagonal crystal structure which forms nano-laminated layered structures. They exhibit both ceramic and metallic characteristics such as low density, high melting point, high fracture toughness and damage tolerance, excellent electrical and thermal conductivity, good machinability, thermal shock resistance and high temperature oxidation resistance, which make them candidates for several structural applications recently. However, the difficulties in synthesizing of monolithic MAX phase related to the narrow stable region of ternary phase diagram limits their application. The most of the previous studies related to synthesizing of monolithic MAX phase reported the ancillary phase formations besides MAX phase. Hence; in this study, it is aimed to determine the parameters which have effects on the phase stability of monolithic MAX phase. For this purpose, the effect of the starting powder composition, the amount of sintering additions and the sintering parameters (temperature and holding time) on the phase development of monolithic MAX phase were investigated. Phase analyses were performed using an X-ray diffractometer (XRD) and microstructural investigations were carried out by scanning electron microscope (SEM).

***Keywords***: *MAX phase, Sintering, Phase stability.*

# Money, Income, Prices, Employment, and Causality: The Turkish Experienc

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**Abstract:** The role of monetary policy in economic growth, or whether monetary policy matters or not, has long has been a subject of under debate between Keynesians and monetarist schools of economic thought. Initial Keynesians economists had no role for money since they did not have a theory of inflation for situations of less than full employment. Thus, the consumption function model used by Keynesians in the 1950's had no role for money, nor did it considers prices or the price level. According to Keynesians, the transmission mechanism between increases in the money stock and the level of nominal income is indirect, operating through the rate of interest. Thus, according to Keynesians, the role of money in income generation operates passively through interest rate channel. In the Keynesian model, prices are assumed to be fixed in the short-run, so an increase in the nominal money supply means an increase in the real money supply. The real interest rate decreases due to the increasing money supply, because wealth owners exchange their money for nonmonetary assets. The purchase of nonmonetary assets drives up their prices, which is the same as decreasing the real interest rate that they pay. Also, the lower real interest rate stimulates both consumption and investment spending. With more demand for their output, firms increase employment and production. In this study, the causality among money, income, prices, and employment will be analysed for Turkish economy from 1980 to 2018.

***Keywords:*** Money, income, prices, employment, causality

# Energy consumption, capital accumulation, employment and economic growth: The case of post-Soviet Era Central Asian Countries: A Panel ARDL Approach

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**Abstract:** The aim of this study is to determine the impact of energy use, employment, and capital formation on real GDP for four Central Asian countries: Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan using panel data analysis over the period 1990 to 2018. This study uses the autoregressive distributed lag (ARDL) approach to investigate the long-run relationship among real GDP and energy use, employment, and capital formation. The results imply that there is an inverse relationship between real GDP and energy use, but that there is a positive relationship real GDP and other independent variables, which are employment and capital formation. In order to determine the causality among the variables, the Dolado-Lütkepohl Causality Test has been applied. The Dolado-Lütkepohl test results show that there is a causality running from electric consumption to real GDP, thus the null hypothesis can be rejected. A unidirectional causality has been found between capital formation and real GDP. The results also show a unidirectional causality between capital and employment. This result confirms that capital accumulation is an important factor in GDP growth and development for these Central Asian countries

***Keywords***: Energy, energy consumption, GDP, capital formation

# Kırgızistan'da Yozlaşma ve Ekonomik Büyüme

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**Abstract:** Yozlaşma, çürüme, ahlaksızlık, görevi kötüye kullanma ve yolsuzluk olarak ifade edilen "corruption" sürdürülebilir ekonomik büyümeyi menfi olarak etkilediğinden tüm ülkeler için istenmeyen bir durumdur. Devletin ekonomiye müdahalesiyle birlikte yozlaşmanın da arttığı bilinmektedir. Ne var ki, bu durum her ülke için aynı derecede ve aynı şekilde olmamaktadır. Bu çalışmanın amacı, Kırgızistan için yozlaşma ve devlet müdahalesi arasındaki ilişkiyi analiz etmektir. Düşük gelir seviyesi, önemli devlet müdahalesi, zayıf demokratik kurumlar, güçlü olmayan yargı sistemi ve kültürel olarak rüşvet vermenin sıradan ve normal sayılması yozlaşmayı artıran sebepler olarak sayılabilir. Son yıllarda Kırgızistan'da rüşvete karşı alınan önlemler bireyler tarafından da desteklenmektedir. Kırgızistan'da hükümetin yolsuzlukla mücadele etmesiyle rüşvetin ciddi bir şekilde azalacağına inanılmaktadır. Yozlaşma-çürüme kavramı kamuda çalışan bir görevlinin yapması gereken görevi yapmaması veya para (rüşvet) karşılığı yapması şeklinde ifade edilmektedir. Kamu görevlisinin yapması gereken bir işi "para karşılığı yapması", Kırgızistan'da kişi başına düşen gelir seviyesinin düşük olmasıyla açıklanabilir. Öte yandan yolsuzlukla mücadelede kültürel-dini faktörlerin de etkili olduğunu belirtmeliyiz.

***Keywords***: Yozlaşma, rüşvet, corruption, kamu harcaması

# Reaction Cross-Section Calculations of Fe Isotopes at Alpha Induced Reactions

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**Abstract:** Theoretical nuclear reaction models are very important considering their contributions on the guiding of researchers in the cases of experimental data absence. There are various models that were developed to investigate different properties of the studied reactions where optical model is one of them which is important for the realization of the nuclear reactions nature and details. It allows scientists to investigate the elastic scattering in the presence of absorption effects. In the optical model, the total interaction potential is complex. Optical model potential's importance and utilization aim arises due to its characteristics that could be used to determine how the cross-sections of the compound and pre-equilibrium nuclear reactions are distributed over the opened reaction channels. This ability makes the optical model potential a very important parameter for theoretical nuclear reaction studies. By taking into account of its importance, in this study reaction cross-section calculations of $^{54,56}$Fe isotopes at alpha induced reactions have been done by using various alpha optical models. In the calculations; Watanabe folding approach with Koning-Delaroche, McFadden-Satchler, Demetriou-Grama-Goriely and Avrigeanu models have been employed as alpha optical model potentials. TALYS 1.8 code was used for all theoretical calculations due to its broad and accepted usage. Obtained results have been compared with the experimental data taken from Experimental Nuclear Reaction Data Center (EXFOR) library.

***Keywords***: *cross-section, TALYS 1.8, optical models, alpha induced reaction, EXFOR*

# Financial Development and Renewable Energy Consumption

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**Abstract:** In the last thirty years, it is known that there has been a rapid increase in production, trade and energy consumption in both developing and developed countries. Financial development can affect energy demand in various ways. One of the direct ways financial development affects energy demand is to make it easier and cheaper for consumers to borrow to buy durable consumer goods such as automobiles, refrigerators, air conditioners and washing machines. These products generally consume enough energy to affect a country's overall energy demand. In addition, financial developments are encouraging enterprises to expand their existing capacities (new facilities, employment growth, machinery and equipment growth) by making access to financial capital easier and less costly (Sadorsky, 2011). In this study, long and short term causality relationship between financial development and renewable energy consumption is examined..

***Keywords***: : Energy Consumption, Financial Development, Renewable Energy

# CFD analysis on fin and baffle configurations in solar air collector

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**Abstract:** Solar air collectors are widely utilized in many application such as solar dryers and air preheaters. In this study three various solar collectors were designed and their thermal behaviour were analyzed. The numerical study were done by utilizing Ansys Fluent 18.2 to analyze thermal and flow behavior of solar collectors. In all solar collectors absorber plate was located in the top of collector under glass cover. Fins and baffles with different geometrical pores were used in designed solar collectors and their effect on collector's performance numerically were investigated. The numerical simulation results indicated that utilizing fin modification in the solar collector had better influence on improving outlet temperature of solar collector. In addition, there is no significant difference between circular and rectangular perforated baffles.

***Keywords***: *Solar collector, performance, numerical, fin, baffle*

# FACILITY LOCATION SELECTION WITH MULTI-CRITERIA DECISION-MAKING TECHNIQUES: AN APPLICATION IN INTERNAL SECURITY SECTOR

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**Abstract:** The required resources are rapidly depleted in the world due to the increase in population and the rapid change in technology. The rapidly decreasing natural resources and the sharing of these resources have become the most important national security problem of the countries. The social and economic problems, which arise as a result of the developments in the social and political life occurring from the failure to meet the needs of the people, will cause the disruption of the social order. However, the number of crimes and crime types are increasing in parallel with technological developments and will be becoming an internal security problem. As a result of these developments, by providing internal security due to the change of internal and external security detection of countries, asymmetrical struggles that the countries faced with, international terrorism are the main changes that Turkey faced with being a developing country placed in the Middle East. Because one of the biggest tasks of the government is to provide public order by providing safety and security for the welfare and peace of the people. In our country, this issue is mostly fulfilled by the General Directorate of Police and the General Command of Gendarmerie, which operates under the Ministry of Interior. In order to the internal security units to intervene in the most effective and rapid manner in the crimes and incidents, the optimum decision should be made in determining the location of the establishment. Therefore, it is considered that decisions made by using scientific methods will be more appropriate. In this study, choosing of location point of Gendarmerie Stations which have an important role in ensuring internal security will be evaluated with Multi-Criteria Decision Making Techniques

***Keywords:*** Internal Security, Station, MCDM, ELECTRE, AHP

# AN ACADEMIC VIEW TO SUV CAR PREFERENCES: CAR SELECTION WITH MULTI-CRITERIA DECISION MAKING TECHNIQUES

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**Abstract:** The automobile sector is one of the most important sectors in the progress of the world economy. The global integration in our country has increased due to the development in the automobile sector since the 1960s and the technological developments since the 1980s. As a result, luxury consumption has increased rapidly in our country. The automobile sector also took its share with the preference and use of SUV cars, which are a segment between passenger cars and 4x4 passenger vehicles, has increased rapidly since the 2000s. In our country, factors such as social status, attitudes and beliefs, reference, price and also word of mouth information are influential in the choice of automobiles, then purchasing is performed. In particular, advertisements made by manufacturers by using information and communication channels also have an effect. Also consumers in our country are not purchasing only new cars but also prefer a large number of used cars because of economic reasons. In this exchange, the traditional trade-in auto markets, auto gallery, and car dealers are used. People's experiences, car dealers and car dealers' approaches are effective here. However, for a more effective and consistent choice in an expensive and high-risk consumption expenditure which can be considered as luxury, especially SUV cars, all factors affecting the choice of car purchasing should be taken into consideration. This decision will be made under the influence of multiple factors is a multi-criteria decision making. For this reason, in this study, the factors that affect the consumers' automobile preference will be determined in the first step, and then these factors will be evaluated with MultiCriteria Decision Making Techniques (MCDM).

***Keywords***: SUV Automobile, MCDM, AHP

# CONVOLUTIONAL NEURAL NETWORK BASED DETECTION AND CLASSIFICATION OF DRONES USING GRAMIAN ANGULAR FIELD TRANSFORMATION

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**Abstract:** Drones have been widely used in recent years owing to the significant improvement of their capabilities. Since some illegal missions, such as terrorism and carrying explosives, could also be performed by drones, classification and detection of them has become a mandatory topic of research. In this study, we investigate convolutional neural networks (CNN) to detect and classify drones based on feature images. Acoustic signals of drones and ambient noise are transformed into these feature images using Gramian angular field transformation (GAFT) method. The GAFT method is applied to discrete Fourier transform (DFT) of acoustic signals, and then output of this process is normalized and transformed into gray scale images. Acoustic signals of drones (Mavic (DJI Mavic Pro), Phantom (DJI Phantom-4 Pro 2.0)) and ambient noise are collected at an actual outdoor environment. For performance evaluation, three different datasets are constructed based on the distance between drones and the microphone colleting the acoustic signal. Dataset-1, dataset-2, and dataset-3 include acoustic signals recorded between 1-100 meters, 1-300 meters, and 1-500 meters, respectively. Lastly, ambient noise (without the drones flying) recordings are added to all datasets. For all the datasets, the CNN is separately trained, and tested with unseen data. Experimental results show that GAFT method, which is applied to DFT, performs 69.3% detection performance even at low SNR (signal-to-noise ratio). Classification rates reach 95.3%, 74.7%, and 62.9% accuracy level for dataset-1, dataset-2 and dataset-3, respectively. As expected, the performance decreases depending on increment of the distance.

***Keywords**:* Drone detection, Drone classification, CNN, GAFT

# Several High Concern Risk Assessment and Management Approaches for Software Development Projects

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**Abstract:** Software is a product or a service or a project whose requirements are captured; specification document is prepared by requirements analysis; in/out architecture is designed; related source codes, variables, methods, classes, modules and relationships among these are written; necessary tests and integration operations are done; when needed, maintenance, repair and update operations are executed by software or computer engineers and also that has its own documentation jobs and user manual, and has numeric and textual data, and also multimedia tools in its memory. Software development projects have a large financial burden and need to invest in high volumes. When looked at costs based on the international tangible data on computer software; it was $150 billion in 1985, it was $2 trillion in 2010 and it passed over $5 trillion after 2016. Also, in the year of 2018, just a daily giro of Apple Store was about $250 million. Despite of these costs, expenses and investments that are exponentially increasing every year, the rate of successful development of the software projects is not very high. Based on the "CHAOS" report (international size) prepared in 2016, only 17% of the software development projects were completed in a timely manner, in the allocated budget and in accordance with the requirements. 53% of the projects were completed over time and/or over budget and/or also without fulfilling the requirements exactly. 30% of the software projects cannot have been completed in the development phase and were cancelled. For that software development projects with such high expenses and low success rate can have a better quality structure, a risk assessment and management approach has to be determined for better software risk assessment and management methodology. So, some problems which may form software risks can be recognized and determined on time before causing trouble and endangering for software development projects. In this paper, several important software risk assessment approaches – Fuzzy Logic/Approach, ANFIS (Adaptive Neuro-Fuzzy Inference System), Decision Tree Algorithm, Random Forest Algorithm, AHP (Analytic Hierarchy Process) and TOPSIS (The Technique for Order of Preference by Similarity to Ideal Solution) – underlying software risk management were introduced, showed and explained in detail by giving some case studies. Thus, some reliable data have been gathered, specified and determined so that this software risk assessment and management process can be organized and managed by benefiting from these approaches. According to this information, manpower, what is the main resource of software development process will be used more effectively. And then, the benefits of the "Software Risk Assessment and Management" under "Software Engineering" may be seen more tangible and concrete.

***Keywords***: Software Engineering, Software Development Projects, Software Risk Assessment, Software Risk Management

# Çok Kriterli Karar Verme Yöntemi ile Araç Seçimi

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**Abstract:** Günümüzde çok fazla araç (otomobil) seçeneğinin bulunması ve/veya kişinin araç (otomobil) hakkında yetersiz bilgiye sahip olmasından dolayı karar verme süreci oldukça zorlaşmaktadır. Bu zorlukla ilgili yapılan çalışma, otomobil almak isteyen bir tüketici ele alınarak örneklenmiştir. Çalışmada, tüketicinin belirlemiş olduğu üç otomobil alternatifi üzerinde durulmuştur. Tüketicinin beğendiği otomobil alternatifleri; "Kia Ceed", "Seat Leon" ve "Volkwagen Polo" dur. Bu seçenekler içinden en uygun karara varabilmek için "fiyat", "km", "yıl", "güvenlik", "konfor", "vites", "yakıt" ve "tüketici beğenisi" olmak üzere toplamda sekiz kriter (kıstas) belirlenmiştir. Ayrıca, tüketicinin "Saaty Ölçeğinde" kullandığı değerler ile kıstasların önem sırası belirlenip ortaya konmuştur. Hesaplamalar sonucunda "yakıt" ve "konfor" parametrelerinin en öncelikli kriterler arasında olduğu görülmüş ve eşit öneme sahip olduğu belirlenmiştir. Tüketicinin fikirlerini ve düşüncelerini de gözeterek, belirlenen parametreler ile matematiksel değerlendirme sonucu karmaşıklaşan karar verme süreci çözümlenmektedir. Çalışmada, AHP (Analitik Hiyerarşi Süreci) yöntemi kullanılarak tüketicinin verilen araç seçenekleri arasında en "optimum çözümü" seçmesi için bir çıkış yolu sunulmuştur. Sunulan bu çözümde, "Seat Leon" modelinin %30,33, "Volkwagen Polo" modelinin %30,44 ve "Kia Ceed" modelinin ise %36,31'lik bir orana sahip olduğu ortaya çıkmıştır. Bunun doğal bir sonucu olarak, "Çok Kriterli Karar Verme Yöntemi" ile tüketici tarafından "Kia Ceed" model otomobilin tercih edilmesi gerektiği ve en uygun kararın bu alternatif olduğu somut bir şekilde gözler önüne serilmiştir

***Keywords:*** Çok Kriterli Karar Verme Yöntemi, Analitik Hiyerarşi Süreci (AHP), Ölçme, Değerlendirme

# Production of Copper - Magnesium Alloy Messenger Wire For High Speed Railway Catenary Systems

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**Abstract:** Catenary systems have a number of electrical and mechanical properties. It should be resistant to all climatic, environmental and road conditions in terms of its mechanical properties. In terms of its electrical properties, it should be a safe and good conductor as it provides the necessary energy to the electric locomotives along the railway route. The mechanical properties of messenger wires are more important than the electrical properties. In this study, 120 $mm^2$ (19/2.80 mm) cross sectional area CuMg0.4 messenger wire was produced for high speed railway catenary systems according to DIN 48201-2 standard. For casting in production, 20 mm CuMg0.4 wire rod was produced by UpCast casting technique at Rautomead RS prototype production area, then it was conformed to 14 mm diameter by using continuous extrusion forming process and then 8 mm diameter draw-peeling process. The 8 mm CuMg0.4 wire rod was then cold drawn as a single wire with a diameter of 2.80 mm. The final 19/2.80 mm CuMg0.4 messenger wire was produced by bending from 2.80 mm single wire. After production, mechanical, electrical, chemical, cross-sectional and microstructure properties of Copper-Magnesium alloyed messenger wires were examined. The specifications of the produced wire are compared with the DIN 48201-2 standard. As a result of the productions tests, the production of messenger wire that meets DIN 48201-2 standard values with an average tensile strength of 604 MPa, an average elongation of break 0.6% and an electrical resistance of 0,200 Ohm/km has been successfully realized.

***Keywords***: : Copper, Magnesium, Drawing, Messenger Wire,

# Production of Copper - Magnesium Alloy Contact Wire For High Speed Railway Catenary Systems

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**Abstract:** Electrolytic copper alloy wires are used in the railway, automotive and communication sectors due to their superior mechanical properties, corrosion and abrasion resistance properties compared to pure copper. In this project, CuMg0.5 copper alloy contact wire with 120 mm2 AC cross section according to EN 50149 standard was produced for high speed railway catenary systems. At the production stage, 20 mm CuMg0.5 wire rod was produced by UpCast continuous casting technique at Rautomead RS-80 continuous casting furnace with graphite crucible technology, then it was conformed to 19,50 mm diameter by continuous extrusion forming process and then produced as contact wire by wire drawing process. CuMg0.5 Alloy wires with an amount of magnesium in the alloy ranging from 0.4% to 0.7% by mass were produced. After production, mechanical, electrical, profile and microstructural properties of Copper-Magnesium alloy wires were analyzed. As a result of the experiments, the production of contact wire that meets the EN 50149 standard requirements has been successfully realized. The tensile strength 532 MPa, percentage elongation of break 6.5% and electrical conductivity 42.13 m/ohm.mm2 of the produced contact wire were obtained. The cross-sectional profile image of the contact wire was verified according to the 120 mm2 AC standard on the profile projection device.

***Keywords***: : Copper, Magnesium, Continuous Casting, Extrusion, Drawing

# Sleep apnea detection with respiratory modulated ECG signal

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**Abstract:** Today, Sleep apnea is one of the common public respiratory diseases. Sleep apnea has several effects on human life even may result in death. For this purpose detection and treatment of this disease become crucial. Polysomnography (PSG) is the gold standard for apnea detection. PSG contains various physiological signals and the detection of apnea is done with the evaluation of these signals by expert physicians. This is a timeconsuming procedure and may give subjective results. And a huge data collection must also be recorded. Therefore, we developed an automatic Electrocardiography (ECG) based apnea detection algorithm to eliminate subjectivity and to reduce time and the data collection. Since ECG is a respiratory modulated signal because of the location of the heart, we firstly determined respiratory signals from the ECG series. For this purpose, we used a low-pass filter wit 1Hz cutoff frequency. Secondly, different features were calculated from the determined respiratory signals using energy, power spectral density, and continuous wavelet transform. These features were determined for every 116 epochs of 3 different apnea patients. 348 epochs were evaluated in total. Using these features and machine learning techniques, sleep apnea was successfully detected. 5-fold cross-validation algorithm was applied for the training and testing procedure. Ensemble RUSBoosted Tree method gave the best results with 74.4% sensitivity, 76.5% specificity, 75.4% accuracy and 77.0% positive predicted values

***Keywords***: : Sleep Apnea, ECG, Machine Learning

# Detection of Cervical Neoplastic Changes Using Telecentric Imaging

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**Abstract:** Cervical cancer is the second most common cancer in women's mortality and causes of death. Currently, the pap-smear test has been used for screening of cervical cancer. If the result of cytology (Pap test) is positive, the colposcopic examination is used to define the neoplastic region of the tissue for biopsy. Before the colposcopic examination, acetic acid performed to cervical tissue to make visible neoplastic regions. However, the sensitivity and specificity of the colposcopy examination are 67.7% and 98.94%, respectively. Also, outcomes of the colposcopy results are subjective and depend on the physician experience. Therefore, non-invasive and realtime techniques are needed to precisely define the neoplastic region of cervical tissue based on objective criteria. In this study, we have developed a new imaging system to obtain a high-resolution vessel structure of cervical tissue. The system consists of a CCD camera, computer, telecentric lens, and LEDs emitting light of 550 nm. Cervical images obtained using the telecentric lens just before the colposcopic examination. Vascular structures of the cervical tissues were obtained by image processing including contrast enhancement methods, noise reduction, and frangi filter. The cervical tissue regions with high vessel density defined after image processing. Then, the correlation between the vessel density and histopathological results have been investigated to develop objective criteria in diagnosing neoplastic tissue based on high-density vessel structure.

***Keywords***: : Cervix, cervical neoplasia, image processing, frangi filter

# Graphene Aerogel: A Promising 3D Material for Electrochemical Energy Storage Systems

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**Abstract:** The rechargeable lithium batteries are currently used widely in the fields of power batteries and 3C (Computer, Communication and Consumer electronics) because of their advantages of high power/energy densities and acceptable safety performance. The cathode materials are an important component of the rechargeable lithium-ion batteries. However, the low lithium ion diffusion and electronic conductivity limit its wide commercial application in the power automotive field. In comparison to the amorphous carbon, graphene with excellent mechanical, thermal and electrical properties has been regarded as an ideal carrier to facilitate the transfer of electron and diffusion of Li+. Even an addition of a small amount of graphene can enhance the lithium storage performance of the cathode significantly. Graphene aerogel (GA) has shown outstanding advantages in preparing the three-dimensional porous electrode materials with high specific surface, excellent conductivity and structural stability. This novel 3D porous aerogel composite is identified as a promising cathode material for the rechargeable Li-ion battery, and the simple strategy may be applied to construct other high performing composite structure and materials.

***Keywords***: Graphene aerogel, Composite cathode material, Li-ion battery

# Graphene Aerogel Based Phase Change Composite for Energy Harvesting Systems

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**Abstract:** Phase change materials (PCMs) are a class of energy storage materials with a high potential for many advanced industrial and residential applications. These smart energy management systems can store energy in the form of melting-solidifying latent heat, and release the stored energy without almost any energy drop. Through recent years, graphene-based porous nanostructures have been investigated widely for novel applications in solar thermal energy harvesting for thermal energy storage, water distillation and solar-to-electrical energy conversion. In addition to graphene aerogels, sustainable carbon aerogels can also be used as a supporting platform for the fabrication of high-performance solar-to-thermal energy harvesting and storage systems. Graphene aerogel can be considered as one of the most interesting members of the carbon-based photo-thermal materials with high light absorption and photo-to-thermal conversion efficiency. Systems based on graphene nanostructures, including graphene derivatives, graphene-based porous nanostructures, graphite nanoplatelets and expanded graphite, can be employed to convert solar irradiation into thermal energy, and this energy can be easily stored using PCMs to have a stand-alone system for sustainable and continuous thermal energy production

***Keywords**:* Phase change materials, Graphene aerogel, Energy harvesting

# Recent Advancement of Electromagnetic Interference Shilding Novel Metalic Materials

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**Abstract:** Electromagnetic interference (EMI) shielding and microwave absorbing materials have been extensively investigated to reduce electromagnetic (EM) radiation and radar reflection in the microwave regions. Recently, carbonepolymer composites, including carbon black, carbon fiber, carbon filaments, carbon nanotubes and graphene sheet, with high conductivity have been employed for application as promising EMI shielding materials due to their easy processing and good flexibility The growth in the application of electronic devices across a broad spectrum of military, industrial, commercial and consumer sectors has created a new form of pollution known as noise or radio frequency interference (RFI) or electromagnetic radiation or electromagnetic interference (EMI) that can cause interference or malfunctioning of equipment. Therefore, there is a greater need for the effective shielding of components from its adverse effects. In this study, the shielding materials like metals, conducting plastics and conducting polymers for the control of electromagnetic radiations.

***Keywords***: Shielding materials, Composites, Electromagnetic interference

# A Novel Polyoxometalate/Reduced Graphene Oxide Nanocomposite For Fuel-Cell Application

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**Abstract:** Polyoxometalates (POMs) are highly redox-active molecular components with great potential for electrochemical energy storage and sensors. Because POMs are a class of anionic metal oxides based on high-valent transition metals, the structure and reactivity of POMs can be tuned over a wide range. In this report, a novel polyoxometalate/reduced graphene oxide (rGO) nanocomposite for fuel-cell application was developed. The effective surface areas of POM-rGO/GCE and POM/GCE were calculated to be 845 $cm^2$/mg and 314 $cm^2$/mg, respectively. The POM-C3N4 NTs/GCE also exhibited a higher peak current for methanol oxidation than those of comparable GCE and POM/GCE, providing evidence for its higher electro-catalytic activity.

***Keywords***: *Reduced graphene oxide, Bi-metallic nanoparticles, Fuel Cell*

# EFFECT OF DIFLUBENZURON ON THE DEVELOPMENT OF CHICK EMBRYO

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**Abstract:** **Aim:** To check the effect of drug Difenoconazole on chick embryo. Difenoconazole which is a fungicide sprayed on plants and cause toxic effect on non -targeted species. Few studies have investigated that body weight of zebra fish reduced by difenoconazole. Our aim of study to see the effect of Difenoconazole on chick embryo growth.

**Methodology:** A total 56 eggs were selected and categorized into four groups (one control and other three were treated groups). At fifth day of incubation were treated with drug and first sacrificed done on eleventh day of incubation for examination. Three eggs from each group were sacrificed. The second sacrificed done on nineteen day of incubation three eggs from each group were sacrificed and examined their growth.

**Major findings**: Higher growth was observed in the control group. In treatment 1, heart formation and angiogenesis was occurred. In treatment 2, mostly eggs aborted and some showed little growth. While results of treatment 3 showed very little development of chick embryo. Thus, higher doses of difenoconazole proved more toxic and lethal.

**Implications of the study:** This study demonstrates that difenoconazole has a significant teratogenic potential on chick embryo because it caused abortion and inhibits the growth and development of chick embryo, thus its use should be limited.

***Keywords***: : Chick embryo, growth, Difenoconazole, Toxic.

# Influences of Lubricant Fluid with Nanoparticle Additive on the Load Capacity of a Hydrostatic Journal Bearing

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**Abstract:** Hydrostatic journal bearings are recommended for supporting shafts operating at high speeds and under heavy loads in the industry. In the bearings, the viscosity of the fluid film between the bearing and shaft surfaces decreases with increasing temperature at high rotation speeds and hence, the fluid between the surfaces should be circulated by means of a pump in order to cool the lubricant. However, lubricant supplying between the surfaces at the high flow rate causes the whirl instability and vibrations problems in the bearing-shaft system. These instability problems give rise to significant damage on the system during operating at the high speeds and under the heavy loads. As a solution of this problem, it could be suggested to control the change in viscosity with temperature by adding nanoparticle in the lubricant fluid. In this study, the effects of the nanoparticle additives in the lubricant film on the load capacity of a hydrostatic journal bearing are theoretically investigated. The lubricant flow between the bearing and rotor surfaces are modelled with Reynold's equation and viscosity term in Reynold's equation is defined as a function which is depends on the nanoparticle properties. Then, the pressure distribution is obtained with numerically solving the Reynold's equation and the load capacity of the bearing is calculated with using this pressure distribution. The results show that the usage of the lubricant with nanoparticle is increased the load capacity of the hydrostatic journal bearing

***Keywords***: Lubricant with nanoparticle, hydrostatic journal bearing, load capacity, rotordynamic

# Investigation of Cooling Performance of Nanofluids on Unmanned Air Vehicles

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**Abstract:** In order to solve the problem of heat loads, which is a requirement of developing unmanned aerial vehicle technology, this study is focused on increasing heat transfer rate in a cross-flow compact heat exchanger by using nanofluids. So enhancing heat transfer is a critical key to solve this problem. Effects of different Reynolds number (Re= 6000, 8000, 10000, 12000) and different types nanofluids (Cu-H2O, CuO-H2O, TiO2-H2O, H2O) on heat transfer and fluid flow were studied numerically. Realizable k-Ɛ turbulence model of ANSYS FLUENT computational fluid dynamics code was used for numerical analysis. It was obtained that increasing Reynolds number causes an increase in the average Nusselt number and decrease in surface temperature. So increasing Reynolds number from Re=6000 to 12000 causes an increase of 44.6% on average Nusselt Number. Cu-H2O nanofluid shows the best cooling performance on heat transfer. Also, the numerical results were validated by some studies in the literature.

***Keywords**:* Computational Fluid Dynamics, Heat exchanger, Nanofluid, UAV

# Enhancing Thermal Performance of Cooling Tower by Using Swirling Jets

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**Abstract:** Cooling tower generally used in HVAC systems, electric power plants and manufacturing. The main problem of cooling towers is evaporation loss. The evaporation loss can be decreased with using fans and drift eliminators to save more water. This study is mainly focused on numerical analysis of direct contact cooling system, which can be used as cooling tower, for decreasing evaporation loss and increase the efficiency of the system by using two crosswise swirling jets. The parameters of this study are Reynolds numbers for jets inlet velocities (Re= 3900, 5200, 7800, 8500) and air inlet temperatures (Tinlet=10°C, 22°C, 32°C, 40°C). This model was studied numerically by using ANSYS Fluent Computational Fluid Dynamic program. As a result, it is obtained that increasing Reynolds number causes an increase on evaporation loss. When Reynolds number is decreased from 8500 to 3900, the evaporation loss decreased of 30%. The higher air inlet temperature causes higher evaporation loss. When the air inlet temperatures are decreased from 40 °C to 10 °C, the evaporation loss is decreased of 62.8%. By using this cooling system, the outlet water temperature was reduced by 19°C. Also, the numerical results were validated by some studies in the literature..

***Keywords***: Direct contact cooling, swirling jet, evaporation loss, effectiveness

# Impact of CO2 Emission and Oil Prices on Renewable Energy Production in Turkey

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**Abstract:** Turkey's demand for energy and natural resources has been increasing due to economic and population growth. But Turkey's conventional energy sources are insufficient to meet the increasing energy demand. This leads to higher energy import dependency in Turkey. Imported fossil fuels, which is contributing the climate change, are an important energy resource for Turkey like other countries. That's why an increase in these kind of energy resources prices, such as oil prices, can adversely affect the Turkish economy. Increasing renewable energy production can contribute to reduce energy import dependency, to maximize the use of domestic resources, to combat climate change. The aim of this paper is to analyze the impact of carbon dioxide emission and oil prices on renewable energy production in Turkey over the period 1983 to 2016 by using ARDL model. The results indicate that renewable energy production is positively related to carbon dioxide emission in the long run. By contrast, carbon dioxide emission has negatively related to carbon dioxide emission in the short run. On the other hand there is no relationship between renewable energy production and oil prices both in the short and in the long run.

***Keywords***: *Renewable Energy, Carbon Dioxide Emission, Oil Prices, Energy Import, Economic Growth*

# Carbon Footprint and Sustainable Development: The Case of Turkey

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**Abstract:** The problems of climate change and global warming, which are serious threats to human life in recent years, are being discussed extensively in the international arena. The carbon footprint, which makes up the largest share of the ecological footprint on, is a measure of CO2 emissions as a result of the total energy consumption required for industrial activities and the life of a human being. In this study; are discussed on the reduction of use of fossil resources, a more effective use of renewable energy sources and provide sustainable development in Turkey. The aim of this study is to investigate renewable energy sources that are suitable for the country's potential instead of these sources because fossil fuels are both harmful to the environment and constitute an important part of the current account deficit. Moreover, implementations and plans to reduce CO2 emissions in the world literature has discussed. On the other hand, to use sustainable energy sources effectively and to reduce carbon emissions in Turkey policy recommendations on possible actions has discussed.

***Keywords***: Sustainable Development, Carbon Footprint, Renewable Energy.

# Experimental study on airfoil angles in horizontal axis wind turbine

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**Abstract:** An aerodynamically efficient blade is one of the prime necessities to extract maximum mechanical power from a wind turbine. A number of research is available in the literature studying on blade design and configuration to improve aerodynamic characteristics of horizontal axis wind turbines. Less attention, however, has been devoted to wind turbines in terms of optimization of airfoil angles. This present study has important significance for the aerodynamic design and manufacturing of wind turbine blades.

***Keywords***: *Wind Turbine; airfoil Angle; optimization; aerodynamic response*

# Graphene-Based Ionizing Radiation Sensors

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**Abstract:** The unique properties of graphene, like high carrier mobility and mechanical robustness, makes it a strong candidate to be used as a novel material to design radiation sensors. Up to now, the development of graphene-based sensors was mainly focused on the detection of visible and IR light, X-rays, low energy $\gamma$-rays, light ions and neutrons. Many of these sensor designs are based on graphene field effect transistors (GFETs) using undoped silicon substrate. GFETs exploit the ambipolar resistance of graphene near its charge neutrality point (Dirac point) using the semiconductor substrate to absorb radiation. Such sensors do not depend on the direct collection of charges, but they sense ionizing radiation through the change in conductivity of the graphene layer induced by changes of the electric field. These field changes can be induced by charges drifting close to the graphene layer. Our purpose is to extend this approach to the detection of $\beta$-particles with the final goal of developing a field sensing device to track minimum ionizing particles.

***Keywords**:* Graphene, Radiation, Sensors

# Comprehensive Investigation of Applications of Liquid-to-Air Membrane Energy Exchangers in Building HVAC Systems

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**Abstract:** Fouling can be defined as the buildup of undesirable substances on a surface. Fouling negatively impacts the performance of engineering equipment, such as heat and membrane exchangers. Heat exchanger fouling is the attachment of particles to heat transfer surfaces, and reduces the overall heat transfer coefficient of heat exchangers. Similarly, membrane fouling occurs when particles lodge on a membrane surface or within the membrane pores, and limit the permeation rate through the membrane. This research is targeted towards fouling in heating, ventilating and air-conditioning (HVAC) systems, because HVAC systems play a key role in global energy consumption. In developed countries, HVAC systems make up about half of the energy consumed in buildings, and up to one-fifth of the total energy consumed. Given that membranes are promising for HVAC applications and are progressively adopted in air-to-air heat/energy exchangers, recently highlighted the need for extensive research on fouling in membrane-based HVAC systems. Liquid-to-air membrane energy exchangers (LAMEEs) use semi-permeable membranes and are designed to transfer heat and moisture between air and liquid streams in heating, ventilating, and air-conditioning (HVAC) systems.

***Keywords**:* Energy, HVAC, Liquid-to-air Membrane

# İklim Değişikliği ve Havza Yönetimi

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**Özet:** Son yıllarda dünya kamuoyunda en fazla tartışılan konulardan biri haline gelen ve yaşanan çevre sorunlarından en önemlilerinden olan küresel ısınma ve iklim değişikliğinin etkileri gözlendikçe insanoğlunun ilgisi daha da artmakta ve insanlığı tehdit etmektedir. İklim değişikliği, "Nedeni ne olursa olsun iklim koşullarındaki büyük ölçekli ve önemli yerel etkileri bulunan, uzun süreli ve yavaş gelişen değişiklikler" biçiminde tanımlanabilir. İnsanlar tarafından atmosfere verilen gazların sera etkisi yaratması sonucunda dünya yüzeyinde sıcaklığın artması ise küresel ısınma olayıdır. Havza yönetimi; bir havza sınırı içerisinde kalan toprak, su, bitki örtüsü varlığı ile bunları etkileyen bir faktör olarak da insan faaliyetlerinin birlikte ele alındığı bir doğal kaynak yönetimidir. Dünyayı tehdit eden küresel ısınma birbirinden farklı bölgelerde, farklı şekillerde kendisini göstermektedir. İklim değişikliği hidrolojik çevrim, su kaynakları, onların yerel-bölgesel-küresel yönetimi ve dağıtımı üzerine önemli ölçüde etki etmektedir. Sağlık ve besin üretimi yanında, endüstri ve sürdürülebilir ekosistemler için vazgeçilmez olan su kaynaklarına küresel ısınmanın etkide bulunması kaçınılmazdır. Küresel ısınmanın en önemli sonuçlarından biri olan su kaynaklarının azalması, sürdürülebilir yaşamı engelleyecek boyutlara ulaşmaktadır. Su kaynaklarını planlama çalışmaları havza yönetimi içinde değerlendirilmektedir. Bu çalışmada iklim değişikliği ve küresel ısınmanın havza yönetimi üzerine olan etkileri anlatılmış, problemlerden bahsedilmiş ve çözüm önerileri getirilmiştir.

***Anahtar Kelimeler:*** Küresel ısınma, İklim değişikliği, Havza, Havza yönetimi.

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