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5TH INTERNATIONAL CONFERENCE ON ADVANCES IN NATURAL AND APPLIED SCIENCES (ICANAS)

on 21-23 September 2021, Ağrı/Turkey

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Chairs of ICANAS'21

International, Interdisciplinary, Online

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5th International Conference on Advances in Natural and Applied Sciences

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BOOK of ABSTRACTS

ICANAS 2021

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5th International Conference on
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Dear ICANAS 2021 participants!

We would like to thank you all for your interest to participate in the International Conference on Advances in Natural and Applied Sciences (ICANAS 2021) which will be held in Ağrı (İbrahim Çeçen University), Turkey, September 21-23, 2021.

Due to the extraordinary circumstances of the Covid19 coronavirus pandemic, we have decided to hold our meeting online this year.

This year we are happy to organize the 5th International Conference on Advances in Natural and Applied Sciences on the international platform in collaboration with İbrahim Çeçen University of Ağrı. Our Conference aims to provide an atmosphere for colleagues from all over the world to share expertise, experience and scientific studies and industrial experiences that describe significant advances in the following areas, but are not limited to; Chemistry, Physics and Biology, Mathematics and Statistics, Agricultural and Aquatic Sciences, Biotechnology and Nanotechnology, Engineering, Computers Sciences, Physics, Chemistry, Biology and Mathematics Education. The conference program includes invited speakers, online paper presentations, poster presentations and virtual presentation.

ICANAS 2021 is an international meeting for International Conference on Advances in Natural and Applied Sciences from all over the world working in Natural and Applied Sciences to present their latest research results, to exchange new ideas and application experiences face to face, to discuss challenging issues, to establish research relations and to find global partners for future collaboration.

This year, within the scope of the Conference, nearly 100 oral and poster abstracts accepted by the Scientific Committee and Editorial Board were presented.

Selected papers from the ICANAS2021 recommended by the scientific committee will be published in special issues of following journals: International Journal of Education, Science and Technology; Eastern Anatolian Journal of Science; International Journal of Scientific & Engineering Research.

I would like to thank honorary chairs Prof. Dr. Abdulhalik KARABULUT (The Rector of Ağrı İbrahim Çeçen University) and İbrahim ÇEÇEN (The Chairman of IC Holding) who contributed to making this conference a great success.

Also, I would like to thank all conference participants who supported the conference with their knowledge, invited speakers, session chairs, authors / presenters, colleagues, conference secretariat, technical team that contributed to the online conference, sponsors and everybody who has all contributed to this conference with great efforts for months.

I wish every success and fruitful results in their academic lives for all participants of ICANAS 2021 organized Ağrı, İbrahim Çeçen University.

Hope to see you in face at the next ICANAS conferences...

Prof. Dr. Rıdvan DURAK

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CONTENTS

Invited Talks

ID	Authors	Abstract Title	Page
01	Abdulmecit TÜRÜT	Some Explanations on Experimental Current-Voltage-Temperature Characteristics in Schottky Barrier Diodes	III
02	Cevdet COŞKUN	Ethical Violations and Causes Frequently Encountered in Scientific Research and Publication Process	V
03	Natalia Igorevna CHERKASHİNA	Effect of Electron Irradiation on Composites with POSS	VI
04	Dilfuza EGAMBERDIEVA	The Potential of Biochar for Improving Soil and Plant Health	VIII
05	Hüseyin Ozan TEKİN	Principles of Monte Carlo Simulations for Radiation Transport and Nuclear Shielding Studies in Nuclear and Medical Physics: MCNPX Experience	IX
06	Zainab YUNUSA	Synthesis of Graphene Nanoribbons and its Application to Ammonia Gas Sensing	X
07	Abdikerim KURBANALIEV	Turbulent Flow Modelling Using Open Source Packages OpenFOAM and Paraview	XI
08	Arif SALİMOV	Some Problems of Lifts	XII
09	Nicoleta Anca ŞUTAN	"The face" of Biosynthesized Nanoparticles	XIII
10	Alexander LABOVSKY	Approximate Deconvolution with Correction - a Member of a New Class of Turbulence Models	XIV
11	Fouad Ismail FOUAD El-AGAWANY	Polymers and Glasses; Their Applications For Gamma Radiation	XV
12	Mohammed İbrahim SAYYED	Shielding Characteristics of Different Glass Systems for Protection Against Gamma Rays in Diverse Applications	XVI
13	Christopher MAYACK	Chemical Biomarkers that Can Accurately Predict Honey Bee Health Factors	XVII

Chemistry Oral Presentations

ID	Authors	Abstract Title	Page
22	Ahmet Gökhan AĞGÜL	In Vivo Effects of Methotrexate and Zingerone on Carbonic Anhydrase, 6-Phosphogluconate Dehydrogenase and Thioredoxin Reductase Enzyme Activities in Testis Tissues of Rats	19
30	Ebru AKMAN, Hanif ŞİRİNZADE, Esra DİLEK, Sibel SÜZEN	Effects of Indole Derived Schiff Base Compounds on Human Carbonic Anhydrase Isoenzymes (hCAI and hCAII)	21
31	Ebru AKMAN, Hanif ŞİRİNZADE, Esra DİLEK, Sibel SÜZEN	Inhibition of Acetylcholinesterase Enzyme (AChE) by Indole Derived Schiff Base Compounds	22
35	Abdullayeva Mairam DUKUYEVNA, Kalykova Gulzada SATYVALDIEVNA	Investigation Of Physical, Chemical and Technological Properties of Clays of The Tash-Kumyr Deposit	23
42	Feruza AYTIEVA, U.T. TESHEBAEVA	Case-Based Learning Approach and Technologies to Advance Teaching Biochemistry in the University	24
59	Rümeysa YAVUZ, Derya ÜNLÜ	Purification of Azeotrope Methylal/Methanol Mixtures by Pervaporation Process Using BTEE Doped PVA/PVP Hybrid Membranes	25
65	Hande BEK, Derya ÜNLÜ	Removal of Humic Acids Through PVDF/PVP Blend Membrane by Filtration Process	26
76	Safinur ÇELİK	Isolation of Protease from Tragopogon Reticulatus (yemlik) and Identification of Some Characteristics	27
95	Nedim GÜRLER, Ferit Can YAZDIÇ	Antibacterial, Mechanical, Water Vapor Barrier and Optical Properties of Crosslinked Starch-Polyvinyl Alcohol Films Containing Thymol	28
103	Dilan Özmen ÖZGÜN, Gülsen ÖZLİ, Halise İnci GÜL	Synthesis of 2-[(Aryl)methylidene]-2,3-dihydro-1H-inden-1-ones as Potential MAO Inhibitors	29
123	Habip ÇELİK, Murat GÜNEY, Murat ŞENTÜRK	Synthesis of Sesamol-Based Sulfonate Esters and Their Biological Activities	33
127	Tuba AYDIN, R. SAĞLAMTAŞ	Inhibition Effects of Polygonatum Multiflorum (Solomon's Seal) Roots on Some Enzymes	34

Physics Oral Presentations

ID	Authors	Title	Page
26	Ruya Aydin RAOOF, Rıdvan DURAK	Investigation of the Change of Ground State Properties of N-Electron Quantum Dot Structures Interacting in Morse Potential Depending on Confinement Intensity	38
66	Fatma AKDEMİR, Aslı ARAS, Rıdvan DURAK	Calculating Energy Absorption and Exposure Buildup Factors of Some Psychoactive Substances	39
69	M. Emin GÜLDÜREN, Harun GÜNEY, Demet İSKENDEROĞLU, S. Morkoç KARADENİZ	Growth And Characterization of NiO Thin Films Grown by Spray Pyrolysis Method	40
70	M. Emin GÜLDÜREN, Harun GÜNEY, Demet İSKENDEROĞLU, S. Morkoç KARADENİZ	Cd Dopant Effect on NiO Thin Films Grown by Spray Pyrolysis Method	41
96	Bünyamin AYGÜN, Cemalettin AYGÜN, Önder ŞİMŞEK, Abdulhalik KARABULUT	Investigation of Fast Neutron Attenuation for Ferrovanadium	42
105	Bünyamin AYGÜN, Doğan DURNA, Önder ŞİMŞEK, Abdulhalik KARABULUT	Research on Protective Drug Effect Ingredients in Boron Neutron Capture Therapy	43

Biology Oral Presentations

ID	Authors	Title	Page
43	Selçuk ÇEKER	Determination of the Genotoxic Potential of Haplophyllum Vulcanicum Boiss. & Heldr	47
45	Mehmet KARADAYI, Şeyma AKSU	Cold Active Amylase Producing Yeasts From a Cryoconite Hole in Palandöken Mountain	48
48	İlknur ÇOLAK, Gökçe KARADAYI	Determinatıon of Expression Levels and DNA Methylation Rates of Some Genes Affecting Cadmium Stress Responses in Triticum Aestivum	50
71	Burak ALAYLAR, Mine ISAOĞLU, Medine GÜLLÜCE, Kadir TURHAN, F. Tülay TUĞCU	A Newly Synthesized 4-Thiazolidinone Derivative with Antimutagenic Effect against NPD-Induced Mutagenesis	51

73	Selin DOĞAN, Medine GÜLLÜCE, Taha YASİN KOÇ	Nanotechnological Applications in the Food Industry the Use of Nanomaterials and Their Evaluation for the Food Safety	52
74	Selin DOĞAN, Medine GÜLLÜCE, Selma SEZEN, Taha YASİN KOÇ	Investigation of Production Potentials of Various Commercially Important Enzymes in Bacillus Species Isolated from Magnesite Mines	53
84	Hamiyet TALAY, Mucip GENİŞEL	The Effect of Luteolın on The Elımınatıon of Hydrogen Peroxıde-Induced Oxidative Damage In Human Erythrocytes	54
85	Songul HALHALLİ, Mucip GENİŞEL	The Effect of Flavonoid Derivative 6-Fluoroflavone on Mitigation of Hydrogen Peroxide Induced Oxidative Damage in Erythrocyte Cells	55
98	Ayşe YEŞİLBAŞ, Ahmet Regaib OĞUZ	Hormonal Control of Osmoregulation in the Lake Van Fish (Alburnus tarichi, Güldenstädt, 1814)	56
125	Burak ALAYLAR	Investigation of Siderophore-Producing Bacteria Isolated from Sainfoin (Onobrychis sativa L.)	57

Mathematics Oral Presentations

ID	Authors	Title	Page
39	E. A MİDİNOVAE, S.B. TANGATAROVA	One of The Cornerstones in Stem Approach	61
46	Dilek ERKMEN, Alexander LABOVSKY	Improving Regularization Techniques for Incompressible Fluid Flows via Defect Correction: Detailed Version	62
60	Nil KOFOGLU	On Adjoint Curve of a Curve in Three Dimensional Weyl Space	63
62	Yasasya BATUGEDARA, Alexander LABOVSKY, Kyle SCHWİEBERT	Higher Temporal Accuracy for LES-C Turbulent Models	64
79	Kyle SCHWİEBERT, Yasasya BATUGEDARA	Note on the Effect of Grad-Div Stabilization on Calculating Drag and Lift Coefficients	65
108	Ahmet Ocak AKDEMİR, Sinan ASLAN	Some New Fractional Order Integral Inequalities for Logarithmically Convex Functions	66

Air, Soil, Water, Food, Healths Oral Presentations

ID	Authors	Title	Page
56	Halime Erzen YILDIZ, Canan DEMİR, Tuğba GÜR, Şehriban YÜREKTÜRK, Arzu Esen TEKELİ	Determination of some antioxidant enzyme levels in hairdressing salon workers in Van province	69
57	Halime Erzen YILDIZ, Nergiz YILDIZ YORGUN	Frequency of Lung Cancer in Van Central Districts	71
124	F. Aygun Erturk, S. Yagci, G. Karadayi, G. Agar	Chlorophyl Analysis in Determination of The Lipoic Acid Effects in Bread Wheat Plants Applied Heavy Metal	72
131	Erkan AZİZOĞLU, Özdemir ADIZEL, Gökhan GÖK	Important Biological Values of Birecik - Karkamış Districts and Their Contribution to Biotourism	73

Nanotechnology Oral Presentations

ID	Authors	Title	Page
32	Emir ÇEPNİ, Hülya Öztürk DOĞAN, Tuba ÖZNÜLÜER ÖZER	Electrochemical Synthesis of Pd Particles Decorated Cu2S Nanobelts as Novel Electrocatalysts for Hydrogen Evolution Reaction	77
67	Ahmet MAVİ, Safinur ÇELİK, Kübra SOLAK	Purification of Carbonic Anhydrase Enzyme with Sulfanilamide Bonded Magnetic Nanoparticles	78

Engineering Oral Presentations

ID	Authors	Title	Page
13	Selma AKÇAY	Effect on Heat Transfer of Al2O3-water Nanofluid in a Zigzag Channel with Baffles	82
15	Büşra KADIOĞLU, Süleyman TOY	Indoor Thermal Comfort; Definition, Applications and Turkey Cases	83
17	Samet DURMUŞ, Harun YAKA	Springback Analysis in the Forming of Oven Panels	84
19	Uğur ÖZKAYA, Mehmet Burak BİLGİN	Effects of Welding Joining Methods Applied to AISI 430 Ferritic Stainless Stells on Surface Polishing	85
36	Yalçın YAŞAR, Harun YAKA	The Effect of Welding Current on Mechanical Properties in Joining Low Carbon Steel and Stainless Steel Materials by Mig-Mag Method	86
64	Ali Kıvanç ŞAHİN, Tuğrul AKGÜL, Oğuzhan ÇAKIR	Battle Royale Optimization based PID Controller Design for Vehicle Cruise Control System	87
77	Boğaçhan BAŞARAN	The Effects of Using Different Elastic Modulus Expressions on the Load-Displacement Behavior	88

		of Concrete Beams with Hybrid Steel-FRP Reinforcement	
80	Büşra Kadıoğlu AKGÜL, Süleyman TOY	The Designed Examples for Optimal Use of Urban Furniture in Winter Cities	90
81	Yusuf KANCA, Bengi ÖZKAHRAMAN	Friction and Wear Characteristics of Methacrylated K-Carrageenan/Gellan Gum Based Hydrogels	91
91	Hasan TUNA, Sirer ALBAYRAK	Investigation of the Relationship Between Safety Culture Levels and Safety Performances of Employees in the Construction Sector	92

Materials Science Oral Presentations

ID	Authors	Title	Page
18	Nilay ÇÖMEZ	Corrosion and Wear Behavior of Fe-Cr-C-V-Mo Hardfacing Coatings	97
33	Elif ERÇARIKCI, Kader Dağcı KIRANŞAN, Ezgi TOPCU	Flexıble And Ultralıght Cozn-Mof/Reduced Graphene Oxıde Sponge	98

Agricultural Science Oral Presentations

ID	Authors	Title	Page
55	Tülay DİZİKISA, Nesrin YILDIZ	The Effect Of Different Organic Fertilizers On Soil Properties In Tolering Climate Change	101
75	Yücel DEMİR, Ömer AKBULUT	Milk Yield Traits of Anatolian Buffalo Reared In Pasinler	102
78	Ekrem GÜLLÜCE, Neslihan HIDIROĞLU, Medine GÜLLÜCE, Mehmet KARADAYI	Removal of Crystal Violet Dye from Aqueous Solutions Using Robinia pseudoacacia L. (Fabaceae) Fruits Biosorbent	103
86	Yücel DEMİR, Ömer AKBULUT	Reproductive Traits of Anatolian Water Buffaloes Reared at Erzurum Conditions	104
99	Kader YOLCU	The Role of Climate Changes in Reproductive Performance in Cattle-Review	105
120	Selvinaz YAKAN, Cafer Tayer İŞLER	Usability of Infrared Thermal Camera in The Diagnosis of Foot Diseases of Cattle	106
121	Erkan AZİZOĞLU, Rıdvan KARA, Özdemir ADIZEL, Gökhan GÖK	A Statistical Approach on Reproductive Biology of Chukar Partridge (Alectoris chukar, Gray, 1830) Living in Hakkâri Province	107

122	Elif KAVAL OĞUZ	Toxic Effects of Cypermethrin on Gill of Van Fish (Alburnus tarichi Güldenstaadt 1814)	109
129	Elif ÖRĞİ, Ahmet Regaib OĞUZ	Determination Of Melatonin Level During Reproductive Migration In Van Fish (Alburnus Tarichi Güldenstädt, 1814)	110
130	B. ERGÖZ, Z. ALKAN, A. N. KIRAÇÇAKALI, Elif ÖRĞİ, A. R. OĞUZ	Investigation of Mucus Cell Localization and Density in the Digestive Canal of Van Fish	112

Education Oral Presentations

ID	Authors	Title	Page
37	Gulchehra DAVRANOVA	The Influence of Social Networking on Students Learning English	115

INVITED TALKS

ID:01-IOP

Some Explanations on Experimental Current-Voltage-Temperature Characteristics in Schottky Barrier Diodes

Abdulmecit TÜRÜT

Faculty of Engineering and Natural Sciences, Department of Engineering Physics,
Istanbul Medeniyet University, 34700 Ünalan, Üskudar, Istanbul, Turkey

Schottky and ohmic contacts are essential parts of electronic and optoelectronic devices based on semiconductor materials. Controlling the contact/semiconductor interface properties is the key to obtaining a contact with an optimum performance. The Schottky barrier height (SBH) is one of the most important quantities of a metal/semiconductor (MS) rectifying contact since it manages the flow of carriers across MS interface and therefore it is crucial for the development of future high-functionality devices. The formation and modification mechanism of SBH in the MS Schottky contacts is still a subject of much debate. The important of zero bias and bias-dependent barrier in current-voltage characteristics under measurement temperature and the determination of the Richardson constant of the semiconductor substrate used in the fabrication of a MS Schottky contact and of some diode parameters will be explained by means of experimental findings in literature.

Keywords: Schottky Diodes, Barrier Height, Temperature mesurements,

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Ethical Violations and Causes Frequently Encountered in Scientific Research and Publication Process

Cevdet COŞKUN

Giresun University, Faculty of Arts&Sciences, Department of Physics, cevdet.coskun@giresun.edu.tr

Ethics, which has gained more and more importance in the field of scientific research and publication in recent years, seems to remain on the agenda from now on. This is necessary in one aspect and inevitable in another aspect. Because as the fierce competition and struggle for survival in the field of science and technology continues, scientists will be under pressure to do more research and publication. With the ease of access to information/documentation, ethical violations will lead to serious problems and debates not only at the national but also at the global level. In this context, the most important way to minimize ethical violations is to ensure that scientists undergo a serious education on ethics. Since ethical violations made in the scientific research process are only noticed when they turn into publications, reader control is also of great importance. For this reason, ethical violations are more common in societies that read and write less. Ethics, which is influenced by many factors from the determination of academic promotion and appointment criteria to filling the relevant legal gap, is also a matter of rights and law. In this talk, we will try to examine the qualities that an ideal scientist should have, not only in the field of scientific research and publication, but also in almost every field of academic life, what are the common ethical violations and ways to minimize them.

Keywords:

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ID: 03-IOP

Effect of Electron Irradiation on Composites with POSS

N.I. CHERKASHİNA, V.I. PAVLENKO, N.I. BONDARENKO, R.V. SİDELNİKOV

Belgorod State Technological University named after V.G. Shoukhov, Belgorod, Russia, cherkashina.ni@bstu.ru

The purpose of this article was to study the effect of electron irradiation on polyimide track membranes-based polymer composites where Polyhedral oligomeric silsesquioxane (POSS) was used as a filler. Samples were irradiated with a 5·1015 cm–2 flow of electrons of energy 150 keV in a vacuum at a pressure of no more than 10–4 Pa. The curves of diffuse reflectance spectra of the initial polyimide and of the composite containing filler, both before and after irradiation with electrons, are presented. The change in the integral absorption coefficient of composites with different filler contents after electron irradiation is investigated. For pure polyimide after electron irradiation, the integral absorption coefficient of solar radiation increases by 26.7 %. For a composite with 70 % POSS content, the integral absorption coefficient increases by 15.3%.

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ID: 04-IOP

The Potential of Biochar for Improving Soil and Plant Health

D. EGAMBERDİEVA [1,2*], J. ALİMOV2, A. ABDURAKHMONOV[2], S. ABDUSAMATOV[2], Z. JABBAROV[2]

[1] *Leibniz Centre for Agricultural Landscape Research (ZALF), Müncheberg, Germany*
[2] *Faculty of Biology, National University of Uzbekistan, Tashkent 100174, Uzbekistan,*
egamberdievad@gmail.,com

Biochar is a solid product obtained by heating of biomass or organic waste in the total or partial absence of oxygen and is applied to improve soil properties, or considered a means of carbon sequestration. Several positive effects of biochar on soil chemical, physical, and biological properties have already been demonstrated. Biochar amendment has also been repeatedly discussed as an effective means to restore saline lands and increase plant tolerance to salt stress. Especially, improved soil cation exchange capacity, water holding capacity, soil nutrient retention, and increased soil enzyme activities were reported. Biochar contains a higher amount of labile carbon fractions, which may stimulate microbial activity and thereby improve soil nutrient cycling [1, 2]. Biochar amendment has also been repeatedly discussed for its disease suppressive properties. It can be assumed that the modification of plant root exudate composition, changes in soil microbial and biochemical properties and the induction of systematic plant defense mechanisms in the wake of biochar amendments are crucial factors impacting pathogen suppression. However, the underlying mechanisms of such beneficial effects provided by biochar amendment of soils are highly complex. Therefore, more in-depth studies are needed to understand biochar interactions with soil organisms under extreme environments, which will help achieve maximum benefits of biochar under saline soil conditions.

Keywords: biochar; salinity; soil; plant; microorganisms; soil enzymes

Acknowledgement: This research was supported by UZB-Ind-2021-93 grant from the Department of Science & Technology (DST), the Government of India, and the Ministry of Innovative Development of the Republic of Uzbekistan

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ID: 05-IOP

Principles of Monte Carlo Simulations for Radiation Transport and Nuclear Shielding Studies in Nuclear and Medical Physics: MCNPX Experience

Huseyin Ozan TEKİN

Medical Diagnostic Imaging Department, College of Health Sciences, University of Sharjah, Sharjah 27272, United Arab Emirates

Recently, the use of Monte Carlo simulation has accelerated due to its use in a variety of areas, including nuclear technology, medical radiation, and industry. On the other hand, customers may choose from a variety of Monte Carlo Codes. In this presentation, technical details, basics of input writing, general structure of MCNPX (version 2.4.0) Monte Carlo code will be discussed. MCNPX is a general-purpose programme that is used to simulate and transport radiation in order to study the interaction of radiation with materials. It also monitors all particles at various energies. MCNPX is a completely three-dimensional program that makes use of expanded nuclear cross section libraries and particle type physics models. In addition, MCNPX has a broad range of application areas not only in different fields but also in different radiation types as well energy levels.

Keywords: MCNPX; Monte Carlo simulations; radiation

ID: 06-IOP

Synthesis of Graphene Nanoribbons and Its Application to Ammonia Gas Sensing

Zainab YUNUSA

Bayero University, Kano, Nigeria

Carbon nanomaterial have been employed for gas sensing application due to their exceptional electronic, thermal and mechanical characteristics. Graphene nanoribbon which is a 1D carbon material has superior characteristics in terms of high conductivity as compared with its carbon nanoubes. Different techniques including spin coating, dip coating, drop casting, dielectropheresis, direct synthesis etc have been used for coating of the sensing material onto the transducer. Amongst these techniques the direct synthesis technique or in situ have not been widely explored and it has a better advantage because with this technique, the adhesion of the sensing material to the transducer is much stronger and it is simple and economical because it is locally synthesized. Therefore, in this paper it was proposed to synthesize the sensing material epitaxially onto the substrate. The substrate employed was GaPO4 with a platinum metal. A Zirconium layer was sandwitched in between the GaPO4 and the platinum electrodes for improved adhesion. Alcohol Catalytic Chemical Vapor Deposition (ACCVD) was employed for the synthesis of Carbon Nanostructures. Novel structure of Y-branched Multiple Layered Graphene Nanoribbons were discovered for the first time and has never been reported based on the author's knowledge on this substrate. This was employed for gas sensing application in order to investigate its sensing potentialities. It was tested towards ammonia gas with different concentrations of 0.125 to 1 % at room temperature and then compared with pristine multiwalled carbon nanotubes for comparison. It was observed that the sensitivity of the direct synthesis sensor was more than that of pristine carbon nanotubes which makes it as a potential sensing material for ammonia gas. The minimum sensitivity of the sensor at 0.25% concentration is 4.3 while the maximum sensitivity for 1% gas

concentration is 6. This shows that the pristine GNR based sensor. This shows that the pristine GNR based sensor has affinity towards ammonia gas as in CNT based ammonia gas sensors. In order to test the sensor for repeatability, it was tested repeatedly for 0.25 % gas concentration for four cycles which showed the same t. It could also be observed that the sensitivity increases as a result of increase in gas concentration which is in agreement with work done by other researchers.

Keywords:

ID:07-IOP

Turbulent Flow Modelling Using Open Source Packages OpenFOAM and Paraview

A.Y. Kurbanaliev[1], A.T. Kalmurzaeva[2], B.R. Oichueva[3] and A. B. Turganbaeva[4]

[1]Osh state university, Osh, Kyrgyzstan, abdikerimkurbanaliev@gmail.com
[2]Batken state university, Batken, Kyrgyzstan, anipa.kalmurzaeva.80@mail.ru
[3] Osh state university, Osh, Kyrgyzstan, oichuevab@gmail.com
[4]Osh State Pedagogical University, mir_ayka@mail.ru

Modeling turbulent flows by using computational fluid dynamics is an effective method for studying a wide range of scientific and technical problems of practical interest. In this paper, we consider capabilities of the OpenFOAM and Paraview open packages for numerical solution of number of computational fluid dynamics problems. It is shown results of test problems calculations available in open most informative and reliable database.

Acknowledgement: This work was supported by Ministry of Education and Sciences of Kyrgyz Republic.

Keywords: Navier-Stokes Equations, RANS Turbulence Models, volume of fluid method, ERCOFTAC Database, Open FOAM, Paraview.

ID: 08-IOP

Some Problems of Lifts

Arif SALİMOV

Baku State University, Department "Algebra and Geometry", Baku, Azerbaija, asalimov@hotmail.com

A real modeling of Riemannian holomorphic manifold is a real smooth manifold admitting the pure Riemannian metric with respect to the integrable structure which is defined by the isomorphic representation of commutative algebras. In general, the Riemannian metric on holomorphic manifolds is not a holomorphic metric. The main purpose of this work is to study holomorphic metrics by using the Tachibana operator applied to pure tensors.

We can define the following classical numbers of order two: dual numbers (or parabolic numbers), i.e. , where is the field of real numbers. Let be a differentiable manifold and its tangent bundle. Two types of lift (extension) problems have been studied in the previous works of some authors: a) The lift of various objects (functions, vector fields, forms, tensor fields, linear connections, etc.) from the base manifold to the tangent bundle; b) The lift on the total manifold by means of a specific geometric structure on . In the present work we continue such a study by considering the structure given by the dual numbers on the tangent bundle and defining new lifts of functions, vector fields, forms, tensor fields and linear connections.

Using holomorphic extensions of functions, we also introduce so-called deformed lifts in the tangent bundle of two order being defined as the set of all higher order 2-jets and investigate some properties of these lifts. The other purpose of this work is to study the deformed lifts (i.e. so called the intermediate and complete lifts) of functions and vector fields which surprisingly appear in the context of algebraic structures in the bundle of 2-jets.

Keywords:

ID:9-IOP

"The Face" of Biosynthesized Nanoparticles

Nicoleta Anca ŞUŢAN[1], Liliana Cristina SOARE[2], Claudiu ŞUŢAN[3]

[1] *University Of Piteşti, ancasutan@yahoo.com*
[2] *University Of Piteşti, soleil_cri@yahoo.com*
[3] *University Of Piteşti, claudiusutan@yahoo.com*

Based on the wide diversity of living entities, the possibilities of intracellular and extracellular bioreduction or biosorption of metal ions are continuously explored to obtain the most promising biogenic nanoparticles, with remarkable applications in various areas and industries [1]. Furthermore, the attractiveness of biogenic nanoparticles lies in the advantage of accurate planning of synthesis conditions, which facilitates stabilization, separation and purification of nanoparticles [2]. Despite the attention paid to the production and extensive use of nanoparticles, many concerns about bioactivity and cytotoxic potential still persist. Surface charge of nanoparticles is highly dependent on the presence and nature of the coating or capping agent [3]. Coated surface highly influence their stability, biocompatibility and toxicity. In an era dominated by biotechnologies and nanotechnologies, in order to enjoy a period of safe bionanotechnology, the imperative to elucidate the formation, dynamics and role of nanoparticle coating is reinforced by a multitude of important researches.

Keywords: biosynthesis, nanoparticles, coating,

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ID:10-IOP

Approximate Deconvolution with Correction - a Member of a New Class of Turbulence Models

Alexander LABOVSKY

[1] *Michigan Technological University, Houghton, United States, aelabovs@mtu.edu*

We propose a new family of models for fluid flows at high Reynolds numbers, Large Eddy Simulation with Correction (LES-C), that combines LES approach to turbulence modeling with defect correction methodology. We investigate, both numerically and theoretically, one of these models, based on the Approximate Deconvolution Model (ADM). The new model, Approximate Deconvolution with Correction (ADC), is shown to be stable and higher order accurate with respect to the filtering width. It is shown to outperform its most natural competitor, the ADM, on a variety of benchmark problems. These include the computation of errors (on a problem with known solution); a benchmark problem of finding maximal drag and lift coefficients; flow past the step; and the discussion on Taylor-Green vortex solutions.

Keywords: turbulence model, defect correction, approximate deconvolution

ID:11-IOP

Polymers and Glasses; Their Applications for Gamma Radiation

Fouad Ismail FOUAD El-AGAWANY

Physics department, Faculty of Science, Menoufia University, Al Minufya, Egypt fouaadesmael@yahoo.com

Shielding against ionizing radiation is the most important and of great interest to protect people from the hazards resulted from the exposure to any type of the ionizing radiation. The ionizing radiation is broadly classified into neutrons, photons, heavy charged particles, and electrons. This radiation is characterized by their high penetration ability. In this work, an alternative materials instead of lead are examined to be used as gamma – ray shields. These materials are glasses and polymers. Several engineers and scientists have been used glasses with different compositions as radiation shielding. Therefore, the glass classification as good shielding materials must include assessing its photon and neutron shielding parameters. Neutron shield requirements simply require that the shield contain high neutron-absorbing elements such as H, B, Mg, Ca, and Cd, while effective photon shields are expected to be dense and have high mass attenuation coefficients. Thus, for glasses that are required as shields for photons and neutrons, their composition must strike a balance between light and heavy elements. Hence, the glass shield's composition would determine the type of radiation it has a potential of adequately shielding. Besides, different types of polymeric materials also investigated to be used as gamma – ray shields. The shielding effectiveness of these materials are examined via determination of the vital parameters as mass, linear attenuation coefficient, half value layer, mean free path, and buildup factors through different programs as Xcom, Phy-X/PSD, and MCNP. Finally, some physical and optical characterization of the investigated parameters is discussed.

Keywords: Polymers, Glasses

ID:12-IOP

Shielding Characteristics of Different Glass Systems for Protection Against Gamma Rays in Diverse Applications

Mohammed Ibrahim SAYYED

Department of Physics, Faculty of Science, Isra University, Amman, Jordan Department of Nuclear Medicine Research, Institute for Research and Medical Consultations, Imam Abdulrahman Bin Faisal University, Damman, Saudi Arabia, mabualssayed@ut.edu.sa

In the current century and with the rapid development in the technology, the utilization of gamma-rays has become an essential requirement for daily life activities. The research centers, dental as well as medical facilities and other facilities use a lot of equipment which emit different kinds of the radiation. The continuous exposure of humans to the radiation causes skin burns, cancers and other health problems. In the last two decades, scientists began to search for effective ways to reduce the negative effects of radiation. One of the most important methods is the use of materials that have the ability to absorb radiation and thus reduce the amount of radiation that reaches the human body. These materials known as radiation shieling materials. Recently, many glass systems have been prepared and developed as a novel radiation shielding materials. Glass has promising properties that distinguish it from other materials and encouraged scientists to use it as a radiation shielding material. These properties including the high transparency of the glasses, low toxicity, and the possibility of fabricating the glasses in simple technique. In this work, we will give a brief description about the radiation shielding properties of different glasses including silicate, borate, tellurite, phosphate and heavy metal oxide glasses

Keywords: Glass, heavy metal oxide, Gamma

ID:13-IOP

Chemical Biomarkers That Can Accurately Predict Honey Bee Health Factors

Christopher MAYACK[1], Robert BROADRUP[2], Anthony MACHERONE[3], Helen WHİTE[4]

[1] Sabancı University, İstanbul, Turkey, cmayack@sabanciuniv.edu
[2] Lafayette College, Easton, United States, rbroadrup@gmail.com
[3] Johns Hopkins University, Baltimore, United States, anthony_macherone@agilent.com
[4] Haverford College, Hoverford, United State, hwhite@haverford.edu

Recent years have witnessed a noticeable decrease in honey bee populations worldwide. Researchers have attributed this decline to several factors, both natural and unnatural (caused by human activity). At the same time, beekeepers regularly face challenges with determining the best management practices of their bee hives because they lack the rapid diagnostic tools required for determining the cause of decline in bee health before the colony collapses. To address this, we use a systems biology approach with machine learning validation to search for chemical biomarkers and the underlying mechanisms that might be responsible for the multifactorial synergistic bee health declines by integrating hive exposome data, with the prevalence and abundance of pesticides and bee diseases, sampled from urban and suburban environments. We determined top biomarker hits for all of the 20 most common bee diseases and pesticide exposures that were found across the hives sampled. Moreover, for 9 of the 20 diseases we were able to develop a chemical biomarker library that has around 90% accuracy for predicting if a hive is infected with this disease or not. These chemical biomarkers and libraries could therefore be used in the future for rapid diagnoses of bee hives using one standardized protocol for high throughput analysis that would give the beekeeper enough warning to improve bee health and prevent honey bee colonies from collapsing.

Keywords: Honey bee, Exposome, Bee health,

CHEMISTRY
ORAL PRESENTATIONS

ID:22-COP

In Vivo Effects of Methotrexate and Zingerone on Carbonic Anhydrase, 6-Phosphogluconate Dehydrogenase and Thioredoxin Reductase Enzyme Activities in Testis Tissues of Rats

Ahmet Gökhan AĞGÜL

Ağrı İbrahim Çeçen University, Ağrı, Turkey, agaggul@agri.edu.tr

Objectives: Methotrexate is a chemotherapy agent used in the treatment of several diseases such as cancer.[1, 2] Its high-dose exposure damages seminiferous tubules, reduces sperm count, and causes genetic mutations in sperm.[1] Zingerone is a nontoxic compound with varied pharmacological activities and has several potent biological activities such as anticancer.[3] The focus of the current study is to assess the activities of carbonic anhydrase (CA), 6-phosphogluconate dehydrogenase (6PGD), and thioredoxin reductase (TrxR) enzymes in the testis tissues of the rats exposed to methotrexate and zingerone.

Material and Methods: In the current study, the Wistar albino male rats were used as experimental animals. The rats (n=21) were categorized into three groups matched for body weight, with each group consisting of seven rats. Group C consisted of healthy rats. Group Z consisted of rats that received daily oral administration of zingerone (50 mg/kg) for 20 days. Group M consisted of rats that were administered methotrexate (20 mg/kg i.p.) daily for the last 5 days of the experiment. All the rats were administered physiological saline solution during the experiment. At the end of 20 days, the activities of CA, 6PGD, and TrxR enzymes, which are the indispensable biological molecules of metabolic processes in all living organisms[4], in the testis tissues of the rats were spectrophotometrically determined.

Results: According to our results, CA and TrxR activities decreased significantly in the testis tissues of the rats in the groups M and Z compared with that of the healthy rats in the group C. Although 6PGD activities of the rats in the group M increased significantly, 6PGD activities of the rats in the group Z were close to that of the healthy rats in the group C.

Conclusion: Our findings have shown that methotrexate and zingerone, which have anticancer properties, have similar properties on the activities of CA and TrxR enzymes except for 6PGD enzyme in the testicular tissues of the rats.

Keywords: Methotrexate; Zingereone; Carbonic Anhydrase; 6-Phosphogluconate Dehydrogenase; Thioredoxin Reductase; Rat

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ID: 30-COP

Effects of Indole Derived Schiff Base Compounds on Human Carbonic Anhydrase Isoenzymes (hCAI and hCAII)

Ebru AKMAN[1], Hanif ŞIRINZADE[2], Esra DİLEK[3], Sibel SÜZEN[4]

[1] *Institute of Health Sciences, Erzincan Binali Yıldırım University, uzmbioebru@gmail.com*
[2] *Faculty of Pharmacy, Erzincan Binali Yıldırım University, hshirinzade@erzincan.edu.tr*
[3] *Faculty of Pharmacy, Erzincan Binali Yıldırım University, edilek@erzincan.edu.tr*
[4] *Faculty of Pharmacy, Ankara University, sibel@pharmacy.ankara.edu.tr*

Carbonic anhydrase (CA) enzyme is an enzyme from the family of metalloenzymes containing zinc (Zn^{2+}) ions in its active site, and it is an enzyme that catalyzes the conversion of carbon dioxide to bicarbonate and proton, which is a slow reaction (EC4.2.1.1). It catalyzes the hydrolysis reaction of p-nitrophenylacetate to p-nitrophenol. Since p-nitrophenol absorbs at 348 nm, spectrophotometric activity measurement is made by utilizing this property.

The hCAI and hCAII isoenzymes from human erythrocytes were purified by affinity chromatography and the pure enzyme obtained was intended to be used in kinetic studies. Inhibition effects of indole derivative schiff base compounds (1a-1t) used in the study on these isoenzymes were determined and IC_{50} value at nanomolar level was calculated for each isoenzyme. It was observed that these compounds inhibited enzymes significantly. In our study, IC_{50} values for hCAI isoenzyme were determined to be in the range of 38.50-231.05 nM, respectively. The same parameter was calculated for the hCAII isoenzyme in the range of 33.01-216.28 nM. Acetazolamide (AZA) was used as a positive control for these enzymes and IC_{50} values were 61.29 nM for hCAI; It was determined as 39.48 nM for hCAII. 1k, 1l, 1p and 1t for hCAI with the best inhibitory effect relative to the control compound; for hCAII, we had 1k and 1p compounds.

Keywords: Carbonic anhydrase, enzyme, inhibition, indole derived compounds

ID:31-COP

Inhibition of Acetylcholinesterase Enzyme (AChE) by Indole Derived Schiff Base Compounds

Ebru AKMAN[1], Hanif ŞIRINZADE[2], Esra DILEK[3], Sibel SÜZEN[4]

[1] *Institute of Health Sciences, Erzincan Binali Yıldırım University,, uzmbioebru@gmail.com*
[2] *Faculty of Pharmacy, Erzincan Binali Yıldırım University, hshirinzade@erzincan.edu.tr*
[3] *Faculty of Pharmacy, Erzincan Binali Yıldırım University, edilek@erzincan.edu.tr*
[4] *Faculty of Pharmacy, Ankara University, sibel@pharmacy.ankara.edu.tr*

Alzheimer's is a very common dementia disease recently and there is no definite cure. In this disease, which causes a decrease in neurotransmitters in the brain, the neurotransmitter that shows the most decrease is acetylcholine. To treat or prevent the disease, the degradation of acetylcholine should be reduced, and this is only possible with the inhibition of acetylcholinesterase (AChE), which breaks down acetylcholine.

To investigate the *in vitro* effect of indole derivative Schiff base compounds on AChE enzyme, first, pure enzyme was supplied ready. Acetylthiocholine iodate (AChI) was used as substrate. The yellow colored 5-thio-2-nitrobenzoate anion, which is formed because of hydrolysis of the substrates and then the reaction of DTNB with thiocholine, gives maximum absorbance at 412 nm wavelength.

The inhibition effects of the indole derivative Schiff base compounds (**1a-1t**) used in the study on the AChE enzyme were determined and the IC_{50} value at the nanomolar level was calculated. It was observed that these compounds inhibited the enzyme significantly. In our study, IC_{50} values were determined to be in the range of 9.90-135.90 nM. Compared to the control compound Tacrine, **1s** compound showed the best inhibitory effect.

Keywords: Acetylcholinesterase, enzyme, inhibition, indole derived compounds

ID:35-COP

Investigation of Physical, Chemical and Technological Properties of Clays of The Tash-Kumyr Deposit

Abdullayeva Mairam DUKUYEVNA[1], Kalykova Gulzada SATYVALDIEVNA[2]

[1] *Osh State University, Osh, Kyrgyzstan, mairama59@mail.ru*
[2] *Osh State University, Osh, Kyrgyzstan, kalykova-g@list.ru*

This article examines the raw materials of clay deposits in the southern region of the Kyrgyz Republic. Relevance research is driven by the need to study the properties of white-burning clay deposits in the southern region to produce cost-effective, meeting all the requirements of ceramic materials.

Clay raw materials were used as research objects two Tash-Kumyr deposits. As a result of the study, granulometric, chemical and mineralogical compositions were determined, water-soluble salt content in clay rocks of two deposits Kaala, Kara-Tyt.

X-ray, thermographic, and chemical methods of analysis were used to determine the mineralogical composition of the clay under study. Testing of ceramic-technological properties was carried out according to the procedure described in GOST 21216-2014. And ceramic – technological parameters such as molding humidity, ductility, air, fire and complete shrinkage, clay sensitivity to drying, and water absorption of burnt samples at various temperatures were studied.

It is established that the clay rocks of the studied deposits are representatives of kaolinite-hydromica clays, and the non-plastic part is composed of minerals of the silicon oxide group (quartz, cristobalite, and chalcedony). According to the results of X-ray phase analysis of clay powders, the enriched sample of the Kalaa deposit had the highest content of kaolinite, while the Kara - Tyt clay had the highest content of quartz.
The studied samples are coarse-grained, differ in plasticity, air and complete shrinkage, and drying properties.

Based on the results of the study, a conclusion is made about the possibility of using the studied clays in the production of ceramic products of the national economy.

Keywords: Natural clay, kaolinite, water-soluble salts,

ID:42-COP

Case-Based Learning Approach and Technologies to Advance Teaching Biochemistry in the University

F.B. AYTIEVA[1], U.T. TESHEBAEVA[2]

[1] *Osh State University, Kyrgyzstan, ferfiorikg@gmail.com*
[2] *Osh State University, urnisatilenovna1968@gmail.com*

Due to COVID-19 pandemics, limitation of the cooperative active learning and hands –on labs, we have been searching for new methodologies of teaching. Using of various achievements of technology such as a virtual lab, interactive remote- teaching tools and animations that facilitate deep learning by enhancing the understanding of the importance and application of the material, motivates students for deep learning by increasing their interest in Biochemistry. We will describe how we have been using the CBL, Pear Deck and virtual lab in teaching Biochemistry. Our analysis has showed that the combination of above-mentioned tools results in higher learning outcome and increases knowledge retention.

Keywords: COVID-19, biochemistry education, case-based learning, online teaching, remote-teaching, virtual laboratory tool.

ID:59-COP

Purification of Azeotrope Methylal/Methanol Mixtures by Pervaporation Process Using BTEE Doped PVA/PVP Hybrid Membranes

Rümeysa YAVUZ[1], Derya ÜNLÜ[2]

[1] *Bursa Teknik University, Bursa, Turkey, rumeyysayavuz@gmail.com*
[2] *Bursa Teknik University, Bursa, Turkey, derya.unlu@btu.edu.tr*

Methylal (CH3-O-CH2-O-CH3), also known as dimethoxymethane, is accepted as a "green" solvent in the industry. It is an important intermediate used in various applications such as polymers, resins, adhesives, diesel fuel additives, insecticides[1]. Methylal is usually synthesized by the catalytic reaction of methanol and formaldehyde. During synthesis, methylal and methanol form an azeotropic mixture with a minimum boiling point[2]. Azeotropic mixtures cannot be separated by simple distillation. Conventional methods, which are used to separate these mixtures, are generally very costly, energy-intensive processes and require additional chemicals. At this point, the pervaporation process is an important alternative. Recently, pervaporation has attracted great attention due to its low energy consumption, easy usage, low cost, and high selectivity. The aim of this study is to separate the azeotropic methylal/methanol mixture and to obtain the methylal as pure. For this purpose, the separation performance of the methylal/methanol mixture by pervaporation process was studied by using 1,2-bis (trietoksisilil) etan (BTEE) doped PVA/PVP hybrid membranes. The synthesized membranes was characterized by SEM, FT-IR and TGA. The effect of BTEE content on the separation performance of pervaporation was investigated. It was observed that as the BTEE content increased, the methanol flux decreased. The highest flux is obtained as 0.01385 g/cm2.h by the using 0.25 wt.% BTEE doped hybrid membrane. The obtained results show that BTEE doped membrane is a promising candidate for the separation of azeotropic methylal/methanol mixture.

Keywords: membrane, methylal, pervaporation,

ID:65-COP

Removal of Humic Acids Through PVDF/PVP Blend Membrane by Filtration Process

Hande BEK[1], Derya ÜNLÜ[2]

[1] *Bursa Teknik University, Bursa, Turkey, handebek96@hotmail.com*
[2] *Bursa Teknik University, Bursa, Turkey, derya.unlu@btu.edu.tr*

Organic substances in water resources cause undesirable problems. The most important one of these problems is the formation of by-products, which are harmful to human health, by the reaction of humic substances or other compounds after the chlorination process for disinfection. For this reason, various methods have been used in the process of processing water resources into drinking water. Membrane technology studies increase for the removal of humic acid from surface waters due to the economical and environmentally friendly properties. In this study, porous blend membranes were synthesized by phase transformation method using polyvinylidene fluoride (PVDF) as base polymer and polyvinylpyrrolidone (PVP) as pore-forming. The synthesized membranes was used to purification of aqueous humic acid solution by applying the filtration process. The effect of PVP ratio in PVDF/PVP blend membrane on humic acid removal was investigated. 10 % by mass of PVDF and 2%, 5% and 10% by mass of PVP solutions were prepared. The blend membrane which has 5% PVP gave the best performance in removal of humic acid. PVDF/PVP blend membranes were prepared as 90/10, 80/20, 70/30 and 60/40 ratios by mass. The removal ratios of humic acid by 5% PVP loaded PVDF/PVP blend membrane with different PVDF/PVP ratios were 22.07%, 24.81%, 41.84% and 27.5%. The different ratios of PVDF/PVP blend membranes, the best removal results were observed in a ratio of 70/30 PVDF/PVP as 41.84%. The obtained results show that the best separation performance was obtained in a ratio of 70/30 PVDF/PVP by 5 wt.% PVP loaded membrane.

Keywords: Humic acid, membrane, filtration.

ID:76-COP

Isolation of Protease from Tragopogon Reticulatus (yemlik) and Identification of Some Characteristics

Safinur ÇELIK[1]

[1] *Atatürk University, Erzurum, Turkey, safinur.celik@atauni.edu.tr*

Protease enzymes that constitute 60% of the enzyme market in the world are widely used in food, detergent, pharmaceutical and leather industries. Its wide range of uses have encouraged researchers to search for new protease sources that can be used commercially. Commercial proteases are produced from plants, animals and microbial sources. The aim of this study is to isolate of protease from *Tragopogon reticulatus* and determination of some characteristics. The plants were collected at the beginning of June with leaves and roots. The protease was isolated by ammonium sulphate precipitation and ion-exchange (DEAE-Sepharose) chromatography. Protease activity was determined by the casein digestion method. Optimum pH and temperature were determined. The value of Km was also determined using casein as a substrate. The effects of some effectors on the activity of the protease enzyme were investigated. The optimum pH and temperature of enzyme was 8,0 and 45 °C, respectively. The enzyme retained its activity 70% at pH 5-10 and 20-90 °C. The purified protease exhibits activity at wide range pH and temperature indicates that this enzyme may be suitable for different industries.

Keywords: Protease, Identification, Tragopogon reticulatus,

ID:95-COP

Antibacterial, Mechanical, Water Vapor Barrier and Optical Properties of Crosslinked Starch-Polyvinyl Alcohol Films Containing Thymol

Nedim GÜRLER[1], Ferit Can YAZDIÇ[2]

[1] *Munzur University, Tuncel, Turkey, drnedimgurler@gmail.com*
[2] *Munzur University, Tuncel, Turkey, fcanyazdic@munzur.edu.tr*

In this study, potato starch/polyvinyl alcohol blend films containing thymol were successfully prepared by solution-casting method using (3-Aminopropyl) trimethoxysilane (0%, 5% and 10%) with different amounts as crosslinker and glycerol as plasticizer. Physicomechanical properties of the films such as mechanical, water vapor permeability, opacity and color were determined. The tensile strength of the films increased with increasing crosslinking, but the elongation at break decreased. The tensile strength of films without crosslinker was 7.05 MPa and films with 5% and 10% were 7.33 and 8.11 MPa, respectively. The elongation at break decreased by 84.44%, 60.43% and 34.42%, respectively. The water vapor permeability of the films was 2.15×10^{-6} g s^{-1} m^{-1} Pa^{-1}, 2.27×10^{-6} g s^{-1} m^{-1} Pa^{-1} and 1.89×10^{-6} g s^{-1} m^{-1} Pa^{-1} for films with and without crosslinker, respectively. The films became more opaque with increasing content of (3-Aminopropyl) trimethoxysilane. The color properties of the films were examined on the L*, a* and b* scales. As the amount of crosslinker increased, the L* and a* values of starc/polyvinyl alcohol films decreased, the b* value increased and the films observed yellowish. For the antimicrobial activities of thymol-containing films, standard pathogen strains *E.coli* ATCC and *S. aureus* ATCC were also tested.

Keywords: Crosslinker, polyvinyl alcohol, starch.

ID:103-COP

Synthesis of 2-[(Aryl)methylidene]-2,3-dihydro 1H-inden-1-ones as Potential MAO Inhibitors

Dilan Özmen ÖZGÜN[1], Gülsen OZLI[2], Halise Inci GÜL[3]

[1]*Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Ağrı İbrahim Çeçen University, Ağrı ,Turkey*
[2]*Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Erzincan Binali Yıldırım University, Erzincan, Turkey*
[3]*Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Ataturk University, Erzurum, Turkey*

The monoaminergic system has a critical role in the modulation of mood and emotion, as well as in the regulation of motor and cognitive functions. The normal functioning of synaptic neurotransmission is achieved by the effective degradation of monoamine neurotransmitters such as noradrenaline, dopamine, and serotonin [1] Such degradation includes the oxidative deamination of monoamines and is catalyzed by monoamine oxidase enzymes (MAOs) [2-4] Hence, MAO inhibitors are used in the treatment of depression and also in neurodegenerative disorders such as Parkinson's and Alzheimer's disease [5]. MAOs contain flavin adenine dinucleotide (FAD) and are found in the outer membranes of mitochondria throughout the brain [6]. Two isoforms, MAO-A and MAO-B, have been identified based on inhibitor sensitivity and substrate selectivity [7,8]. It is important that MAO-B is the major isoform in the human brain [9]. The activity of dopamine can be prolonged by MAO-B selective inhibitors and thus MAO-B inhibitors have clinical use in the treatment of Parkinson's disease. In addition to monotherapy in early Parkinson's disease, they can also be used as adjunctive therapy with levodopa [5].
Chalcones (1,3-diphenyl-2-propen-1-ones) are open chain flavonoids that are ubiquitous in edible plants and have a broad range of reported biological activities [6,7] which include anti-inflammatory and neuroprotective effects [8,9]. At the end of the eighties, chalcones have been discovered as potential MAO inhibitors. Isoliquiritigenin was the first chalcone derivative used in the kinetic studies to determine the MAO inhibitory activity. Afterwards, some studies indicated that synthetic and natural chalcones are inhibitors of MAO enzymes [10-13]. It has been reported that chemical structure consisting of two aromatic rings linked through a three-carbon , □, β-unsaturated carbonyl system enables them to possess essential structural features for selective binding to human MAO-B [10,14].
Prompoted from above observations, in the present study , a series of 1-indanone based chalcone derivatives were synthesized and will screen for inhibitory potencies against hMAO enzymes.

Synthesis of the compounds (IG 7, IG 10, IG 11, IG 17, IG 21, IG 23, IG 25, IG26) The compounds designed were synthesized by Claisen–Schmidt condensation under basic condition. To the mixtures of 1-indanone and suitable benzaldehyde in 1:1 mol ratios in

ethanol (6 ml), aqueous solution of NaOH (10%, 10 ml) was added. Reaction content was stirred at room temperature (r.t) for 24 hours. Reactions were followed by TLC [CHCl3: MeOH (98:2)]. When the reaction finished, the content of the reaction flask was poured on ice-water and neutralized by HCl (10%). The solid precipitated was filtered and washed with cold ethanol. The crude compounds were purified by crystallization with EtOH. Synthetic pathway was summarized in Scheme 1.

Scheme 1. Synthesis of the compounds

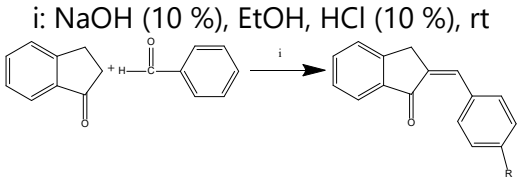
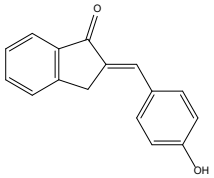
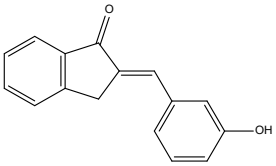
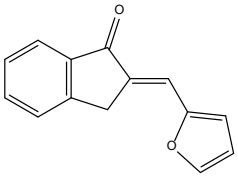
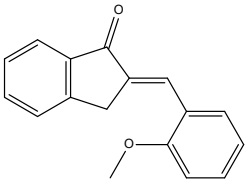
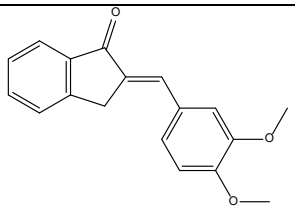


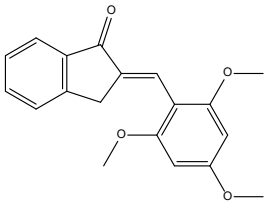
Table 1. Chemical structures of the compounds

IG 7  2-[(4-Hydroxyphenyl)methylidene]-2,3-dihydro-1H-inden-1-one
IG 10  2-[(3-Hydroxyphenyl)methylidene]-2,3-dihydro-1H-inden-1-one
IG11  2-[(Furan-2-yl)methylidene]-2,3-dihydro-1H-inden-1-one
IG 17  2-[(2-Methoxyphenyl)methylidene]-2,3-dihydro-1H-inden-1-one
IG 21



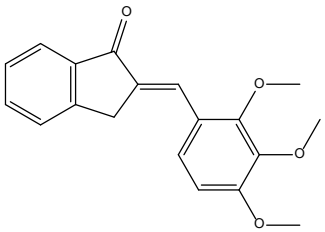
2-[(3,4-Dimethoxyphenyl)methylidene]-2,3-dihydro-1H-inden-1-one

IG 23



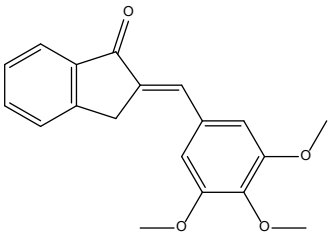
2-[(2,4,6-Trimethoxyphenyl)methylidene]-2,3-dihydro-1H-inden-1-one

IG 25



2-[(2,3,4-Trimethoxyphenyl)methylidene]-2,3-dihydro-1H-inden-1-one

IG 26



2-[(3,4,5-Trimethoxyphenyl)methylidene]-2,3-dihydro-1H-inden-1-on

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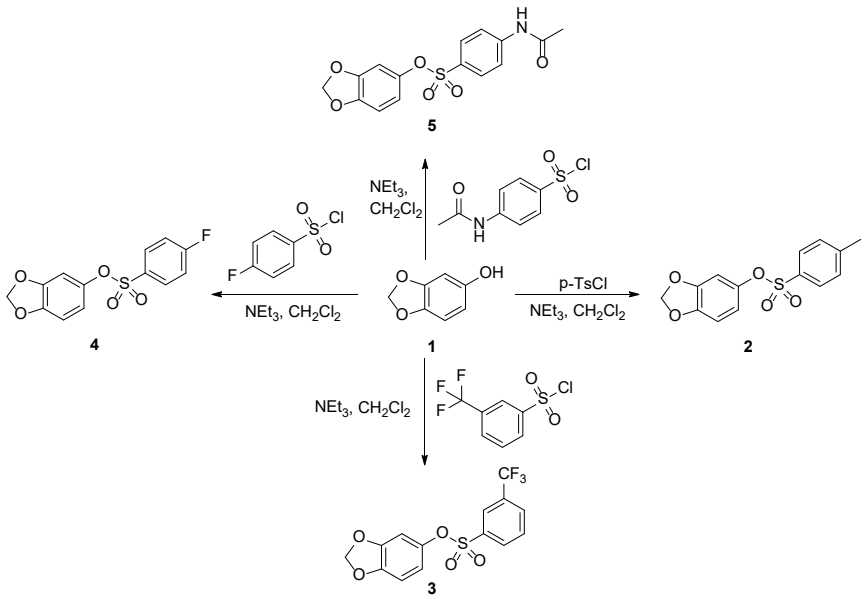
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Synthesis of Sesamol-Based Sulfonate Esters and Their Biological Activities

H. ÇELİK[1], Murat GÜNEY[1], Murat ŞENTÜRK[2]

[1] Ağrı İbrahim Çeçen University, Department of Chemistry, Ağrı, Turkey, habipmeyali@gmail.com
[1] Ağrı İbrahim Çeçen University, Department of Chemistry, Ağrı,Turkey, mguney@agri.edu.tr
[3]Ağrı İbrahim Çeçen University, Pharmacy Faculty, Ağrı, Turkey, senturkm36@gmail.com

In this study our aim is to obtain some novel sesamol-based sulfonate esters starting from sesamol and the investigation of their in vitro biological activities. For this purpose commercially available sesamol (**1**) was subject to direct sulfonylation at the OH position with p-TsCl, 4-fluorobenzenesulfonyl chloride, 3-(Trifluoromethyl) benzenesulfonyl chloride, 4-acetamidobenzenesulfonyl chloride in the presence of NEt_3 in CH_2Cl_2 to yield desired sülfonate esters (Scheme 1). Their biological activities are under investigation [1,2].



Scheme 1. The synthetic route of sesomol-based sulfonate esters

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ID:127-COP

Inhibition Effects of *Polygonatum Multiflorum* (Solomon's Seal) Roots on Some Enzymes

Tuba AYDIN[1] and R. SAĞLAMTAŞ[2]

[1]*Ağrı İbrahim Çeçen University, Agri, Turkey, taydin@agri.edu.tr*
[2]*Ağrı İbrahim Çeçen University, Agri, Turkey, rsaglamtas@agri.edu.tr*

The most common name for the *Polygonatum* (Asparagaceae) species is "Soloman's seal" and it means the seal of Solomon. *Polygonatum multiflorum* is a plant species known as "Mührüsüleyman otu" in Turkey and used for various purposes in folk medicine (Seberg et al. 2012; Yesil and Ozhatay 2013). In this study, water, ethanol (EtOH), acetone, $CHCl_3$ and n-hexane extracts were prepared from the underground parts of the *P. multiflorum*. Inhibition effects of *P. multiflorum* were investigated on α-glucosidase, acetylcholinesterase (AChE), butyrylcholinesterase (BChE), human carbonic anhydrase (hCA) I and II enzymes. For that purpose, *P. multiflorum* collected by the local people from Kütahya, Turkey (Gediz, Murat Mountain, Çukuroren locality) was procured, then dried and ground. Different extracts of *P. multiflorum* were prepared with water, EtOH, acetone, $CHCl_3$ and n-hexane organic solvents. After the inhibition effects of the extracts on α-glucosidase, AChE, BChE, hCA I and II enzymes were determined by spectrophotometer, 50% enzyme inhibitor concentrations (IC_{50}) values were calculated. According to these results, IC_{50} values of extracts were found to be in the range of 3.48-13.89 mg/mL for α-glucosidase, 68.61-99 mg/mL for AChE, 18.43-37.05 mg/mL for BChE, 78.75-123.75 mg/mL for hCAI and 99-126 mg/mL for hCA II enzymes. The water extract of *P. multiflorum* showed no inhibition on any enzyme.

In this study, it was revealed for the first time that *P. multiflorum* showed a very strong inhibition effect, especially on the α-glucosidase enzyme. It also showed a strong effect on the BChE, while it was found to be weakly effective for AChE, hCA I and II enzymes.

Keywords: *Polygonatum multiflorum*, *α*-glucosidase, inhibition

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PHYSICS
ORAL PRESENTATIONS

ID:26-POP

Investigation of the Change of Ground State Properties of N-Electron Quantum Dot Structures Interacting in Morse Potential Depending on Confinement Intensity

Ruya Aydin RAOOF[1], Rıdvan DURAK[2]

[1] *Atatürk University, Erzurum, Turkey, ruyaasultan22@gmail.com*
[2] *Atatürk University and Ağrı İbrahim Çeçen University, Ağrı, Turkey, rdurak@atauni.edu.tr*

In this study, the ground state properties (such else electron density, chemical potential, kinetic energy and Hartree Energy etc.) of quantum dot system including large number of interacting electrons in Morse potential ((r) = V_0(1 − e −br) 2 , V_0 and b are constants) has been investigated by changing V_0 and b parameters. For this purpose; primarily, the electron density for two-dimensional electron gas which interacting with Coulomb Potential (r) has been expressed by using Fermi - Dirac functions. In next stage, Thomas-Fermi equation has been obtained for the system interacting by combining the density expression and Poisson equation. Thomas-Fermi equation has been solved numerically. The effect of electron interaction on the base properties of the system has been determined by taking Ve = 0 in numerical operation. The results showed that the strength of electron interaction and hence the system properties changed with depth and curvature of confining potential

Keywords: Quantum dot structures, Electron gaz, Morse potential.

ID:66-POP

Calculating Energy Absorption and Exposure Buildup Factors of Some Psychoactive Substances

Fatma AKDEMİR[1], Aslı ARAZ[2], Rıdvan DURAK[3]

[1] *Giresun University, Giresun, turkey, fatma.akdemir@giresun.edu.tr*
[2] *Atatürk University,Erzurum, turkey, asliaraz25@gmail.com*
[3] *Atatürk University and Ağrı İbrahim Çeçen University, Ağrı, Turkey, rdurak@atauni.edu.tr*

Psychoactive substances are chemical substances that especially effective in the central nervous system and cause temporary changes in perception, mood, consciousness and behavior by changing the functions of the brain. In addition, psychoactive substances are also used for the purpose of anesthesia and against pain problems. In recent years, the buildup factors of some psychoactive substances, the use of which has increased excessively despite many negative consequences and risks, were calculated using the EpiXS. In the present study, energy absorption buildup factor (EABF) and exposure buildup factor (EBF) values of amphetamine, caffeine, cocaine, diazepam, morphine, nicotine and phenobarbital (long-acting) selected from psychoactive substances that are widely used in daily life, have been computed for 0.015-15 MeV energy region up to 40 mfp (mean free path) penetration depths. In addition, the effective atomic number and electron density of the chosen substances were computed for photon energy 1 keV to 100 GeV. The results show EABF and EBF values of amphetamine are most and are least in diazepam. This study should be useful in estimating the dose for patients using psychoactive substances and also receiving radiation therapy.

Keywords: Buildup Factors, Psychoactive Substances, Radiation,

ID:69-POP

Growth And Characterization Of NiO Thin Films Grown By Spray Pyrolysis Method

Muhammed Emin GÜLDÜREN[1], Harun GÜNEY[2], Demet İSKENDEROĞLU[3], Sibel Morkoç KARADENİZ[4]

[1] Ağrı İbrahim Çeçen University, Vocational School, Ağrı, Turkey, megulduren@agri.edu.tr
[2] Atatürk University, Hınıs Vocational School, Erzurum, Turkey, harunguney@atauni.edu.tr
[3] Atatürk University, Kazım Karabekir Education Faculty, Erzurum, Turkey, demettatar@atauni.edu.tr
[4] Erzincan Binali Yıldırım Universit, Physics Department, Erzincan, Turkey, smorkoc@erzincan.edu.tr

In this study, the growth of NiO thin films was carried out by spray pyrolysis method on glass substrate. Different base temperatures were used for growth, and it was investigated how these temperatures affected the structural, morphological, and optical effects of the samples. The structural properties of the samples were examined by X-ray diffraction (XRD), morphological properties by scanning electron microscopy (SEM) and optical properties by UV–Vis spectroscopy. In the examinations made, it was observed that the NiO thin films were grown successfully, and the structural morphological and optical properties were changed with the change of the substrate temperature.

Keywords: Thin film, Spray pyrolysis, XRD,

ID:70-POP

Cd Dopant Effect on NiO Thin Films Grown by Spray Pyrolysis Method

Muhammed Emin GÜLDÜREN[1], Harun GÜNEY[2], Demet İSKENDEROĞLu[3], Sibel Morkoç KARADENİZ[4]

[1] Ağrı İbrahim Çeçen University, Vocational School, Ağrı, Turkey, megulduren@agri.edu.tr
[2] Atatürk University, Hınıs Vocational School, Erzurum, Turkey, harunguney@atauni.edu.tr
[3] Atatürk University, Kazım Karabekir Education Faculty, Erzurum, Turkey, demettatar@atauni.edu.tr
[4] Erzincan Binali Yıldırım Universit, Physics Department, Erzincan, Turkey, smorkoc@erzincan.edu.tr

In this study, Cd doped NiO thin films were carried out by spray pyrolysis method on glass substrate. The structural, morphological and optical effects of Cd dopant on NiO samples were investigated. Firstly, the structural properties of the samples were examined by X-ray diffraction (XRD). Then, the morphological properties of the produced thin films were asserted by scanning electron microscopy (SEM). And, lastly the optical properties of the grown nanostructures were analyzed by UV–Vis spectroscopy. It was observed that the XRD peaks of the samples shifted, and their intensities changed with the Cd dopant. Also, it was clear that there were changes in the SEM photographs of the samples after the Cd dopants introduced to the NiO lattices. And, the absorption measurements showed that modifications were also occurred in the band gaps of the samples due to the doping the thin films with varied concentrations of Cd ions.

Keywords: Metal-doping, Semiconductors, Uv-vis spectroscopy,

ID:96-POP

Investigation of Fast Neutron Attenuation for Ferrovanadium

Bünyamin AYGÜN[1], CEMALETTIN AYGÜN[2], ÖNDER ŞIMŞEK[3], Abdulhalik KARABULUT[4]

[1] Ağrı Ibrahim Çeçen University, Ağrı, Turkey, baygun@agri.edu.tr
[2] Department of Technical Engineering, Karadeniz Technical University, Trabzon, Turkey, baygun@agri.edu.tr
[3, 4] Department of Physics, Faculty of Science, Atatürk University, Erzurum, Turkey and Agri Ibrahim Çeçen University, Agri, Turkey, akara@agri.edu.tr

In this study, it was aimed to show ferrovanadium, as alternative shielding materials aganist fast neutrons with Monte Carlo Smilation and to determine the shielding performances of these ferrovanadium. Ferrovanadium and other vanadium alloys are used in carbon steels, high-strength steels and alloy steels to increase temperature and torsion resistance. These steels are used in industry, especially in the production of automotive parts, high strength tools and durable pipes. The aim of this study is to investigate whether ferrovadiniums containing four different rates of vanadinium can be an alternative shielding material against fast neutrons. To do this, some important shielding parameters such as half-value layer, effective removal sections, mean free path, and number of particles passing through the material were determined using a quasi-experimental Monte Carlo simulation (GEANT4) code. The results were compared with 316LN nuclear steel. All samples were found to absorb fast neutrons. But it was found that the sample containing 85% vanadinium had the best absorption. As a result, it has been shown that these samples can be shielding materials against neutrons in nuclear applications.

Keywords: Geant4, Neutron, Geant4,

ID:105-POP

Research on Protective Drug Effect Ingredients in Boron Neutron Capture Therapy

Bünyamin AYGÜN[1], Doğan DURNA[2], Önder ŞIMŞEK[3], Abdulhalik KARABULUT[4]

[1] Department Of Electronics And Automation, Vocational School, Agri Ibrahim Cecen University, Agri, Turkey, baygun@agri.edu.tr
[2] Department of Clinical Sciences, Faculty of Dentistry, Atatürk University, Erzurum, Turkey, dogandurna@atauni.edu.tr
[3] Department of Mathematics And Education Sciences Education Kazim Karabekir Faculty of Education Atatürk University, osimsek@atauni.edu.tr
[4] Department of Physics, Faculty of Science, Atatürk University, Erzurum, Turkey and Agri Ibrahim Çeçen University, Agri, Turkey, akara@agri.edu.tr

Boron Neutron Capture Therapy (BNCT) is a method of intravenously administering a non-radioactive boron compound (bearing ^{10}B) to tumor cells, bombarding this tumor cell with epithermal neutrons. During the bombardment, neutrons are captured by 10B, as a result of this capture, ^{10}B decays to release high-energy charged particles [Helium-4 (^{4}He) (ie particle α) and Lithium-7 (^{7}Li)]. The energy released during this time both kills the tumor cells and damages the DNA of tumor cells, thus preventing the proliferation of tumor cells. During this treatment, intact cells must be protected from the lethal energy that will emerge from the 10B (n, α) reaction. Therefore, there is a need for good neutron-absorbing agents. These agents will absorb excess neutrons and prevent possible nuclear reactions. In this study, neutron absorption capacities were investigated of some drug effect ingredients (Lithium carbonate, Chromium chloride, Chromium nicotinate, Lanthanum carbonate, Zinc gluconate, Titanium dioxide) which are commonly used in some diseases. Neutron reduction parameters such as mass removal cross-section, half-value layer, mean free path, and transmission number were determined using Monte Carlo Simülation GEANT4 code. Chromium chloride, Chromium chloride, Titanium dioxide, drugs with the best neutron absorption were determined. These cells will be protected from harmful effects by injecting these drugs into healthy cells before boron neutron treatment and allowing them to stay there, by absorbing the excess neutrons scattered during the treatment.

Keywords: BCNT, Neutron, Therapy,

BIOLOGY
ORAL PRESENTATIONS

ID:43-BOP

Determination of the Genotoxic Potential of Haplophyllum Vulcanicum Boiss. & Heldr.

Selçuk ÇEKER[1]

[1] *Bolu Abant Izzet Baysal University, Bolu, Turkey, selcukceker06@gmail.com*

Haplophyllum genus, which is in the Rutaceae family known as 'Citrus' in Turkey, are perennial and fragrant plants. The genus *Haplophyllum*, which has a wide geographical distribution from the Mediterranean region to Eastern Siberia, is represented by about 70 species in the world. Turkey has an important gene center for the genus *Haplophyllum* with an endemism rate of 58%.[1] *Haplophyllum* species are used in skin diseases, warts and herpes, stomach, and toothaches in folk medicine in Sudan and other African countries and Mongolia.[2] In addition, some types are used in the treatment of nervous system, fever, infertility, and testicular cancer. *Haplophyllum* species show important biological activities including antioxidant, antimicrobial and anti-inflammatory, cardiovascular effects, malaria, and anti-ulcer.[2] In previous literature, it has been reported that *Haplophyllum* species contain alkaloids, lignans, coumarins, flavonoids, essential and essential oils.[2] In this study, it was aimed to determine the genotoxic potential of *Haplophyllum vulcanicum Boiss. & Heldr.*, since *Haplophyllum* has the stated biological activities, its use in complementary medicine and there is not enough research in the literature about its genotoxic potential. For this purpose, the genotoxic potential of methanol extracts of *Haplophyllum vulcanicum Boiss. & Heldr.* (HVm) in human lymphocyte cells was investigated by micronuclei test. As a result of the study, it was observed that HVm had no genotoxic effect at the concentrations used (10, 25, 50, 75 and 100 µL). In addition, it was determined that HVm exhibited antigenotoxic properties against sodium azide, which was used as a mutagen, at 50 and 75 µL concentrations.

Keywords: Haplophyllum vulcanicum, micronuclei, genotoxicity,

ID:45-BOP

Cold Active Amylase Producing Yeasts from a Cryoconite Hole in Palandöken Mountain

Mehmet KARADAYI[1], Şeyma AKSU[2]

[1] *Atatürk University, Erzurum, Turkey, mkaradayi@atauni.edu.tr*
[2] *Atatürk University, Erzurum, Turkey, seymaaksu23@gmail.com*

Cold active amylases are one the most important groups of commercially produced enzymes and their importance is increasing due to the fact that they require less energy in many industrial processes, especially production of cold active detergents and food processing applications. This situation leads scientific research to the discovery of new microbial sources that produce cold active amylases. Hence, the present study was conducted to isolate new microbial cold adapted amylase sources from the Palandöken Mountain, one of the coldest ecosystems of Turkey. For this aim, soil samples were taken from a cryoconite hole in January 2020. The microbial isolation steps were performed according to previous studies in the literature. The pure cultures were inoculated on starch agar plates and incubated at +4 °C for three weeks. Then, active isolates were determined by the treatment of Gram's iodine solution. The molecular identification of the isolates were done by using Sanger sequencing of the particular PCR amplicons produced by the universal ITS 1-4 primer set. The sequence data was deposited at NCBI – GenBank with unique accession numbers.

According to the results, 65 yeast isolates were obtained from a cryoconite hole in Palandöken Mountain. Among them, four isolates were determined as cold active amylase producers and they were identified as *Vishniacozyma tephrensis* SAY-1, *Vishniacozyma victoriae* SAY-2, *Dioszegia hungarica* SAY-3 and *Rhodosporidiobolus colostri* SAY-4. The accession numbers were MW922829.1, MW922830.1, MW922831.1 and MW922832.1, respectively.

In conclusion, these results of the present study are valuable for the development of cold active amylase production strategies. Moreover, these isolates will be studied for the optimization of the yield in the near future.

Keywords: Cold active amylase, Cryoconite, Palandöken Mountain,

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ID:43-BOP

Determinatıon of Expression Levels and DNA Methylation Rates of Some Genes Affecting Cadmium Stress Responses in Triticum Aestivum

İlknur ÇOLAK[1], Gökçe KARADAYI[2]

[1] *Ataturk Unıversıty,, Erzurum, Turkey, ilknur00c@gmail.com*
[2] *Ataturk Unıversıty, Erzurum, Turkey, gokce.karadayi@atauni.edu.tr*

The accumulation of cadmium (Cd) heavy metal in the soil origaneted from increasing of factors such as changing climatic conditions, incorrect irrigation techniques and chemical fertilizers used in recent years [1]. Therefore, our study was aimed to determine of the molecular level changes caused by Cd accumulation in Triticum aestivum (bread wheat) plant. In this context, the wheat plants applied in 0, 100, 250 and 500 µM Cd doses were determined both root and stem the expression levels and DNA methylation rates of UGT-3, LTP-4 and PIP-1 genes. DNA methylation rates were determined by applying the restriction enzyme-based qAMP technique, which is a new technique used in plants, and the obtained results were compared with the gene expression analysis. When the UGT-3, LTP-4 and PIP-1 genes were analyzed, the highest methylation percentage of all three genes was observed at 250 µM concentration. In gene expression analysis, the highest expression ratio of the UGT-3 gene was observed at dose of 250 µM in the stem, while the LTP-4 gene occurred in the root at a concentration of 250 µM. On the other hand, it was observed that the PIP-1 gene was downregulated at the expression level in the plant stem and was consistent with the methylation results. In addition, 6 and 14-fold upregulation of the PIP-1 gene occurred in the plant root at concentrations of 250 and 500 µM, respectively. Consequently, changes in methylation ratios of UGT-3, LTP-4 and PIP-1 genes under Cd stress were investigated for the first time in our study. In addition, the qAMP technique, which is generally used in mammalian cells, was used for the first time in plant cells and was successfully concluded. As expected, a significant correlation was observed between the expression levels of genes and their methylation status. On the other hand, the fact that the gene expression and DNA methylation ratios observed at some doses of the genes are not inversely proportional has revealed the necessity of explaining the results in more detail by investigating other mechanisms involved in the regulation of gene expression.

Keywords: Cadmium, qAMP, gen expression,

ID:71-BOP

A Newly Synthesized 4-Thiazolidinone Derivative with Antimutagenic Effect against NPD-Induced Mutagenesis

Burak ALAYLAR[1], Mine ISAOĞLU[2], Medine GÜLLÜCE[3], Assoc. Kadir TURHAN[4], Fatma Tülay TUĞCU[5], Mehmet KARADAYI[6]

[1] *Ağrı Ibrahim Çeçen University, Ağrı, Turkey, balaylar@agri.edu.tr*
[2] *Atatürk University, Erzurum, Turkey, mine.isaoglu@gmail.com*
[3] *Atatürk University, , Erzurum, Turkey, gullucem@atauni.edu.tr*
[4] *Yıldız Technical University, İstanbul, Turkey, turhankadir@yahoo.com*
[5] *Yıldız Technical University, İstanbul, Turkey, ftugcu@yildiz.edu.tr*
[6] *Atatürk University, , Erzurum, Turkey, mkaradayi@atauni.edu.tr*

4-Thiazolidinone derivatives have been the subject of research in many scientific disciplines, especially medicine and pharmacy, with their diverse bioactivities such as antimicrobial, antiviral, anticancer, anti-inflammatory and antidiabetic activities [1]. In this study, it was aimed to investigate the potential genotoxic and antigenotoxic effects of the newly synthesized 4-thiazolidinone compound, (2*Z*,5*Z*)-3-phenyl-2-[(pyridin-2-yl)imino]-5-[(thiophen-2-yl)methylidene]-1,3-thiazolidin-4-one (**C1**), using AMES/ *Salmonella* test system. For this purpose, the safety of **C1** and its leading role in the development of novel antigenotoxic agents were determined. In the genotoxicity assessment, *Salmonella typhimurium* TA98 tester strain was exposed to 0.2, 0.4, 0.6, 0.8 and 1.0 mM/plate concentrations of **C1**. At the same concentrations, **C1** was treated with 2.5 µg/plate dose of 4-nitro-*o*-phenylenediamine (4NPD) to assess antigenotoxicity. According to the results, **C1** did not show mutagenic activity on the TA98 strain at the concentrations tested. However, **C1** was found to have antigenotoxic activity in the 0.2-1.0 mM/plate concentration range and significantly inhibited the number of 4NPD-induced revertant colonies ($inhibition_{max}$ = 38.8% for 1 mM/plate). As a result, it was determined that this newly synthesized 4-thiazolidinone derivative is a genotoxically safe compound and has a protective effect against DNA damage caused by 4NPD.

Keywords: 4-Thiazolidinone, Synthesis, Antigenotoxicity,

ID:73-BOP

Nanotechnological Applications in the Food Industry the Use of Nanomaterials and Their Evaluation for the Food Safety

Selin DOĞAN[1], Medine GÜLLÜCE[2], Taha Yasin KOÇ[3]

[1] *Atatürk University, Erzurum, Turkey, nisaselin25@gmail.com*
[2] *Atatürk University, Erzurum, Turkey, gullucem@atauni.edu.tr*
[3] *Atatürk University, Erzurum, Turkey, tahayasinkoc@hotmail.com*

Nanotechnology, one of the important science and technology fields of our age, is a branch of science responsible for the examination, design, processing and control of materials in very small nanoscales. Nanotechnological studies are carried out in many fields such as physics, chemistry, biology, medicine and engineering, and produced nano materials are used. One of the latest trends in the scientific world is the studies on the use of nanomaterials in the food industry. Nanotechnology and nanomaterials, which are a developing technology today, have the power to revolutionize the field of food processing and packaging, if used correctly in the food industry. The widespread use of nanotechnology in the food industry and the use of nanomaterials in many areas of the food industry such as production, processing and protection have brought up the debates on whether the use of these materials is safe for consumers. It is not possible to say anything definite about the effects of nanotechnological applications and nanomaterial use in the food industry on consumer health due to the fact that nanotechnology is a developing science and there are few studies in this field. In this study, nanotechnological applications in the food industry and the use of nanomaterials are evaluated in terms of food safety.

Keywords: Nanotechnological, Nanomaterials, Food safety,

ID:74-BOP

Investigation of Production Potentials of Various Commercially Important Enzymes in Bacillus Species Isolated from Magnesite Mines

Selin DOĞAN[1], Medine GÜLLÜCE[2], Selma SEZEN[3], Taha Yasin KOÇ[4]

[1] *Atatürk University, Erzurum, Turkey, nisaselin25@gmail.com*
[2] *Atatürk University, Erzurum, Turkey, gullucem@atauni.edu.tr*
[3] *Atatürk University, Erzurum, Turkey, selma-sezen@hotmail.com*
[4] *Atatürk University, Erzurum, Turkey, tahayasinkoc@hotmail.com*

Enzymes, which are a very important protein for living organisms, are widely used in many industrial areas, especially in the food, textile, paint, detergent and pharmaceutical sectors. Enzymes used for commercial purposes are generally obtained from microorganisms because their production is easier, faster, more economical, more environmentally friendly, and they can be produced in high amounts and purity by creating very few by-products. Every year, approximately 41% of protease enzyme, 10% of renin enzyme, 3% of lipase enzyme, 10% of cellulase and xylanase enzymes are obtained from microorganisms for industrial use. In this study, microorganisms isolated from magnesite mine, which is one of the important mines of our country in terms of reserve richness and diversity of usage areas, were used; 14 *Bacillus* species identified by conventional and molecular methods were qualitatively investigated in terms of their ability to produce industrially important amylase, lipase, xylanase, protease, cellulase pectinase and chitinase. As a result, it has been determined that many enzymes of industrial importance can be produced by *Bacillus* species obtained from the natural flora of magnesite mine.

Keywords: Magnesite, Enzyme, Bacillus,

ID:84-BOP

The Effect of Luteolin on the Elimination of Hydrogen Peroxide-Induced Oxidative Damage in Human Erythrocytes

Hamiyet TALAY[1], Mucip GENİŞEL[2]

[1] *Agri Ibrahim Cecen Universty, Faculty of Pharmacy, Ağrı, Turkey,hamiyettalayy@gmail.com*
[2] *Agri Ibrahim Cecen Universty, Faculty of Pharmacy, Ağrı, Turkey, mgenisel@agri.edu.tr*

The aim of this study was to evaluate the capacity of the flavonoid derivative luteolin to alleviate the oxidative damage created in human erythrocytes exposed to hydrogen peroxide. Oxidative damage caused by free oxygen radicals causes lipid peroxidation in living cells, dragging the cell to apoptosis or necrosis, causing the cell to eventually lose its viability. Antioxidants produced by the body or taken exogenously are used to prevent oxidative damage in tissues, to eliminate or minimize damage. Flavonoids are among the radical scavenging agents taken exogenously. In this study, in order to determine the antioxidant effect / capacity of flavonoid derivative luteolin, it has high amount of unsaturated fat and haemoglobin and frequently exposed to oxidative damage. Erythrocyte cells were studied in ex vivo environment. Hydrogen peroxide (H_2O_2) was used as oxidant to expose erythrocyte cells to oxidative damage. To determine how oxidative damage in erythrocytes replaces luteolin, DMSO and H_2O_2 used only to dissolve the erythrocytes in the RPMI 1640 cell culture medium. Three different concentrations of luteolin were applied in combination with DMSO. After the experimental samples were incubated at 37 °C for 24 hours to simulate the body environment, lipid peroxidation levels were measured to determine the change in oxidative damage levels. The results showed that H_2O_2 significantly increased damage in cell upstream, causing oxidative damage. In groups where luteolin was added only with DMSO and DMSO, a significant and clear decrease in MDA levels was observed compared to the H_2O_2 group. The lowest levels of destruction in the cell membranes were measured in groups with flavonoid derivative.

Keywords: Oxidative damage, flavonoid, erythrocyte,

ID:85-BOP

The Effect of Flavonoid Derivative 6-Fluoroflavone on Mitigation of Hydrogen Peroxide Induced Oxidative Damage in Erythrocyte Cells

Songül HALHALLI[1], Mucip GENİŞEL[2]

[1] *Agri Ibrahim Cecen Universty, Faculty of Pharmacy, songulhalhalli1@gmail.com*
[2] *Agri Ibrahim Cecen Universty, Faculty Of Pharmacy, mgenisel@agri.edu.tr*

Flavonoids that have a polyphenolic structure are considered as natural antioxidant substances. In addition, it is known that not only flavonoids, but also flavonoid derivatives formed by binding groups such as sugar, methyl, which bind to flavonoids, have antioxidant properties and even their activity increases. In the current study, it has been investigated whether the erythrocytes, which are damaged by oxidative damage by the use of flavonoid derivative 6-fluoroflavone, with hydrogen peroxide (H_2O_2), have an effect on the destruction of the cell membranes. Human erythrocytes were subjected to three concentrations of 6-fluoroflavone along with H_2O_2 and H_2O_2 in RPMI 1640 cell culture medium for 24 hours at 37˚C and then lipid peroxidation levels were determined. Dimethylsulfoxide (DMSO) used to dissolve 6-fluoroflavone in the working setup was also tested separately. H_2O_2 significantly increased the lipid peroxidation level of erythrocytes. All 6-fluoroflavone applications administered with H_2O_2 significantly reduced membrane damage. In the DMSO group, while lipid peroxidation was only lower than the H_2O_2 group, there was no decrease in 6-fluoroflavone applications. This shows that 6-fluoroflavone alleviates damage to membranes independently of DMSO.

Keywords: Flavonoid species, lipid peroxidation, erythrocyte,

ID:98-BOP

Hormonal Control of Osmoregulation in The Lake Van Fish (Alburnus tarichi, Güldenstädt, 1814)

A. YEŞILBAŞ[1], A. R OĞUZ [2]

[1] *Van Yüzüncü Yıl University, Van, Turkey, yesilbasayse@hotmail.com*
[2] *Van Yüzüncü Yıl University, Van, Turkey, ahmetoguz@yyu.edu.tr*

Lake Van is Turkey's largest alkaline lake. Lake Van fish (Alburnus tarichi Güldenstädt, 1814) is a vertebrate species living in the lake. During the breeding period (April-July), fish migrate from the lake to fresh waters while spending time in water areas with different physico-chemical properties. After completing its breeding migration, the fish returns to the hyper-alkaline and salt water environment of the lake [1].

Adaptation and regulation to the aquatic environment in fish is under the control of the endocrine system. Hormones increase or decrease the amount of water and ions taken into the body by the osmoregulatory organs [2].

Thyroid and cortisol hormones are the most important hormones controlling osmoregulation in fish. In this study, thyroid and cortisol hormone levels were investigated in fish in aquatic areas with different chemical properties during the reproductive migration of fish from Lake Van. As a result, it has been observed that the studied hormones are effective in the adaptation of the Van Lake fish to water.

Keywords: Van fish, Thyroid hormones, Cortisol, Reproductive migration.

Acknowledgements: This study was supported by YYU Scientific Research Projects Presidency with project number FYL-2019-7890.

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ID:125-BOP

Investigation of Siderophore-Producing Bacteria Isolated from Sainfoin (*Onobrychis sativa* L.)

Burak ALAYLAR

Department of Molecular Biology and Genetics, Faculty of Arts and Sciences, Agri Ibrahim Cecen University, Agri, Turkey, balaylar@agri.edu.tr

Sainfoin (*Onobrychis sativa* L.) is one of the most well-known forage crop in all over the world. Especially, this forage plant is grown in Central and Eastern Anatolia in Turkey. It is well adapted to cold and drought land conditions. In this regard; most of the farmers have prefer to cultivation of this plant in our region Ağrı/Turkey, because of its beneficial nutrient content and growing under extreme climate conditions. However, in past decades, numerous detrimental effects have caused to decreasing of plantation of sainfoin such as soil born diseases, pesticisides and over usage of chemical fertilizers. Hence, as alternative approaches have been used to increase yield of agricultural products. Among these approaches, Plant growth promoting rhizobacteria (PGPR) are tried to fill this gap with its eco-friendly feature from last past decades. These microorganisms can be situated in the rhizosphere and rhizoplane which enhance plant growth promotion in the deficience of pathogens or decrease the hazardous effects of pathogens on crop yield by HCN production, antibiosis, induced systemic resistance and siderophore production.

Siderophore production by PGPRs have been attracted intensive attention with their beneficial properties and aproaches in various type of agriculture areas as struggling with plant diseases which caused by microorganisms, soil science *etc*. In this perspective, soil samples for PGPR isolation studies were provided 5 different regions from sainfoin rhizosphere in Ağrı region. Then, dilution series (10^{-1}-10^{-7}) were spread on Luria-Bertani (LB) agar plates and single colonies were chosen further purification studies. And then, each isolate was inoculated onto Chrome azurol S (CAS) agar plates, the plates were incubated at 28 °C for 2-7 days. According to the colour alteration, colour from blue to orange around the bacterila colonies were determined as siderophore-producing bacteria. Finally, the molecular characterization of the potential PGPRs which have siderophore pruduction capabilities was carried out the 16S ribosomal RNA gene region sequence analysis method. The results were demonstrated that 5 isolates (*Bacillus* sp., *Bacillus pumilus*, *Arthrobacter* sp., *Enterobacter ludwigii* and *Pseudomonas* sp.) were isolated from sainfoin have huge potential to use for as biocontrol agents sainfoin agricultural applications.

Keywords: Sainfoin, siderophore production, 16S rRNA, PGPR

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MATHEMATICS
ORAL PRESENTATIONS

ID:39-MOP

One of the Cornerstones in Stem Approach

E. A MIDINOVAE[1], S.B. TANGATAROVA[2]

[1] *Osh State University, Osh, Kyrgyzstan, midinovae@gmail.com*
[2] *Osh State University, Osh, Kyrgyzstan, stangatarova88@bk.ru*

Unfortunately, students have less creative, innovative spirit needed to succeed in today's society as its more important than ever before outside of the workplace, too. How can we help young people develop as creative thinkers so that they're prepared for life in constant changed world? That's the central question of this research. There is extensive evidence that active learning works better than a completely passive lecture. STEM-based education teaches children more than science and mathematics concepts. Being STEM ambassadors 2021 in Kyrgyzstan we try to create active learning environments that foster student engagement. We test 1 year students' activity on "Medical biology, genetics, parasitology" subject. The focus on hands-on learning with authentic problems helps develop softs skills which sets them to be successful. The ability to think critically and challenge standards is the basis of innovation. In this work, we offer one tool to help faculty members implement active learning. This tool on the process of implementation elements that have been shown to increase student outcomes related to achievement, logic development, or other relevant learning goals with college-age students. This pedagogical approaches to transforming educational practice that seem better suited as it shown approximately 15% more activity then classical teaching lesson. Results are taken from not completed work's first topic: "Vaccine distribution challenge" for the 1st year medical students of IMF, Osh State University.

Keywords: STEM, teaching approach, inquiry, activity of students

ID:46-MOP

Improving Regularization Techniques for Incompressible Fluid Flows via Defect Correction: Detailed Version

Dilek ERKMEN[1], Alexander LABOVSKY[2]

[1] Agri Ibrahim Cecen University, Ağrı, Turkey, dderkmen@gmail.com
[2] Michigan Technological University, Michigan, United States, aelabovs@mtu.edu

We propose and investigate two regularization models for fluid flows at higher Reynolds numbers. Both models are based on the reduced ADM regularization (RADM) of [1]. One model, which we call DC-RADM (deferred correction for reduced approximate deconvolution model), aims to improve the temporal accuracy of the RADM. The second model, denoted by RADC (reduced approximate deconvolution with correction), is created with a more systemic approach of [6]. We treat the RADM regularization as a defect in approximating the true solution of the Navier-Stokes equations (NSE), and then correct for this defect, using the defect correction algorithm, introduced in [6]. Thus, the resulting RADC model can be viewed as a first member of the class that we call "LESC-Reduced", where one starts with a regularization that resembles a Large Eddy Simulation turbulence model, and then improves it with a defect correction technique. Both models are investigated theoretically and numerically, and the RADC is shown to outperform the DC-RADM model both in terms of convergence rates, and in terms of the quality of the produced solution.

Keywords: defect correction, regularization, large eddy simulation

ID:60-MOP

On Adjoint Curve of a Curve in Three Dimensional Weyl Space

Nil KOFOĞLU

Beykent University, İstanbul, Turkey, nilkofoglu@beykent.edu.tr

In this study, we defined the adjoint curve of a curve in three dimensional Weyl space. We also compared the Frenet apparatuses of these two curves. Then, we investigated the conditions to be general helix, slant helix for the adjoint curve and we expressed that the considered curve and its adjoint curve created Bertrand pair. Finally, we showed that the geodesic curvature vector field of the net which is occured by the Frenet vector fields of the considered curve is equal to the negative of product of the second curvature and the principal normal vector field of the adjoint curve and also the tendency of the principal normal vector field of the adjoint curve is equal to the second curvature of the adjoint curve.

Keywords: Weyl space, Prolonged covariant derivative, Adjoint curve,

ID:62-MOP

Higher Temporal Accuracy for LES-C Turbulent Models

Yasasya BATUGEDARA[1], Alexander LABOVSKY[2], Kyle SCHWIEBERT[3]

[1] Michigan Technological University, Michigan , United States, bbatuged@mtu.edu
[2] Michigan Technological University, Michigan , United States aelabovs@mtu.edu
[3] Michigan Technological University, Michigan , United States kjschwie@mtu.edu

Large Eddy Simulations(LES) are widely used in modeling turbulent flows. In Labovsky(2020), a method called Large Eddy Simulation with Correction (LES-C) was proposed to reduce the modeling error. However, there was a need to reduce the Time discretization error of the LES-C models. Therefore, we propose a method that uses a predictor-corrector scheme called Deferred correction to reduce the Time discretization error. The method was obtained by adding extra terms to the LES-C model and there we can obtain extra accuracy with no additional computational cost. The method is tested for the ADC model (a member of the LES-C family) and the full numerical test is carried out where a clear reduction of errors can be observed. We also performed the full numerical analysis of the method.

Keywords: LES, LES-C, LES-C Turbulent Models

ID:79-MOP

Note on the Effect of Grad-Div Stabilization on Calculating Drag and Lift Coefficients

Kyle SCHWIEBERT[1], Yasasya BATUGEDARA[2]

[1] *Michigan Technological University, Michigan , United States, kjschwie@mtu.edu*
[2] *Michigan Technological University, Michigan , United State, bbatuged@mtu.edu*

In recent years, grad-div stabilization has become a popular technique for improving the mass conservation of a solution to the incompressible Navier-Stokes equations (NSE). Grad-div stabilization can be easily implemented in any code that already uses the very common Taylor-Hood finite elements. In this work we do a close review of the grad-div stabilized and modular grad-div stabilized NSE applied to a well-known benchmark problem: 2D flow around a cylindrical obstacle. We show that using large grad-div stabilization parameters can change the calculated drag and lift coefficients. We will then suggest a remedy for the given test problem and verify our results by comparing with Scott-Vogelius finite elements.

Keywords: Navier-Stokes Equations, Grad-Div Stabilization, Scott-Vogelius Finite Elements,

ID:108-MOP

Some New Fractional Order Integral Inequalities for Logarithmically Convex Functions

Ahmet Ocak AKDEMIR[1], Sinan ASLAN[2]

[1] *Agri Ibrahim Cecen University, Ağrı, Turkey, aocakakdemir@gmail.com*
[2] *Agri Ibrahim Cecen University, Ağrı, Turkey, sinanaslan0407@gmail.com*

In this presentation, firstly, we will give some historical backgorunds and further information about geometrically convexity, Riemann-Liouville fractional integral operators and general forms of proportional fractional integral operators. In the second part, we will use the general forms of proportional fractional integral operators to prove some new integral inequalities for integrable m-logarithmically convex mappings.

Keywords: fractional integral operators, integral inequalities, logarithmically convex functions,

AIR, SOIL, WATER, FOOD, HEALTHS
ORAL PRESENTATIONS

ID:56-BOP

Determination of Some Antioxidant Enzyme Levels in Hairdressing Workers in Van Province.

Halime Erzen YILDIZ[1], Canan DEMIR[2], Tuğba GÜR[3], Şehriban YÜREKTÜRK[4], Arzu Esen TEKELI[5]

[1] Van Yüzüncü Yıl University, Van, Turkey, halimeyildiz@yyu.edu.tr
[2] Van Yüzüncü Yıl University, Van, Turkey, canandemir@yyu.edu.tr
[3] Van Yüzüncü Yıl University, Van, Turkey, tugbagur@yyu.edu.tr
[4] Van Yüzüncü Yıl University, Van, Turkey, sehribanyurekturk@yyu.edu.tr
[5] Van Yüzüncü Yıl University, Van, Turkey, arzutekeli@yyu.edu.tr

Since the profession of hairdressing requires the use of a number of cosmetic products, hairdressers are professionally exposed to many dangerous chemicals. These chemicals act as free radicals in the body that damage compounds such as protein and DNA. When it comes to continuous exposure to chemicals, free radicals increase in humans and damage healthy cells over time. The increase in free radicals in the body slows down the antioxidant defense systems and leads to oxidative stress. In this case, dysfunction in body cells and tissues and various related diseases occur. These products can cause allergic dermatitis, asthma, rhinitis and even cancer when taken by skin or respiratory tract. Hairdressing-related cancers include lung, breast, ovarian, cervical, lymphoma, bladder, pancreatic, and salivary gland cancers. At the same time, hairdressers are exposed to electromagnetic fields as they constantly use blow dryers/hair dryers, which adversely affect health [3,4,2,1].

In line with this information, it was aimed to determine the levels of malondialdehyde acid (MDA), which is an indicator of oxidative stress level and the end product of lipid peroxidation, and superoxide dismutase (SOD), catalase (CAT) and reduced glutathione (GSH), which are known as some important antioxidants, in hairdresser workers in Van.
After obtaining the ethics committee approval for the study, 33 female hairdressers working in the central districts of Van (Edremit, Tusba and İpekyolu) were included in the study as subjects. Volunteer participants benefiting from hairdressing services were determined as the control group. Venous blood was taken from those who accepted the study, examined in the laboratory, and the results were statistically analyzed. Descriptive statistics and comparison results of the groups are summarized in Table 1. When Table 1 was examined, the difference between group averages for MDA, CAT, SOD and GSH was statistically significant ($p < 0.05$).

Table 1. Descriptive statistics and comparison results in the Hairdresser Staff and control Groups

	Group	n	Mean±Std. Deviation	p
MDA	Hairdresser Staff	30	0,658632±0,0537978	0,001
	Control	33	0,270515±0,0555822	
CAT	Hairdresser Staff	30	0,13219±0,14007	0,001
	Control	33	0,254±0,01928	
SOD	Hairdresser Staff	30	41,732±18,942544	0,001
	Control	33	77,6904±9,870398	
GSH	Hairdresser Staff	30	0,0011868±0,00063783	0,001
	Control	33	0,0254815±0,01233310	

As a result, it can be said that hairdressers, whose professional lives will last for many years, are in the potential risk group in the formation of diseases such as eczema, asthma, cardiovascular diseases, cancer, in which reactive oxygen derivatives also play a role since they are constantly exposed to physical and chemical factors. Hairdresser employees should be encouraged to reduce risks

Keywords: Antioxidant, Hairdresser, Van Province,

ID:57-BOP

Frequency of Lung Cancer in Van Central Districts

Halime Erzen YILDIZ[1], Nergiz Yıldız YORGUN[2]

[1] *Van Yüzüncü Yıl University, Van, Turkey, halimeyildiz@yyu.edu.tr*
[2] *Van Yüzüncü Yıl University, Van, Turkey, Nergiz_yildiz@yahoo.com*

Lung cancer (Ca) is the second most common type of cancer after prostate cancer in men and breast cancer in women. The average 5-year survival for all stages is around 15%. The median age at diagnosis of lung cancer for both sexes is 70 (3,4). Cigarette is in the first place in its etiology, and Radon gas, which is a radioactive substance, is in the second place. In addition, asbestos, atmospheric carcinogens, passive smoking, previous lung infections, positive family history, dietary factors, occupational exposures are among the causes of lung cancer (5,1,6). Lung Ca consists of two main histological subtypes, non-small cell (NSCLC) and small cell (SCLC). Approximately 85% of all lung cancers are NSCLC and 15% are SCLC. As a treatment, surgery, chemotherapy (KT), radiotherapy (RT), immunotherapy and supportive treatments are applied alone or in combination (2,4,7).

In this study, our aim is to investigate the incidence of lung cancer in the central districts of Van (Ipekyolu, Tusba, Edremit). For this purpose, 162 patients in central districts who applied to Van Yüzüncü Yıl University Dursun Odabaş Medical Center between February 2014 and July 2021 and were diagnosed with Lung Ca were included in the study. File information (age, gender, histological sub-main type, smoking history, family history, treatment given) of 62 recent applicants was analyzed. SPSS statistical package program was used for statistical calculations.

When the data is evaluated; 43.2% of 162 patients reside in İpekyolu, 42.6% in Tusba and 14.2% in Edremit. The lowest mean age was found in İpekyolu (59.0857±12,48622) and the highest in Tusba (64.1594±12,66029). There was no significant difference between the districts in terms of gender. NSCLC in Ipekyolu district is 52.8%, SCLC in Edremit district is 36.8%, and most of the patients not identified histologically reside in Tusba district (60%). While there was no significant relationship between the districts in terms of smoking and family history, it was determined that there was a significant correlation in comparison with the histological type ($p<0.05$). When the type of treatment received was examined, the patients in İpekyolu district received the most KT, RT and Combined treatments (40.9%, 50.0, 58.8%, respectively), which was statistically significant ($p<0.05$). In addition, it was observed that most of the patients who underwent surgical resection were in Tusba (57.1%).

It can be said that the current results in this study are compatible with the literature. Such retrospective studies support the prospective studies needed. Thus, regional risk factors can be determined and some preventive measures can be taken to reduce the incidence of Lung Ca and mortality trends.

Keywords: Lung Cancer, Statistics, Rate

ID:124-BOP

Chlorophyl Analysis in Determination of the Lipoic Acid Effects in Bread Wheat Plants Applied Heavy Metal

F. Aygün ERTÜRK[1], S. YAĞCI[2], G. KARADAYI[3] and G. AĞAR[2]

[1]Bayburt University, Nutrition and Dietetics Department, Bayburt, Turkey, filizayerturk@bayburt.edu.tr
[2]Ataturk University, Biology Department, Erzurum, Turkey, semrayagci_89@outlook.com, gagar@atauni.edu.tr
[3]Ataturk University, Molecular Biology and Genetics Department, Erzurum, Turkey, gokce.karadayi@atauni.edu.tr

It is known that have become an environmental problem for all organisms from plants to humans of heavy metals, which have recently started to accumulate in ecosystems due to industrial activities, pesticides and fertilization in agriculture. This problem against is used to various materials especially protect plants. Lipoic acid (LA) is an important cofactor for energy metabolism, naturally synthesized in almost all living things. Due to lipoic acid properties such as removing free radicals and chelating metals in living beings under environmental stress, it is called the antioxidant of antioxidants by interacting with antioxidants [1]. In our study, Copper (Cu), Lead (Pb) and Aluminum (Al) heavy metals were applied to bread wheat plants and the protective properties of lipoic acid were analyzed by chlorophyll analysis. For each application, the SPAD value of the chlorophyll amount was created with the SPAD-502 Plus instrument from the middle parts of the 5 repetition selected plants in each replication, so that they do not come into the middle vein of the uppermost leaf. As a result, an increase in SPAD value was observed in parallel with the dose increase of LA application. It was also determined that heavy metal stress increase (30.733), the SPAD value compared to the control and lipoic acid applied under heavy metal stress caused decreased (13,063) an in SPAD values depending on varying concentrations.

Acknowledgement: This work was supported by Research Fund of the Bayburt University

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ID:131-BOP

Important Biological Values of Birecik - Karkamış Districts and Their Contribution to Biotourism

Erkan AZİZOĞLU[1], Özdemir ADIZEL[2], Gökhan GÖK[3]

[1]Hakkari University, Çölemerik Vocational School, Department of Plant and Animal Production, Hakkari, Turkey, erkanazizoglu@hakkari.edu.tr
[2]Hakkari University, Yüksekova Vocational School, Department of Plant and Animal Production, Hakkari, Turkey
[3]Hakkari University, Department of Material Science and Engineering,Faculty of Engineering, Hakkari, Turkey

In this study, the important species that need to be protected in Birecik and Karkamış districts and their effects on tourism are emphasized. In scientific sources, it is stated that the first agricultural activities in the world begins in southeast Turkey. For this reason, the oldest civilization remains are expected to come from this region. There is a lot of evidence in the region to support this idea. Göbeklitepe and Zeugma are the main these works.

The fact that the first agricultural and domestication activities started in this region after the last ice age gives an idea about the nature of the region. It is understood that the natural living conditions of the region are suitable for these activities. This situation also provides information on the richness of biodiversity in the area. As a matter of fact, there are many figures of wild animals in the historical artifacts in the region. Based on these data, we can say that the region is an exceptional place for living things.

The richness of species in the region is also reflected today. Some species seen in Anatolia continue to live only in this region today. Birecik and Karkamış districts on both shores of the Fırat River are the leading areas in the region with regard to living things. The bald ibis (Geronticus eremita), which is endangered worldwide, lives in this area as a semi-wild. The population of the Fırat turtle (Rafetus euphraticus) is increased density in these sections. Pallid Scops-owl (Otus brucei) lives in old tree cavities in a small woodland in Birecik district center. Desert monitör (Varanus griseus), one of the giant lizards, and the striped hyena (Hyaena hyaena), whose numbers are very low, are the creatures seen in the area. The region has a rich fauna with these species.

The bald ibis station is one of the leading point in Turkey biyoturizm. Many tourists come to see the species. In order for tourism to become widespread in the region, other species

should also be introduced. The sustainability of tourism will only be possible with strict protection of the species in the area.

Keywords: Bald ibis, Birecik, Fırat turtle, Karkamış, Pallid Scops-owl

NANOTECHNOLOGY
ORAL PRESENTATIONS

ID:32-NOP

Electrochemical Synthesis of Pd Particles Decorated Cu2S Nanobelts as Novel Electrocatalysts for Hydrogen Evolution Reaction

Emir ÇEPNI[1], Hülya Öztürk DOĞAN[2], Tuba Öznülüer ÖZER[3]

[1] *Atatürk University, Erzurum, Turkey, emircepni@atauni.edu.tr*
[2] *Atatürk University, Erzurum, Turkey, hdogan@atauni.edu.tr*
[3] *Atatürk University, Erzurum, Turkey, tozkim@atauni.edu.tr*

Increasing need for energy around the world, decrease in fossil fuel reserves that meet this need, and problems such as global warming necessitate the searches for renewable, cheap and clean energy resources. Hydrogen is basically formed by the decomposition of water and is a good alternative to fossil fuels in terms of both its manufacturability and not releasing harmful gases into the atmosphere after its usage. Herein, we present electrochemical synthesis of palladium decorated copper(I) sulfide nanobelts (Pd/Cu_2S NBs) as novel catalysts for hydrogen evolution reaction (HER). The X-ray powder diffraction spectroscopy, X-ray photoelectron spectroscopy and field emission scanning electron microscopy were used for the analytical and morphological characterizations. The reported electrocatalysts properties of Pd/Cu_2S NBs were obtained via linear sweep voltammetry in an aqueous 0.5 M H_2SO_4 electrolyte. The HER potential at 10 mA cm^{-2} was established to be −205 mV which is attributed a good electrocatalytic activity for hydrogen production in acidic solution.

Keywords: Hydrogen Energy, Electrocatalyst, Electrochemical Synthesis,

ID:67-NOP

Purification of Carbonic Anhydrase Enzyme with Sulfanilamide Bonded Magnetic Nanoparticles

Safinur ÇELIK[1], Kübra SOLAK[2], Ahmet MAVI[3]

[1]*Atatürk University, Erzurum, Turkey, safinur.celik@atauni.edu.tr*
[2] *Atatürk University, Erzurum, Turkey, kubra.solak92@gmail.com*
[3]*Atatürk University, Erzurum, Turkey, amavi@atauni.edu.tr*

Enzymes are widely used in industrial processes and scientific research. Therefore, high purity purification of enzymes in a fast and inexpensive way is very important economically. The aim of this study is to develop a new, cheap, reusable and magnetic based material to purify the carbonic anhydrase (CA) enzyme in a short time with high efficiency. In the first part of the study, Fe_3O_4 magnetic nanoparticles (MNP) was first synthesized. MNPs were coated with silica using the tetraethyl orthosilicate (TEOS) in the second step and $Fe_3O_4@SiO_2$ was obtained. In the third step, -NH_2 group was added to the surface of $Fe_3O_4@SiO_2$ by the APTES ((3-Aminopropyl) triethoxysilane) and $Fe_3O_4@SiO_2$-NH_2 was produced. In the fourth step, -NH_2 of $Fe_3O_4@SiO_2$-NH_2 and -COOH group of Phloretic acid (PA, 3-(4-hydroxyphenyl) propionic acid) were covalently bounded using EDC (N-(3-Dimethylaminopropyl)-N′-ethylcarbodiimide hydrochloride) and NHS (N-hydroxysuccinimide) activators and $Fe_3O_4@SiO_2$-PA were obtained. Finally, the diazonium salt of the sulfonamide (SA) in which the carbonic anhydrase enzyme has affinity is bound to the aromatic ring of phloretic acid found in $Fe_3O_4@SiO_2$-PA to synthesize $Fe_3O_4@SiO_2$-PA-SA. The final particle ($Fe_3O_4@SiO_2$-PA-SA) was characterized by SEM, TEM, XRD and FT-IR. In the second part of the study, carbonic anhydrase (CA) enzyme from erythrocytes was purified by using $Fe_3O_4@SiO_2$-PA-SA. The obtained CA was checked for purity by SDS-PAGE and the enzyme was found to be of high purity.

Acknowledgement: This work was supported by TÜBİTAK. Kübra Solak has a scholarship for her PhD from 100/2000 program of Turkish Higher Education Council (YÖK).

Keywords: Purification, Magnetic Nanoparticles, Carbonic Anhydrase,

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ENGINEERING
ORAL PRESENTATIONS

ID:13-EOP

Effect on Heat Transfer of Al2O3-water Nanofluid in a Zigzag Channel with Baffles

Selma AKÇAY[1]

[1] *Çankırı Karatekin University, Çankırı, Turkey, selma.352@hotmail.com*

In this study, the effects on heat transfer and friction factor of Al_2O_3-water nanofluid in a zigzag channel with baffles were numerically investigated. In simulations, mass, momentum and energy equations are discretized with finite volume approach and iterations are solved with SIMPLE algorithm. In the study, Reynolds number ($200 \leq Re \leq 1600$), and nanoparticle volume ratio ($0.01 \leq \varphi \leq 0.03$) were changed, and other parameters kept constant. The lower and upper zigzag walls of the channel were kept at constant temperature, and the Nusselt number and friction factor along the channel were calculated. In order to observe the effects of the parameters examined, contours of velocity and temperature in the channel were obtained. The numerical results show that the nanofluids contribute significantly to the heat transfer improvement, especially the increasing nanoparticle volume fractions at high Reynolds numbers significantly improve the heat transfer, while the friction factor increases slightly.

Keywords: zigzag channel, baffle, nanofluid, heat transfer, friction factor.

ID:15-EOP

Indoor Thermal Comfort; Definition, Applications and Turkey Cases

Büşra KADIOĞLU[1], Süleyman TOY[2]

[1] *Atatürk University, Erzurum, Turkey, busrakadiogluu@gmail.com*
[2] *Atatürk University, Erzurum, Turkey, stoy58@gmail.com*

The concept of thermal comfort has long been a topic introduced since the beginning of the last century and studied extensively in the world especially in the fields of architecture and engineering. In its broadest sense, according to ASHRAE-55 standards, its definition is the ambient where people can feel comfortable. This concept was initially used only for indoor for a long time and has been adapted for outdoor use for the last 40 to 50 years. The fact that thermal comfort qualities affect the preferences of the users indoor shows that this concept has dimensions related to social, economic, health, energy, environmental and many other issues. The provision of thermal comfort requires a number of adaptations of the human body. In this sense, in the first studies, heat transfer process and heat balance of human body are studied and equations, calculation indices and models are developed. In Turkey thermal comfort was seen initially as indoor engineering knowledge, especially in recent years and later considered in outdoor environment and architecture and design. This study, corresponding general definitions and information related to the concept of thermal comfort will address some of the studies conducted over the last decade in Turkey and will have some basic conclusions from the results. In this sense, the main findings of the study are the effects of thermal comfort on the interior dimensions of the users, it is determined that the effects are tried to be determined in the common use areas, calculations are made according to various indexes, and consequently, the structures provide suggestions for controlling the energy consumption and increase the comfort levels of the users.

Keywords: indoor, thermal comfort, thermal comfort indices,

ID:17-EOP

Springback Analysis in the Forming of Oven Panels

Samet DURMUŞ[1], Harun YAKA[2]

[1] *Amasya University, Amasya, Turkey, sametdurmus@yandex.com*
[2] *Amasya University, Amasya, Turkey, harun.yaka@amasya.edu.tr*

In this study, the springback (material distortion) behavior of furnace catalytic side panel sheet materials, which occurs as a result of forming operations, was investigated. In this study, the distribution of the final part geometry between the lower and upper limits of the desired tolerance values was analyzed by using the MINITAB statistical software program. As the material type, 0.60 mm thick DC04 cold rolled sheet material was used. The surfaces of the molds of the original model were prepared in SOLIDWORKS software. Forming operation was performed using two different mold as two operations. First operation is cutting process and the second operation is the forming process. The data obtained from the analyzes for the first final product were far from the tolerance values according to the technical drawing. The part was out of tolerance due to the effect of springback. In order to bring the geometry to the desired tolerance range, in addition to the operations applied to the part, a third mold was produced and the final forming process was carried out. The geometry obtained for the second final product is visually smoother than the first geometry. As a result of the measurements made, it remained within the acceptable tolerance values according to the technical drawing.

Keywords: sheet forming, springback, MINITAB,

ID:19-EOP

Effects of Welding Joining Methods Applied to AISI 430 Ferritic Stainless Stells on Surface Polishing

Uğur ÖZKAYA[1], Mehmet Burak BİLGİN[2]

[1] *Amasya University, Amasya, Turkey, ugur_ozkaya06@hotmail.com*
[2] *Amasya University, Amasya, Turkey,mehmetburak.bilgin@amasya.edu.tr*

In this study, the effects of different welding methods used in joining AISI 430 Ferritic stainless steels on surface polishing were investigated. In this study, 0.9mm AISI 430 ferritic stainless sheet was used as the material. TIG (Argon welding, Micro plasma welding and Laser welding were used as the welding method. PTX polishing machine and ceramic-based abrasives were used in the surface polishing process. By using the TIME TR-200 surface roughness measuring device, the lower and upper limits of the desired surface roughness tolerance values of the sample parts were used. The distribution of the sample sheet materials used in the application was prepared in SOLIDWORKS software. The cutting process of the sample sheet materials was carried out precisely on the laser cutting machine. According to the data obtained after the trial studies, it was found that the surface polishing ability of the parts to which the laser welding and micro plasma welding method was applied was higher. It has been determined that the surface polishing capabilities of the sheet metal parts applied with TIG welding method are lower. The welding method and application method are effective in determining the surface polishing quality.

Keywords: AISI 430, ferritic stainless steel, TIG,

ID:36-EOP

The Effect of Welding Parameters on Mechanical Properties in Joining Materials with Different Properties with Mig Method

Yalçın YAŞAR[1], Harun YAKA[2]

[1] *Amasya University, Amasya, Turkey, yalcin__yasar@hotmail.com*
[2] *Amasya University, Amasya, Turkey, harun.yaka@amasya.edu.tr*

In this study, in joining low carbon steel and stainless steel with MIG welding; the effects of welding current, welding voltage and welding time on mechanical properties were investigated. Mechanical properties and microstructures were investigated by taking samples from the materials that joined at three different welding current values. In addition, penetration analyzes were made according to the welding current changes. As a result of the study, according to the results of the tensile test, it was observed that the strength of the joining at high amperage in MIG welding of low carbon steel was higher. However, the elongation value was higher in the welded sample at low amperage. It has been observed that the tensile strength of the joint with lower amperage value is higher in MIG welding of stainless steel. According to the results of bending test, we can see that many test pieces are broken from the weld area. According to the hardness test results, the highest hardness values in all welding methods were measured from the weld metal, followed by ITAB and base material, respectively. When microstructures are evaluated as a whole, starting from the melting line of the grains in all joints, it was determined that they were directed towards the heat flow direction and towards the solidification point.

Keywords: MIG welding method, welding current, mechanical properties, ITAB

ID:64-EOP

Battle Royale Optimization based PID Controller Design for Vehicle Cruise Control System

Ali Kıvanç ŞAHİN[1], Tuğrulhan AKGÜL[2], Oğuzhan ÇAKIR[3]

[1] *Erzurum Technical University, Erzurum, Turkey, ali.sahin@erzurum.edu.tr*
[2] *Erzurum Technical University, Erzurum, Turkey, tugrulhan.akgul@erzurum.edu.tr*
[3] *Karadeniz Technical University, Trabzon, Turkey, cakir@ktu.edu.tr*

In this paper, a novel meta-heuristic algorithm for vehicle cruise control (VCC) system, battle royale optimization algorithm based BRO/PID controller is proposed. This algorithm, known as the battle royale and inspired by the digital game, is represented by each individual soldier/player. This algorithm is based on the struggle for survival of each soldier/player to move toward the safest (best) place. In order to tune the parameter values of the PID controller through the battle royale optimization algorithm, the Zwee Lee Gaing's (ZLG) objective function, which is one of the performance criteria frequently used in the literature, is used. In order to demonstrate the efficiency and superiority of the proposed battle royale optimization algorithm based PID controller, convergence profile, transient and frequency responses analysis were performed via the MATLAB program. When the results obtained are examined, it is observed that the BRO-based PID controller gives better results than the other approaches PID controllers proposed in the literature.

Keywords: Vehicle cruise control system (VCC), Battle royale optimization algorithm, PID controller,

ID:77-EOP

The Effects of Using Different Elastic Modulus Expressions on the Load-Displacement Behavior of Concrete Beams with Hybrid Steel-FRP Reinforcement

Boğaçhan BAŞARAN

Amasya University, Amasya, Turkey, bogachan.basaran@amasya.edu.tr

One of the important factors affecting the flexural behavior of concrete beams with hybrid FRP-steel reinforcement is the modulus of elasticity of concrete. Various national and international reinforced concrete (RC) codes present empirical equations expressing the modulus of elasticity of concrete in terms of its compressive strength. However, these equations generate significantly different modulus of elasticity estimates (up to 44% differences), which results in significant variations between the estimated deflections of RC beams.

In this study, the effects of the use of different modulus elasticity equations in ACI 318-19 (2019), CSA S806-12 (2012), Eurocode 2 (2004) and TS500 (2000) codes on the theoretical load-displacement behavior of hybrid RC beams were investigated numerically. In this context, the experimental load-deflection curves of the related beams in the literature were compared to the numerical curves according to different modulus of elasticity expressions. The study underscores considerable differences between the analytical load-deflection curves of the beams according to different elastic modulus expressions. Differences up to 4 and 32 % were obtained between the cracking load and deflection estimates from different elastic modulus equations at the initiation of cracking. Similarly, differences up 1 and 13 % were observed in the load and deflection values at the start of tension steel yielding. Finally, ultimate loads and deflections differed up to 2 and 10 % when using different elastic modulus expressions.

Keywords: Hybrid RC beam, Flexural behavior, Elastic modulus,

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ID:80-EOP

The Designed Examples for Optimal Use of Urban Furniture in Winter Cities

Büşra Kadıoğlu AKGÜL[1], Süleyman TOY[2]

[1] *Atatürk University, Erzurum, Turkey, busrakadiogluu@gmail.com*
[2] *Atatürk University, Erzurum, Turkey, stoy58@gmail.com*

Urban spaces which are a necessity of the life of people living in cities, are places where both social and personal needs are met. These places change over time according to the city's climate, physical structure and socio-cultural and socio-economic structure of the citizens. In order to meet the increasing needs of the citizens with the effect of urbanization in urban spaces, there are various elements called urban furniture. These elements are shaped according to the social and physical structure of the city. The needs of the citizens change according to effects such as climate, culture, physical structure, economy and different geography. As a climatic effect, harsh weather conditions such as snow, wind, ice, frost, prolonged cold and decreasing daylight in cities where the winter season is predominantly felt restrict the use of urban spaces and the access of the citizens to these spaces. In these places the use of qualified urban space and access to urban furniture are important. However, urban spaces and urban furniture that are not designed in accordance with winter climate conditions lose their accessibility.

In this study, the design criteria of urban spaces and urban furniture in winter cities with harsh winter climate conditions were examined. In addition to this, examples from world cities regarding the usage levels of urban space and urban furniture are discussed. The examination was carried out within the extent of the design criteria that should be applied in winter cities. By examining the examples in world cities such as Trondheim, Edmonton, Montreal, Toronto, Bakklandet, Ottawa, Vancouver, Bracebridge, Quebec, Denver, Harbin, Washington, conclusions were made about the optimal use of urban furniture in winter cities. The study was prepared within the extent of the completed master thesis titled " Aesthetic and Functional Evaluation of Urban Furniture within the context of Winter Cities; the Case of Erzurum City Center ".

Keywords: Winter city, Winter climate, Urban furniture,

ID:145-EOP

Friction and Wear Characteristics of Methacrylated κ-Carrageenan/Gellan Gum Based Hydrogels

Yusuf KANCA[1], Bengi ÖZKAHRAMAN[2]

[1] *Hitit University, Çorum, Turkey, yusufkanca@hitit.edu.tr*
[2] *Hitit University, Çorum, Turkey, bengiozkahraman@hitit.edu.tr*

In-vitro friction and wear properties of a methacrylated κ-carrageenan/gellan gum based hydrogel proposed as a cartilage tissue engineering material were investigated as it was reciprocated against a CoCrMo femoral head using a custom pin-on-disk tribometer. Tests were carried out for 1 h at a sliding speed of 20 mm s^{-1} and the loads of 2.5 and 5 N in phosphate saline solution (PBS) and bovine calf serum (BCS) at 37±1 °C. The wear track of each sample was photographed to measure the damage area using ImageJ. Both the coefficient of friction (COF) and the damage area were found to increase at a higher load regardless of lubricant. The use of BCS rather than PBS contributed to better lubrication and reduced the COF by 29% and 38% at 2.5 and 5 N, respectively. The wear track was observed as surface fibrillation when BCS lubricant was used, and the wear track area greatly decreased. The hydrogel tested at 2.5 N in BCS showed superior tribological performance than the other test groups. This study shows how the tribological performance of the hydrogel altered under various physiological conditions.

Keywords: Hydrogel, Methacrylation, Tribology,

ID:91-EOP

Investigation of the Relationship Between Safety Culture Levels and Safety Performances of Employees in the Construction Sector

Hasan TUNA[1], Sirer ALBAYRAK[2]

[1] *Gümüşhane University, Gümüşhane, Turkey, hasan.tuna@gumushane.edu.tr*
[2] *Ağrı Ibrahim Çeçen University, Ağrı, Turkey, sireralbayrak@gmail.com*

The construction sector has an important place in the Turkish economy with its financial size and workforce opportunities it provides. In addition, according to the 2019 work accident statistics of the Social Security Institution in the construction sector, which is in the category of very dangerous work, 47701 accidents occurred, 368 employees lost their lives due to work accidents, and 1586 employees became permanently incapacitated as a result of work accidents. Occupational accidents are one of the most important problems faced by employees in their working lives. Many legislation and institutional arrangements have been made in order to prevent accidents that may occur during the working life of humanity and to create a healthy environment for employees. Although these regulations exist, many accidents still occur in workplaces. Recently, the concept of safety culture has been emphasized in the prevention of occupational accidents. In this study, the effect of safety culture perceptions of employees in the construction industry on safety performance was examined. The sample of the study consists of 130 people working in 5 different companies operating in the construction sector in Ankara, Istanbul, Ağrı and Sivas, determined by simple sampling method. As a data collection tool, 9 different scales adapted into Turkish by Dursun (2011) were used. IBM SPSS 22 package program was used to analyze the data in the research. It has been determined that there is a positive and significant relationship between the variables of safety culture (attitudes of managers, behaviors of managers, safety priority, safety communication, safety training, safety awareness, employee participation, fatalism and reporting culture) and employees' safe behaviors (safety compliance and safety participation). As a result of the regression analysis, it was determined that the variables of safety awareness and reporting culture were significant predictors of employees' safe behaviors (safety compliance and safety participation). It is thought that eliminating the fatalism understanding, taking measures to increase awareness and competence, and developing a reporting culture by creating a strong reporting system will contribute to the reduction of occupational accidents.

Keywords: safety culture, construction industry, security performance,

MATERIALS SCIENCE
ORAL PRESENTATIONS

ID:18-AOP

Corrosion and Wear Behavior of Fe-Cr-C-V-Mo Hardfacing Coatings

Nilay ÇÖMEZ

Manisa Celal Bayar University, Manisa, Turkey, nilay.comez@cbu.edu.tr

The workpieces which experience abrasive, erosive and corrosive conditions can be protected by hardfacing coatings. Present study focused on the effect of molybdenum (Mo) on wear and corrosion resistance of Fe-Cr-C hardfacing alloys with a constant ferrovanadium addition of 8 wt.%. Increasing Mo content provided the formation of complex carbides and increased carbide volume fraction (CVF) although it caused a minor change in corrosion resistance. Owing to the increased CVF, wear loss of coatings tended to decrease. The coating with minimum Mo content exhibited the maximum corrosion rate of 0.06 mm/year whereas the other coatings showed the same corrosion rate of 0.04 mm/year. Corrosion has started in iron based matrix around the carbides which act as cathode spot.

Keywords: Hardfacing, hardness, wear, corrosion, carbide.

ID:33-AOP

Flexible and Ultralight CoZn-MOF/Reduced Graphene Oxide Sponge

Elif ERÇARIKCI[1], Kader Dağcı KIRANŞAN[2], Ezgi TOPÇU[3]

[1] *Atatürk University, Erzurum, Turkey, elif.ercarikci@atauni.edu.tr*
[2] *Atatürk University, Erzurum, Turkey, kdagci@atauni.edu.tr*
[3] *Atatürk University, Erzurum, Turkey, ezgitopcu@atauni.edu.tr*

We studied the fabrication of a flexible and ultralight CoZn-Metal-organic frameworks/reduced graphene oxide (CoZn-MOF/rGO) sponge for use as a multifunctional flexible electrode material. Flexible and ultralight CoZn-MOF/rGO sponge was produced by incorporating hydrothermally synthesized CoZn-MOF into the aqueous dispersion of graphene oxide (GO) using a foaming sol-gel method. The physicochemical properties of as-prepared materials were characterized by means of scanning electron microscopy (SEM), energy-dispersive X-ray spectroscopy (EDAX), X-ray photoelectron spectroscopy (XPS), and X-ray powder diffraction (XRD) patterns. Cyclic voltammetry (CV) result showed that the flexible and ultralight CoZn-MOF/rGO sponge exhibited good electrochemical performance. This study exhibited that flexible and ultralight CoZn-MOF/rGO sponge possessing easy and non-toxic method preparation, low cost, and high flexibility, have great potential to develop high-performance flexible electrode materials.

Keywords: Graphene sponge, Flexible electrode material, Cobalt zinc Metal-organic frameworks,

AGRICULTURE
ORAL PRESENTATIONS

ID:63-AOP

The Effect of Different Organic Fertilizers on Soil Properties in Tolering Climate Change

Tülay DİZİKISA[1], Nesrin YILDIZ[2]

[1] *Ağrı Vocational Training School, Ağrı İbrahim Çeçen University, Ağrı, Turkey, tdizikisa@agri.edu.tr*
[2] *Deparment of Soil Science And Plant Nutrition, Faculty of Agriculture, Atatürk University Erzurum, Turkey, nyildiza25@hotmail.com*

Sustainable agriculture is an important global issue. The soil has lost organic matter in the past centuries. Is it a good practice to reduce global warming? In fact, one of the practices promoted to combat climate change is increasing soil organic matter. The use of organic fertilizers can enhance crop yield and soil properties while restraining pests and diseases. Organic fertilizers are derived from natural sources (e.g., livestock and poultry excreta, plant residues, biogas residue, and agricultural by-products), and their usage can have a positive impact on pollution. Our concern about organic matter nowadays is because soils play a major role in the global carbon cycle and the amount of SOC is determined by the balance between the rates of organic carbon input and output. The carbon input is the sum of all organic carbon compounds added to the soil per unit of time (usually a year). It consists of the carbon present in crop residues, roots that die off, organic carbon in manure and wastes, etc . Carbon gain in soil involves storage and a possible reduction of carbon in the atmosphere. Carbon storage is determined by the environmental conditions (climatic factors) and the type of soil and transformation processes, including biological interactions. Several natural factors influence the amount of organic matter in the soils like temperature, soil moisture and water saturation, texture, topography, salinity, acidity, vegetation, and biomass production. Soil organic carbon (SOC) is a very important component of the global carbon cycle and the fate of SOC will have an important impact on the future global climate. The use of stabilized organic compounds that can be stored in soils for centuries has been studied in the last decades, especially considering charcoal and biochar. The application of certain biochars can help to sequester carbon, and improve soil conditions in some soil types/climates. For example, Biochar has significant effects on the physical nature of agricultural soils and can mitigate anthropogenic climate change while improving agricultural soil fertility.

Keywords: Organic Fertilizers, Climate Change, Soil Properties,

ID:75-AOP

Milk Yield Traits of Anatolian Buffalo Reared in Pasinler

Yücel DEMİR[1], Ömer AKBULUT[2]

[1] *Ağrı İbrahim Çeçen University, Ağrı, Turkey, ybakracli@hotmail.com*
[2] *Giresun University, Giresun, Turkey, omer.akbulut@giresun.edu.tr*

This study was conducted to determine the milk yield characteristics of Anatolian Buffaloes grown in Pasinler District of Erzurum province. In addition, the effects of some effective environmental factors on milk yield and composition have been investigated. The research produced a milk yield record of 104 buffalo cows that gave birth between Dec 2012 and 2015. In milk yield traits, lactation sequence (LS) was determined as 220,03±3,383 days, lactation milk yield (Trapez II) (LMY) was determined as 791,61±17,196 kg and daily milk yield (DMY) was determined as 3.57±0.056 kg. Furthermore, in the sample examined in the version 597 milk % fat, % protein, % lactose, % dry matter, % fat-free dry matter, density, and somatic cell count (Log_{10}SCC) respectively %6,79±0,066, %4,29±0,019, %4,84±0,014, %16,83±0,059, %10,03±0,024, 1.0302±0,00008 g/cm^3 and 4,90±0,018 cells/ml was determined. The effect of lactation sequence on: LS, LMY, DMY and non-fat dry matter, season on: LS, DMY and non-fat dry matter, and year on milk and milk composition characteristics was found to be significant ($p<0.01$). The traits studied were significantly affected by lactation sequence*year interaction. In light of these findings, it may be proposed to increase the number of animals in enterprises by taking into account conditions and economic conditions, to make breeding with breeds with good milk yield direction, to take care of care-feeding, to create marketing models for milk and dairy products.

Keywords: Milk yeild, Pasinler, Anatolian Buffalo,

ID:78-AOP

Removal of Crystal Violet Dye from Aqueous Solutions Using Robinia pseudoacacia L. (Fabaceae) Fruits Biosorbent

Ekrem GÜLLÜCE[1], Neslihan Hıdıroğlu İSPİRLİ[2], Medine GÜLLÜCE[3], Mehmet KARADAYI[4]

[1] *Atatürk University, Erzurum, Turkey, gulluceekrem@hotmail.com*
[2] *Atatürk University, Erzurum, Turkey, n.hidiroglu@atauni.edu.tr*
[3] *Atatürk University, Erzurum, Turkey, gullucem@atauni.edu.tr*
[4] *Atatürk University, Erzurum, Turkey, mkaradayi@atauni.edu.tr*

Since synthetic dyes used in the textile and cosmetic industries are toxic and carcinogenic, these synthetic dyes must be removed from water [1]. In recent years, biosorption studies have been carried out in the removal of aqueous solutions of synthetic dyes by using natural materials, abundant in nature. Biosorption studies have been preferred because their eco-friend, cheap and sustainable properties [2]. The aim of this study was a biosorption study to remove crystal violet dye from aqueous solutions by using fruits of Robinia pseudoacacia L. (Fabaceae) as a natural biosorbent (RPF). In this study, parameters such as pH, initial dye concentration, biosorbent dose, stirring speed and temperature were investigated. In addition, isotherm, kinetic and thermodynamic studies were also carried out. According to the results of the studies carried out under the experimental conditions: pH: 6, initial dye concentration: 10 mg/L, biosorbent dose: 1 mg, contact time: 30 min., stirring speed: 150 rpm and temperature: 298 K. It was observed that the RPF biosorbent removed 79% of the crystal violet dye from aqueous solutions. Freundlich, Langmuir, Elovich, Temkin and Dubinin–Radushkevich isotherms were calculated. In kinetic studies, the correlation coefficient of pseudo-second order kinetics (R2=0.995) was found to be higher than pseudo-first order kinetics (R2=0.924). In addition, according to the ΔG values found in the thermodynamic studies, it was observed that the process was endothermic and naturally spontaneous. As a result, it was concluded that the low cost, eco-friendly and effective treatment of the RPF biosorbent was used in the removal of synthetic dyes from aqueous solutions.

Keywords: Biosorption, Robinia pseudoacacia L. (Fabaceae) Fruits, Crystal Violet,

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ID:86-AOP

Reproductive Traits of Anatolian Water Buffaloes Reared at Erzurum Conditions

Yücel DEMIR[1], Ömer AKBULUT[2]

[1] *Ağrı İbrahim Çeçen University, Ağrı, Turkey, ybakracli@hotmail.com*
[2] *Giresun University, Giresun, Turkey, omer.akbulut@giresun.edu.tr*

Anatolian water buffalo plays a critical role in supplying a portion of the income and the necessities of some rural region. Anatolian water buffalo is one of the finest dairy buffalo race in grown Turkey. The success of any dairy farm depends upon efficient reproductive performances of a dairy animal. Different genetic and non-genetic factors influence its performance reproductive. Limited data are available on the phenotypic factors related to the productive and reproductive performance of Anatolian water buffalo. This study aims to reveal reproductive traits of Anatolian water buffaloes. Reproductive traits of Anatolian water buffalo under the present study will serve as standard and hence can be used as a reference or standard at a glance to compare the performances of Anatolian water buffalo reared under different agro-climatic zones of Turkey. Therefore, reproductive traits like age at the first calving (AFC), calving interval (CI), gestation period (GP), dry period (DP), survival rate (SR), and calving rate (CR) of Anatolian water buffalo are examined in this study. Data from 190 Anatolian water buffalo cows maintained at the Pasinler, gave birth (born) in the period between 2012 and 2015 were used for this study. According to the results, it was found that average AFC was 34,88 months, CI was 400,36±11,895 days, GP was 318,60±3,721 days, DP was 178,90±12,560 days, SR was 91,45 % and CR was 80,00 %, as investigated reproductive traits. It was also observed that the effect of the year on calving rate was significant ($p<0.10$). It was concluded that reproductive traits performance of Anatolian water buffalo are middle level under the Erzurum conditions, so that it can be said that the productivity level of this breed may increase by the genetic improvement and better herd management. Besides, based on the present findings, it may be recommended to have a breeding programme which given due weightage to both production and fertility traits.

Keywords: Reproductive, Anatolian water buffalo, Erzurum,

ID:99-AOP

The Role of Climate Changes in Reproductive Performance in Cattle-Review

Kader YOLCU

Ağrı İbrahim Çeçen University, Ağrı, Turkey, kyilmaz@agri.edu.tr

Reproduction is one of the most important factors determining profitability in a dairy business. Sustainability of this profitability can be achieved by obtaining one calf from each of the cattle that have reached pubertal age, in an annual synchronized manner. Obtaining an annual calf is a very grueling and challenging process in terms of business. During this period, the cattle should be subjected to optimum care and feeding conditions. If these essential conditions and comfort cannot be established, the first delayed physiological action by cattle is reproductive activities.

Body temperature is an important physiological parameter and is considered a health indicator in dairy cows. In dairy cattle, even small changes in body temperature have major negative effects on metabolic activities. Cattle can actively continue their reproductive activities in a certain temperature range, and this temperature range is called the thermoneutral range. The fact that the temperature values are higher than the level that the animals can tolerate causes the formation of heat stress, and the lower ones cause the formation of cold stress. Both of these stress factors will result in the disruption of reproduction and will negatively affect the profitability of the business in every respect. In this study, the effects of cold and heat stress on reproductive performance in cattle will be compiled.

Keywords: heat stress, cold stress, reproduction

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ID:120-AOP

Usability of Infrared Thermal Camera in The Diagnosis of Foot Diseases of Cattle

S. YAKAN[1] and C.T. İŞLER[2]

[1]*Department of Animal Health, Eleskirt Celal Oruc Animal Production School, Ağrı İbrahim Çeçen University, Agri, Turkey, syakan@gmail.com*
[2]*Mustafa Kemal University, Faculty of Veterinary Medicine, Department of Surgery, Hatay, Turkey, cafer.isler@gmail.com*

In this study, it was aimed to determine the thermographic temperature values taken from the extremities (digital and interdigital region) of healthy and disease animals and reference data for thermographic examination in dairy cows healthy and with digital dermatitis (DD) and interdigital dermatitis (IDD). A total of 14 dairy cows, 7 healthy and 7 with digital lesions, were used in the study. Temperature values taken from the extremities of healthy with DD and IDD cows were evaluated according to the student's t-test. Extremity temperatures of animals with DD and IDD were 1-4 °C higher than healthy animals. The mean temperature values of animals with DD and IDD (34.28 ± 1.40) were higher than healthy animals (30.64 ± 0.11), and a statistically significant difference was found between these two groups ($P < 0.001$). As a result, it was revealed that thermography can be used for diagnosis as an auxiliary imaging technique in cattle foot diseases.

Keywords: Infrared thermography, digital and interdigital dermatitis, dairy cow

ID:121-AOP

A Statistical Approach on Reproductive Biology of Chukar Partridge (Alectoris chukar, Gray, 1830) Living in Hakkâri Province

Erkan AZIZOĞLU[1], Rıdvan KARA[2], Özdemir ADIZEL[3], Gökhan GÖK[4]

[1]*Hakkari University, Çölemerik Vocational School, Department of Plant and Animal Production, Hakkari, Turkey, erkanazizoglu@hakkari.edu.tr*
[2]*Hakkari University, Yüksekova Vocational School, Department of Plant and Animal Production, Hakkari, Turkey*
[3]*Department of Biology, Faculty of Science, Van Yüzüncü Yil University, 65080-Van, Turkey*
[4]*Hakkari University, Department of Material Science and Engineering, Faculty of Engineering, Hakkâri, Turkey*

In this study, reproductive biology of Chukar partridge (*Alectoris chukar*, Gray, 1830) in Hakkâri province was studied.

Research; It was carried out between 2020 March and August in areas where the henna partridge species lives and breeds intensively within the borders of the province of Hakkâri. The breeding sites of the species were determined from certain observation points. 5 nests belonging to the species were determined at different altitudes in the breeding areas. Reproduction status was demonstrated statistically with certain measurements (nest dimensions, egg weight and width, nestling's beak, height and head dimensions) and observations on these nests. Reproductive status and changes of the components were made by applying the Regression and Variance tests with the help of the R statistical analysis program. A regression model was created to identify factors affecting nestling weight. In the model, nestling weight was taken as dependent variables, egg weight, egg length and egg width as independent variables. Accordingly, the effect of egg weight on nestling weight was found to be statistically significant($p<0.05$). Other variables were not found to be significant. In the second regression model created, head size dependent variables were egg length, egg weight and egg width as independent variables. In this model, the effect of egg weight on head size was found to be statistically significant($p<0.05$). When the beak size is taken as the dependent variable, the effect of other variables is not statistically significant($p>0.05$). Again, the effect of hatchling egg characteristics was not significant($p>0.05$).

In the analysis of variance, it was examined whether the mean egg and hatchling weights differ according to 4 different nests, and it was determined that both hatchling weights and egg weights vary according to nests. The 1st and 4th nests and 3rd and 2nd nests were similar in the mean egg weight. However, in the mean weight of the nestling, the 1st and 3rd nests showed similarities with the 4th and 2nd nests.

Keywords: *Alectoris chukar*, Breeding Biology, Chukar partridge, Hakkâri, Regression model

Acknowledgement: This study was supported by Hakkâri University Scientific Research Project Directorate (Grant No: FM20BAP12)

ID:122-AOP

Toxic effects of Cypermethrin on Gill of Van Fish (*Alburnus tarichi* Güldenstaadt 1814)

E. Kaval OĞUZ

[1]*Van Yüzüncü Yıl University, Van, Turkey, ekoguz@yyu.edu.tr*

Lake Van is the largest lake in Turkey. In recent years, it has started to be polluted due to agriculture, animal husbandry, and domestic waste [1]. Developments in the agriculturel field have led to the use of many chemicals. One of these chemical groups is pesticides. Cypermethrin is one of the most commonly used pesticides in the lake Van basin, Turkey. The van fish is a vertebrate endemic species living in Lake Van. Therefore, it is used as a bioindicator in the determination of lake pollution [2]. In this study, the effects of sublethal dose (0.05 µg/L) of cypermetrin on gill of the Lake Van fish for 96h, the only vertebrate species living in Lake Van were investigated. As a result, reversible and irreversible anomalies were determined in fish gills exposed to cypermethrin.

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ID:129-AOP

Determination of Melatonin Level During Reproductive Migration in Van Fish (Alburnus Tarichi Güldenstädt, 1814)

Elif ÖRĞİ[1], Ahmet Regaib OĞUZ[2]

[1] *Van Yüzüncü Yıl University, Van, Turkey, elfkzlts@hotmail.com*
[2] *Van Yüzüncü Yıl University, Van, Turkey, ahmetoguz@yyu.edu.tr*

The photoperiod is the time an organism is exposed to light throughout the day, i.e. 24 hours. Like many animals, fish are also affected by changes in daylight. In general, the pineal gland is part of the central nervous system. The pineal gland in fish is a light-sensitive structure containing photoreceptor cells. Melatonin hormone levels secreted from the pineal gland can also change salinity, nutrient availability, precipitation, pH of the environment and the density of the environment, apart from the photoperiod. The hormone melatonin is involved in processes such as determining the biological clock, adaptation to seasonal changes, and reproduction.

Van fish is an anadromic endemic carp species living in Lake Van, which is among the few soda lakes in the world. The hormone melatonin secreted from the pineal gland is also a hormone affected by environmental changes. In this study, melatonin levels were determined in fish plasmas sampled from lakes and streams during breeding migration. Melatonin-secreting pinealocyte cells and their localizations were also marked immunohistochemically. t was determined that pinealocyte cells were localized in the lumen part of the pineal vesicle and the plasma melatonin level increased in fish passing from the lake to the river.

Keywords: Van fish, Pineal gland, Melatonin, Immunohistochemistry

Acknowledgments: This study was supported by Yüzüncü Yıl University Scientific Research Projects Directorate (Grant No. FYL-2020-8916).

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ID:130-AOP

Investigation of Mucus Cell Localization and Density in the Digestive Canal of Van Fish

B. ERGÖZ[1], Z. ALKAN[2], A. N. KIRAÇÇAKALI[3], E. ÖRĞI[4], A. R. OĞUZ[5]

[1]*Faculty of Science, Department of Biology, Van, Turkey,* burcu_ergozz@hotmail.com
[2]*Faculty of Science, Department of Biology, Van, Turkey,* zhra.alkan@hotmail.com
[3]*Faculty of Science, Department of Biology, Van, Turkey,* kiracaysenur878@gmail.com
[4]*Faculty of Science, Department of Biology, Van, Turkey,* elfkzlts@hotmail.com
[5] *Faculty of Science, Department of Biology, Van, Turkey,* ahmetoguz@gmail.com

Mucus is a polysaccharide compound containing sulfate and carboxyl groups. The amount of mucus secreted from cells in different organs; It increases with effects such as stress, infection, toxic substances, physical and chemical damage. In addition, mucus secretion is an important factor for osmoregulation, respiration, resistance to diseases and is a very good natural defense mechanism against parasites and pathogens. In fish, as in other vertebrates, it is concentrated in the parts of the digestive tract. Mucus cell localizations and density vary according to fish species.

Van fish is an endemic species living in Lake Van, one of the largest soda lakes in the World [1]. The fish is in the family Cyprinidae. Like other creatures in this family, Van fish do not have a true stomach structure. Although the digestive tract of the fish is similar to the digestive tract of the fish in the carp family, it also shows some differences. [2].

In this study, mucus cells in the digestive tract of Van fish were stained using Periodic acid-Shiff (PAS) dye. It was determined that mucus cell distribution and cell sizes differed in the esophagus forming the digestive tract, stomach-like structure, anterior and posterior intestines.

Keywords: Van Fish, Digestive Canal, Mucus Cell, Neutral Glycoconjugate

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EDUCATION
ORAL PRESENTATIONS

ID:37-EOP

The Influence of Social Networking on Students Learning English

Gulchehra DAVRANOVA

Batken State University. Batken, Kyrgyzstan, davranova_83@mail.ru

Annotation: The article deals with the development and huge impact of social networking on students learning English. The article discovers the positive influence of social media, different applications and podcasts. The purpose of the article is to study how social media use by university students affects their academic as well as their social life at the university. Participants consisted of students of the faculty of world languages and culture.

Keywords: social networking, internet literacy, cyber,