ICENSOS 2023



2nd International Conference on Engineering, Natural and Social Sciences

April 4 - 6, 2023: Konya, Turkey

Abstract Book

ABSTRACT BOOK OF 2ND INTERNATIONAL CONFERENCE ON ENGINEERING, NATURAL AND SOCIAL SCIENCES

ABSTRACT BOOK OF 2ND ICENSOS 2023:

Editors:

Asst. Prof. Dr. Umut Özkaya

4 - 6 April 2023

Konya, Turkey

Publication date: 15.04.2023

Abstract Book of 2nd International Conference on Engineering, Natural and Social Sciences

https://www.icensos.com/

2nd International Conference on Engineering, Natural and Social Sciences ICENSOS 2023: edited by Umut Özkaya

ISBN: 978-605-72325-8-8

As this is a serial book published, it has ISBN. All abstract were peer reviewed.

ISBN 978-605-72325-8-8

Printed in the Turkey with ISBN 978-605-72325-8-8

International Conference Website

https://www.icensos.com/

INTRODUCTION

We had the great honor of organizing the 2nd International Conference on Engineering, Natural and Social Sciences ICENSOS 2023. It was truly a great pleasure for us to greet a lot of participants from many different countries attending ICENSOS 2023! We firmly believe that the conference will become an important international event in the field of cross-industry discussion about innovations in Academic Studies.

Three cooperating organizations supported the four-day conference. There were 316 papers accepted for presentation at ICENSOS 2023, contributed from different countries. We had plenary speeches and several well-known scientists and experts, to give invited talks at different sessions.

The purpose of ICENSOS 2023 was to provide a forum for the participants to report and review innovative ideas, with up-to-date progress and developments, and discuss novel approaches to the application in the field of their own research areas and discuss challenges of doing science.

We sincerely hope that the exchange of ideas on doing research, science and improving education will help the participants, and international cooperation sharing the common interest will be enhanced.

On behalf the Organization Committee of ICENSOS 2023, we would like to heartily thank our cooperating organizations for all they have done for the conference. We would also like to thank the authors for their contribution to the proceedings; the participants and friends of ICENSOS 2023, for their interest and efforts in helping us to make the conference possible; and the Editorial boards for their effective work and valuable advice, especially the ICENSOS 2023 secretariat and the ICENSOS 2023 staff, for their tireless efforts and outstanding services in preparing the conference and publishing the Proceedings.

Asst. Prof. Dr. Umut Özkaya

Conference chairs

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Türkiye dışından toplam 26 farklı ülkeden (Fas, Cezayir, Tunus, Nijerya, Kosova, Kuzey Makedonya, Pakistan, Endonezya, Arnavutluk, Hindistan, Azerbaycan, Şili, Macaristan, Türkiye, Almanya, Ukrayna, Malezya, Suudi Arabistan, Fransa, Irak, Ukrayna, Bulgaristan, Filistin, İtalya, Romanya, Polonya) katılım sağlanmış olup, 316 adet bildirinin 140 (%55,69) tanesi yabancı katılımcı tarafından sunulmuştur.

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A study about the properties of some special functions

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Abstract – The simplest and most important special functions are the gamma and beta functions, which are essential for understanding many other special functions. These functions have attracted the interest of many researchers until today. Especially in recent years, there have been important studies on the extensions of these functions. The aim of this work is to explain some basic properties of a broad variety of functions, including several special functions like the gamma function, beta function and hypergeometric functions.

Keywords – Beta Function, Gamma Function, Hypergeometric Functions

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Industry 4.0 and Effects on Management and Strategies

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Abstract – In today's rapidly changing world Industry 4.0 became an important player in business processes. The new technologies offered by Industry 4.0 affect management techniques and processes in organizations, and organizational relations, groups, teams, and employees, in short, the structure and functioning of the organization as a whole. Industry 4.0, is not only about production; It also causes the transformation of jobs, ways of doing business, and human resources. With the transformation, Industry 4.0 factors should be taken into consideration in the managerial processes in organizations today and in the future. Industry 4.0 is the coordination of different technologies rather than the use of individual technologies. It will be able to realize a digital transformation thanks to the applications in which it is used holistically.

How much and how businesses are involved in their strategies is an important component of success in Industry 4.0. Industry 4.0 should be handled by businesses with a holistic perspective, in terms of corporate design. In the process of applying Industry 4.0 technologies, the digital transformation of the functions of management, the integration of these processes, and the resulting organizational development, to the whole of the organization, its culture, and its climate are extremely important for the success of the enterprises. Therefore, managers should be Giving the necessary importance, integrating the functions of the business into this process, providing the necessary financing for Industry 4.0 technologies, and strengthening human resources will come to the fore as key factors in managerial success.

Keywords –Management, Industry 4.0, Coordination, Management Functions, New Technologies, Effects On Management

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CLOUD COMPUTING IN HIGHER EDUCATION INSTITUTIONS: PROS AND CONS

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Abstract **–** *The Breakthrough developments in Information and technology (IT)* have led Higher Education Institutions (HEIs) to adopt state-of-the-art practices to change their education landscape and enhance their teaching and learning methods. Though different definitions of cloudcomputing, many of them agree that it is a system providing users with distant multi-services and tools through the internet. Cloud Computing characteristics, making it a hub as one of the ever- growing industries nowadays, include on-demand self-service, broad network access, resource pooling, rapid elasticity, and measured Service. Besides, cloud computing models contribute to the efficient use of IT. There are three main models: public, private, and community cloud hybrid.They offer services under three delivery models: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). Cloud features and services have provided convincing arguments to make cloud computing-based technology solutions a mainstream tool in HEIs running management for the benefit of students, teachers, researchers, and other educational stakeholders. Primarily through its different education cloud applications such as Microsoft Education Cloud Google, Education Cloud Earth Browser , Socratica …etc. These apps offer several significant benefits to technology enhanced learning, like cloud availability, cost- effectiveness, easiness, and safety. However, some limitations make these cloud computing opportunities unattainable and lead to non-cloud adoption as those relating to cloud privacy, security, infrastructures, and management.

Keywords – Cloud Computing, Models, Education, Pros, Cons

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FROM CORK WASTE TO ELECTRICAL THERMAL AND HYDROGEN BIOENERGIES

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Abstract **–** Several measures have been taken in recent years to reduce the use of fossil fuels and shift toward renewable energy sources such as biomass, particularly cork wastes, which currently generate more than 60% of the energy generated by cork powder energy conversion. This powder's high calorific content ranging from 4,000 to 7,000 Kcal/kg is natural, renewable, and recyclable, and contributes to a reduction in greenhouse gas emissions and carbon footprint. Cork wastes are now considered strategic substances due to their significant environmental and socioeconomic roles in the worldwide. The present research relies on cork wastes as potential of electrical, thermal, and hydrogen bioenergy source. Cork properties and energy usages are discussed beginning with cork's environmental, economic, and energy properties and processing through two types of cork wates conversion processing: industry and energy process. The firstl one is in four stages: preparation, transformation, granulation, and transformation, whereas the second one has three phases: extraction of cork, storage of planks, and from micro agglomerated cork stoppers to energy generation, and at the end of the study the three types of bioenergy that cork wastes may produce based on recent academic and research discoveries. Electrical energy, thermal energy, and hydrogen energy are the three types.

Keywords – Cork Wastes, Properties, Process, Energy, Hydrogen

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Modeling of the Pore Shape Effect of the Plastic Behavior of Porous Materials

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Abstract **–**Lotus-type porous materials are characterized by cylindrical porosities aligned along a single direction, giving them transverse isotropic behaviour with two independent effective properties. The first is a pore-parallel property that can be estimated by a simple law of mixtures. The second property, perpendicular to the pores, requires a homogenization calculation for its determination. The main purpose of this work is to estimate the effective tangent modulus of these materials by numerical homogenization based on the representative volume element. A formula allowing the estimation of the effective tangent modulus is proposed on the basis of the obtained numerical results which have shown that the shape of the pores has a great influence on the effective property studied. Its validation is ensured by its comparison with the various numerical results.

Keywords – Lotus-Type Porous Materials; Plastic Behavior; Tangent Modulus; Shape Effect; Numerical Homogenization

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An ameliorated Salp Swarm Algorithm using Chaos

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Abstract **–** In this paper an improved optimization algorithm called Chaotic Salp Swarm Algorithm (CSSA) is proposed. This is improved version of recently proposed Salp Swarm Algorithm (SSA), which mimics swarming acts of salps when foraging and navigating in oceans. To improve the performance of SSA, chaotic maps are introduced in Salp Swarm Algorithm. The algorithm is evaluated on several numerical standard functions and is compared with SSA. The comparative results shows that the chaotic maps significantly enhances the performance of the SSA algorithm.

Keywords – Optimization, Swarm intelligence, Salp swarm algorithm, Chaos, Chaotic maps.

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Existence Results for Systems of Second-Order Impulsive Differential Equations with Two Point Boundary Condition

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Abstract – In this paper the authors study the existence of solutions to systems of nonlinear second order impulsive differential equations. Their results are established by using vector versions of Perov's fixed point theorem and the nonlinear alternative of Leray-Schauder type. Both approaches are combined with a technique based on vector-valued metrics and matrices that converge to zero. Examples illustrating the results are included.

Keywords –Two Point Boundary Values Problems With Impulsives, Existence, Perov Fixed Point Theorem, Vector-Valued Norm, Convergent To Zero Matrices.

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April 4-6, 2023 : Konya, Turkey

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New findings on periodic solutions for a housefly model

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Abstract **–** This paper analyzes the neutral housefly model presented by a first-order neutral differential equation. Our main objective is to convert our model into an integral equation, after which we'll use the method of Green's functions, the Schauder and Banach fixed point theorems, as well as other suitable conditions, to guarantee the presence and uniqueness of positive periodic solutions. Our results are consistent with some previous studies.

Keywords – Housefly Model, Uniqueness, Iteration, Fixed Point Theorem, Positive Periodic Solution.

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Extremal ranks of the two matrices X_0 and X_1 in a complexe least-rank solution $X=X_0+iX_1$ of the matrix equation $AXA^*=B$

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Abstract *–In this work, we study the extremal ranks of the two real matrices X_0 and X_1 in a Hermitian least-rank solution $X=X_0+iX_1$ of the matrix equation $AXA^*=B$.*

Keywords – Two Real Matrices, Hermitian Least-Rank Solution

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Existence and Asymptotic Behavior of Positive Continuous Solutions for some Engineered Reaction-Diffusion Systems

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Abstract – In this paper, we study the existence of positive solutions for a certain class of parabolic reaction-diffusion systems. The method used here is based on techniques of potential analysis and functional analysis. The originality here persists in the generalization of work already studied by several authors: the systems studied are of a higher order and the non-linearities considered are more general.

Keywords – Reaction Diffusion Systems, Parabolic Systems, Positive Solutions, Green Function

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On a Reaction-Diffusion Model Applied to Image Restoration

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Abstract **–** In this paper, we propose a new model of nonlinear and anisotropic reaction diffusion system applied to image restoration and edge detection. We show the existence of a global weak solution to the considered system in the case of quasi-positivity and a triangular structure condition on the nonlinearities.

Keywords – Image Restoration, Edge Detection, Reaction-Diffusion System, Weak Solution

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A Nonlinear System of Generalized Ordered XOR-Inclusion Problem in Hilbert Space with S-Iterative Algorithm

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Abstract **–** In this article, a nonlinear system of generalized ordered XOR-inclusion problems in Hilbert space is introduced and studied. Initially, we define the resolvent operator related to the (α, λ)-XOR-weak-ANODD multivalued mapping. Using the fixed-point technique, we demonstrate the results of existence. In order to make the suggested system more realistic, we create the S-iterative algorithm and demonstrate that the sequence generated through this technique strongly converges with the proposed system's solution. One example is provided in support of the existence result as well.

Keywords: Resolvent Operator; S-Iteration; System; XOR- Inclusion; Hilbert Space

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Seroprevalence of *Toxoplasma gondii* among goats in periurban areas of Faisalabad Pakistan

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Abstract –. Domestic goats were infected with *T. gondii* due to ingestion of food or water contaminated with oocysts. Goats of both sexes of different breeds i.e., Beetal, Nachi and Teddy was sampled by cross-sectional method from different Periurban areas of Faisalabad. A blood sample (5ml) was collected through disposable syringe from jugular vein. Half of the blood was collected in blood for serum collection and half of the blood was collected in a tube having EDTA solution for haematological analysis. Samples were brought to the laboratory, Department of Zoology, GC University, Faisalabad. Sera was obtained by centrifugation at room temperature (25°C) at 3000 rpm for 10 minutes and was stored at -20°C until serological analysis was performed. Seroprevalence of *T. gondii* antibodies in goats was determined using Latex Agglutination Test (LAT). Out of 120 goats 57 were infected with *T. gondii* showing an overall prevalence of 47.5%. Infection was higher in male goats (56.14%) as compared to female goats (43.85%) with statistical significant (P<0.05). *T.gondii* infection was highest (66.7%) in Teddy and lowest (60%) in Beetal goats with non-significant results (P>0.05). The prevalence toxoplasmosis had highest (57%) in the age group (< 1 year) and lowest (43.33%) among age group of (1-1.5 years) with significant results(P>0.05). Toxoplasmosis was higher among goats where stray cats had access to animal having prevalence (77%). We concluded that the values of haemoglobin, RBCs, WBCs, platelet cells decreased among seropositive. The value of seronegative remain same as in healthy goats showed significant results having (P< 0.05).

Keywords – Toxoplaasma Gondii, Goats, Prevalence, Age, Breed, Haematology

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Development of Bi2O3-ZnO heterostructure for enhanced photodegradation of rhodamine B and reactive yellow dyes

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Abstract – Semiconductor based photocatalysis is one of the effective techniques of AOPs for environmental remediation. In present work, the development of an efficient photocatalyst formed by coupling of p-type Bi2O3 and n-type ZnO is reported. The Bi_2O_3-ZnO heterostructures with 5, 10 and 15% Bi2O3 were synthesized by co-precipitation method. The prepared heterostructures were characterized by various advanced techniques including XRD, XPS, UV-Visible spectroscopy, FTIR, SEM and surface area measurement. The prepared ZnO and Bi_2O_3-ZnO heterostructures were tested as photocatalysts for photodegradation of dyes using mixed solution of rhodamine B and reactive yellow dyes. The 5% Bi_2O_3-ZnO heterostructure was found as most efficient photocatalyst with 93 and 91% photodegradation of rhodamine B and reactive yellow dyes, respectively. It was found that incorporation of 5% Bi_2O_3 with ZnO enhanced the photocatalytic activity about 15 times towards photodegradation of dyes.

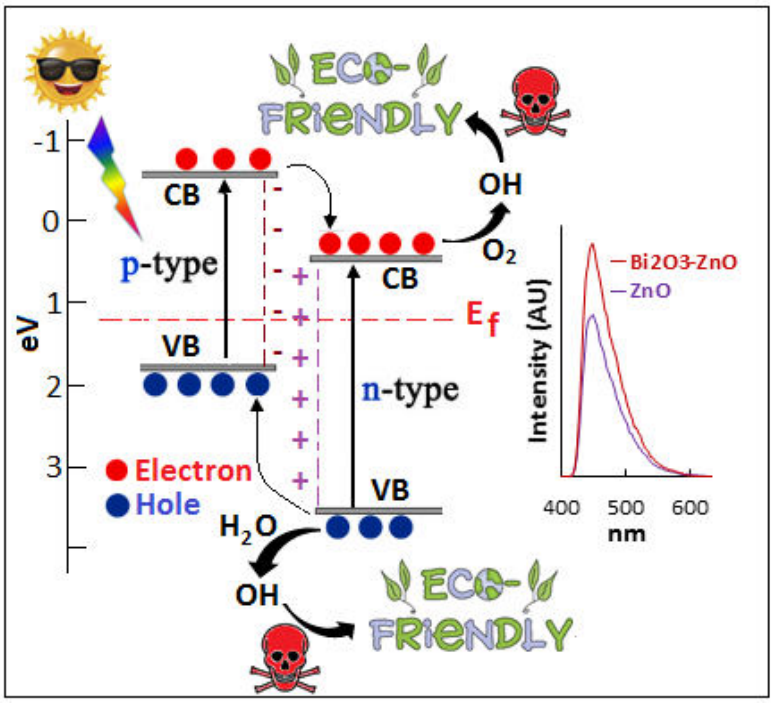

Figure 1. Mechanism of photodegradation of dyes

Keywords – Photocatalysis, Heterojunction, Bi_2O_3, ZnO

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Enhancement of photocatalytic activity of Ba doped CoO for degradation of Emamectin Benzoate in aqueous solution

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Abstract - The present study was focused on the preparation of cobalt oxide (CoO) and barium doped cobalt oxide (Ba doped CoO) by following co-precipitation method for the degradation of Emamectin benzoate pesticide in aqueous medium. The prepared catalysts were characterized using SEM, EDX and XRD to confirm the formation of catalysts and to observe the variation in the composition of catalysts during degradation study. The degradation of Emamectin benzoate pesticide was studied under the influence of different factors like solution pH, dose of catalyst, contact time, temperature and initial concentration of pesticide. It was observed that solution pH affects the degradation of pesticide and maximum degradation was found at pH 5 and 6 using CoO and Ba doped CoO respectively. The degradation of pesticide was found to be increases continuously with time of contact and decreases with increase in temperature. Likewise, at the beginning, degradation was observed to be increases up to some extent with dose of catalyst and initial concentration of pesticide but started decreases with further augmentation in the dose of catalyst and initial concentration of pesticide. It may be concluded from this study that doping of Ba considerably enhanced the photocatalytic ability CoO for Emamectin benzoate pesticide.

Keywords: Coo; Ba Doped Coo; Emamectin Benzoate; Photocatalytic Degradation

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Well-posedness and general stability of the solution for the nonlinear Moore-Gibson-Thompson problem

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Abstract **–** In recent years, there has been a lot of interest in the Moore-Gibson-Thompson equation (abbreviated MGT), and numerous papers have been written to investigate and comprehend it . Moreover, Moore–Gibson–Thompson (MGT) equation is based on the modeling of high amplitude sound waves. There has been quite a bit of work in this area of research due to a wide range of applications such as medical and industrial use of high intensity ultrasound in lithotripsy, heat therapy, ultrasonic cleaning, etc. In this work, we study the asymptotic behavior of one-dimensional Moore-Gibson-Thompson equation with a nonlinear damping term. First, we show the existence and uniqueness of the solution by the semi-group method, more precisely by the Hille-Yosida theorem. And by building an appropriate Lyapunov functional, we establish a general decay result for the solutions of the system. Also my work is divided as follows. In section 2, we use the semigroup method, more precisely the Hille-Yosida theorem, to prove the well-posedness. In section 3, we state and demonstrate some technical lemmas needed in the proof of our main result. Section 4 is devoted to the statements and proofs of our stability results.

Keywords – Moore-Gibson-Thompson equation, Nonlinear damping, Semigroup approach, Lyapunov functional, General decay.

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Global well-posedness and asymptotic behavior of some evolution problems with delay

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Abstract **–** Because classical Timoshenko equations constitutes the coupled equations for modeling of wave propagations in beams, it also improved the Euler--Bernoulli and the Rayleigh beam models. Also, by adding shear distortion to the Euler-Bernoulli beam, the estimate of the natural frequencies improves considerably. In this work, we consider a one-dimensional system known as Shear beam model (no rotary inertia) where the transverse displacement equation is subject to a distributed delay of neutral type. Under some assumptions on the kernel k, we first achieved the global well-posedness of the system by using the classical Faedo-Galerkin approximations along with two a priori estimates. Next, we find the energy expression and by using technique of Lyapunov functional we demonstrate, although delays are known to be of a destructive nature in the general case, that this system is exponentially stable regardless any relationship between coefficients of the system.
This work is organized as follows: In Section 2, we introduce some assumptions and transformations needed in the next sections to prove the main result. In Section 3, by using the Faedo-Galerkin approximations, we establish the global well-posedness of the system. In Section 4, without any relationship between the system parameters, based on the energy method, we establish an exponential stability.

Keywords – Shear Model, Neutral Delay Term, Faedo-Galerkin Method, Lyapunov Functional, Exponential Stability.

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Physical-mechanical behavior of sand concrete made from blast furnace waste

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Abstract – Blast furnace waste can be identified as a new construction material in the making of concrete. The use of such a waste as a material will contribute to save an important part of the natural resources and protect the environment. In this experimental study we sought to determine the physical and mechanical characteristics of a concrete based on crystallized slag sand, where the natural sand was substituted by 25% and 50% by the crystallized slag sand. The characterization of these concretes was made from their mechanical properties: compressive strength, tensile strength and longitudinal Young's modulus as well as their durability: capillarity, mass water absorption and hydraulic shrinkage. The experimental results showed a beneficial effect related to the percentage of crystallized slag sand used in concrete compared to ordinary concrete.

Keywords – Waste, crystallized slag, Blast furnace waste, performance, material characteristic.

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Photovoltaic panel degradation modes in a continental climate

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Abstract **–** A variety of variables, including temperature, humidity, radiation, dust, and mechanical shocks, can affect the performance of photovoltaic modules. Each of the factors mentioned there has the potential to cause one or more types of degradation, including discoloration of the encapsulant, snail tracks, hot spots, corrosion, delamination, and finger interrupts. The purpose of the current study is to determine the degradation modes noted in photovoltaic panels that have been exposed to outdoor conditions for six years in a continental climate.

Visual examination of the tested modules reveals that the encapsulating mode of discoloration is the most frequent type of degradation. The other degradation modes, such as snail tracks, hot spots, corrosion, and finger interrupts, are also registered in the tested modules.

Keywords – Degradation Modes, Outdoor Conditions, Continental Climate.

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Parametric Instabilities of Electrostatic and Electromagnetic Waves in Plasmas

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Abstract **–** In this present study, we have reviewed the parametric instabilities of waves in plasmas. Parametric instability is a kind of nonlinear process in which two waves decay by a pump radiation. The laser beat wave has potential to excites the electrostatic as well as electromagnetic waves in plasmas via counterpropagation or copropagation interaction. The parametrically excited waves exist in the pair of slow and fast waves. The density perturbation associated with electrostatic waves (electron Bernstein wave, lower hybrid wave and upper hybrid wave) is excited by nonlinear ponderomotive force. The nonlinear ponderomotive force imparts the oscillatory velocity to the plasma electrons which is coupled by pair of waves and causes the nonlinear process (parametric instabilities). The resonant excitation is occurred when the laser frequency approaches near the critical density of plasma. The main four type of parametric instabilities (Stimulated Raman scattering, Two plasmon decay, Stimulated Brillouin Scattering, Decay instability) is discussed through the growth rate of decay wave.

Keywords – Parametric Instability, Laser, Beat Wave, Electrostatic Wave, Electromagnetic Wave, Resonant Excitation

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Interest of vegetable coagulants in the optimization of the maturation time of a soft cheese of camembert type

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Abstract - Cheese ripening is a key step in cheese processing using a slow and expensive process. In our study, we used a vegetable coagulant which allowed to reduce the ripening time and to decrease considerably the production costs. Several studies have shown that due to their high proteolytic activity, vegetable coagulants accelerate ripening. Nevertheless, they cause texture and flavour defects and reduce cheese yield. Several studies on our local cheeses have shown that thistle extract (*Cynara cadunculus*) can accelerate ripening without causing all the defects associated with plant enzymes. To this end, we used the thistle enzyme (cyprosine), mixed with rennet at doses ranging from 20% to 50%, with the aim of optimising ripening without affecting the technological and sensory characteristics of soft Camembert-type cheese. The optimisation of the ripening process is evaluated by the proteolytic activity of the enzyme, which is reflected in the increase in the rate of non-protein nitrogen (NPN) released into the coagulum mass during ripening. The comparison of the NPN/total nitrogen NT ratio allowed us to evaluate the difference in proteolysis and the evolution of refining in our trials. The application 30% of cyprosine gave the expected results on the one hand on the control of proteolysis during ripening, on the other hand on the reduction of the ripening time from 12 to 09 days, and finally by obtaining a cheese very appreciated by the tasting panel.

Key words : Ripening, Cyprosine, Optimisation, Proteolysis.

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Comparaison of the properties of fuels based from agricultural and agro-industrial feedstocks

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Abstract **–** The goal of this study is to assess the characteristics of gasoline fuels commonly used in road transport and to investigate the influence of incorporation of ethanol or ethyl tert-butyl ether (ETBE) on fuels properties. The bioethanols tested were generated from agricultural and agrifood by-products. This seems necessary to ensure compliance with environmental directives which required more stringent standards. The most relevant parameters studied are the Reid Vapour Pressure (RVP), the distillation curve, the octane number, the sulfur content, the lubricity, etc. It has been found that the addition of 5% of ethanol produced from agricultural by-product was added to lead free gasoline or to super premium gasoline, the RON increased from 95 up to 96.8 and from 96 up to 99.5, respectively. The ethanol from agricultural by-product with gasoline blends provides higher octane rating that the ethanol from agrifood residues. The Sulphur content of gasoline fuels with oxygenates additives blends falls in the range of 0.0134–0.015wt%. Blends using ETBE or agrifood ethanol in gasoline fuels are considered sweet fuels. The addition of oxygenate additives from agrifood wastes or agricultural wastes led to a decrease of blends lubricity.

Keywords – Bioethanol, Agricultural By-Products, Gasoline Fuels, Distillation Curve. Octane Number, Lubricity.

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Existence, uniqueness results for semilinear fractional equation involving distributional Riesz fractional operator

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Abstract **–** In this paper, our main focus is to study the existence and uniqueness of weak solution for a semilinear fractional equation involving distributional Riesz fractional derivative, the result of this problem in fractional Sobolev space. For establish the existence of weak solution we use the applications of Schauder fixed point theorem with suitable condition on the semilinear term. Then, in addition to condition we prove the uniqueness of weak solution and we suggest the Banach contraction principle theorem.

Keywords – Weak Solution, Riesz Fractional Derivative, Partial Differential Equations, Schauder Fixed Point Theorem, Fractional Equation.

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Growth of solutions of linear differential equations near a singular point

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Abstract – In this paper, we investigate the local growth and oscillation, near the singular point $z = 0$, of solutions to the differential equation

$$f'' + \left(A(z)\exp\left\{\frac{a}{z^n}\right\} + A_0(z)\right)f' + \left(B(z)\exp\left\{\frac{b}{z^n}\right\} + B_0(z)\right)f = H(z),$$

where $A(z), A_0(z), B(z), B_0(z), H(z)$ are analytic functions in

$$D(0, R) = \{z \in \mathbb{C}: 0 < |z| < R\}$$

and a, b are non-zero complex constants.

Keywords – Linear Differential Equations, Growth And Oscillation Of Solutions, Finite Singular Point, Nevanlinna Theory.

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Growth of solutions *of certain complex differential equations* near a *punctured disc*

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Abstract – In this paper, we investigate the local growth and oscillation, near the singular point $z = 0$, of solutions to the differential equation

$$f'' + A(z)\exp\left\{\frac{a}{z^n}\right\}f' + (B(z)\exp\left\{\frac{b}{z^n}\right\} + C(z)\exp\left\{\frac{c}{z^n}\right\})f = F(z)\exp\left\{\frac{a}{z^n}\right\},$$

where $A(z), B(z), \mathrm{C}(z), F(z)$ are analytic functions in

$$D(0,R) = \{z \in \mathbb{C}: 0 < |z| < R\}$$

and a, b are non-zero complex constants.

Keywords – Linear Differential Equations, Growth And Oscillation Of Solutions, Finite Singular Point, Nevanlinna Theory.

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Synthesis and characterization of new coordination polymers for the construction of functional and switchable networks

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Abstract **–** Metal-organic networks have seen a surge in popularity in recent years. These compounds, formed by combining metal ions with organic ligands, possess exceptional properties that make them highly versatile for gas or energy storage, detection, catalysis, and delivery of active molecules [1-2]. Incorporating a spin transition property into these networks opens up the possibility of using them for information detection or storage [1-3]. This study presents the synthesis and characterization of various imidazolium salts featuring nitrile or carboxylate coordination functions (Figure 1). Additionally, we outline the various strategies employed (including classical, solvothermal, and ionothermal synthesis techniques) that allow us to generate networks incorporating these imidazolium salts with Fe2+ or Co2+ ions, which have the potential to exhibit switching properties between a low-spin and a high-spin state, depending on factors such as temperature, pH, solvent type, and metal salt.

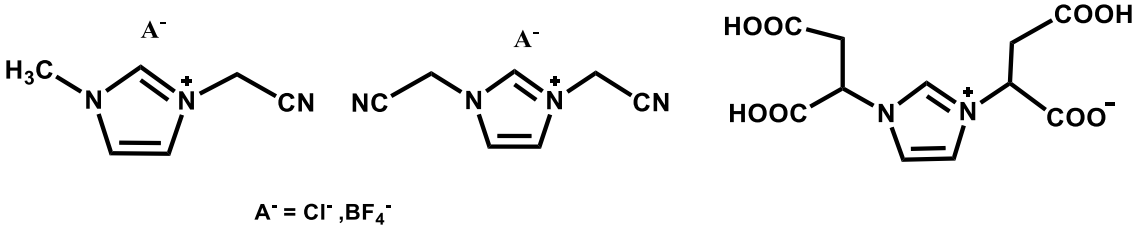

Figure 1: Representation of the different imidazolium salts used.

Keywords – metal-organic networks, solvothermal, spin transition, imidazolium, switching properties.

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Transforming the Artistic Landscape with GANs In Digital Art Generation

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Abstract **–** The use of Generative Adversarial Networks (GANs) has greatly transformed the artistic landscape by enabling the creation of highly realistic and diverse digital art. GANs are deep learning models that use two neural networks, a generator and a discriminator, to produce synthetic data through an adversarial process. We will use GAN to create a new model for generating realistic art. Our model creates art by learning from existing works of art, analyzing their style, and then varying from the acquired styles to produce new and unique artwork with increased aesthetic appeal.

Keywords – Gans, Digital Art, Deep Learning Models, Artistic Transformation, Aesthetic Appeal

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Synthesis and Characterisation of Novel Iron and cobalt Spin Crossover Compounds

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Abstract **–** Luminescent materials that use transition metals and lanthanoids have a wide range of applications in lighting, luminescence sensing, and optical devices. Among them, d10 metal coordination compounds such as zinc(II) and cadmium(II) with various ligands have been extensively studied for their attractive luminescent properties. Organic polynitrile ligands are versatile structural components that can lead to various architectures in zero, one, two, or three dimensions, and incorporate most 3d transition metals. The flexibility of these ligands is due to their ability to act as rigid ligand bridges because of the linear and rigid geometry of the CN groups. Furthermore, they can be functionalized with different potentially coordinating groups, which results in a wide variety of coordination modes. In this study, we present the first luminescent series of mononuclear zinc(II) and cadmium(II) coordination compounds containing the organic polynitrile 1,1,3,3-tetracyano-2-propoxy-propenide counter anion (abbreviated as tcnopr–) in combination with the chelating ligand 2,2-dipyridylamine (abbreviated as dpa). The compounds were characterized and structurally determined using infrared spectroscopy, elemental analysis, X-ray crystallography, and powder X-ray diffraction. The photophysical properties of the compounds were studied using solid-state absorption spectra, solid-state excitation spectra, and solid-state emission spectra.

Keywords – Luminescence, Structure, Polynitrile, Transition Metals, Lanthanides.

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New mix design method for low Carbon Eco-self-compacting concrete with limestone filler

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Abstract – This study proposes a new mix design method for eco-self-compacting concrete (Eco-scc) with limestone filler (LF) content based on the material packing characteristics. It investigates the effect of LF on the rheological and mechanical properties of Eco-scc through eight mixes with different LF replacement levels of 0, 10, 20, 30, 40 and 50% by volume of cement. An equivalent packing density was defined and calibrated to represent the effect of LF, and the basic water demand, relative slump-flow and relative flow-time of experiment mortar formula were designed based on it.
The effectiveness of the method was demonstrated in producing low-carbon eco-scc by optimizing the volumetric proportions of binder (cement and LF) according to an ideal particle gradation curve. It was found the optimum area, exhibiting satisfactory workability characteristics and compressive strengths. The proposed method can contribute to the development of sustainable and environmentally friendly concrete construction.

Keywords – Eco-Scc, Limestone Filler, Packing Characteristics, Workability, Compressive Strengths

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Utilization of marble dust, granulated blast furnace slag, and glass-fiber reinforced plastic waste as mineral additives in self-compacting concrete (SCC)

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Abstract **–** The use of waste materials in the concrete industry can be a viable solution to reduce landfill waste and its environmental impact. This study aims to investigate the feasibility of recycling marble dust, granulated blast furnace slag, and glass-fiber reinforced plastic waste as filler materials in self-compacting concrete (SCC). We incorporated these industrial by-products into the SCC mixes at a rate of 15% of the cement mass, while keeping the other components constant. We then experimentally evaluated their effect by conducting several tests, such as the slump flow test to assess workability, and measuring the density and air content of the fresh mixtures. After 28 days of curing, the flexural and compressive strengths of prismatic and cylindrical specimens were examined. The experimental results revealed that the addition of granulated blast furnace slag yielded the best workability and mechanical behavior of SCC, while the glass fiber-reinforced plastic powder produced the lowest slump flow value and mechanical strength. In fact, the inclusion of glass fiber-reinforced plastic waste caused a reduction in SCC workability and strength by approximately 17% and 18%, respectively, compared to the incorporation of slag. Moreover, the use of marble dust and granulated blast furnace slag had similar effects on the workability and strength of SCC, with a slight predominance of the latter by about 2% and 6% in terms of slump flow and compressive strength, respectively. A good correlation between the density and air content of SCC mixtures was also reported. The study concludes that granulated blast furnace slag, marble dust, and glass fiber-reinforced plastic waste can be effectively recycled as mineral admixtures in the production of SCC without significantly modifying its fresh and hardened properties.

Keywords – Marble, Blast Furnace Slag, Glass Fiber, Plastic, Self-Compacting Concrete.

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Development of Enhanced Security for Authentication Using OTP And MAC Address: A Case Study of Politeknik Ungku Omar

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Abstract – In Malaysia, the Politeknik Ungku Omar (PUO) is a technical education institution that provides online portals for students to access resources and conduct student-related activities. Yet, due to the sensitive nature of the data kept on the portals, it is essential to put strong security measures in place to guard against unauthorised access and secure sensitive data. This case study details the development and implementation of an improved security method for authentication at PUO students' portal using One-Time Passwords (OTP) and the user's device's Media Access Control (MAC) address. When a student logs into the students' portal, they must provide their username and password, along with the OTP generated on their registered mobile number or email address. Furthermore, the system checks the MAC address of the device being used to log in. If the MAC address is not registered in the system, the student will not be able to access the students' portal. This approach ensures that only authorized students can access the students' portal and provides an additional layer of security against unauthorized access. The development of this mechanism involves analysing the need for better security measures, researching, and contrasting alternative security techniques, and developing a two-factor authentication system. To access the PUO site, users must provide their login, password, OTP, and MAC address of their device. The system was tested and improved. The technology offers an extra layer of security to protect private data and stop unauthorised access. PUO's commitment to protecting the security and confidentiality of student information is demonstrated by the adoption of this improved security system. Other organisations can modify and use the system to increase the security of own chatbot systems and prevent illegal access.

Keywords – OTP (One-Time Password), MAC (Media Access Control Address), Students' Portal, Authentication

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Lyapunov and Backstepping Control Design of Direct Current Motor

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Abstract – The main idea of this work is to exploit the "BACKSTEPPING" technique based on Lyapunov's theory for designing stabilizing controls for a special recursive class of nonlinear systems. By considering some state variables as being virtual controls, and designing intermediate control laws for them. Some internal variables are sometimes inaccessible to measurement or expensive to measure, hence the introduction of observers based on the same principle.
Finally, we applied this technique to DC motor, and according to the results we find, (short response time, good disturbance rejection and good accuracy in steady state), we think this means that the back stepping technique offers the best possible performance, and the simulation results confirm it.

Keywords – Backstepping control, Theory of Lyapunov, DC motor, Speed, Robustness.

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On Fractional HBV Model Through Singular And Non-Singular Derivatives

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Abstract **–**The current study's aim is to evaluate the dynamics of a Hepatitis B virus (HBV) model with the class of asymptomatic carriers using two different numerical algorithms and various values of the fractionalorder parameter. We considered the model with two different fractional-order derivatives, namely the Caputo derivative and Atangana–Baleanu derivative in the Caputo sense (ABC). The considered derivatives are the most widely used fractional operators in modeling. We present some mathematical analysis of the fractional ABC model. The fixed-point theory is used to determine the existence and uniqueness of the solutions to the considered fractional model.

Keywords – Fractional Operators, Different Numerical, Fractional-Order, Derivatives, Uniqueness of The Solutions

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Approximation solutions of time dependent Schrodinger equation for Yukawa potential using the Nikiforov-Uvarov-Functional Analysis method

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Abstract – The time dependent Schrödinger equation for The Yukawa potential is studied. This potential is not studied in the literatures. The Yukawa potential has been used in nonrelativistic quantum mechanics to study the interactions between nonrelativistic particles. The knowledge of the solution of the Schrodinger equation gave all the possible information, as regards the physical properties of any system considered. These include the energy, momentum and coordinate of the particle in the system, frequency and wavelength that describe the quantum mechanical system, probability amplitude and phase of the wave function, and others. To obtain the energies spectrum and the wave functions we use a new method for solving a second order differential equation of the hypergeometric type called Nikiforov–Uvarov-Functional Analysis (NUFA) method and the method of variables separation . The (NUFA) method is composed of the concepts of the Nikiforov-Uvarov (NU) method, the parametric Nikiforov-Uvarov method and the functional analysis method. This method is a simple and elegant method for solving a second order differential equation of the hypergeometric type. This method is easy and simple just as the parametric NU method. Unlike the NU method which involved looking for the square of the polynomials and other conditions which makes it complicated, the NUFA can easily be used to obtain the energy and the wave function once the wave equations have been properly transformed and the singularities identified. So its simplicity eliminates the rigorous mathematical manipulations, as encountered in other techniques. The eigensolutions obtained using NUFA method are in agreement with the ones obtained in literatures for the stationary potential models considered. This method can be used to solve few body problems in nuclear physics, particle physics, as well as molecular and chemical physics.

Keywords – The Nikiforov–Uvarov-Functional Analysis Method, Time Dependent Schrödinger Equation, Yukawa Potential, Wave Function, Method Of Variables Separation.

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Study On The Listeriosis Disease By Adopting Fractal-Fractional Operators

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Abstract – Listeriosis is one of the zoonotic diseases affecting most parts of the Sub-Saharan countries. The infection is often transmitted by eating and it can also pass by respiratory and direct contact. In this paper, a listeriosis mathematical model is formulated involving fractal-fractional orders in both Caputo and Atangana–Baleanu derivatives. Moreover, future behaviors of the disease are investigated by considering the fractal–fractional operators that are very effective in modeling the real-life phenomena by virtue of their memory effect.

Keywords – Listeriosis Model; Mittag–Leffler Kernel; Power Kernel; Fractal-Fractional

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On Fractional Tumour–İmmune–Vitamins Model For İntervention Of Vitamins

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Abstract – Cancer is a very challenging issue in terms of people's health and lives around the world. Cancer refers to a collection of illnesses distinguished by the formation of tumour cells, malignant cells, or cancer cells that have the potential to become cancerous. Millions of people across the globe are suffering from this illness. Several studies on cancer and related diseases have been made in recent years. The main goal of this article is to computationally examine the tumour–immune–vitamins (TIV) system dynamics, which incorporates the effect of vitamin intervention on enhancing the immune system and its aspects on squeezing and delaying tumour cell production and division. We analyse the model with different fractional approaches to learn more about its dynamics. Initially, the TIV model is proposed with Caputo–Fabrizio (CF) derivative. We investigate the existence and uniqueness of the solutions

Keywords – F- Derivative Fractional Conformable And β-Conformable Derivatives Existence And Uniqueness Numerical Simulation

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FRACTIONAL 2019-NCOV MODEL OF MAJOR DISASTER FOR HUMAN LIFE

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Abstract – The purpose of this research is to explore the spread dynamics of a novel coronavirus outbreak, or 2019-nCOV via a fractional approach of type fractal-fractional (FF) derivative. We considered the FF approach in sense of the Atangana–Baleanu derivative for the system 2019-nCOV. In the FF operator, when we choose fractional-order one, we achieve the fractal model and when choosing fractal order one then we obtain a fractional model and while considering both the operators together we obtain the fractal-fractional mode.

Keywords – Fractal-Fractional (FF) Operator; 2019-nCOV Model; AB Derivative; Numerical Simulation

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Financial Chaotic Model in Atangana-Baleanu Stochastic Fractional Differential Equations

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Abstract **–** We formulate and analyze a new financial chaotic model in fractional stochastic differential equation in Atangana-Baleanu operator. The model is constructed initially in integer case and then the application of fractional and stochastic approach are used for the model generalization. We study with care some of the mathematical results for the model in integer case by identifying the suitable values of parameters and initial values for the state variables for which the model behaves chaotic. Further, using the concept of stochastic differential equation, the model is further extended to the stochastic fractional differential equations. The equilibriums possibly the model posses are shown and analyzed. Lyapanove exponent are investigated for the model. We give a new method that is introduced recently in literature to find the model solution numerically for the case of fractional stochastic differential equation.

Keywords – Stochastic Differential Equation; The Model Solution Numerically; AB Derivative; Numerical Simulation

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Microbiological quality evaluation of water treated in wastewater treatment plant

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Abstract **–** The acceleration of economic and demographic development is damaging the environment, particularly water resources. Their overconsumption and their growing degradation process constitute a real problem which is dealing by treating wastewater in wastewater treatment plants. For a long time, the emphasis was placed on the physicochemical quality of water, which makes it possible to highlight certain types of pollution. This approach is not sufficient to characterize water. This is why this work is the study of the bacteriological quality of the treated water from the wastewater treatment plant of the town of Boumerdès (Algeria), using activated sludge process, through the monitoring of the evolution of bacteria indicating fecal pollution (total coliforms, fecal coliforms, fecal streptococci, sulfite reducer clostridium) and pathogenic germs (salmonella) in both raw water and treated water. Random samples were taken. The analysis, according to standardized protocols showed a reduction in the bacterial load as well as an absence of detection of salmonella in the treated water, indicating satisfactory treatment. Also, the number of fecal coliforms and fecal streptococci was below the World Health Organization guideline threshold. The obtained results made it possible to classify these purified waters in the "A" category. The presence of sulfite reducer clostridium and the fecal coliform/fecal streptococci ratio indicated old fecal contamination and the predominance of human and animal contaminations respectively.

Keywords – Wastewater, Treated Water, Wastewater Treatment Plant, Bacteriological Quality, Activated Sludge

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Epidemic Model With Time Distributed Delay And Nonlinear Incidence Function

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Abstract **–** In this research, we investigate the global properties of the heroin epidemic model with time distributed delay and nonlinear incidence function. We show that the system has threshold dynamics in terms of $R0$, and we prove, a Lyapunov function, that for $R0 < 1$ the drug-free equilibrium is globally asymptotically stable. For $R0 > 1$, we give the persistence result of the heroin consumption. We also show the global stability of the endemic equilibrium for $R0 > 1$ using a suitable Lyapunov function. The mathematical results are illustrated by numerically simulations.

Keywords – Lyapunov Functional Uniform Persistence Weak Delay Global Stability

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Numerical investigation of MHD stagnation-point flow and heat transfer of sodium

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Abstract **–** A rigorous analysis of unsteady magnetohydrodynamic mixed convection and electrically conducting nanouid model with a stretching/shrinking wedge is presented. First, the governing partial dierential equations for momentum and energy conservation are converted to coupled nonlinear ordinary dierential equations by means of exact similarity transformation. The homotopy analysis method (HAM) is employed to obtain the analytical approximations for ow velocity and temperature distributions of alumina-sodium.

Keywords – The Homotopy Analysis Method (HAM), Coupled Nonlinear Ordinary, Partial Dierential Equations

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Chebyshev Operational Matrix Method for Lane-Emden Problem

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Abstract – In the this paper, a new modied method is proposed for solving linear and nonlinear Lane-Emden type equations using rst kind Chebyshev operational matrix of dierentiation. The properties of rst kind Chebyshev polynomial and their shifted polynomial are rst presented. These properties together with the operation matrix of dierentiation of rst kind Chebyshev polynomial are utilized to obtain numerical solutions of a class of linear and nonlinear LaneEmden type singular initial value problems (IVPs).

Keywords – Lane-Emden Equations, Chebyshev Rst Kind Operational Matrix Of Dierentiation, Isothermal Gas Spheres Equation, Nonlinear ODE

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Fractional SIR Epidemic Model of Childhood Diseases

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Abstract **–** Models of bio-mathematics are experimental systems that recreate aspects of human tissue function, diseases or virus. In this research, a new operational matrix based on the Laguerre wavelets is introduced for a arbitraryorder susceptible-infected-recovered (SIR) epidemic dynamical system of childhood diseases. An exact mechanism for the Riemann–Liouville arbitrary integral operator for the Laguerre wavelets is explained where the arbitrary-order derivative is assumed in the Liouville-Caputo style. Further, we use this operational matrix to convert the given dispute into a system of algebraic equations. The chaotic attractors for fractional-order SIR dynamical model are illustrated graphically by adopting the Adams–Bashforth-Moulton (ABM) scheme. Numerical simulations and results for the susceptible, infected and recovered peoples are carried out by using the Laguerre wavelets.

Keywords – SIR Epidemic Model Laguerre Wavelets Operational Matrix Fractional-Order Differential Equations (Fdes) Fractional Derivatives Dynamical Systems Adams-Bashforth-Moulton Method

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Model Stochastic Fractional Differential Equations

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Abstract **–** We formulate and analyze a new financial chaotic model in fractional stochastic differential equation in Atangana-Baleanu operator. The model is constructed initially in integer case and then the application of fractional and stochastic approach are used for the model generalization. We study with care some of the mathematical results for the model in integer case by identifying the suitable values of parameters and initial values for the state variables for which the model behaves chaotic. Further, using the concept of stochastic differential equation, the model is further extended to the stochastic fractional differential equations. The equilibriums possibly the model posses are shown and analyzed.

Keywords – Financial Chaotic System; Equilibrium Points; Numerical Results

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2nd International Conference on Engineering, Natural and Social Sciences

April 4-6, 2023 : Konya, Turkey

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Agro-industrial waste valorization as a source of bioactive ingredients

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Abstract **–** Agro-industrial wastes raise alarmingly and becomes a serious environmental issue. Some of these wastes, such apricot kernels, have considerable potential to be valorized. The management of these kernels could be economically and environmentally interesting because they are considered as potential source of oils. The present study focused on extraction and characterization of nonconventional oil from apricot kernels with the view of it valorization. The apricot pits were collected from the local processing of apricot plants. They were broken to separate kernels. The kernels were submitted to cold-pressing technique in order to extract the oil. The obtained apricot kernel oil was stored in closed amber colored bottle at room temperature. Some of physicochemical characteristics were investigated. The organoleptic properties were evaluated by sensorial analysis, pH was determined by using pH paper, specific gravity was calculated by weighting, and refractive index was measured by digital refractometer. Fatty acids composition of the oil was carried out by gas chromatography analysis coupled with mass spectrometry. The results showed that the obtained vegetable oil had an acidic pH supposing the richness of the oil with acidic character compounds. Fatty acids composition revealed that the apricot kernel oil was dominated by unsaturated fatty acids. The oil contained linoleic and oleic acids as the major components. Based on the finding, kernels from processing of apricot plants constitute a potential source of valuable oil that is rich with bioactive compounds. The chemical composition of the oil lead to its valorization in edible, cosmetic and pharmaceutical fields.

Keywords – Agro-Industrial Waste, Valorization, Characterization, Oil, Bioactive Ingredients, Quality

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April 4-6, 2023 : Konya, Turkey

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Ephedra alata subsp alenda: a bioresource for the prevention of UV radiations

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Abstract – Skin cancer is thought to be mostly brought on by UV rays. The need for efficient solutions to manage the side effects, body resistance, toxicity, environmental harm, and escalating costs of current chemotherapies is due to the fact that the number of cases rises rapidly every year. In place of synthetic medications, phytochemicals have demonstrated promise in reducing the harmful effects of UV radiation. Plant sources have pharmacological effects on skin malignancies because they contain a variety of macromolecules that disrupt the metabolic functions of skin tumors. The creation of plant-based drugs to combat photocarcinogenesis necessitates a multidisciplinary strategy, with carefully selected steps essential to the procedure's success. *Ephedra alata subsp alenda* was selected as the study's plant. Several extracts were created using the ultrasound aided extraction approach, including methanolic and water extracts. The investigation's findings showed a link between antioxidant activity and polyphenol content, with methanolic extract being the most effective solvent for removing the plant's constituent parts because of its high polarity. This study yielded significant SPF values that rise as the extract concentration does using low amounts of each extract. Therefore, using higher doses will surely provide better sun protection qualities. Prior to doing in vivo investigations, the conducted study may be useful for formulating, analyzing products, and providing information. These plant extracts may be used to develop future photo protection formulations, such as creams and lotions with greater SPF.

Keywords – Biomolecules, Polyphenols, UV radiations, SPF, Skin, Photocarcinogenesis.

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April 4-6, 2023 : Konya, Turkey

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Physicochemical and petrographic characterizations of the Algerian phosphate ores for use in biomedical application

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Abstract **–** In this work, the physico-chemical and petrographic characterization of the Kef Essnoun phosphate ore deposit, Djbel Onk basin, were carried out by optical microscopy, X-ray diffraction and infrared spectroscopy. The microscopic observation conducted on the three raw phosphate layers (somital, main, basal) shows a variation in the petrographic composition from one layer to another, in terms of the amount of phosphatic elements compared to the cement. The phosphatic elements consist mainly of spherical to oval pellets, coprolites, pseudo-oolites and bioclasts in different sizes. The cement is composed of carbonates (dolomite and rarely calcite), amorphous silica and clays. The obtained structural results show the presence of francolite minerals, dolomite and calcite in small amounts. After sintering at different temperatures, allows us to conclude that it is possible to eliminate organic and carbonic matter, and formation of new compounds, such as calcium oxide and whitelockite. Infrared spectroscopy displays the nature of the functional groups that are present in the phosphate ore. These are phosphate groups, carbonate and hydroxyl groups. Finally, we can conclude that the present results highlight the quality of the Kef Essenoun to serve as valuable raw material for the production of bio-ceramic industrial products.

Keywords – Phosphorites; Sintering Behaviour; Bio-Ceramic; Biomedical.

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April 4-6, 2023 : Konya, Turkey

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Investigation of the structural, electronic, magnetic, and thermodynamic properties of SrRuO3: A first-principles calculations

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Abstract **–** Theoretical investigation on structural, electronic, magnetic and thermodynamic properties of $SrRuO_3$ oxide perovskite has been accomplished within density functional theory (DFT). For exchange correlations generalized gradient approximation (GGA), on-site coulomb repulsion (GGA+U) and modified Becke-Johnson (mBJ) have been used.

The spin polarized electronic band structure and density of states present half-metallic nature for the compound with majority spin (spin up states) as metallic and minority spin (spin down states) as semi-conducting.

The magnetic study shows that a total magnetic moment of 2μB comes mainly from Ru atoms. The correct magnetic moment value confirms the studied material's half-metallic nature.

Thermodynamic parameters like Debye temperature (θD), specific heat (C_V), entropy (S). Have been calculated using quasi-harmonic Debye model under different temperature and pressure values.

Keywords – Electronic Structural, Thermodynamic Properties, Half-Metallic, GGA+U, Perovskite Oxide

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Immobilization of Microbial Pectinase to Chitosan-Based Composite: Experimental, DFT, and Molecular Docking Studies

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Abstract **–** Pectinase was immobilized on chitosan-alginate-clay CAC beads using epichlorohydrin (ECH) as the crosslinker. Prepared beads and immobilization product were analyzed by Fourier Transform Infrared Spectrophotometry (FT-IR) and Scanning Electron Microscopy (SEM). Experimental data covered some hydrolytic properties of the immobilized enzyme, such as pH, temperature, reusability, concentration, and storage time. The immobilization procedure increased the optimal temperature to 60 °C and maximum activity was obtained at pH (6.0). After 5 cycles of reuse of the immobilized enzyme, approximately 67% of the initial activity remained. Free pectinase, CAC, and immobilization product were also investigated by Gaussian calculations, the HF/6-31g basis set. Furthermore, Aspergillus niger proteins (PDB ID: 3K4P and 7BLY) were examined for molecular docking calculations, and ADME/T calculations were made to examine the effects and reactions of these molecules in human metabolism.

Keywords – Alginate, Chitosan, DFT, Immobilization, Molecular Docking, Pectinase

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April 4-6, 2023 : Konya, Turkey

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Insight into Structural, Electronic, Magnetic and Elastic Properties of Full-Heusler Alloy Co_2 Ti Pb

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Abstract **–** In the present paper, we have engaged ab-initio density functional theory within the full-potential linearized plane wave method [1] to investigate Heusler alloys Co_2YPb (Y=Ti, V, Fe and Mo) for electronic structure, mechanical stability and thermo-electronic possessions. which is based on density functional theory (DFT) [2] implemented in the wien2k code [3]with Generalized Gradient Approximation (GGA) [4]. For exchange and correlation potential, we have applied a modified version of the potential proposed by Becke–Johnson (mBJ) to our compounds in order to improve the band-gaps and approach them for experimental results. The electronic and magnetic properties results in both GGA and mBJ-GGA [5] show that the full-Heusler Co_2YPb (Y=Ti, V, Fe and Mo) are half-metallic ferromagnetic (HMF) compounds. The results obtained showed that the Cu_2MnAl-type structure has more stable Energy than the Hg_2CuTi-type structure for all the full-Heusler studied.Furthermore, we also found that all materials have integral magnetic moments which are mainly due to 100% spin polarization at Fermi energy, thus it well agreement with the Slater-Pauling base. Finally, the calculated elastic constants and the anisotropy shear factors indicate that these compounds are a ductile character and are mechanically stable.

Keywords – Ab initio, Full Heusler compound, Half-metallic Spin polarization, Elastic Properties

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April 4-6, 2023 : Konya, Turkey

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The mathematical study of Corruption under a modified predator-prey model

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Abstract – In this analysis, we propose a new non-linear mathematical model of the problem of corruption. The model has two equilibria, namely, a corruption-free equilibrium and an endemic equilibrium. First, we prove the existence and uniqueness of the solution using the fixed-point theorem. Afterward, we obtain the basic reproduction number. Moreover, we investigate the local stability, and to verify the study's findings, numerical simulations were run using MATLAB's ode45 software.

Keywords – Corruption Model, Local Stability, Predator-Prey Model

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April 4-6, 2023 : Konya, Turkey

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On the control of the Bresse system with viscoelastic boundary conditions

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Abstract – In this work, we investigate the stability problem of a Bresse system together with three boundary controls of memory-types and delay terms in the three equations. Namely, we consider the following problem

$$\begin{cases} \rho_1 u_{tt}(x,t) - K(u_x + v + lw)_x(x,t) + K_0 l(w_x - lw)(x,t) + a_1 u_t(x,t-\tau) = 0, & in\ (0,1)\times[0,\infty[, \\ \rho_2 v_{tt}(x,t) - b v_{xx}(x,t) + K(u_x + v + lw)(x,t) + a_2 v_t(x,t-\tau) = 0, & in\ (0,1)\times[0,\infty[, \\ \rho_1 w_{tt}(x,t) - K_0(w_x - lw)_x(x,t) + Kl(u_x + v + lw)(x,t) + a_3 w_t(x,t-\tau) = 0, & in\ (0,1)\times[0,\infty[, \\ u(0,t) = v(0,t) = w(0,t) = 0 & in\ [0,\infty[, \\ u(1,t) = -\int_0^t g_1(t-s)[(u_x(1,s) + v(1,s) + lw(1,s)]ds, & in\ (0,1)\times[0,\infty[, \\ v(1,t) = -\int_0^t g_2(t-s)v_x(1,s)ds, & in\ (0,1)\times[0,\infty[, \\ w(1,t) = -\int_0^t g_3(t-s)[(w_x(1,s) - lu(1,s)]ds, & in\ (0,1)\times[0,\infty[, \end{cases}$$

By assuming the weights of delay $a_i, i = 1,2,3$, are small, we establish a general energy decay of the system by introducing an appropriate Lyapunov functional.

Keywords – Bresse system, Viscoelastic damping, Delay, Lyapunov functional, Stability.

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On the stability of the thermo-elastic Full Von Kármán beam with second sound and internal discrete delay term

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Abstract **–** In this paper, we consider a one-dimensional thermo-elastic system of Full Von Kármán beam with second sound and a linear frictional damping delay term, where the heat flux is given by Cattaneo's law. Under suitable assumptions on the weight of delay and that of frictional damping, we establish the well-possedness of the system by using semi-group theory and we prove that the system is exponentially stable.

Keywords – Stability, Full Von Kármán beam, thermal effect, delay term, Lyapunov functional.

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Improvement of the mechanical properties of sand concrete from oil wells by valorization of dune sand

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Abstract - Drilling, production, and refining operations, large quantities of liquid and solid industrial waste are generated, which often contain toxic substances. These waste discharges pose significant environmental and health risks. The ideal solution is to use this waste in the manufacture of sand concrete capable of replacing traditional sand concrete.

This paper proposes a new alternative to oil well sand for use in Sand Concrete. This experimental study demonstrates that Sand Concrete based on this new resource, sand dunes from the Algerian desert, has good strength (both compressive and tensile) and low drying shrinkage.

Keywords *– Sand concrete, Oil wells, Dune sands, Improvement, valorization*

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April 4-6, 2023 : Konya, Turkey

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Effect of polypropylene fibers on the properties of sand concrete

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Abstract - Concrete is inherently brittle, resulting in low crack resistance, which limits its application to absorbing compressive stresses. For centuries, additives have been added to concrete to enhance its strength. In recent times, various methods have been employed to improve the properties of concrete, one of which is the addition of fibers.

This paper presents experimental research on the fresh and hardened properties of sand concretes reinforced by polypropylene fibers. The results indicate that all studied mixtures exhibit pseudo-plastic behavior in the fresh state. The incorporation of polypropylene fibers increases the viscosity and reduces the free shrinkage of the concrete. In terms of mechanical strength, the results demonstrate that the inclusion of polypropylene fibers enhances both tensile and compressive strength.

Keywords – Sand concrete, Polypropylene fibers, Properties, shrinkage.

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April 4-6, 2023 : Konya, Turkey

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Different types of pneumatic aerators used in wastewater treatment plant

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Abstract **–** Water is one of the most important vital for life. Among the solutions to achieve water sustainability is wastewater treatment, and the key element in a wastewater treatment plant is aerator, performed by an aeration basin equipped with an aerator, the main roles of these aerators are aeration and also mixing, to ensure that the water has a specific concentration of dissolved oxygen, atmospheric air must be introduced into water, oxygen dissolved in water is important for degrade the organic matter located in wastewater. There are many types of aeration systems; pneumatic aerators, mechanical aerators, mixed aerators and pumped liquid aerators. This study presents one of the most common aerators "pneumatic aerators", in these systems; bubbles of air are inserted beneath the scattered liquid's surface, and when they ascend they cause the liquid to turbulence. Our search includes different types of pneumatic aerators used in wastewater treatment plants; they are divided according to the diameter of the air bubble into; fine bubble aeration, medium bubble aeration and big bubble aeration. And brings together some empirical facts to derive some conclusions concerning their application in wastewater treatment plants. In this study; we confirm that the major parameters for evaluation and comparison are oxygenation efficiency.

Keywords – Wastewater Treatment Plants; Aeration Basin; Aerators; Pneumatic Aerators; Oxygen Dissolved.

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Investigation of Structural, Optoelectronic Properties of Elpasolite Cs_2NaVCl_6: Promising Materials for Optoelectronic

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Abstract **–**In this study, we report a described analysis estimating the Structural, electronic, magnetic and optical properties for the elpasolite Cs_2NaVCl_6 in the antiferromagnetic phase. Using the Linearized augmented plane wave method with full potential (FP-LAPW) method, based on density functional theory (DFT) implemented in the Wien2k package. The past properties have treated within the (GGA-PBE) and the modified Beck-Johnson correction (mBJ-GGA) approximations. The electronic properties indicate a semiconductor behavior with a direct band gap at Γ-Γ direction with values of 2.51eV. Moreover, the high absorption coefficient, with values exceeding $10^4 cm^{-1}$ in the visible range and high reflectivity, which reaches 40% in the Extreme Ultraviolet (EUV) range of light, suggest that these materials have the potential for optoelectronic applications.

Keywords – Halide Double Perovskites, FP-LAPW, Optoelectronic Properties, Elpasolite.

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ATTENUATING POTENTIAL OF MODIFIED DIETS ON REPRODUCTIVE CAPABILITY OF STREPTOZOTOCIN-INDUCED DIABETIC MALE WISTAR RATS FOLLOWING THE ADMINISTRATION OF ALPHA LIPOIC ACID SUPPLEMENT

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Abstract – According to scientific evidence, the global prevalence of diabetes is increasing at an alarming rate, and male reproductive changes have been widely documented in diabetics. Diabetes-related effects on testicular function have been attributed to a lack of insulin, resulting in a direct negative effect on both Leydig cells and Sertoli cells regulatory activity; however, the facts are murky, and it is unclear exactly how nutrition affects male reproductive function control, especially in diabetic condition..This research therefore aimed to investigates the attenuating potential of modified diet in reproductive capability of streptozotocin-induced diabetic male wistar rats following the administration of alpha lipoic acid. A total of 160 adult male Wistar rats weighing between 150 and 200 g were used. The animals were given a 7-day acclimatization time. The rats were split into four units of four groups, with each group consisting of ten rats. Unit one acted as the non-diabetic control unit, while Units 2, 3, and 4 were used to induce type 2 diabetes using streptozotocin at a dose of 60 mg/kg body weight, followed by a 15-minute injection of 100 mg/kg body weight of nicotinamide. Group one rats in all units were given normal chow, Group two rats in all units were fed a modified high fat diet, Group three rats in all units were fed a modified high protein diet and 200 mg/kg body weight alpha lipoic acid, while Group four rats in all units were fed a modified high carbohydrate diet and 200 mg/kg body weight alpha lipoic acid and 50 mg/kg body weight metformin After 12 weeks of feeding and drug administration, rats were euthanized and blood were collected for biochemical analysis. Data were analyzed as mean Standard Error of Mean (SEM) using GraphPad prism version 8.0 (GraphPad Software, San Diego, CA, USA). The mean variations between groups were compared using two-way analysis of variance (ANOVA), followed by the Tukey post hoc test, with p - values 0.05 considered statistically significant.. The results showed that a high protein diet (HPD) reduces body mass index and FSH while increasing LH and Testosterone levels in naive and disease rats, implying that it could be a useful strategy for preventing and managing obesity, diabetes, and improving fertility in diabetic patients. However, an isocaloric high protein diet and higher branched-chain amino acid intake may increase insulin resistance, which may have an adverse effect on metabolic parameters; thus, the exact amount of protein required to achieve the desired result should be investigated, and understanding the mechanisms of ALA on reproductive cells may provide a cytological basis for therapeutic targets that are ultimately of clinical benefit.

Keywords – Alpha Lipoic Acid, Carbohydrate, Diabetes Mellitus, Diets, Fats, Hypoglyecmia, Metformin, Nicotinamide, Nutrition, Protein, Streptozotocin, Wistar Rats

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Density functional studies of cubic Fluoroelpasolites Cs_2NaYF_6 : X-ray storage phosphor materials and scintillators applications

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Abstract **–**The structural, electronic and optical properties of the cubic fluoroelpasolites Cs_2NaYF_6 were calculated using the density functional theory (DFT) with generalized gradient approximation (GGA) for potential exchange correlation. The modified Becke-Johnson (mBJ-GGA) potential approximation is also used for calculating the electronic and optical properties of the material. We have analyzed the structural parameters, total and partial densities of states, dielectric function, absorption and reflectivity. The results show that the band structure of the fluoroelpasolites Cs_2NaYF_6 has an insulating behavior for the two directions of spin and as a result there is no net magnetic moment in this supercell. A wide band gap of 9.6 eV is obtained with mBJ, which allows the application of this material as X-ray storage phosphor materials and scintillators.

Keywords – Fluoroelpasolites, Mbj-GGA, Density Functional Theory (DFT), Optical Properties

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April 4-6, 2023 : Konya, Turkey

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Exploring the Ferromagnetic Half-metallic behavior of CrYSn (Y= Ca, Sr) Half-Heusler via spin polarized density functional theory

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Abstract – in the present work we have performed self-consistent ab-initio calculation using the full-potential linearized augmented plane-wave method (FP-LAPW), based on the density functional theory (DFT) as implemented in the Wien2k code to study the structural, electronic, magnetic, thermodynamic and thermoelectric properties of the half-heusler compound CrYSn (Y= Ca , Sr) using generalized gradient approximation (GGA) described by Perdew–Burke–Ernzerhof (PBE), GGA+U and the modified Beck-Johnson correction (mBJ) , the obtained results show that the compound is stable in the ferromagnetic state (FM) in α phase on one hand and has a half-metallic character (metallic nature in spin up channel and semiconductor one in spin down channel with an indirect gap)on the other hand thus, the compound is a good candidate for spintronic applications, moreover it shows a very interesting thermoelectric predispositions in the minority spin or spin down channel at room temperature consisting of a very high Seebeck coefficient, high electrical conductivity and figure of merit near unity for the two compounds.

Keywords: Spin down; FP-LAPW; high Seebeck coefficient; Half -Heusler; Spintronic applications.

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April 4-6, 2023 : Konya, Turkey

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Intermolecular interactions, kinetic stability, charge transfer and nonlinear optical properties for an organic molecule using DFT method

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Abstract – Thiazolidinones derivatives are an important aromatic heterocyclic nucleus. These heterocyclic compounds are extensively used for their biological activities, photovoltaic applications. In this work, we are interested to the 2-thioxo- 3N-(2-methoxyphenyl)-5[4'-methyl-3'N–(2'-methoxyphenyl) thiazol-2'(3'H)-ylidene] thiazolidin-4-one. The knowledge of the crystal structure of these compounds is crucial for understanding the related charge transfer phenomena. On the other hand, the interest for nonlinear optical (NLO) properties of π-conjugated and functionalized organic compounds has greatly increased due to their potential applications in optoelectronics. Theoretical calculations in the ground state have been carried out for the compound studied using the density functional theory DFT/B3LYP with 6-31G++(d,p) basis set, to establish the configuration, stereochemistry and conformations of the molecule. Other physical and chemical parameters such us the frontier orbital energy gap (difference between the HOMO and LUMO), these orbitals determine the way how the molecule interacts with other species and give information about reactivity/stability of specific regions of the molecule. Furthermore, the molecular electrostatic potential (MEP) surface was mapped. The negative and positive charge density distribution were determined in order to understand the molecular geometries and the intramolecular charge transfer within the molecule. Calculated frontier molecular orbitals (FMOs) energies and chemical reactivity parameters indicated that the molecule under investigation exhibits high first hyperpolarizability, typical of a NLO material.

Keywords – Thiazole; Heterocyclic; Density function theory (DFT); HOMO-LUMO; NLO

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Group key Management in Resource Constraint Environment: Applications and Use Cases

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Abstract – In today's interconnected world, where several endpoints require data sharing in the most effective and concurrently secure manner, group communication is a crucial mode of communication. Especially in the confined surroundings introduced by the Internet of Things and sensor networks, the ensuing complexity constitutes a significant issue. Group key Management (GKM) is a vital function in schemes for secure group communication. Secure group communication scheme (SCG) should be created for realistic circumstances because they must account for the requirements and limits of real-world applications. This covers elements such as network latency, bandwidth constraints, processing resources available on devices used by end-users, and so on. By creating schemes that are customized to these settings, it is possible to improve performance and usability in the field while preserving robust security assurances against adversary assaults. This paper evaluated various use-cases and their accompanying applications in which group key management is a major concern, as well as emphasizing some of the unresolved issues that must be addressed in a variety of circumstances.

Keywords – Constraint; Group Key; Management

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Mathematical modelling of the COVID-19 dynamics containment in Ain-Touta (Algeria)

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Abstract **–** The effectiveness of disease containment and prevention measures depends, to a large extent, on a good understanding of the transmission dynamics of the disease, and on mathematical models that play an important role in predicting its future dynamics. In this context, we present an improved mathematical model to study the dynamics Covid-19 spread from the beginning of its announcement. This investigation takes into account the role of susceptible population containment and the infected and infectious population isolation for anticipating the progression of the disease's current outbreak. As a measure of communicability, the value of the basic reproductive number has been analysed, over time during disease outbreak.

Keywords – Basic Reproductive Number, Containment, Covid-19, İsolation, Local Stability, RIS Model

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Preparation and characterization of a biopesticide based on *Artemisia Herba-Alba* essential oil encapsulated with Succinic Acid modified beta-cyclodextrin

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Abstract – Numerous essential oils have been researched as biopesticides because of their effectiveness and environmental safety. Nevertheless, encapsulation is necessary to improve its physical, chemical and biological properties. Therefore, this paper aims to investigate the physicochemical characteristics and antifungal activity of the *Artemisia Herba-Alba* essential oil (HAEO) encapsulated in Succinic Acid modified β-cyclodextrin (SACD). Hydrodistillation was used to extract a yellowish oil from the plant *A. herba-Alba*, and gas chromatography coupled to mass spectrometry was performed to determine the chemical composition. The scanning electron microscope, Fourier transform infrared, thermogravimetric analysis and docking studies were combined to validate the molecular inclusion of HAEO with SACD. The antifungal activity was examined against *Botrytis cinerea* by direct contact with a potato dextrose agar. The results showed that the main compound in HAEO was α-thujone (65.0%). Furthermore, HAEO has been successfully incorporated into SACD with a binding energy value of -5.3 KJ.mol^{-1}, and its thermal stability improved. At a 0.1% concentration, the HAEO in encapsulated form showed a higher ability to inhibit *B. cinerea* (38.34%), compared to EO in free form (12.00%). Thus, these findings produced evidence that the strategy of encapsulating EOs by SACD can develop novel *B.cinerea* inhibitors and a promising alternative biopesticide.

Keywords –Artemisia Herba-Alba, Essential Oil, Succinic Acid Modified B-Cyclodextrin, Inclusion Complex, Co-Precipitation, Botrytis Cinerea.

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Etin Kuru Ve Yaş Yaşlandırılması İle İlgili Yapılan Bilimsel Yayınlara Bibliyometrik Bir Bakış (Web of Science Taban:1991-2022)

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Özet **–** Son yıllarda Türkiye'de gelir seviyesi yüksek ve diyetinde et ve et ürünlerine yer veren tüketicilerin aroma, lezzet ve tekstür açısından geliştirilmiş et ve et ürünlerine talebi artmıştır. Bu talep doğrultusunda büyük parça etlerin özel muhafaza koşullarında bekletilerek olgunlaştırılması, tüketiciler tarafından talep edilen bir durum haline gelmiş, restaurant ve kasaplarda bu tür ürünlere yer verilmeye başlanmıştır. Özellikle son yıllarda etin yaşlandırılması "meat aging" ile ilgili bilimsel yayınların da sayısının artması tüketicilerin bekledikleri ve talep ettikleri yeme kalitesini en iyi halde sunulması için önemli bir gelişmedir. Bu bağlamda bu çalışmada ilk olarak et ürünlerinin kuru ve yaş yaşlandırılması ile ilgili bilgi verilmiştir. Kuru ve yaş yağlandırma hakkında 1991-2021 yılları arasında yapılan bilimsel yayınlardan (n:216) en fazla toplam atıf alan 20 bilimsel yayın künyeleri ve yıl başına aldıkları atıf sayıları verilmiştir. Bunun yanısıra son 30 yıla ait ön plandaki trend kelimeler, yazar bilgisi, dergi adları vb bilgiler analiz edilmiştir. Kuru ve ıslak yaşlandırma konusunda uluslararası literatürde (Web of Science) yayınlanan yayınların bibliyometrik analizi RStudio ve VOSviewer programları ile yapılmıştır. Özellikle 2015 yılından sonra kuru ve yaş yaşlandırma ile ilgili çalışmaların ivme kazandığı görülmektedir. 2019 yılında 19, 2020 yılında 21, 2021 yılında ise bilimsel çalışma sayısı 26 sayısına ulaşmıştır. En fazla konu ile ilgili çalışmanın Kore'de yapıldığı görülmektedir. Türkiye ise konu ile ilgili yayın sıralamasında 12. Ülke durumundadır. Yaş ve kuru yaşlandırma üzerine yapılan çalışmalara en çok yer veren dergi "Meat Science" (n:26) olarak görülmektedir. Son zamanlarda özellikle akademik yayınlarda meat (et), muscle (kas), dry aged beef (kuru yaşlandırılmış biftek), process (proses), crust (kabuk) kelimelerinin geçtiği yayınların daha çok atıf aldığı görülmektedir.

Anahtar Kelimeler – Bibliyometrik Analiz, Kuru Yaşlandırma, Yaş Yaşlandırma, Et, Yaşlandırma

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Estimates for the Asymptotic convergence of Herschel–Bulkley Fluid with friction

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Abstract – In this paper, we study the asymptotic behavior of an incompressible Herschel-Bulkley fluid in a thin domain with Tresca boundary conditions. We study the limit when the ε. tends to zero, we prove the convergence of the unknowns which are the velocity and the pressure of the fluid, and we obtain the limit problem and the specific Reynolds equation.

Keywords – Asymptotic approach; Herschel-Bulkley fluid; Reynolds equation; Tresca law

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DRQN: A one-dimensional based search algorithm for smooth global optimization

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Abstract **–** In this work, we propose an algorithm for solving bound-constrained and non-convex global optimization problems where the objective function is differentiable. The proposed method is a combination of two procedures; the main procedure is to scan the feasible domain using a one- dimensional global search algorithm through a number of α – dense curves that are relatively spread and become progressively denser, thus covering simultaneously the search space. In order to quicken the exploration procedure, we have incorporated a quasi-Newton algorithm to spot the lowest regions. The performance of the algorithm is demonstrated through experiments on some typical engineering problems.

Keywords – Global optimization; Dimensionality reduction technique; One-dimensional global search algorithm; Limited Memory BFGS-B algorithm.

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Polyphenol Content and Antioxidant Activity of Ocimum Basilicum L Extract from Setif Algeria

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Abstract **–** In herbal medicine, the effect of many medicinal plants is attributed in whole or in part to the phenolic compounds in these plants. These substances possess biological activities that make them beneficial to human health.
The objective of the current investigation was to evaluate the phenols in a Ocimum basilicum L collected from Setif in eastern Algeria. We looked at the numerous techniques for extracting phenols in water and methanol, as well as the inhibition of lowering antioxidant power test DPPH scavenging activities and calculation of IC50.

Keywords – Ocimum Basilicum L; Polyphenol; DPPH; Antioxidant,;Ic50

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Theoretical Study for a Multi-Phase Transmission Problem

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Abstract **–** We consider a fluid-structure multiphase problem between two nested open bounded domains Ω_1 and Ω_2 in $\mathbb{R}^2$. We use the Navier-Stokes equations in Ω_1 and the waves equation in Ω_2 with initial, boundary and transmission conditions. Firstly, we establish the variational formulation of our problem in a specific spaces V_1 and V_2, to be defined later, and prove the equivalence between the variational formulation and our problem using some interesting theorems and lemmas.The existence of the weak solution is then proved by the Faedo-Galerkin theorem, and end by proving the uniqueness of solution of the weak problem.

Keywords – Faedo-Galerkin Method, Mathematical Biology, Fluid/Parabolic, Structure/Hyperbolic, Transmission Problem

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A New Model Predictive Current and Speed Control Combination for PMSM Using Two Sliding Mode Speed and Flux Weakening Controllers

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Abstract **–** This academic article investigates a new combination of controllers to optimize the performance of a permanent magnet synchronous motor (PMSM). Firstly, an adaptive sliding mode controller (SMC) is utilized to alter the velocity, causing a fast and variable result. Secondly, a sliding mode observer (SMO) is enacted to reduce the flux, thereby decreasing both current and torque flickers. The third controller is the Model Predictive Controller (MPC), which is used to control the current and speed, eliminating the chattering that is common to traditional sliding mode and guaranteeing system stability. The combination of the three controllers is predicted to create the optimal control and PMSM performance. The paper will discuss the design of each controller and the implementation of their combination. Additionally, the paper will present the outcomes from the simulations that were run to evaluate the performance of the three controllers.

Keywords – Flux Weakening, Field Oriented Control, Model Predictive Control, PMSM, Sliding Mode Control, Sliding Mode Observer.

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Estimates for the asymptotic convergence of BINGHAM Fluid with friction

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Abstract – The aim of this paper is to study the asymptotic behavior of an incompressible Bingham fluid in a dynamic regime occupying a bounded domain of R3 with nonlinear friction of Tresca type. Firstly, the existence and uniqueness of weak solution is proved. Then we show the estimates for the velocity field and the pressure independently of the parameter ε. Finally, we give a specific Reynolds equation associated with variational inequalities and prove the uniqueness. The proof uses the asymptotic behavior when the dimension of the domain tends to zero.

Keywords – A Priori Inequalities; Asymptotic Approach; Bingham Fluid; Reynolds Equation; Tresca Law; Weak Solution.

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Enhancing the mechanical and morphological behavior of polyethylene/polypropylene blends without and with compatibilizer

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Abstract – Polypropylene (PP) and low-density polyethylene (LDPE), two of the most widely used commercial thermoplastics, are both used due to their distinct properties. PP is well known for both its high strength and resistance to solvent attack, as well as for being relatively reasonably priced. PP's limitations, including low impact strength and flexibility, prevent it from being used in a variety of applications. Nevertheless, LDPE has more flexibility and impact strength than PP. PP's flexibility and impact strength may thus be improved by melting it with LDPE. It is not necessary expected that mixing PP and LDPE will improve the impact strength of PP due to the immiscibility of PP and LDPE.

Keywords – Blends, Compatibilization, Plastic, LDPE, PP, Mechanical Properties.

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Estimates for the asymptotic convergence of generalized non-newtionian fluid with friction

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Abstract – The goal of this article is to study the asymptotic analysis of an incompressible Herschel-Bulkley fluid in a thin domain with Tresca boundary conditions. The yield stress and the constant viscosity are assumed to vary with respect to the thin layer parameter ε. Firstly, the problem statement and variational formulation are formulated. We then obtained the existence and the uniqueness result of a weak solution and the estimates for the velocity field and the pressure independently of the parameter ε. Finally, we give a specific Reynolds equation associated with variational inequalities and prove the uniqueness.

Keywords – Asymptotic Approach; Herschel-Bulkley fluid; Reynolds Equation; Tresca Law

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Salinity stress as an episodic acute negative effect for plants

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Abstract **–** Resistance to salinity varies depending on the growth phase and type of plants. Salinity stress appears as an episodic acute negative factor for plants, its effect later becomes permanent or periodic, and this negative effect on the growth and development of plants becomes acute in a certain period of ontogenesis. Common symptoms caused by salt stress in plants are inhibition of their development and growth, rapid senescence and death in case of persistent stress. Growth retardation is the initial injury caused by salt stress and subsequently necessitates the development of other symptoms. Another injury symptom is the enhancement of programmed cell death in plants during high salinity shock.

The negative effect of salinity stress manifests itself in all areas of plant metabolism. It affects the metabolism of many intracellular substances, including nucleic acids, proteins, carbohydrates and amino acids. In the course of the evolutionary process, plants have created various mechanisms to protect against the hyperosmotic condition and mineral metabolism imbalance caused by salinity and to continue the struggle for survival.

Keywords – Salinity, Effect, Plants, Enzyme, Adaptation

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Estimates for the asymptotic convergence of Non-isothermal BINGHAM Fluid with friction

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Abstract – This paper deals with the asymptotic behavior of a coupled system involving of an incompressible Bingham fluid and the equation of the heat energy, in a three-dimensional bounded domain with Tresca free boundary friction conditions. First we prove the existence and uniqueness results for the weak solution. Second, we show the strong convergence of the velocity and the temperature. Then a specific Reynolds limit equation is obtained, and the uniqueness of the limit velocity and temperature are proved.

Keywords – Asymptotic Approach; Boundary Conditions; Coupled Problem; Fourier Law; Non-Isothermal Bingham fluid; Tresca Law; Reynolds Equation.

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Energy Eigenvalues of Dirac Oscillator in de-Sitter Space

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Abstract **–** In this study, we treat the (2+1) D Dirac equation in the oscillatory motion of a (1/2) spin particle with the interaction of an external magnetic field in the context of the extended uncertainty principle in de-Sitter space. The exact solution of this system has been investigated by Nikiforov Uvarov method, and we obtained the energy eigenvalues and the corresponding wave function in a Jacobi polynomial. Consequently, we deduced that the spectrum of energy remains discrete even for large values of the principal quantum number.

Keywords – Dirac Equation, de-Sitter Space, Magnetic Field, Nikiforov Uvarov Method.

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Failure Mode, Effects, and Criticality Analysis Amelioration Using a New Fuzzy Risk Evaluation Based Model

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Abstract **–**Failure mode, effects, and criticality analysis (FMECA) is a proactive quality tool that allows the identification and prevention of the potential failure modes of a process or product. In a conventional FMECA, for each failure mode, three risk parameters, namely frequency, non-detection, and severity are evaluated and a risk priority number (RPN) is calculated by multiplying these parameters to assess one signal criticality. However, in many cases, it suffers from some. Thus, in this paper, a fuzzy criticality assessment based approach is used to improve the exploitation of the FMECA method. The new model bases on replacing the traditional calculation of criticality by a fuzzy inference engine. The authors used fuzzy logic where the different parameters are shown as members of a fuzzy set, which fuzzified by using appropriate membership functions in order to evaluate the criticality and then prioritizing failure causes as well preferring of actions for controlling the risks of undesirable scenarios.

Keywords –FMEA; RPN; Risk Assessment; Criticality; Fuzzy Logic

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Removal of Methyl Violet 2B Dye from Water Using Modified Carob Fruit Adsorbent

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Abstract – Textile dyes are a major contributor to water pollution in industrial waste. To address this issue, our study focuses on developing an activated carbon adsorbent from Algerian natural carob (fruit of Ceratonia siliqua L) to remove methyl violet 2B (MV2B) dye from wastewater. We investigate the adsorbent's properties and performance, and test its efficiency under different parameters such as adsorbent weight, initial dye concentration, pH, temperature, stirring speed, and contact time. Our results show that optimal conditions for adsorption occur at a 50mg adsorbent weight, 10ppm initial dye concentration, pH 9, 20°C temperature, and stirring speeds between 200 and 300 rpm. The activated carbon exhibits a high absorption capacity, achieving 98% adsorption for an initial concentration of 10 mg/L of methyl violet 2B. The adsorption process is exothermic, spontaneous, and well-modeled by the pseudo-second-order, S-sigmoid isotherm, and Langmuir or Temkin models.

KEYWORDS – CAROB (FRUIT OF CERATONIA SILIQUA L), ADSORPTION, ACTIVATED CARBON, METHYL VIOLET 2B (MV2B).

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Coherent states and thermodynamic functions of a time dependent coupled oscillator

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Abstract **–** A coupled oscillator with time dependent mass and frequecies is studied in the classical and quantum mechanics. By using the method of invariants and the technique of unitary transformation, we have simplified the Hamiltonian of the system. Then we diagonalized the new invariant and found the corresponding eigenstates and eigenvalues. The coherent states associated with the system are found and it is shown that they form an overcomplete set that minimizes the quadratures defined by the ladder operators. The statistical properties of these states are studied using the probability of distribution. In addition, the partition function is calculated. And finally the thermodynamic functions which characterize the system such as the mean energy and the entropy are evaluated in particular cases.

Keywords – Coupled Oscillator; Invariant Operator; Unitary Transformation; Coherent States, Entropy.

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Abiotic stress and gene expression

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Abstract – Abiotic stress, including salt stress, and its responses cause certain quantitative and qualitative changes in many intracellular components, nucleic acids, proteins, carbohydrates, amino acids, and also in a number of secondary compounds of metabolism. The application of molecular biology methods to this field has made it possible to achieve success in the identification and isolation of stress-induced genes. Currently, it has been established that the transcriptional activation of genes during the response to stress occurs at different time intervals. This indicates that the response to abiotic stress is very complex and requires the participation of various signaling systems and transcription factors. The identification of a number of important factors of the response to stress has made it possible to use the responsible genes as markers. For example, the determination of the abiotic dehydration stress cis-element, (CRE)/C-repeat (CRT) (A/GCCGAC) and its post-transcriptional modification played an important role in finding transcription-regulating factors. Genetic screening of stress-induced gene mutations has also allowed the identification of new components of the abiotic regulatory system.

Keywords – Abiotic Stress, İntracellular Components, Amino Acids, Stress-İnduced Genes

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Linked states of Nilsson-type deformed nuclear potential

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Abstract **–**The aim of this work is to study the nuclear structure and the equilibrium shape of some weak deformed light nuclei that the bound states are weakly sensitive to the shape of nucleus. The study is based on the Nilsson model which consists to suppose that the nucleons are independently moving in a mean field of the anisotropic harmonic oscillator. The diagonalization of the total Hamiltonian permits to determine the single particle energies for a given deformation. The present model is applied to determine the ground state of some light nuclei. The results are very encouraged to extend the present model to define the nuclear properties for all type nuclei such the medium, heavy and super-heavy nuclei..

Keywords –Nuclear Structure, Medium Field, Anisotropic Harmonic Oscillator, Nilsson Model

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Changes in the amount of phenolic compounds in plants under salinity

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Abstract – Phenolic compounds are one of the substances synthesized by plants against biotic and abiotic stress factors and play an important role in the formation of their defense system. These compounds belong to the secondary metabolites of metabolism and are chemically heterogeneous compounds with a functional group connected to an aromatic ring called phenol. The number of diversity of phenolic compounds in the plant world is measured in hundreds and thousands.

An increase in the concentration of salts in the environment is accompanied by an increase in the amount of phenolic compounds in the leaves of plants. Flavanoids, which constitute a large group of phenolic compounds in plants, play an important role in the coordination of plants and also play an important role in the defense reaction and pigmentation of plants. Similar to flavonoids, anthocyanins perform various biological functions as antioxidant substances. Isoflavanoids, which are derivatives of intermediate compounds of flavones, are widespread in plants. It has been determined that they are secreted by legumes and play an important role in the formation of nitrogen-fixing nodules by symbiotic rhizobia.

Keywords – Phenolic Compounds, Salinity, Abiotic, Biotic, Biological Functions

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Stabilization Analysis of TS Systems via Fuzzy Lyapunov Function Approach

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Abstract **–** This paper discusses new conditions for stability analysis and fuzzy controllers of stabilization design for continuous-time Takagi-Sugeno fuzzy (TSF) descriptor systems form developed from a nonlinear sector strategy, based on non-quadratic functions which is well-known: line-integral Lyapunov fuzzy (LILF) approach. The mean-value theorem is introduced to overcome the problem in controller design caused by the state-feedback control structure. Instead of the general quadratic Lyapunov fuzzy function, a membership-function-dependent fuzzy Lyapunov function is used to obtain stability and stabilization analysis constraints. Then, all the proposed conditions for the solvability of state feedback controller design are represented as linear matrix inequalities (LMIs) that may be efficiently solved using convex optimization techniques. Using a LILF, sufficient criteria are derived to guarantee the asymptotic stability. The proposed approach has the advantage of having fewer predetermined parameters compared to the available techniques in the literature.The main advantages of the proposed approach are its minimal conservatism and global stability analysis. Convergence conditions are defined under the linear matrix inequality formulation for the second Lyapunov theorem. When designing a controller using LMIs, the controller gains can be determined by solving a set of LMI conditions. These conditions are typically formulated as a set of matrix inequalities, and the goal is to find a set of controller gains that satisfy these inequalities. Finally, a numerical example demonstrates the effectiveness and benefits of the proposed method, Comparisons with the traditional method demonstrate the effects of conservatism reduction.

Keywords – Takagi-Sugeno fuzzy (TSF) systems, linear matrix inequalities (LMIs), Fuzzy Lyapunov function, non-quadratic Lyapunov functions.

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Optical properties of half-metallic ferrimagnetic double perovskite Sr2CaOsO6 compound

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Abstract **–** The crystal, electronic, magnetic and optical properties of the Sr2CaOsO6 double perovskite compounds have been investigated in this work, using density functional theory as implemented in the Full-Potential Linearized Augmented Plane Wave (FP-LAPW) method, employing the Generalized Gradient Approximation (GGA-PBE), GGA + U (Hubbard Coulomb correction) and GGA plus Trans-Blaha-modified Becke–Johnson (TB-mBJ-GGA) as the exchange correlation. According to the structural results, the lattice parameter is in agreed well with the previous experimental data. Spin polarization calculations has shown half-metallic behavior with ferrimagnetic ground state coupling for Ca and Os spins for Sr2CaOsO6 compound. Our calculated electronics results within the TB-mBJ-GGA show that our studied material has direct half-metalic (HM) gaps energy in (Γv-ΓC) directions with a value equal 2.08 eV and net magnetic moment of 2.000μB. The most contribution of total magnetic moment is by Osmium atom. For optical properties, it can be concluded that Sr2CaOsO6 material has a high absorption and can be used in future Spintronics and Optoelectronic applications in a large energy range of the light spectrum which extends from visible to ultraviolet.

Keywords – Fp-Lapw Method, Half-Metallic Ferromagnetic, High Absorption, Optoelectronic Applications

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The effect of Thymoquinone on the levels PLA2G7, UCP2, and NEDD4L proteins associated with lipid droplet formation in prostate cancer.

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Abstract-Prostate cancer (PCa) is the most common type of cancer in men globally. This type of cancer accounts for 7.1% of cancers in men. Despite the effectiveness of Androgen deprivation (AD) treatment, patients can be subject of severe side effects in addition to the development toward castration resistant type. It is known that PCa cells are characterized mainly by increased lipogenesis. several genes are involved in regulating lipid metabolism and lipid droplet (LD) formation. Thymoquinone (TQ) has been reported to impede cell proliferation, metastasis and invasion. However, there was no study in the literature on the expression of NEDDL4, PLA2G7, and UCP2 genes associated with lipid droplet formation of TQ.

The main objective of this study is to investigate the effect of TQ on PLA2G7, UCP2, and NEDD4L proteins on prostate cancer cell lines (DU 145 and PC3). In the first phase of the study, the cells were proliferated and treated with TQ with IC50 of 60 µM and 80 µM for DU 145 and PC3 respectively. After incubation, the levels of PLA2G7, UCP2, and NEDD4L were measured by using the ELISA method. TQ has significantly increased the level of NEDD4L in both cell lines. Similarly, it was also shown that TQ had a decreasing effect on the level of UCP2 proteins. ($p<0,001$)

Preliminary result of our study indicates that TQ has an effect on NEDD4L and UCP2 in both cell lines. This suggest that TQ might have an inhibitory effect on LD and, by further investigations, TQ can be a potential agent for prostate cancer treatment.

Keywords- Prostate cancer; Lipid droplet formation; Thymoquinone; NEDD4L; PLA2G7; UCP2

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A simulation study of the impact of solar radiation on the solar chimney

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Abstract **–** In order to obtain a cheap but stable power source, renewable energy and its innovative and imaginative applications are desperately required. Solar chimeny is mentioned as one of the solar applications, but it is not widely used as a photovoltaic application. It is a clean, revolutionary technology that can be used to generate electricity in nations with vast deserts or wastelands.

Using the Eenrgy 2D application, the effect of solar radiation on the solar chimeny was numerically explored in this study. Solar radiation levels varied from 200 W/m² to 1000 W/m², going through 400 W/m², 600 W/m², and 800 W/m². The analysis focused on the impact of varying solar radiation on the temperature difference in the collector.
The results show that as solar radiation rises, the collector's temperature difference rises as well. It follows the shape of a power law The solar radiation plays a vital impact in the solar chimeny performance

Keywords – Simulation, Energy2D Software, Solar Chimney, Solar Radiation.

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A one-dimensional based search algorithm for continuous global optimization

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Abstract **–** In this paper, we present an algorithm for solving bound-constrained global optimization problems where the objective function is only continuous. In the proposed algorithm we transform the initial multidimensional problem into a one-dimensional one of the same type by running a space filling curve, which becomes increasingly denser and progressively fills the feasible domain. Throughout the generated curve, a one-dimensional global optimization algorithm scans the search space to obtain the global minimum. To accelerate the corresponding algorithm, we have incorporated a derivative free local search algorithm to explore promising regions. The proposed algorithm converges in a finite number of iterations to the global minimum within a prescribed accuracy. Numerical experiments are achieved on some typical test problems and a comparison with well known methods is carried out to show the performance of our algorithm.

Keywords – Global Optimization, Reducing Transformation Method, Evtushenko's Algorithm, Generalized Pattern Search Algorithm, Lissajous Parameterized Curve.

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Observer based control for stabilization of semi-linear evolution equations in Hilbert spaces

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Abstract **–** We establish a compensator design via the separation principle in the practical sense for a class of semilinear evolution equations in Hilbert spaces [3]. Under a restriction on the perturbation that is bounded by an integrable function, we propose a non-linear time-varying practical Luenberger observer to estimate the system states and we prove that the Luenberger observer based on linear controller stabilizes the system. An illustrative example is given to show the applicability of our theoretical results.

Keywords – Compensator Design, Practical Stabilization, Practical Luenberger Observer, Semi-Linear Evolution Equations

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Modifying palm fiber with silane coupling agent for decorating palm fiber/ polyethylene composite

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Abstract – Natural Fibre Reinforced Polymer Composites (NPCs) offer customers more alternatives on the materials market due to their unique advantages. The natural fibers have different origins: wood, pulp, cotton, bark, walnuts, bagasse, corn cobs, bamboo, grain straw and vegetables. Silans are dissolved in some organic solvents or solvent/water mixtures and the prepared solution is directly vaporized on the fibres. Poor interfacial fibre-matrix adhesion can, however, negatively impact the physical and mechanical properties of the resulting composites. because of the superficial incompatibility between hydrophilic natural fibres and non-polar polymers (thermoplastic and thermosetting). A variety of silans (mainly trialkoxysilans) have been applied as couplers in PCNFs to promote interfacial adhesion and improve composite properties. The purpose of this study is to determine the effects of palm fibre alkaline treatments and silane couplers on the mechanical, thermal and water absorption properties of polyethylene PE composites. clarifies the interaction mechanisms between natural fibres and polymer matrices, and discusses the effects of silane treatments on the mechanical and external performance of the resulting composites. Investigate the effects of fibre processing by infrared spectroscopy. The use of coated fibres in composite materials improves mechanical properties compared to untreated composite materials. Additionally, SEM images showed strong interfacial adhesion between treated fibres and polyethylene composite surfaces, which improved water absorption and thermal stability

Keywords – Polyethylene, Palm Fiber, Polymer Composites, Silane, Coupling Agents

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Physical and Universal critical behavior in polycrystalline $La_{0.75}Ca_{0.25-x}Na_xMnO_3$ (x 0.00 and 0.05) samples

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Abstract – We have studied the effect of a partial substitution of Ca^{2+} by Na^{+} on the structural, magnetic and magnetocaloric properties of the mixed valence perovskites $La_{0.75}Ca_{0.25-x}Na_xMnO_3$ (0 and 0.05), prepared by the flux method. X-ray diffraction studies revealed that our samples crystallize in the orthorhombic structure with a Pbnm space group. Rietveld analysis showed that MnO_6 octahedron has a little distortion and that $\theta_{Mn-O-Mn}$ bond angles increase with increasing Na^{+} content. The field cooled (FC) and zero field cooled (ZFC) magnetizations indicated that our samples have a paramagnetic-ferromagnetic phase transition, when decreasing temperature. A small deviation was observed between FC and ZFC curves. This deviation can be explained by the competition between the ferromagnetic and antiferromagnetic interactions, leading to a glassy behavior. The Curie temperature, T_C, increased from 268 K for x = 0 to 270 K for x=0.05. The magnetizations isotherms of our compounds, with a second-order phase transition, were investigated. For the x= 0.10 sample, the maximum of the magnetic entropy change was found to be 3.15 and 6.44 $J.kg^{-1}.K^{-1}$, under an applied magnetic field of 2 and 5T, respectively. The critical behavior of the manganese was studied also around the PM-FM phase transition. Various techniques are used to obtain the critical exponents of our samples; such as modified Arrott plot (MAP), Kouvel–Fisher (KF) method and the critical isotherm analysis (CI) around the Curie temperature (Tc). The experimental results indicated that our samples had a second-order magnetic phase transition. Based on the above methods, the critical exponents (β, γ and δ) were extracted in the low- and the high-magnetic fields from the magnetic isotherms data. The obtained critical exponents were close to those expected for the Tricritical Mean-Field model.

Keywords – Flux method, Powder diffraction, Critical behavior, Manganite

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Spectrofluorimetric Characterization of the Inclusion Complexes of the Antidiabetic Drugs Glibenclamide, Glimepiride and Gliclazide with β-Cyclodextrin

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Abstract **–** Glibenclamide, glimepiride and gliclazide are all antidiabetic drugs that belong to the class of sulfonylureas. These drugs are effective in treating type 2 diabetes by stimulating the release of insulin from pancreatic beta cells. However, these drugs have limited hydrosolubility, which can limit their efficacy and bioavailability. To overcome this limitation, these drugs can be complexed with cyclodextrins (CDs) to improve their solubility and dissolution rate. The characterization of inclusion complexes in solid state of certain hypoglycemic sulfonylureas had been carried out before, however, to the extent of our literature search, no study dealing with the spectral properties of hypoglycemic sulfonylureas and their inclusion complexes with CDs nor the evaluation of their water solubility have been carried out before. Spectrofluorimetric analysis can provide valuable insights into the nature and stability of inclusion complexes, which can be useful for the design and optimization of drug delivery systems. Our contribution lies in the characterization by spectrofluorimetry of the complexes formed in solution, in addition to the evaluation of their water solubility. Thus, the inclusion complexes between the three sulfonylureas and β-CD have been studied in solution and in the solid state and the different results obtained are discussed according to the differences between the three molecules studied.

Keywords – Antidiabetic Sulfonylureas, Glibenclamide, Glimepiride, Gliclazide, Spectrofluorimetry, Cyclodextrins, Inclusion Complexes characterization

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Deinking of waste printed paper by the use of sodium hydroxide treatment

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Abstract **–** Various wastes are a source of concern because they threaten the environment and create pollution in the environment that may lead to various diseases. From here, studies began to search for how to exploit these wastes in a way that does not harm the environment and use them in other fields to benefit from them by recycling them. Among the most recycled wastes, we find waste paper this is due to the large number of them; Paper and paper broad represent a significant portion of total waste – approximately 10% of total municipal solid waste so it was necessary to exploit them in several ways. Recycled waste paper is a raw material for the paper industry. One of the most important processes in the recycling of waste paper, for the ability to print, is deinking. This study focuses on how to remove the ink from the waste printed paper, and therefore to reuse it in several other fields. The waste printed paper is collected, arranged and cut to undergo deinking process Ink is removed from waste printed paper using chemicals. One of the most important chemicals used in deinking process is sodium hydroxide. The process of deinking using sodium hydroxide Different concentrations with temperature change each time has proved very effective in removing ink particles completely from waste printed paper.

Keywords –Deinking,Waste Printed Paper,Treatment, Sodium Hydroxide,Recycling

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Alkali And Silane Treatments and Its Effect on The Mechanical, Morphological, and Thermal Properties of Palm Fiber Reinforced Polyethylene Composites

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Abstract – In recent years, the mechanical properties of synthetic polymeric materials have been enhanced by combining them with various reinforcing fillers, such as lignocellulosic materials, which are among the most environmentally friendly agrowaste and will play a significant role in resolving the most pressing environmental issues of the future. Because they degrade with time, these materials are simple to gather from agrowaste and have no environmental impact. This study aims to determine the effects of palm fiber alkali treatments and silane coupling agents on the mechanical, thermal, and water absorption properties of polyethylene PE composites. Examine the effects of fiber treatments using infrared spectroscopy. The use of treated fibers in composite materials enhances mechanical properties compared to untreated composites. In addition, SEM images showed a strong interfacial adhesion between the treated fibers and polyethylene composite surfaces, resulting in enhanced water absorption and thermal stability

Keywords –Polyethylene, Pecomposites, Palm Fiber, Alkali Treatment, Silane

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Different changes of palm fiber reinforced polyethylene composites properties thanks to processing of alkali treatments

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Abstract **–** the mechanical properties of synthetic polymeric materials have been improved by combining them with different strengthening materials, such as lignocelluloses materials. Those are among the most environmentally friendly agricultural wastes and will play an important role in resolving the most pressing environmental problems of the future. Because they degrade over time, these materials are easy to collect from agricultural waste and do not have any environmental impact. The purpose of this study is to determine the effects of palm fiber alkaline treatments on the mechanical properties of polyethylene PE composites. The use of coated fibers in composite materials improves mechanical properties compared to untreated composite materials. Additionally, SEM images showed strong interfacial adhesion between treated fibers and polyethylene composite surfaces, which improved water absorption and thermal stability.

Keywords –palm fiber,polyethylene,composites,alkali treatment,PEcomposites

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Electrosynthesis and study of electrochemical properties of Polypyrrole nanowires decorated with silver nanoparticles

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Abstract **–** The objective of our work is to elaborate composite materials for the oxidation of ascorbic acid, in order to improve the conductivity and modify the electrochemical properties. The elaboration of Polypyrrole (PPy) nanowires has been successfully achieved using chronoamperometry in aqueous medium containing pyrrole as a monomer; the applied potential is 0.9 V. The structure of PPy nanowires (entangled) was confirmed by scanning electron microscope (SEM).

Cyclic voltammetry and electrochemical impedance spectroscopy were used to study the Electroactivity of PPy and Polypyrrole-Silver nanoparticles (PPy-Ag) films. These methods confirm that the addition of silver to the composite materials improves the conductivity of the PPy film. The PPy-Ag modified electrodes show good electrocatalytic activity on the electro-oxidation of ascorbic acid. The current density of the electro-oxidation increases with the thickness of the PPy and Ag film. These studies showed that the electrochemical properties of the obtained PPy-Ag films are improved compared to polypyrrole and glassy carbon alone. The PPy-Ag composite material may be good candidates for the determination of ascorbic acid in the physiological medium.

Keywords –Composite Materials Polypyrrole Nanowires, Ascorbic Acid, Silver Nanoparticles Et Chronoamperometry

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The inventory of cedar forest in eastern Algeria (Biodiversity and conservation)

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Abstract **–** In a context of noticeable environmental degradation and change such as drought and anthropogenic pressures, it is more imperative to inventory and evaluate a relictural plant community in a steppes environment that remains little known and suffering from degradation. This medium is located south of the wilaya of Bordj-Bou-Arréridj: it is the cedar of Djebel MAADID. The dominant forest species of this community is the Atlas cedar: Cedrus atlantica [(Manetti ex Endl.) Carrière, 1855]. It is a species already protected by national regulations. To protect this biological community, in the context of an ecological strategy as part of a vision of sustainable development for the preservation of plant genetic resources of the Algerian steppe and preservation of the natural heritage of resources. the inventory of the existing flora and imperative to diagnose the current state of this area on the one hand and on the other hand rule for an in situ conservation that would allow the preservation of this plant biodiversity for future with analysis of the state of the environment of this area will contribute to the management of this forest ecosystem, which is a sufficiently degraded for future management and key conservation measures. Preliminary analysis of the results resulted in the characterization of five vegetation facies inferred to the Atlas cedar at Djebel Maadid, with 30 families and 91 species. The inventory of flora is the basis of any attempt to preserve and conserve natural plant communities. The results are conclusive and will help safeguard plant genetic resources on the study site and for future generations.

Keywords – Atlas Cedar, Biodiversity, Conservation, Inventory, Algeria

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2nd International Conference on Engineering, Natural and Social Sciences

April 4-6, 2023 : Konya, Turkey

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The impact of international law on local law

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Abstract **–** Based on the local legislation, specifically in the constitution of Kosovo, it is stated that the primary sources that find application in the territory of Kosovo are the local legislations. In cases where local law does not provide solutions for certain cases, then international agreements can be used, and in these cases they create superiority over local laws. This means that for specific cases for which we cannot find a solution based on local laws, then the solution can be made through the laws of international countries. But in order to use the laws of international countries, the state of Kosovo must have created an agreement with the relevant state. In cases of creating an agreement, then we can use the laws of international countries, and that by referring to the agreement created between the states. In these cases when the law of other countries is used, then we can say that for the given case the international law has superiority over the local laws, but not for other cases. We will talk more broadly about the influence and importance of international law in local legislations during the presentation of the paper.

Keywords – Local Law, International Law, Agreements, Implementation, Legislation.

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April 4-6, 2023 : Konya, Turkey

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Substantiation of the method for monitoring the kinematic parameters of mixed flows in the jet pump flow part

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Abstract – The main methods of controlling the characteristics of well jet pumps are analyzed. It has been established that the current level of indirect methods development for controlling the operating mode of above-bit ejection systems does not take into account the possibility of the jet pump rotation in the well. Taking into account the need to increase the efficiency of the operating remote monitoring characteristics of above-bit ejection systems, a mathematical model for controlling the kinematic parameters of mixed flows was developed and the laws of the velocity profile transformation caused by the relative rotation of the working environment were established. In the process of the nature mathematical modeling of the kinematic parameters distribution, the differential equation of an axisymmetric helical vortex motion flow is supplemented with an empirical relationship between the rotating speed and the radius of the flow. After integrating the equation of the working medium motion, a theoretical velocity profile was obtained for the case of symmetrical and asymmetrical jet pump placement in the well. Theoretical plots of longitudinal velocities are characterized by values of axial and rotational velocity of mixed flows. Based on the analysis of the distribution transformation of kinematic parameters, the coefficient of the velocity plot unevenness was determined in the form of a ratio of their actual and theoretical values. The value of the unevenness coefficient of the speeds distribution increases with an increase in the speed of the jet pump rotation and the angle of the flow twisting.

Keywords – Parameter Control, Remote Monitoring, Jet Pump, Ejection System, Speed Chart.

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April 4-6, 2023 : Konya, Turkey

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Exception to the superficio solo cedit principle

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Abstract **–** Among the basic principles of real property law, which dates back to Roman times, is the superficio solo cedit principle. Based on this principle, it has been said that the real property right over an immovable object has the subject of the right over the immovable object, specifically the land and what is attached to the land. From this it is understood that everything that is attached to the land and together with the owner's land on it is the same person, not someone else. An exception is made to this principle in the last 50 years, emphasizing that in a certain case the real estate owners may be different, specifically the owner of the land is a different person, while the owner of the house is a different person. This happens because the right of construction was added as a real right, and based on this right, the owner of the land can be someone else, while the owner of the real estate can be someone other than the owner of the land, and that for a period of time no more distant than 99 years. This right is defined by the Property Law in Kosovo, but also in the legislation of other countries. We will talk more broadly about the exception of the superficio solo cedit principle, and the right to construction, during the presentation of this paper.

Keywords – Principle, Right of Construction, Exception, Legislation, Property Right.

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April 4-6, 2023 : Konya, Turkey

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Using artificial intelligence methods for quality assessment in higher education

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Abstract **–** Artificial intelligence (AI) is becoming more attainable in every sector of the economy, and higher education is no exception. The purpose of this study is to assess the impact of Artificial Intelligence (AI) on higher education. Different methods of artificial intelligence have been compared during this study by examining all the variables that can have an impact on student success and on increasing the quality of teaching. We identified the most appropriate artificial intelligence methods to analyze the collected data from sources specialized in higher education by comparing them theoretically and practically. Methods are applied on this data to determine their effectiveness in analyzing and predicting students' learning and teaching quality. Evaluations on the data indicate the method with a higher performance. We come to the conclusion that the artificial intelligence methods contribute to improving the quality of teaching and student outcome in higher education.

Keywords – Artificial Intelligence, Higher education, Machine learning

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April 4-6, 2023 : Konya, Turkey

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The formation of *Suaedeta microphyllae* (Azerbaijan)

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Abstract – This formation is characteristic of desert vegetation, spreading in saline soils, forming independent groups and taking part in saline deserts and semi-deserts.

The edifier of the formation – *Suaeda microphylla* Pall. It is a multi-branched shrub with a height of 20-75 cm, young shoots are colored. The leaves are small, fleshy, bluish, hairy, with a blunt tip, 3-10 mm long, 2-3 times longer than their diameter, narrowing towards the stem. The flowers are bisexual, the female is deeply seated with 2-5 mouths, 1-3 in the shape of a ball in small, transparent veiled inflorescences, the inflorescence is green, oblong-ovoid, usually adjacent to each other. The seeds are 0.75-1.25 mm long, oval, smooth, black and shiny. V-X months also bloom and bear fruit.

The formation is represented by 3 associations:

1. Suaeda microphylla;
2. Suaeda microphylla-Climacoptera crassa;
3. Suaeda microphylla–Eremopyrum orientale.

The floristic composition of the coenose includes up to 14 species along with the dominant *Suaeda microphylla*: *Tamarix ramosissima*, *Bromus japonicus*, *Eremopyrum orientale*, *Petrosimonia brachiata*, *Suaeda confusa*, *Malvalthaea transcaucasica*, *Torilis nodosa*, etc. participates. *Fulgensia fulgens* and *Barbula unguiculata* were recorded on the soil surface. The total project coverage is 40-50%.

Keywords: Bisexual, Desert, Saline Soils, Soil Surface, Dominant

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April 4-6, 2023 : Konya, Turkey

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In situ deposition of Ag nanoparticles onto PE/rGO hybrids for the Dip-catalytic hydrogenation of 4-nitrophenol into 4-aminophenol

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Abstract **–** This study was focused on the design and development of a new heterogeneous catalyst based on polyester (PE) fabric modified with graphene oxide nanosheets decorated with silver metallic nanoparticles (PE-rGO/Ag0). PE fabrics were coated with graphene oxide (GO) nanosheets by sonication followed by *in situ* deposition and reduction of silver nanoparticles over the GO surface, covering the PE fabric and producing PE-rGO/Ag0. The catalytic performance of the prepared PE-rGO/Ag0 was assessed during the hydrogenation of 4-nitrophenol (4-NP) in the presence of sodium borohydride (NaBH4). Experimental results indicate that PErGO/Ag^0 with a surface of 6 cm^2 showed the highest catalytic activity with an apparent reaction rate constant (K_{app}) of 0.65 min^{-1}. In addition, PE-rGO/Ag^0 activity resulted to be comparable and significantly higher than previous reported values of silver-based catalysts. Remarkable stability values were achieved during different operating cycles without significant degradation in the catalytic activity, suggesting that PE-rGO/Ag^0 can be used as a strong candidate in long-lasting chemical catalytic processes.

Keywords: 4-Nitrophenol; 4-Aminophenol; Graphene Oxide; Hydrogenation; Polyester Fabric, Reduction Deposition; Silver Nanoparticles

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April 4-6, 2023 : Konya, Turkey

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Treatment of a landfill leachate from Casablanca city by a sequential coagulation-flocculation followed by adsorption onto palm bark powder

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Abstract **–** The study aims to evaluate the efficiency of a sequential landfill leachate treatment (coagu- lation with ferric chloride followed by adsorption onto palm bark powder (PBP). The efficiency of this treatment, was assessed in terms of chemi-cal oxygen demand (COD), color and turbidity removal. This bioadsorbent was subjected to physico-chemical and morphological characterization by different methods (Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), X-ray diffraction (XRD), N_2 adsorption-desorption isotherms, pH at zero charge point (pH_{PZC}) and Boehm titration method). The coagulation process reduced the turbidity by 90%, the COD by 50%, the color by 80% and the biological oxygen demand (BOD_5) by 99% for the optimum dose of ferric chloride of 12 g $Fe^{3+}.L^{-1}$. Thereafter, the sequential treatment of a landfill leachate based on coag- ulation as a pre-treatment process and then adsorption onto PBP improves the removal of turbidity, COD and color to 99%, 59% and 90%, respectively. These results demonstrate that combined coagulation-flocculation and adsorption pro- cesses could be a useful option for the treatment of solid-waste landfill leachate.

Keywords: Landfill Leachate Treatment; Coagulation, Flocculation, Adsorption

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Optimise pi controller with pso for pv systeme

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Abstract **–** In this study, an optimization approach is proposed to design a Proportional-Integral (PI) controller for a PV system using Particle Swarm Optimization (PSO) algorithm. The objective is to optimize the controller's parameters to maximize the system's performance and ensure a stable output voltage. The proposed method uses the Matlab 2021 software to simulate the system and evaluate the controller's performance. The PSO algorithm is employed to search for the optimal PI controller parameters that minimize the error between the desired output voltage and the actual output voltage. The results show that the proposed method can effectively improve the system's performance and reduce the error between the desired and actual output voltage. The simulation results demonstrate the effectiveness of the proposed PI controller design with PSO optimization for a PV system, which can provide a better understanding and improved performance for practical applications.

Keywords – Photovoltaic System, Particle Swarm Optimization, Proportional-Integral Control, Maximum Power Point Tracking, MATLAB

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Alman Edebiyatının Seçilmiş Metinlerinde Eğitim Olgusu

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Özet **–** Edebiyatın, topluma ait olguları malzeme olarak kullanmasını, oldukça derin bir geçmişe dayandırmak mümkündür. Bu malzemelerden biri de hiç kuşkusuz eğitimdir. Eğitimin geniş çevrelerce tartışılmadığı, diğer disiplinlere konu edilmediği bir coğrafya bulmak güçtür. Neredeyse tüm toplumlar için eğitim, uzun yıllar belki yüzyıllar hatta binyıllar boyunca tartışılagelmiş ve tartışılmaktadır da. Bu ve diğer nedenlerden ötürü eğitimin tematik materyal olarak kullanılmasına ise edebi yapıtlarda sıkça denk gelmek mümkündür. Özellikle edebiyatın kurmaca metinlerine eğitim, nitelikli bir kaynak sunmaktadır. Özellikle roman türünde eğitim olgusuna dair malzeme saptamak sıklıkla mümkündür. Öyle ki romana, henüz yeni bir tür olarak insanların karşısına çıktığı bir dönemde eğitimsel bir işlevler ve sorumluluklar dahi yüklenmiştir. Bugün romanın böyle bir sorumluluğu olmasa da hala birtakım romanların eğitimsel mesajlar içerdiğine denk gelmek mümkündür.

Romanın, eğitime dair bol miktarda malzeme içerdiği Alman edebiyatı veya Almanca edebiyat bu açıdan incelemeye değerdir. Özellikle "kara pedagoji/eğitim (Alm.: Schwarze Pädagogik)" gibi bir kavramın bu edebiyata ait coğrafyadan çıkmış olması ve en çok da bu coğrafyada tartışılmış ve tartışılmakta olması sebepsiz değildir. Bu nedenle Alman edebiyatı/Almanca edebiyata dair nitelikli örnekleri ele almak eğitim olgusunun edebiyatta nasıl yer bulduğunu anlamada anahtar rol oynayabilmektedir. Bu açıdan bakıldığında, Alman edebiyatının veya Almanca edebiyatın Robert Musil, Heinrich Mann ve Ödon von Horvath gibi isimleri, eğitimi bazı yapıtlarında eğitimi tematik merkeze oturtmuştur. Bu çalışmada *Öğrenci Törless'in Bunalımları*, *Profesör Unrat* ve *Allahsız Gençlik* gibi seçilmiş metinlerde eğitim/pedagoji ele alınmaktadır. Bu metinler üzerinden eğitimin edebiyatta nasıl yer bulduğunun yanı sıra, eğitimin toplumca nasıl ele alındığının ortaya koyulması amaçlanmaktadır.

Anahtar Kelimeler – Alman Edebiyatı, Eğitim, Kara Pedagoji/Eğitim, Robert Musil, Heinrich Mann, Ödon Von Horvath, Öğrenci Törless'in Bunalımları, Profesör Unrat, Allahsız Gençlik.

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Grid Tied MMC-Based Photovoltaic System by using Triple Active Bridge Converter

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Abstract **–** In the field of Multi-Terminal DC (MTDC) systems, Modular-Multilevel Converter (MMC) is a promising topology. The article analyzes the Grid-Connected Photovoltaic (PV) system by Triple Active Bridge (TAB) converter. No power mismatch occurs by connecting the TAB converter with the above arm and lower arm of MMC. This arrangement overcomes the problem of capacitor voltage profile by eliminating differential-mode component. A circulating-current controller is proposed to reduce the second-order harmonic capacitor voltage. In addition, the half-bridge circuit is being used in the TAB converter which reduces the overall components in the system, cost, and the volume of the system. The MATLAB/SIMULINK simulation shows the validity proposed topology.

Keywords – Modular Multilevel Converter (MMC), Photovoltaic (PV), Circulating Current, Triple Active Bridge (TAB)

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April 4-6, 2023 : Konya, Turkey

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INVESTIGATION OF THE EFFECTS OF DIESEL-BIODIESEL-BUTANOL AND DIESEL-BUTANOL MIXTURE ON ENGINE PERFORMANCE

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Abstract **–** The vast majority of the energy used in the world is obtained from fossil fuels. This situation increases external dependence in countries such as our country, which is constantly growing and developing. In addition, the fact that fossil fuels will end in the near future leads to price instability and environmental problems. These problems have pushed us to look for an alternative fuel, an alternative energy source. The low fuel consumption of the diesel engine and high compression ratios make the diesel engine very attractive for use in heavy duty vehicles. It is known that vegetable oils can be used as fuel in diesel engines without any processing, but when used for a long time, it causes clogging in the engine, fuel line, clogging of injectors, cold weather or difficulties in the first movement when the engine is cold. The conversion of oils into biodiesel by transesterification method is more suitable than the use of unprocessed oil. When we look at the fuel properties of biodiesel produced by transesterification method, although it is similar to diesel fuel, its viscosity value is higher than diesel. In this study, tests were carried out at various speeds to determine the characteristic properties of biodiesel, biodiesel - diesel fuel blend, biodiesel - butanol blend and biodiesel - diesel - butanol blends produced by transesterification method in a four cylinder four stroke direct injection diesel engine.

Keywords – Biodiesel, n-Butanol, Ternary blend, Engine Performance, Transesterification

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April 4-6, 2023 : Konya, Turkey

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Public borrowing in Kosovo after 1999-2000

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Abstract **–** The time period of 1999-2000 was both a good and a difficult year for Kosovo. This is for the reason that Kosovo was freed from occupations and political influences that were harmful to the country and its citizens, among other things and because Kosovo was freed, as soon as it came out of the war it was destroyed both economically and financially. In order to build it, it was necessary to obtain public loans from other countries, whether regional or international. Thus, in addition to numerous donations offered by developed countries, Kosovo was also given public loans from the European Union, as well as other international countries. This is due to the fact that they get out of the economic crisis and to help Kosovo become an independent and sovereign state. And to be an independent and sovereign state, not only the population, the territory, and the state government are enough, but above all the economy and the way of financing the state. So Kosovo was financed by public loans in most cases, which were tried to be returned to the borrowers. Such a thing happened and during the year 2020-2021, due to the global pandemic and the war in Ukraine, they forced the state of Kosovo to take public loans from the European Union, since there were not enough public revenues to fill the state coffers. So Kosovo must continue to manage the public loans received, since they must be returned at the time determined by the lender. The public loan in Kosovo will be discussed in more detail during the presentation of the paper.

Keywords – Public Loans, Borrowing, The State Of Kosovo, The Post-War Period, Loan Management.

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April 4-6, 2023 : Konya, Turkey

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Testing of the layout assembly design (LAD4) of Harvesting Electric Roads (HRE)

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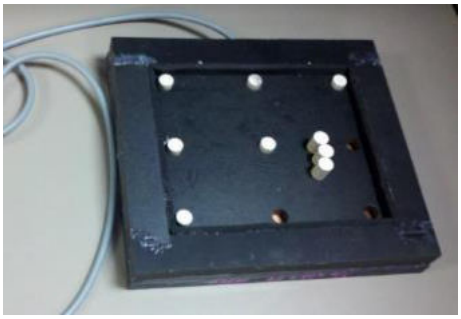
Abstract - The use of alternative power sources for roadway accessories has become increasingly important in recent years, as society seeks to reduce its carbon footprint and dependence on non-renewable resources. One promising avenue for generating electricity is through the use of energy harvesting technologies, which can capture and convert mechanical energy into electrical energy. One such technology involves nanogenerators, which can be embedded within the road to harvest energy from the rotating tires of automobiles. By utilizing the piezoelectric effect, these generators can convert the mechanical pressure exerted by the tires into electrical energy. This energy can then be used to power various roadway accessories, such as traffic signals, lighting, and other electronic devices. Overall, energy harvesting technologies can potentially revolutionize how we power roadway infrastructure. By harnessing the energy from passing vehicles, we can reduce our dependence on traditional power sources and create a more sustainable and energy-efficient transportation system. In our paper, we explore the testing LAD4 of electric vehicles to determine their electric performance and the output voltage generated by the nanogenerators. We also examine the potential applications of this technology, such as in smart cities and highways, where it could be used to power a variety of IoT devices and sensors.





Keywords- Piezoelectric Effect, Harvesting Energy Roads, Testing PZT.

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April 4-6, 2023 : Konya, Turkey

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Capacity Calculator in Recycling of Scrap/Waste Paper and Dough/Cellulose Production

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Abstract – In this study, scrap/waste paper, which is the main raw material of the paper industry, is provided for pulp/cellulose production from scrap/waste paper, which is the raw material of the paper industry. These wastes are sent to the pulp preparation unit and passed through pulping, cleaning and, if necessary, deinking and bleaching and/or fractionation, as a result of opening and grinding processes, depending on the type of paper cardboard to be produced. After that, the paper-cardboard is sent to the paper machine pre-preparation unit to be produced. There is a continuously operating fluting/test-liner paper machine in the facility that performs this process. In the pre-preparation unit of the paper machine, the pulp is fed to the paper machine by passing through the final preparation processes, processes in which the necessary additives and fillers are added and the dry matter is adjusted, depending on the type and weight of the paper to be produced. While calculating the capacity of the paper production plant, the amount/weight of the buffer (large, finished paper roll) produced in the unit time (minute, hour, day, etc.) at the exit of the paper machine goods winder unit is taken as a basis. Capacity calculation in the existing facility is calculated as 350 days and 24 hours. The annual production capacity has been determined as 42,350,000 tons/year of paper. There is no white paper production in the annual production at the facility. Production is made only as yellow paper. 25-30 grams of biocides and polymers are used to destroy bacteria as necessary materials in production. Salt and corrosion inhibitor calculations are made for various paper and boiler chemicals. Besides, in the existing treatment plant, $FeCl_3$ is used as 0.15 wt.% in the production of 1 ton of paper per year.

Keywords – Scrap/Waste Paper, Pulp/Cellulose Production, Capacity Calculation

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April 4-6, 2023 : Konya, Turkey

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Charge transfer in π-stacks of conjugated molecules with short alkyl side chains

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Abstract – This report shows that the molecules studied by the density functional theory, which combine donor thienothiophene (TT) and acceptor diketopyrrolopyrrole (DPP) units connected by aryls (T, thiophene), are organic semiconductors with a narrow band gap and demonstrate acceptable values of charge mobility [1]. The structural variable in the calculations was various side alkyl substituents at the diketopyrrolopyrrole unit. Unlike many experimental works, this work considers the shortest linear and branched alkyls - ethyl, propyl, and isopropyl. Systems with short substituents are a rather rare object of study, and only a few references to the properties of materials based on them have been found in the literature. Therefore, the study and prediction of the properties of donor-acceptor molecules with short substituents is an actual task. The next steps in the study of such systems will be associated with simulating condensed phases containing long polymer chains (T-DPP-T-TT)n packed into simulation cells similar to polymer crystals. This project is supported by DFG via grant GU1510/5-1.

[1] Savchenko V.A., Guskova O.A. An impact of the alkyl side chains on charge transfer properties within the stacks of D-π-A-π-D molecules. *Herald of Tver State University, Series: Chemistry*, 2023, 1 (51), 68-83.

Keywords – Conjugated Molecules Donor (D)-Π-Bridge-Acceptor (A)- Π-Bridge-Donor (D), Marcus Theory, Charge Transfer Rate, Density Functional Theory, Alkyl Side Chains, Hopping, Organic Electronics

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April 4-6, 2023 : Konya, Turkey

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Epitope Screening and *In Silico* Cloning of Envelope Glycoprotein from Ebola Virus (EBOV) for Vaccine Construction

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Abstract – Ebola virus (EBOV) is a type of RNA virus from the family of Filoviridae. The 2014-2016 Ebola outbreak in African countries Guinea, Liberia, and Sierra Leone has a total of 28,616 cases and 11,310 deaths. Death from Ebola is mainly caused by multi-organ failure due to internal bleeding and fluid loss. Another Ebola outbreak spiked this February 2021, suggesting the low effectiveness of the previous vaccines used. Zaire Ebola virus (EBOV) is known to be the species highly involved in the recent outbreak with a high mortality rate. This study is carried out to design a B-cell epitope Ebola vaccine based on the conserved region of Zaire EBOV glycoprotein. Reverse vaccinology and immunoinformatics approaches are used in this study. Samples of Zaire EBOV glycoprotein sequences were retrieved from GenBank, NCBI. The 3D modeling was done using the SWISS-MODEL web server and PyMol software. Phylogenetic tree analysis was also done using MEGA X. B-cell epitope prediction was done by BepiPred 2.0 and Emini Surface Accessibility using the IEDB web server. Epitopes were selected based on their conservancy by comparing the sequences with the MEGA X alignment result. Antigenicity, allergenicity, and toxicity properties of the peptides were predicted using VaxiJen 2.0, AllerTOP 2.0, and ToxinPred web servers. In silico cloning was done as the final step using the pET-24a(+) expression vector. This study revealed that peptides "LEIKKPD," "TGFGTNETEYLF," "PYFGPAA," "PYFGPA," and "KLSSTNQL" are the best candidate for the B-cell epitope vaccine. Phylogenetic tree and 3D modeling successfully showed the genetic and structural differences of Zaire EBOV GP originating from various countries. In silico cloning was also done using the pET28a(+) expression vector to design a clone vector map for the next vaccine development phase.

Keywords – B-Cell Epitope, Immunoinformatics, Ebola Virus, Vaccinology

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A review on the pH measurement of concrete using leaching method

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Abstract – Cement production is one of the biggest contributors to the greenhouse effect. To reduce the carbon footprint, supplementary cementitious materials are introduced to partially replace the cement usage in construction. Portland cement is highly alkaline due to the presence of alkali metals and abundance of calcium hydroxide. The high alkaline characteristics of Portland cement increases the durability of concrete, by providing passive protection to embedded reinforcement steel bars against corrosion. However, the introduction of supplementary cementitious material may reduce the pH and consequently affect the durability of reinforced concrete structure. Therefore, assessment of pH of concrete is important in health monitoring of concrete structure. There is no standardized method for the pH measurement of the cement-based materials so far. However, there are different techniques introduced by researchers to measure the pH value. Leaching is commonly used and recommended by researchers. This paper reviews different leaching methods and their affecting variables on the pH measurement.

Keywords – Ph, Leaching Method

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Hair removal methods in dermoscopy images: A review

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Abstract **–** Nowadays, dermoscopic image analysis technologies have become very popular. We've recently seen an increased demand for image processing technologies to aid professionals in their diagnoses. Skin lesions must be detected early in order to be effectively treated and have a better outcome. Many oncology cases are misdiagnosed at an early stage, leading to catastrophic consequences, including patient death. Melanoma is one of the most aggressive skin diseases in the world. To reduce death rate and make the diagnosis more accurate, earliest detection is required.In the last few years, researchers applied image-processing techniques to identify melanocytic lesions. These techniques can be divided into traditional methods and deep learning based methods. Computer-aided diagnosis systems is a fundamental tool that help experts to diagnose skin lesion automatically, which consist of three important steps: preprocessing, segmentation and classification. Computer-aided diagnosis of dermoscopic images have drawn extensive attention. Dermoscopic images suffer from different undesirable artifacts that affect automatic segmentation and classification outcomes. Literature suggests different studies that have been addressed the problem of hair occlusion of lesion. In this artical we present a review of various methods of hair removal which used two main techniques: hair detection and hair inpainting.

Keywords: Dermoscopy İmages – Hair Removal – Hair Detection – Hair İnpainting – Melanoma – Skin Lesion

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Thermodynamic insight into improvement in thermo-mechanical and viscoelastic properties of isotactic polypropylene

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Abstract **–** Computational studies on Polypropylene (PP) Polymer have attracted considerable scientific and industrial attention in recent years. As Polypropylene being a most vital commodity polymer with a wide domain of grades available for various applications and its low cost, acceptable range of tensile strength and modulus made it as an attractive candidate for many engineering applications. It has been found in various experimental investigations that polymer properties, including structural, mechanical, viscoelastic, and thermo-mechanical properties, can be tuned for end-use products. In order to investigate the characteristics of polypropylene polymer under different processing conditions, we used molecular dynamic simulation. In this simulation work, we have obtained some promising result which qualitatively matches well with an experimental & simulation work. Non-equilibrium molecular dynamics (NEMD) simulation was employed to investigate the effect of shear rate on configurational, viscoelastic and thermo-mechanical properties of polypropylene. The melt structure was further cooled down using various cooling rates, and Young's modulus and glass transition temperature were determined for distinct cases. Two-body excess entropy was calculated to understand and correlate the relation between properties. We have used Rosenfeld excess entropy-viscosity scaling to capture the viscoelastic behavior of polymer under steady shear condition.

Keywords – Molecular Modeling and Simulation, Young's Modulus, Glass Transition Temperature, Excess Entropy

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AGGREGATE RELATIVE ERROR OF EXPLICIT POSITIVITY PRESERVING ALGORITHMS FOR THE HEAT-EQUATION

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Abstract **–** performed systematic tests of recently invented stable and explicit algorithms which preserve the positivity of the solution for the linear heat equation. It is well known that the widely used explicit finite difference schemes are unstable if the time step size is below the CFL limit, and even if they are stable, they can produce negative temperatures. To examine their performance and relative competitiveness, the authors tested them in the case of several 2D systems to find how the errors depend on the stiffness ratio and the CFL limit of the system. They also created an anisotropic but equidistant grid by shrinking the vertical dimension of the 2D system and examined how this kind of anisotropy effects the errors.

Keywords – Heat Transfer; Conduction; Stiff Systems; Unconditional Stability; And Finite Difference

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Cyclic Voltammetry and Impedance Spectroscopy Behavior Studies electrochemical of MnO_2-Ag on FTO substrat

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Abstract **–** Manganese oxide-silver (MnO_2-Ag) has been successfully deposited on Fluorine doped Tin Oxide (FTO) glass electrode using a facile, effective and low cost electrodeposition process the analysis focuses essentially on the effect of silver (Ag) on the electrochemical behavior of the obtained of MnO_2. The electrochemical behavior of this material was investigated by cyclic voltammetry, Fourier Transform Infrared Spectroscopy (FTIR), UV–vis Spectroscopy, Scanning Electron Microscopy (SEM) and electrochemical impedance spectroscopy (EIS).

The morphology of the obtained composites shows a uniform dispersion of silver particles onto the MnO_2 matrix and reveals that the electrodeposition method has a significant effect on the amount of incorporated particles. The impedance spectroscopy study reveals that the conductivity of the composite film increases with the amount of silver incorporated.

Keywords – Electrodeposition ; Mno_2; Silver ; Materials Composite.

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Metin Özetleme Yöntemlerinin İncelenmesi ve Karşılaştırılması

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Özet – Günümüz dünyasında verilerin devasa boyutlara ulaşması ve gittikçe karmaşıklaşmasından dolayı verilerin işlenmesi ve yorumlanması zorlaşmaktadır. Bu işlemleri kolaylaştırmak ve veriler içerisinden istenilen bilgilere ulaşmak için bazı teknik ve algoritmaların kullanılması gerekmektedir. Yapay zeka çalışmalarının ilerlemesi doğal dil işleme alanında da yeni algoritmaları beraberinde getirmektedir. Otomatik metin özetleme konusu da bu algoritmaların kullanıldığı önemli alanlardan birisidir. Otomatik olarak metnin özetlenmesi, veri kümesindeki önemli özelliklerin çıkarımı ve yorumlanmasıyla elde edilen kısaltma işlemidir. Günlük konuşma dilinin yanısıra eğitim, hukuk, ticaret, teknik rapor, akademik makale gibi alanlarda oluşturulmuş metinlerin analiz edilmesi bir ihtiyaç haline gelmiştir. Bu çalışmada metin özetleme alanında kullanılan yöntemler ve tekniklerden bahsedilmiştir. Otomatik metin özetleme işleminde kullanılan iki ana yöntem olan çıkarıcı ve yorumlayıcı yöntemlerin yanı sıra; amaca göre incelenen belirtici ve bilgilendirici; belgenin türüne göre tekli ve çoklu doküman; makine öğrenmesi türüne göre denetimli, denetimsiz ve yarı denetimli; sonuç içeriğine göre alana ve konuya; son olarak da sorguya bağlı olup olmamasına göre yöntemler incelenmiştir. Ayrıca belirtilen yöntemler içerisinde kullanılan teknikler ve algoritmalar çalışmada yer almaktadır. Bu yöntemler belli başlıklar altında kategorize edilerek araştırmacıların metin özetleme yöntemleri hakkında detaylı bilgiye erişmeleri amaçlanmıştır. Çalışma otomatik metin özetleme yöntemlerinin avantaj ve dezavantajlarını belirttiğinden, amaca uygun algoritma ve tekniklerin seçimi konusunda araştırmacılara fayda sağlayacaktır.

Anahtar Kelimeler – Doğal Dil İşleme, Metin Özetleme, Özetleme Kategorizasyonu, Çıkarıcı Özetleme, Yorumlayıcı Özetleme

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Synthesis of bis-aryl-*α,β*-unsaturated ketone derivatives and Intriguing their electronic Properties

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Abstract **–** The present research work is about the chemical preparation of carbon-carbon bond forming reaction via Aldol condensation reaction. Accordingly, we have synthesized three symmetrical bis-aryl-*α,β*-unsaturated ketone derivatives DBC, BBC, and PBMP through the aldol condensation approach towards ketones that have two enolizable sites. Spectrometric methods ^{13}C-NMR and ^{1}H-NMR have been used to determine the structures of DBC, BCC, and PBMP. Moreover, the crystal structure of PBMP has been determined by using a single-crystal X-ray diffraction (SC-XRD) technique. PBMP crystal structure has also been analyzed by Hirshfeld surface analysis (HSA) and the results were compared with those of DBC and BCC crystal structures to evaluate their similarity.

Keywords – Moncarbonyl Aryledines, Chaperonin , Chemotherapeutics , Colorectal cancer , DBC, BBC, PBM

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Treatment and control of used lubricating oils with alginate/ZnO beads

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Abstract – This study investigated a cost-effective and eco-friendly treatment of used lubricating oils which are a significant environmental hazard using alginate/ZnO beads. ZnO-alginate beads were characterized using scanning electron microscopy, Fourier-transform infrared spectroscopy, and X-ray diffraction to confirm the stability and immobilization of ZnO nanoparticles in the alginate beads. The photocatalytic activity of the ZnO-alginate beads was evaluated by their ability to degrade used lubricating oils under UV irradiation. The results demonstrated that the ZnO /alginate beads exhibit excellent photocatalytic activity for used lubricating oil degradation. The system achieved a 70% degradation of used lubricating oils after six hours of UV irradiation. The research findings indicate that ZnO-alginate beads are a promising material for the treatment and control of used lubricating oils, which could be further explored for the treatment of other pollutants and offering an eco-friendly and cost-effective approach for environmental remediation.

Keywords –Beads, Alginate, Zinc Oxyde, Lubricating Oil.

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A New Control Approach for a Solar Shunt Active Power Filter

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Abstract – This research focuses on a grid-connected photovoltaic (PV) system that acts as a shunt active power filter to simultaneously enhance power quality while also providing the utility with extracted PV power. According to the reference that is provided, a direct power control (DPC) is applied on the grid side to inject the solar energy that has been extracted into the electrical network, which is expected to remove reactive power and undesired harmonics. On the PV side, an intelligent strategy of tracking the maximum power point based on fuzzy logic has been developed in order to eventually overcome the rapid evolving weather conditions. Simulation evaluation of the full control strategy is done using the MATLAB/Simulink software. The resulting simulation findings demonstrate that these control systems are feasible, effective, and robust under various test circumstances.

Keywords – Direct Power Control; Shunt Active Power Filter; Photovoltaic System; Fuzzy Logic MPPT Controller.

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GPS Based Time & OTP Attendance Monitoring System

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Abstract **–** For an effective approach to track employee attendance and manage payroll, many firms now rely heavily on attendance management systems. Yet, the integrity and dependability of attendance records might be jeopardized by traditional attendance methods, which are susceptible to fraud and manipulation. In this research, we suggest a unique method for enhancing the integrity and dependability of attendance systems through the use of Two-Factor Authentication (2FA) and GPS monitoring. When employees clock in or out of work, the proposed system uses 2FA to confirm their identities, guaranteeing that only authorized staff can record attendance. Employers can utilize GPS tracking to confirm an employee's whereabouts and make sure they are at the assigned workplace. The suggested technique offers a safe and dependable way to track employee attendance by combining these two measurements. In a series of tests, we demonstrate the suggested system's design and implementation and assess its efficacy. Our findings show that the system has a high degree of accuracy and dependability and is very successful at preventing attendance fraud and manipulation. The proposed approach has the potential to significantly improve organizational performance and cut costs while increasing the efficiency and efficacy of attendance management systems across a variety of sectors.

Keywords – Attendance management, Two-Factor Authentication (2FA), Global Positioning System (GPS)

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System of a well jet pump automated design

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Abstract – Using the Python programming language, an algorithm for the automated design of an oil jet pump was developed in the form of four components:
– import block of necessary libraries;
– block for entering the main parameters of the well;
– a block for entering additional parameters for calculating the current efficiency ratio;
– unit for calculating the efficiency factor.
To enter the initial parameters, geometric dimensions standardized series of the flow part elements of the well jet pump and structures of ground pumping units were used. The range of changes in the output data is determined in accordance with the recommendations developed by Kobe (USA), a leader in the field of oil and gas ejection technologies application. To automate the task, the "Ejector" class system was created, which provides means of grouping data and functionality. The efficiency factor of the ejection system is adopted as the criterion for optimizing the working process of the jet pump. From the entire array of obtained efficiency values, the maximum values and their corresponding values of the design and ejection system operational parameters are singled out. Taking into account the significant range of work flows, to automate the process of calculation and graphical dependencies display, a function of automatic reconstruction of the graphic dependency for the specified range of work flows in the form of a slider was created. To increase the application efficiency of the automated design system, a graphic 3D dependence was developed for choosing the optimal design and operational parameters of the well jet pump.

Keywords – Jet Pump, Ejector, Design Automation, Efficiency, Calculation Program

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Relating Compressive Strength and Water Absorption of Non-fired Bricks with Sodium Stabilisers for Customised Applications

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Abstract **–** Bricks have been arguably the most popular construction material since prehistoric times. Manufacturing methods combined with technology have made a wide variety of fired bricks available worldwide today. However, fired bricks are inadvertently energy-intensive and non-eco-friendly. In terms of green construction materials, non-fired bricks made with additives, such as sodium stabiliser, promise to be a favourable alternative because they are essentially a low-energy-intensive manufacturing product. In this study, the key engineering characteristics of a laterite-based geopolymer brick, i.e., compressive strength and water absorption, are determined for customised applications with mix designs of different sodium hydroxide (NaOH) and sodium silicate (Na_2SiO_3) mass ratios. The relationship between compressive strength and water absorption of the samples was next established to identify the optimal mix ratios. It was found that as the Na_2SiO_3/NaOH ratio increased, the compressive strength increased too, while the water absorption decreased. The optimum mix ratio is suggested to be determined in further research since there is just a positive trend with a maximum of 11.5 MPa of compressive strength and 14.9 percent of water absorption at a 1.8 Na_2SiO_3/NaOH ratio. This inversely proportional relationship can be related to the cross-linking of aluminosilicate gel during geopolymerization. In terms of application, it can be load-bearing Class 1 and internal wall bricks according to the Malaysian Standard; all excluded engineering and damp-proof course brick per the British Standard; third-grade brick for the Singapore Standard; non-weathering building brick in accordance with the American Standard; and all types of bricks according to the Australian Standard.

Keywords – Non- Fired Brick, Sodium Stabilisers, Geopolymer, Compressive Strength, Water Absorption, Relationship, Customised Application

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Conservative Management of Cultural Heritage in old Cairo-*Case study: Wikala Bazaraa*

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Abstract **–** This paper targets the conservation of cultural heritage and examines the factors affects a sustainable urban development, while discussing the challenges represented by the unitary system and the conflict, overlapping of the organizational structure whether at the central level, or the local one. Old Cairo gained high commercial importance for the concentration of economic activities and commercial and handicrafts, as the city of Cairo had many wikalas, most of which have disappeared, and none of them have survived except for a few, it served as the main reed, and it is one of the most important elements of the Islamic city in addition Mosques and residential areas located on the main axes of movement. And for example, and not Wikala AlGhuri, Wikala Qaitbay,Wikala Oda Bashi and Wikala Bazaraa,The international charters had played important role in stating the importance of heritage conservation, where this paper will highlight it.

Keywords – Cultural Heritage, Physical Conservation, Functional Conservation, Tangiable Values, Intangiable Values

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New structure Leapfrog-Hopscotch Algorithms to solve the Diffusion Equation

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Abstract – In this work, we construct novel numerical algorithms to solve the heat or diffusion equation. We start with 10^5 different leapfrog-hopscotch algorithm combinations and narrow this selection down to five during subsequent tests. We demonstrate the performance of these top five methods in the case of large systems with random parameters and discontinuous initial conditions, by comparing them with other methods. We verify the methods by reproducing an analytical solution using a non-equidistant mesh. The new methods are then applied to the nonlinear Fisher equation. Finally, we analytically prove that the order of accuracy of the methods is two, and present evidence that they are unconditionally stable.

Keywords – Diffusion Equation; Stiff Equations; Unconditional Stability; Odd-Even Hopscotch Method; Unconditional Stability

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The Impact of Plant-Based Diets on Poultry Nutrition and Production: A Review

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Abstract – Plant-based diets have become increasingly popular in recent years due to various reasons, such as health and environmental concerns. This trend has led to a growing interest in the use of plant-based ingredients in poultry feed formulations. However, the impact of plant-based diets on poultry nutrition and production is still not well understood. This review aims to provide an overview of the current literature on the use of plant-based diets in poultry nutrition and production. Firstly, the nutritional value of plant-based ingredients commonly used in poultry diets is discussed, including their protein, energy, and amino acid content, as well as their anti-nutritional factors. Secondly, the effects of plant-based diets on poultry performance, including growth, feed efficiency, carcass quality, and egg production, are reviewed. Thirdly, the potential benefits and drawbacks of plant-based diets on poultry health, welfare, and environmental impact are evaluated. Overall, the use of plant-based diets in poultry nutrition and production is a complex and multifaceted topic. While plant-based ingredients can provide a sustainable and cost-effective alternative to traditional animal-based protein sources, their nutritional value and anti-nutritional factors need to be carefully considered. Furthermore, the effects of plant-based diets on poultry performance and health may vary depending on the specific ingredients used, the inclusion levels, and the stage of production. Therefore, a comprehensive and evidence-based approach is required to optimize the use of plant-based diets in poultry nutrition and production.

Keywords – Phytobiotics, Poultry Nutrition, One Health, Eggs, Alternative to Antibiotics, Production Performance.

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Predicting seedling vigor index of rapeseed (*Brassica napus* L.) under salinity stress and priming: an artificial intelligence modeling approach

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Abstract **–** Seed germination is critical for seedling establishment and subsequent plant health and vigor. Rapeseed germination depends on numerous environmental and stress factors. The seedling vigor index (SVI) can be used to compare the negative effects of various treatments and stress factors on seed germination. Therefore, this study proposed a mathematical model to estimate SVI values to quantitatively explain the relative effects of different salt and ascorbic acid concentrations on seedling germination and growth. To this end, two AI-based models were compared to predict the effects of five salinity levels (0.20, 5.0, 10.0, 15.0 and 20.0 dS m^{-1} NaCl) and four priming doses (0, 0.5, 1.0 and 2.0 mM ascorbic acid (AsA)) on rapeseed germination. These models were artificial neural networks (ANN) and support vector machines (SVM). All the developed models were evaluated according to the following performance indices: coefficient of determination (R^2), root mean square error (RMSE) and mean absolute error (MAE). The results showed that all the implemented models had high performance in modelling SVI. However, the best results were obtained in the single layer neural network (R^2=0.996, MAE=23.89, and RMSE=30.76, testing subset) using 3 neurons in the hidden layer. The SVI prediction model developed in this study can be successfully used to predict the SVI value when salinity stress and ascorbic acid priming doses are within the concentrations (doses investigated in this study) at which rapeseed seeds can germinate. Thus, SVI values for rapeseed can be predicted in advance by salinity and AsA concentrations without germination tests.

Keywords –Artificial Neural Networks, Rapeseed, Support Vector Machine, Salinity Stress, Seedling Vigor Index

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Synthesis and characterization of amide derivatives using carboxylic acid

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Abstract **–** Amides are ubiquitous in many organic molecules, such as peptides, natural products, and pharmaceutical agents, as well as ligands and catalysts in organic synthesis. Direct amidation of esters with amines is a promising alternative synthetic method for amides. Furthermore, amide derivatives have been linked to a broad spectrum of biological activities like anti-tuberculosis, anti-tumor, anticonvulsant, anti-inflammatory, etc. The main objective of this research will be to develop an accessible approach for the synthesis of biologically active amide-containing compounds from isolated lauric acid. A library of amide derivatives will be synthesized by reacting aliphatic esters (lauric acid esters) and amines. The amide derivatives will be characterized through melting points, FT-IR, and other available spectroscopic techniques (^{1}H & ^{13}C) NMR. Moreover, the synthesized derivatives will also be screened for their biological activities like anti-bacterial, anti-fungal, and anti-cancer etc. And the results will be published in an international journal.

Keywords – Aliphatic Acid, Aliphatic Amine, Fecl3

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April 4-6, 2023 : Konya, Turkey

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Synthesis of hydrazone derivatives from isolated Lauric acid

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Abstract **–** The present research work is about the synthesis of Hydrazones containing the group (-NH-N=CH). They are typically generated by the elimination of a water molecule between a hydrazide and a carbonyl compound (Aldehydes, ketones). The applicative importance of Hydrazones as they are used in a wide range of applications in many fields such as agriculture, medicine as well as pharmacology. The biological activities of hydrazones include antibacterial, anti-convulsant, anti-analgesic, anti-inflammatory, cardioprotective, anti-platelet, and anti-cancer. Different spectroscopic techniques like ^{1}HNMR, UV, FTIR, and HRMS studies have been applied for their characterization. According to the ^{1}HNMR studies the synthesized compounds have their E and Z isomers with their percentage relative abundance. The FTIR studies of the above-mentioned compounds confirmed the signals for N-H and N=C. The HRMS studies of the synthesized compound confirmed the molecular weight and also the different fragments were also confirmed. UV studies confirm the formation of a synthesized compound by showing a signal at its peak lambda max.

Keywords – Functionalized Hydrazones, Medium-Chain Fatty Acid, Dodecanoic Acid

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Yapay Zeka ile Tasarruf Finansmanı Sektörü Firmalarının Sosyal Medya Etkinliklerinin Tahmin Edilmesi

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Özet – İnternet kullanımının yaygınlaşmasıyla birlikte küresel ölçekte insanların birbiriyle haberleşmesi ve bilgi paylaşımı sosyal medya aracılığı ile kolaylıkla gerçekleşmektedir. Bu platformlardan Twitter özellikle iş hayatı ve politik konular olmak üzere milyonlarca mesaj ve geri bildirimin yazılarak okunduğu çok kullanıcılı bir ortam haline gelmiştir. Birçok insanı birarada bulundurması geniş bir kitleye ulaşabilmeyi sağladığı gibi firmaların rekabet gücünü arttırmak için tüketici davranışlarını anlayabilmesi açısından da önemli katkılar sağlamaktadır. Ancak bu ortamdan elde edilen büyük boyutlu verilerin analiz edilmesi klasik yöntemlerle yapılamayacak kadar zordur.

Bu çalışmanın amacı tasaruf finansmanı sektöründe lider firmalardan EminEvim'in Twitter'daki sosyal medya etkinlikleri analiz edilerek, paylaşım yapılması durumunda alınacak etkinin retweet ve beğeni sayısı türünden belirlenmesidir. Bu aşamada Yapay Zeka algoritmalarından Rastgele Orman ve Çok Katmanlı Algılayıcı modelleri oluşturularak eğitim ve test similasyonları gerçekleştirilmiştir. Sonuçlar değerlendirildiğinde en yüksek başarıyı Rastgele Orman temelli modellerinin elde ettiği ve önerilen sistemin kullanımıyla tasarruf finansmanı sektöründe bulunan firmaların sosyal medyada etkili sonuçlar elde edeceği görülmüştür.

Anahtar Kelimeler – Tasarruf Finansmanı, Eminevim, Yapay Zeka, Rastgele Orman, Çok Katmanlı Algılayıcı, Twitter

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Tasarruf Finansman Sektöründe Müşteriye Uygun Finansman Methodu Seçilmesinde Yapay Zeka Temelli Öngörü Modellemesi

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Özet – Tasarruf finansman sistemi, banka faizlerinin yüksek olması nedeniyle konut ve motorlu taşıt gibi varlıkların alımlarını, banka kredisi kullanmadan gerçekleştirmek isteyen bireylerin tercih ettiği bir finansman sistemidir. Sistemi yürüten firmalar benimsedikleri farklı methodlar ile belirlenen bir vade sonunda katılımcının talep etmiş olduğu finansamana ulaşmasını sağlamaktadır. Firmaların kullandıkları bu methodlar katılımcının ödeme imkanlarına uygun ve elde etmek istediği finansman için yeterli olmak durumundadır. Bu nedenle sistemin sorunsuz işleyebilmesi için katılımcıya uygun methodların seçilmesi son derece önemlidir.

Bu çalışmada, tasarruf finansmanı katılımcısı olan müşteriye en uygun finansman methodunun belirlenmesi için yapay zeka destekli bir model önerisi sunulmaktadır. Modelin geliştirilmesi sırasında veri seti, Türkiye'nin tasarruf finansmanı sektöründe önde gelen firmalarından EminEvim'in müşterilerine sunmuş olduğu methodlar üzerinden yapılan analizler ile elde edilmiştir. Elde edilen sonuçlar önerilen modelin müşteri-finansman methodu eşleştirmesinde başarılı olduğu ve etkili şekilde kullanılabileceğini göstermektedir.

Anahtar Kelimeler – Tasarruf Finansmanı Sistemi, EminEvim, Yapay Zeka, Tahmin, Veri Analizi

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Synthesis of functionalized amide from isolated cholic acid and its characterization

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Abstract – Amides are common functional groups that have been studied for more than a century. They are the key building blocks of proteins and are also present in a wide range of other natural and synthetic compounds. Amides are known to be poor electrophiles, which is typically attributed to the resonance stability of the amide bond. The synthesis of biologically active compounds will be the major goal of this research Amides will be synthesized by the reaction of an ester with an amine. The amide functional group is ubiquitous and one of the most important motifs in pharmaceuticals, agrochemicals, and other valuable products. The compounds will be synthesized in the department of Applied Chemistry. Targeted compounds will be characterized through melting point, FTIR, X-ray Diffraction and other available spectroscopic techniques such as ^{1}H-NMR and ^{13}C-NMR. The separation of compounds and other impurities will be done through column chromatography and preparative chromatography. The synthesized amides will be further screened for their biological activities like anti-cancer, anti-bacterial and anti-fungal.

Keywords – Natural Acid, Primary Bile Acid, Chenodeoxycholic Acid

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Preparation of pyrimethamine based co-crystal salts, single crystal, computational and biological evaluation

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Abstract **–** Historically, pyrimethamine has been practiced worldwide as biomedicine against malaria. The antimalarial drug, pyrimethamine is not used any more for the treatment of malaria due to the resistance phenomenon, though; it can be modified for the potential reuse in medicinal chemistry. Utilizing pyrimethamine combined with other chemical moieties might be an excellent way to overcome drug resistance. Thus, at this juncture we have planned to prepare the co-crystal salts of pyrimethamine (anti-malarial drug) using different substituted aromatic acids. The targeted compounds will be characterized by measuring the melting points, NMR (^{13}C and ^{1}H) and FTIR spectroscopy. Furthermore, the synthesized compounds will also be evaluated for their anti-microbial and anti-cancer activities.

Keywords – Pyrimethamine, TNP, Co-Crystal Salt, DFT, Single Crystal XRD, Biological Activity

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Synthesis and biological activity of sulfonyl functionalized chalcone derivatives

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Abstract **–** Chalcone is an exceptional chemical template having multifarious biological activities due to the presence of the reactive ketoethylenic group (–CO–CH=CH–). Chalcones demonstrate a variety of activities like anticancer, anti-inflammatory, antimicrobial, anti-HIV, antimalarial, etc. The presence of different substituents on the aryl rings of chalcones also plays a prominent role in enhancing the biological activity of chalcone derivatives. Furthermore, many biologically active compounds contain sulfonyl moiety. So, by considering the pharmaceutical importance of both the chalcone and sulfonyl group, we have planned to synthesize arylsulfonyl derivatives of chalcones by employing the aldol condensation reaction. Prepared compounds will be characterized through melting points, FT-IR, and other available spectroscopic techniques (^{1}H & ^{13}C) NMR. Moreover, the synthesized compounds will also be screened for their antimicrobial activities.

Keywords – Chalcone, Arylsulfonyl, Biological Activity, FTIR

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Synthesis, structural and computational analysis of nitro functionalized unsymmetrical bis-aryl *α, β*-unsaturated ketones

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Abstract – Symmetrical and unsymmetrical diarylidene alkanones are pharmaceutically active compounds. Many of the unsymmetrical diarylidene alkanones have shown vast biological potential such as anti-inflammatory, anti-cancer, anti-bacterial, anti-microbial, anti-tumor, etc. Aromatic substitution has also a prominent role to enhance the biological activity of the diarylidene alkanones. So here in we have planned to synthesize nitro substituted arylidenealkanone derivatives, by employing the aldol condensation reaction. Target compounds will be characterized through melting points, FTIR, and other available spectroscopic techniques such as ^{13}C-NMR, ^{1}H-NMR. Moreover, the synthesized compounds will also be screened for their antimicrobial activity.

Keywords – Diarylidene Alkanones, Unsymmetrical Diarylidene, Biological Activity, FTIR

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Synthesis of 4-aminobenzamide azomethine derivatives and their biological evaluation

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Abstract **–** Azomethines are the most important class of organic compounds. These compounds show remarkable biological activities including anti bacterial, anti fungal, anti malarial, anti-microbial, antiviral, anti proliferative and antipyretic activity. Similarly Benzamide derivatives possess different kinds of pharmacological activities like antimicrobial, analgesic, anti-inflammatory, anticancer, cardiovascular, and other biological activities. So, keeping this importance in view we planned to synthesize the azomethine derivatives of 4-aminobenzamide. Targeted compounds will be characterized through melting points, FT-IR and other spectroscopic techniques. Moreover, the synthesized compounds will also be screened for their antimicrobial activities.

Keywords – Azomethines, 4-Aminobenzamide,Biological Activity, FTIR

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Synthesis and characterization and biological evaluation of *N*-(2, 6-dichloro-3-methylphenyl) anthranilic acid hydrazone derivatives

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Abstract **–** Flufenamic acid, mefenamic acid, meclofenamic acid (MCFA), *N*-(2,6-dichloro-3-methylphenyl) anthranilic acid and tolfenamic acid are derivatives of *N*-phenylanthranilic acid (fenamates). They are non-steroidal anti-inflammatory drugs (NSAIDs) used as potent analgesic and anti-inflammatory agents in the treatment of osteoarthritis, rheumatoid arthritis and other painful musculosketal illnesses. Their derivatives show cytotoxic activities. They are potent inhibitors of cyclooxygenase, thereby inhibiting the release of prostaglandins. Due to the above-mentioned facts this ongoing project is directed to develop new meclofenamic acid hydrazone derivatives. The targeted compounds will be characterized by measuring melting point, FTIR and other available spectroscopic techniques such as NMR. The synthesized compounds will also be screened for their antimicrobial activity.

Keywords – Fenamates, Nsaids, Acid Hydrazone Derivatives, Meclofenamic Acid, Biological Activity, FTIR

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Synthesis, computational and structural investigation of unsymmetrical monocarbonyl curcuminoids

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Abstract **–** Unsymmetrical monocarbonyl curcuminoids are pharmaceutically active compounds. They belong to different families like gingiberaceae and betulaceae. Many of the unsymmetrical monocarbonyl curcuminoids have shown vast biological potential such as anti-inflammatory, anti-cancer, anti-bacterial, anti-microbial, anti-tumor, etc. There is an increasing demand for curcumin, demethoxycurcumin, bisdemethoxycurcumin and other curcuminoids because of their biological activity. So here in we have planned to synthesize unsymmetrical monocarbonyl curcuminoids by using the aldol condensation reaction. All synthesized products will be characterized through melting points, FTIR, IR, ^{13}C-NMR, ^{1}H-NMR and Mass spectrometry an and other available spectroscopic techniques. Moreover, the synthesized compounds will also be SAR studies for their antimicrobial activity.

Keywords – Unsymmetrical Monocarbonyl Curcuminoids, Demethoxycurcumin, Biological Activity, FTIR

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One-pot synthesis, characterization and computational investigation of lauric acid based peptoids

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Abstract – Peptoids (N -substituted glycines) are mimics of α-peptides in which the side chains are attached to the backbone nitrogen α - amide nitrogen instead of the $C\alpha$ -atom. Peptoids hold promise as therapeutics since they often retain the biological activity of the parent peptide and are stable to proteases. The relationship between peptoid sequence, structure and function leading to form stable, chiral, polyproline-like helices, loops, and turns secondary structures in either organic or aqueous solution. So here in we have planned to synthesize Lauric acid based peptiodes by employing the Ugi multicomponent reaction (Ugi-4CR). The targeted compounds will be characterized by measuring the melting points, thin layer chromatography, FTIR, NMR ($_{13}$C and $_{1}$H) and mass spectrometry. Moreover, the synthesized compounds will also be screened for their antimicrobial activity.

Keywords – Peptoids, Lauric Acid, Ugi-4CR, Biological Activity, FTIR

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İpekböceği (*Bombyx mori* L.) Yetiştiriciliğinde Yapay Yem Karışımlarının Kullanımı

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Özet **–**Evcilleştirilmiş ipekböceği, *Bombyx mori* L., binlerce yıldır ipek üretimine büyük katkı sağlayan ekonomik açıdan en önemli böceklerden birisidir. İpekböceği'nin temel özelliklerinden biri tek tip bir besin kaynağıyla beslenmeyi tercih etmesidir. Taze dut yaprakları ipekböceği larvalarının tek doğal besin kaynağıdır. Dut yapraklarının tüm yıl boyunca bulunmaması ipekböceği yetiştiriciliğini ve koza üretimini ciddi şekilde sınırladığından, ipekböceği larvalarının yapay bir yemle beslenmesi hep gündemde olmuştur. İpekböceklerinin tüm larva döneminde yapay yemlerle beslenmesi ilk kez 1960 yılında başarılmıştır. Ancak ipekböceği larvaları bu yapay yemlerle beslendiğinde larvaların büyüme ve gelişmesi gerilemiş, küçük kozalar üretmişlerdir. Daha sonraki yıllarda pek çok gelişmenin ardından özellikle Japonya'da genç ipekböceği larvalarının 1. ve 3. yaş dönemleri arasında yapay yemle beslenmesi yaygınlaşmıştır. Günümüz ipekböceği yetiştiriciliğinde yapay yemlerin maliyetleri nedeniyle tüm larva dönemleri boyunca kullanılamayacağı genel olarak kabul edilmiştir. Bu derlemede, ipekböceği yetiştiriciliğinde yapay yem karışımlarının temel bileşenleri, formülasyonları ve hazırlanması ile ilgili ayrıntılara yer verilmiş, ayrıca bu konudaki güncel bilimsel çalışmalar da özetlenmiştir.

Anahtar Kelimeler – İpekböceği, Besleme, Yapay Yem Karışımı, Dut Yaprağı, Koza

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Synthesis and investigation of spectroscopic properties of 5-(4'-arilazo-3'methyl-1H-pyrazole-5'il azo)-6-hydroxy-4-methyl-1H-pyrimidine-2-tiyon dyes

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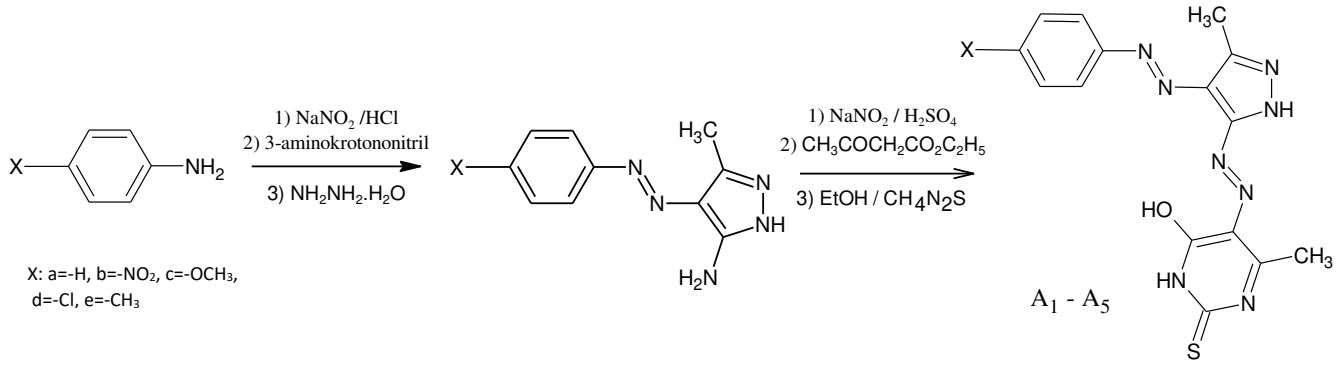
Abstract – The most important development regarding disperse dyes in recent years is the use of pyrazole and its derivatives as chelating components. Azopyrazole disperse dyes have replaced all other disperse dyes in the bright yellow-orange color range and have very good fastness properties. As heterocyclic diazo components, disperse dyes obtained from diazonium salts of 2-aminothiazoles, 2-aminoisothiazoles, 2-aminobenzothiazoles, 5-aminopyrazoles and 2-aminodiazoles have been used in many patents [1-3].

In this study, aniline and aniline derivatives were reacted with 3-aminocrotononitrile compound. The obtained intermediate product was refluxed with hydrazine monohydrate and 5 different pyrazole derivatives were synthesized as a result of the ring closing reaction. Then, diazonium salts of these pyrazole derivatives were prepared and reacted with ethyl acetoacetate. Finally, unstable intermediates were reacted by heating with thiourea and 5-(4'-arilazo-3'methyl-1H-pyrazole-5'il azo)-6-hydroxy-4-methyl-1H pyrimidine-2-tiyon (A1-A5) dyestuffs were synthesized. The structures of the synthesized dyes were elucidated by elemental analysis, FT-IR and ^{1}H-NMR. Solvent and acid-base properties were investigated by UV-visible spectroscopy method.



Keywords – Heterocyclic Compounds, Chelation Reaction, Cyclization Reaction, Azo Dyes, Spektroscopy

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Otomotiv Fren Diski Marka Temizliği ve Proses Sonrası Uygunluk Kontrolünün Sağlanılması

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Özet – Otomotiv fren diski, araçların fren sistemi için kullanılan bir bileşendir ve hemen hemen tüm araç tiplerinde standart bir bileşen haline gelmiştir. Fren diskleri üzerinde üretici markası, ürün numarası ve disk özelliklerine ait çeşitli bilgiler fren diskinin yan yüzeyine çeşitli işlemler ile markalanmaktadır. Disk üretimi bir kutuda iki adet olacak şekilde gerçekleştirilmektedir. İkili üretime göre planlanan üretim esnasında proses kaynaklı hatalardan dolayı bozulan diskler, ikili sevkiyat düzenini bozmaktadır. Tek kalan markalı fren disklerin, tolerans değerleri arasında temizlenip geri dönüşümü sağlanabilir. Fren diski marka temizleme işlemi doğru yapılmazsa zararlı olabilir. Fren diskleri tolerans aralığı dışında belirli bir çapın altına düştüğünde fren diskinin güvenliğini azaltabilir ve geometrisinde değişim olabilir. Ayrıca, fren diski marka temizleme işlemi sırasında, diskin çizilmesi veya aşırı ısınması gibi sorunlar da oluşabilir. Tek kalan markalı disklerin yeniden kullanımı için nokta vuruşlu lazerle yazılan markaların disk üzerinden silinmesini sağlayacak PLC (programlanabilir mantıksal denetleyici) kontrollü ve Yapay Zekâ destekli sistemin tasarımı ve üretimi gerçekleştirilmiştir. Bu çalışma ile adet fazlası disk üretiminde bulunan markalar hassas bir şekilde temizlenerek diskin geometrisinde tolerans aralığı dışında değişim olmaksızın, anlık olarak çap kontrollü bir şekilde temizlik yapılarak %100 geri dönüşüm ile verimlilik artışı sağlanılmış, operasyon sonrası yapay zeka destekli kameralar ile proses uygunluk kontrolü gerçekleştirilmiştir.

Anahtar Kelimeler – Disk, PLC, Yapay Zekâ, Marka Temizleme, Lazer sensör

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April 4-6, 2023 : Konya, Turkey

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Kültür Mantarı Yetiştirme Odası İklimlendirme Sistemi Analizi

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Özet **–** Ülkemizde de giderek bir iş kolu haline gelen kültür mantarı yetiştiriciliği, sağlıklı beslenme açısından da büyük öneme sahiptir. Kültür mantarı yetiştiriciliğinde sürekli değişen dış hava şartlarına karşın üretim odası içerisindeki sıcaklık, nem ve CO2 oranının belirli değerlerde sabit tutulması gerekmektedir. Bu amaçla çeşitli iklimlendirme sistemleri kullanılmaktadır. Bu sistemlerin işletme maliyetleri ise üretim maliyetini önemli derecede etkilemektedir. Bu çalışma kapsamında mantar yetiştirme odası için iklimlendirme sistem tasarımı yapılmış olup psikometrik hesaplar ile birim kütle başına enerji miktarları hesaplanmıştır. Hesaplamalar için bir analiz yazılımı geliştirilmiş ve farklı tarihlerdeki yetiştirme dönemleri için analizler yapılmıştır. Araştırmada Ankara, İstanbul, İzmir, Erzurum ve Kayseri olmak üzere Türkiye'deki 5 farklı iklim bölgesinde bulunan toplam beş şehir için analizler gerçekleştirilmiştir. Bu şehirlerin dış ortam şartları (yıllık sıcaklık ve nem verileri) Meteoroloji Genel Müdürlüğünden temin edilmiştir. Kültür mantarlarının yetişmesi için ortamın 24°C ve %80 bağıl nemde tutulduğu ve ortama 0,00037 $m^3_{hava}/(kg_{mantar}*s)$ debi ile taze hava sağlandığı göz önüne alınmıştır. Çalışma sonucunda yıllık en yüksek ısıtma enerjisi ihtiyacının 3.618 Wh/kg_{mantar} ile İzmir'de, en yüksek soğutma enerjisi ihtiyacının 51,058 Wh/kg_{mantar} ile İzmir'de, en yüksek nemlendirme ihtiyacının 0,0057 $g_{su}/(kg_{mantar}\ s)$ ile Erzurum'da oluştuğu belirlenmiştir.

Anahtar Kelimeler –İklimlendirme, Kültür Mantarı, Misel, Nem, Yetiştiricilik

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Virtual Reality Technology and Its Developments in Consumer Marketing

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***Abstract* —** Virtual Reality (VR) technology has had a great impact in attracting consumers and getting their attention when it comes to marketing activities. With a special focus to consumer marketing, this article put forwards a conceptual framework for virtual reality in relation to consumer marketing. A comprehensive overview of the practices of virtual and augmented reality is also provided. Based on the framework, future challenges and opportunities opposed by virtual and augmented marketing corresponding to consumer marketing is recommended.

Keywords- Augmented Reality, Consumer Experience, Consumer Marketing, Virtual Reality

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Principles of Using Nanorefrigerant in A VCRS: An Experimental Application

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Abstract – In this study, the basic principles of using nanorefrigerant in a mechanical vapor compression refrigeration system were presented. The aim of this study was to introduce the concept of nanorefrigerant. In addition, it was to explain the usage of nanorefrigerant practically. Within the scope of this study, alumina nanoparticles were added to the system using R134a as the working fluid. Alumina nanoparticles were added to the system by means of compressor lubricant, a polyolester oil. Two-step method was used the preparation of nanoparticles and lubricant mixture. Preparation and stability control of nanorefrigerants were detailly explained. In conclusion, it was observed that the system worked safely and efficiently with the addition of alumina nanoparticles to the system with R134a.

Keywords – Nanorefrigerant, Nanolubricant, POE Oil, Alumina, R134a, VCRS.

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Mineral chemistry and petrogenesis of chromitites from the Koçali Ophiolite (SE Turkey)

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Abstract **–** Koçali Ophiolite, an important Southeastern Anatolian Ophiolite Belt member, presents a complete ophiolite sequence. The Koçali Ophiolite comprises mantle peridotites, ultramafic to mafic cumulates, isotropic gabbros, ultramafic-mafic dykes, sheeted-dyke complex, plagiogranitic rocks volcanic rocks from bottom to top. Mantle peridotites consist of intensely serpentinized harzburgite and small amounts of dunite lenses and bands. Small-sized podiform chromitite masses are occasionally encountered in the peridotites.

Due to the dynamic metamorphism, widespread brecciated structures and cracks are observed in the chromitites. Ferrous alteration is very low in the margins and cracks of Cr-spinel crystals of chromitites containing less than 20% silicate. Some silicate inclusions, such as olivine, are observed in anhedral chromite crystals.

The compositions of some major oxides (wt%) in the unaltered cores of the Cr-spinels are Cr_2O_3 (54.86–58.04), Al_2O_3 (15.55–13.68), FeO (13.57–18.16), and MgO (12.45–15.64). The compositions (wt%) of trace elements are in the following ranges: TiO_2 (0.05–0.19), MnO (0.43–1.00), ZnO (0–0.17), NiO (0.03–0.26) and CoO (0–0.09). The Cr# and Mg# values of chromite are 0.73–0.75 and 0.55–0.67, respectively. Spinels are of the magnesiochromite type. In addition, the Cr#, Mg# and TiO_2 values of the chromitites indicate that the related chromitites are podiform chromitites belonging to the ophiolites. Geochemical and mineralogical data reveal that the high-Cr chromitites were crystallized from a boninitic melt in the island arc environment.

Keywords – Cr-Spinel, Koçali Ophiolite, Mineral Chemistry, Podiform Chromitites, Southeast Anatolian Ophiolite Belt

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Perception of the digital technological integration by the teachers of technology and entrepreneurship

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Abstract **–** In the conditions of ubiquitous informatization and global connectivity, the integration of ICT (Information and Communication Technologies) in education is a major way to modernize today's education. It is a matter of gradual and progressive changes to the extent of transformation of the educational system and construction of new educational models. The degree of integration depends on many factors. In addition to the resource provision, the digital competencies of teachers, and especially their value parameters, have an important impact.

The ways in which teachers in Bulgarian junior high school technological education perceive information and communication technologies (ICT) in the learning process, as well as their attitude to innovative digital forms of learning and teaching have been tested by surveying 127 teachers and conducting semi-structured interviews with 18 of them. The tools used in the process reflect the understanding of the essence of digital technological integration based on theoretical analysis. The participants in the study express their thoughts about the educational potential of learning methods such as game-based learning, use of computer simulations, virtual reality, learning with mobile devices and others.

The results of the empirical research show that teachers in technological and entrepreneurial subjects perceive ICT not only as a way of improving existing methodological practices, but also as a tool for overall transformation of learning. The participants in the survey declare a positive attitude towards most of the listed innovative forms of training; however, they are reserved in the assessments of their capacity and express concerns about their effective methodological interpretation. The results are a prerequisite for increasing the degree of integration of ICT in the Bulgarian high school education in technology and entrepreneurship and show the need for in-depth methodological research in the field of pedagogical use of digital technologies

Keywords – Technology Education, Digital Technological Integration, Information and Communication Technologies, Innovative Forms of Learning and Teaching, Digital Pedagogical Competencies

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Synthesis, Characterization and Metal Sensor Properties of 2,5-bis(N-[2-[(2-hydroxyphenyl)methylene]-2-phenoxyacetohydrazide) thiazolo [5,4-d] thiazole

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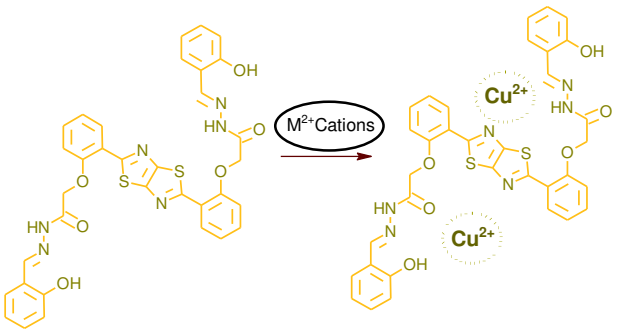
Abstract – Chemosensors are molecules that have the ability to selectively and reversibly bind to the analyte and, as a result, simultaneously change one or more properties of the system, such as color (colorimetric chemosensors) or fluorescence (fluorescent chemosensors) or redox potentials (electrochemical sensors) [1]. Thiazole[5,4-d]thiazol constitutes an important class of contiguous aromatic species formed by back-to-back joining of two thiazole rings. Compounds with different properties can be synthesized by derivatizing these compounds.[2-4] In this study, a new thiazole[5,4-d]thiazole compound carrying azomethine (>C=N-) and hydrazide moieties that can coordinate with metal cations was synthesized and characterized by spectrochemical methods (FT-IR, 1H-NMR, 13C-NMR, and LC-MS-MS). The behavior of this compound as a colorimetric chemosensor was then investigated. The detection ability against Cu^{2+}, Cr^{3+}, Ni^{2+}, Co^{2+}, Mg^{2+}, Zn^{2+}, Fe^{2+}, Fe^{3+}, Mn^{2+}, Hg^{2+}, Pb^{2+}, and Al^{3+} metal ions was investigated in dimethylformamide (DMF) solvent with the best resolution using UV-Visible spectrum monitoring method. When the UV-Vis spectra of the complex solutions obtained from adding different metal cation solutions to the ligand solutions were compared, it was determined that they showed selectivity, especially against the Cu^{2+} cation. After adding this metal ion to the ligand, a significant red shift from the origin and a new peak of the ligand-to-metal charge transfer (LMCT) were seen at 443 nm. When the Job plot was applied, it was determined that the ligand binds to metal ions at a 1:2 ligand-metal molar ratio. The results show that the ligand can be developed to be used as a chemosensor for detecting Cu^{2+} ion.

Keywords – Chemosensor, Colorimetric sensors, Fluorescent, Thiazole[5,4-d]thiazol, Hydrazide, Schiff base



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Production of plastic films from textile waste

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Abstract **–** The textile industry, due to its numerous stages of transformation (from fiber to fabric, then from fabric to clothing), is confronted with significant production off-cuts which until now have ended up in the waste disposal bins. The rate of these unused raw materials is around 15 to 20% of the whole process and the cost of this material can represent up to 40% of the turnover of companies.
This textile waste, which comes mainly from production off-cuts, is in most cases reusable or recyclable. However, it is still often thrown away with household waste. Reusing textile waste is a civic gesture, protecting the environment and reducing waste, but also a social commitment. Thus, it is judicious to develop these new sources of recycled raw materials to make non-woven fabrics, films for packaging, filtration, etc.
Cellulose acetate is the most common thermoplastic derivative of cellulose. In the plastics industry, especially in the packaging industry, only cellulose acetate is widely used. It is also used in food and non-food packaging as a biodegradable film. This is particularly due to a unique combination of properties that distinguish them from other thermoplastics. However, the low elasticity of CA films is a major drawback that limits their application.
In this context, we tried in this work to elaborate films from waste cellulose acetate fibers. These films were subsequently characterized by different techniques and their performance, especially mechanical performance, was improved by adding different plasticizers.

Keywords – Fiber, Films, Cellulose Acetate, Plasticizers, Textile Waste.

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The behavior of eco-friendly mortar containing treated granulated rubber

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Abstract **–** The current research focused on assessing the performance of mortar contained crumb rubber. The physical and mechanical properties of mortar were evaluated after adding 3 percentages of crumb rubber particles as 10%, 17.5 % and 25 % of volume of sand. The work methodology was to study the effect of surface treatment with the alkaline solution of sodium hydroxide (NaOH) of crumb rubber compared with untreated crumb rubber and ordinary mortar. To do this, the following properties have been studied: density, compressive strength, flexural tensile strength and failure mode.
The results obtained show that the treatment of rubber aggregates by the solution method (NaOH) presented a considerable improvement in density and in mechanical performance (increase in compressive strength and flexural tensile strength). This improvement is of the order of 8% compared to mortar with untreated rubber granulate. The failure mode changed from a brittle failure mode for ordinary mortar to a ductile mode for rubberized mortars.

Keywords – Mortar, Aggregate, Rubber, Behavior, Sodium Hydroxide Solution (Naoh).

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Synthesis and Characterization of Curcumin/PDMS based Waterborne Polyurethane

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Abstract **–** One of the major challenges facing the polymer industry now is finding sustainable and renewable alternatives to petroleum-based raw materials. To overcome such challenges, these novel waterborne polyurethane dispersions will be prepared from Curcumin. Waterborne polyurethane dispersions will be synthesized by reacting the hydroxyl terminated polybutadiene (HTPB) with toluene diisocyanate (TDI) and dimethylol propionic acid (DMPA) to form the polyurethane prepolymer, which further reacts with polydimethylsiloxane (PDMS) and curcumin (as chain extenders), and the final product will be obtained by the addition of water. Fourier transform infrared analysis (FTIR) will be used for the structural confirmation of the prepared curcumin based polyurethane dispersions. A number of textile tests, including mechanical (tear strength, tensile strength) and colorfastness (such as washing, rubbing, perspiration) will be conducted on poly/cotton fabrics after applying the synthesized dispersions by pad dry-cure method.

Keywords – Curcumin Based Polyurethane, Poly/Cotton Fabrics, Hydroxyl Terminated Polybutadiene, Biological Activity

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Synthesis and characterization of 4-substituted pyrimidine derivatives using 4-nitrobenzaldehyde

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Abstract **–** Pyrimidine is one of the most important heterocycles found in nucleic acid including thymine, cytosine, which are building blocks of DNA. In literature, pyrimidine derivatives have been reported to exhibit antimicrobial, antiviral, anti-HIV, antitumor, and antimalarial activities. Because of all these pharmaceutical applications associated with pyrimidines we have decided to synthesize pyrimidines derivatives. Pyrimidines derivatives will be synthesized *via* one-pot multicomponent reaction. All synthesized and purified compounds will be characterized by IR and 1H-NMR spectroscopy and mass spectrometry. Virtual screening of the synthesized compounds will be performed to investigate their potential pharmaceutical applications.

Keywords – Pyrimidine, Thymine, Cytosine, Biological Activity

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RELIABILITY AND VALIDITY OF KNOWLEDGE AND ATTITUDES SURVEY REGARDING PAIN IN ALBANIAN

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Abstract **–** Lack of knowledge in pain management and myths about opioid use are identified in other studies as important barriers to effective pain management. Management knowledge regarding the appropriate timing of pain assessment and opioid side effects of nursing staff in Albania is restricted. The Knowledge and Attitudes Survey Regarding Pain can be used to assess nurses' knowledge and attitudes. The study aimed to translate into Albanian and test the validity and reliability of the questionnaire.
A cross-sectional study. The cultural adaptation of the questionnaire was done according to Beaton's guidelines. Reliability and validation were performed by measuring the Alpha Cronbach (α) and Item Total Correlation (ITC).
The pre-final version of the Knowledge and Attitudes Survey Regarding Pain was tested on 25 nurses of the surgery and emergency departments, at the Regional Hospital "Xhaferr Kongoli" Elbasan. It was found that no other changes were needed. Cronbach's α was 0.73 and ITC was 0.32. The Albanian Knowledge and Attitudes Survey Regarding Pain is a very important tool for measuring nurses' knowledge and attitudes toward pain management. This questionnaire can be used in other studies to provide clear insight into knowledge gaps and to recommend new strategies for the deepening of knowledge.

Keywords- Pain, Knowledge, Attitude, Nurse, Validation.

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Impact of Daylight and Building Design on Performance of Students

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Abstract – The indoor environment quality of a space includes thermal comfort, air quality, lighting quality, acoustic quality, layout, and views. This paper is focused on the lighting quality and the relationship of this factor with the performance of students. The literature review highlights that good lighting enhances the visual as well as post-visual performance, the communication, moods, perception to aesthetics, health, and wellbeing of occupants. The building design plays a significant role in the quality of indoor natural lighting. This paper attempts to explore the effect of building design issues on the students' performance, with respect to daylight in the classrooms. A quantitative survey was undertaken among 121 university students to ascertain their perceptions of the interior environment due to lighting quality. The study is limited to the perception of students only excluding the perception of teachers in the classroom. The study reveals that there is a positive level of agreement on the performance of the students with daylight in the classroom. The paper finally concludes that the building design with proper orientation, openings, and views ensures proper daylight in the institutional building and helps to enhance the performance of users.

Keywords – Indoor Environment Quality, Perception, Openings And Views, Orientation, Well Being

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Voleybolcuların İvmelenme ve Sürat Performansları ile Hamstring Eksantrik Kas Kuvveti Arasındaki İlişkinin İncelenmesi

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Özet – Bu çalışmada voleybol oyuncularının ivmelenme ve sürat performansları ile hamstring kas kuvveti arasındaki ilişkinin incelenmesi amaçlamıştır. Çalışmaya bölgesel lig voleybol takımında yer alan 13 gönüllü erkek voleybolcu katılmıştır. Katılımcıların boy ve vücut ağırlığı ölçümü, boy ölçerli baskül kullanılarak çıplak ayakla ve hafif kıyafetler ile ölçülmüştür. Voleybolcuların 10m ivmelenme ve 20m sürat performansları voleybol sahasında Microgate Witty fotosel ile belirlenmiş, iki deneme arasındaki en iyi performans verilerin analizi için kaydedilmiştir. Hamstring eksantrik kas kuvvetleri Gazi Üniversitesi Teknoparkta bu konuda uzman mühendisler tarafından geliştirilen; Anka Kalibrasyon Test Ölçüm Danışmanlık ve Dış Tic. Ltd. Şti. tarafından kalibrasyon sertifikası ile güvenirliliği doğrulanmış H BOARD cihazı ile değerlendirilmiştir. İvmelenme ve sürat ile hamstring kas kuvveti arasındaki ilişkiyi belirlemede non parametrik testlerden Spearman korelasyon analizi kullanılmıştır. Katılımcıların yaş, boy, kilo ortalamaları sırasıyla 21,84±1,57 yıl; 181,92±5,69 cm; 75,30±4,78 kg olarak belirlenmiştir. Voleybolcuların ivmelenme ve sürat performansları ile hamstring kas kuvveti arasında ilişki tespit edilmemiştir ($p>0,05$). Bunun sebebi, ölçümlerin müsabaka dönemine denk gelmesinden ötürü sporcuların kendilerini testlere tam irade ile vermediklerinden kaynaklandığı düşünülmektedir. Çalışmada anlamlılık düzeyi $p<0,05$ olarak kabul edilmiştir.

Anahtar Kelimeler – Hamstring Kas Kuvveti, Sürat, İvmelenme, Voleybol, Performans

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If The KAYA Report (Public Administration Research Project) Were To Be Written Now

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Abstract **–** The KAYA Project, conducted between 1989 and 1991, was a comprehensive research effort aimed at improving Turkish public administration. The State Planning Organization requested TODAIE to conduct this "management research" to investigate the implementation of previous studies and to guide the 6th Development Plan. The main motivation behind this project was Turkey's intention to join the European Communities. During the KAYA Project, various aspects of public administration were examined, from the central government to the district level, with the goal of making it more efficient, effective, fast, and qualified.

The KAYA General Report aimed to revise public administration and address any deficiencies identified, covering a wide range of issues such as the structure of institutions, personnel systems, and resource utilization. Following the 2017 constitutional amendments in Turkey, the political system underwent significant change, impacting nearly all institutions in the Turkish bureaucracy. The harmonization law efforts are evidence of this change.

This study underscores the need for a revised version of the KAYA Report in light of these developments by serving as a prototype of what the report would express if written in today's political climate. The report highlights the importance of efficient, effective, fast, and qualified public administration and the need to revise it in line with current requirements. The study aims to bring attention to the ongoing efforts to improve Turkish public administration and the relevance of the KAYA Project in today's context.

Keywords – KAYA Report, Turkish Public Administration, Reform, Necessity of Reform, Political Changes, Political System Changes, Harmonization Legislations

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2nd International Conference on Engineering, Natural and Social Sciences

April 4-6, 2023 : Konya, Turkey

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Comparison study for different adsorbents used to remove paracetamol from water sources

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Abstract **–** The coronavirus disease 2019 (COVID-19) outbreak has induced an unprecedented increase in the use of several drugs, especially paracetamol, because, for COVID-19 symptoms, paracetamol is recommended as the first-line antipyretic and analgesic medication. The excretion of drugs and their metabolites in stools and urine release these drugs into wastewater, surface waters, and groundwater. This study intends to examine the adsorption of paracetamol, one of the most used medications used during the COVID-19 pandemic, from water using different adsorbents, commercial activated carbon (granular and powder form), clay, silica gel, and zeolite. The experiments were conducted under constant conditions at room temperature 27ºC, initial concentration of 10 ppm, speed of rotation is 200 rpm, the mass of adsorbents is 1 gm, pH 7.8, and volume of solution is 200 ml under different time intervals to study the effect of each adsorbent in the removal process. As a result of this work, activated carbon was the best adsorbent to remove paracetamol from water in both granular and powder forms, which gives the removal of 98.5% in 5 hours for granular and 93.33% in 1 hour for powder activated carbon. It is essential to improve the characteristics of activated carbon to reduce the process's time to make it more economical.

Keywords – Adsorption, Paracetamol, COVID-19, Activated Carbon, Wastewater Treatment.

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April 4-6, 2023 : Konya, Turkey

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Influence of Pulsed Electric Field on physical properties of olive oil

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Abstract - The physical properties (refractive index, viscosity, electrical and thermal conductivities) of olive oil treated with pulsed electric field (PEF) were studied. Results showed that the refractive index of olive oil was not affected by the application of PEF. Dynamic values of viscosity were found to increase with increased applied voltage. Electrical conductivity was not affected by the application of the PEF, while the thermal conductivity was found to increase with increased applied PEF.

Keywords – Pulsed Electric Field, Cell Membrane, Viscosity, Index Of Refraction, Electrical And Thermal Conductivities.

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April 4-6, 2023 : Konya, Turkey

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Sense through Wall Human Detection using ADALM-Pluto AD9361

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Abstract – The research describes the development of an interior target identification system that uses ultra-wideband radars to locate one or more targets in a cluttered environment. The device can gather information about target distances from radar, which can be used to localize and follow one or more targets in real time. One of the most crucial tools for the present wireless transmission system is software-defined radio's (SDR). An SDR is a radio that uses re-configurable hardware and robust software to apply various modulation and demodulation schemes as well as different standards in the same device, allowing it to tune to any frequency range. In our research Radio Detection and Ranging (RADAR) was used for detection with ultra-wideband frequencies. We can predict the locations and shapes of the targeting object behind the wall because of the ultra-wideband (UWB) radar technology. It is very useful, particularly for uses involving security and relief. We're moving to SDR, the analog device (AD) we used is ADALM-Pluto AD9361, because of UWB. In this experiment, various frequency bands are sent and either captured with or without objects. We create a comparison method that is like autocorrelation after various findings. The research outcomes proved that the program surpassed one without segmentation. With this strategy, UWB radars have an advantage over narrow-band (NB) radars in terms of enhanced data processing flexibility, and as a result, they will be utilized more efficiently and effectively in applications in the real world. Additionally, they demonstrated that it is possible to quickly identify humans using only a brief amount of data. The tools used for experimental setup are GNU Radio, the signal processing block, and Python for Out-of-Tree Module (O-TM).

Keywords – Software Define Radio's (SDR), Radio Detection and Ranging (RADAR), Ultra-wide Band (UWB), Analog Devices (AD), Narrow Band (NW), and Out-of-Tree Module (O-TM).

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April 4-6, 2023 : Konya, Turkey

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Chrysin, a 5,7-Dihydroxyflavone restrains inflammatory arthritis in rats via subsiding oxidative stress biomarkers and inflammatory cytokines

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Abstract **–** This study was intended to appraise the anti-inflammatory and anti-arthritic potential of Chrysin (CR) which is a natural dietary flavone found in many plants including *Passiflora*, *Propalis* and honey. The *in vitro* anti-arthritic potential was assessed by using protein denaturation, and membrane stabilization assays. The acute anti-inflammatory action was assessed Carrageenan and Xylene induced edema models in Wistar rats. For anti-arthritic potential, 0.1 ml Complete Freund's adjuvant was injected in the left hind paw of each rat at day 1 while treatment was started on day 8 using oral gavage and continued till 28th day. For treatment, CR at 25, 50, 100 mg/kg and in combination (CR 100 mg/kg) with methotrexate (MTX) while MTX (1mg/kg) as standard control was provided while disease and normal control were treated with distilled water for 21 days. Treatment with MTX, CR and their combination exhibited notable inhibition of paw edema and pain, restoration of body weight and immune organ weight as evident from the improvement in histology of ankle joints. Treatment with CR alone and in combination significantly restored altered blood parameters with notable ($p<0.0001$) down-regulation of interleukin -6,-1β, tumor necrosis factor-α, NF-κβ, and cyclooxygenase-2 and up-regulation ($p<0.0001$) of IL-4, 10, and I-κβ in contrast to disease control rats. The treatment noticeably improved the superoxide dismutase, and catalase activities while reduced the peroxidation level in liver homogenate. It can be concluded from the findings that CR especially in combination with MTX ameliorated CFA induced arthritis owing to its profound anti-oxidant, analgesic and anti-inflammatory actions.

Keywords **-** *Complete Freund 's adjuvant, Chrysin, Protein Denaturation, Cyclooxygenase, Interleukin, Methotrexate*

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April 4-6, 2023 : Konya, Turkey

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Novel quinoline derivatives as antitumor agents against HepG2 cells: Synthesis, characterization, in silico, in vitro and docking studies

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Abstract – New quinoline derivatives based on the allyl and amino acid were prepared and characterized using ele- mental analysis, 1 HNMR, 13 CNMR spectra. Docking studies of synthesized compounds were performed in order to explore their binding with HepG2 (code: 5EQG protein) as human liver carcinoma. Some synthe- sized compounds were evaluated for them in vitro cytotoxic activity against the hepatic carcinoma cell line (HepG2). Among the tested compounds, compound 15d exhibited the most promising profile, being able to inhibit HepG2 (IC 50 = 6.529 µg/ml).

Keywords – Quinolines; Amino Acids; Antitumor; Docking

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April 4-6, 2023 : Konya, Turkey

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In silico, In Vitro and docking applications for some novel complexes derived from new quinoline derivatives

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Abstract **–**The new quinoline derivatives: 2-oxo-1,2-dihydroquinoline-4-carbohydrazide (1), 2-(allyloxy) quinoline-4-carbohydrizde (2), 1-allyl-2-oxo-1,2-dihydroquinoline-4-carbohydrazid (3) and 2-(allyl-thio) quinoline-4-carbohydrazide (4) and their Cu(II), Ni(II) and Co(II) complexes were synthesized and characterized by using elemental analysis (CHNM%), FTIR, UV/Vis, 1H NMR, 13C NMR spectra, DTA, TGA, magnetic susceptibility and the conductivity of 0.001M in DMSO. The obtained results revealed the formation of the Cu(II) complexes in the square planar form, meanwhile Ni(II) and Co(II) complexes as octahedral structure. The FTIR spectra of the synthesized ligands and their complexes were giving the characteristic stretching vibration bands. The weight loss which appeared in the TG analysis indicates that there are different types of water molecules in the formed complexes. The theoretical calculations which are carried out using different computer programs permit proposing an optimized geometry for the formed complexes. The molecular modeling for the free ligands and their complexes were evaluated and discussed. The energy of the HOMO and LUMO was calculated and discussed. The most stable structure of the synthesized compounds was suggested and its energy was evaluated. The most benefit properties, which play a very important role in drug synthesis with reference to the surface properties of the compounds, were evaluated and discussed. The application of the DFT on the target compounds, gave dipole value around 1.73 D. This result turns out well with the requirement properties of the new drug. Docking the synthesized compounds with HepG2-code: 5EQG protein; e.g. liver carcinoma cell, gave a promising inhibition in Silico level. The antimicrobial activity of the target compounds with E. Coli, B. Subtils and Asp. Niger, in Vitro level, gave promising result. The interaction of the compounds with the microorganisms was tested in Silico level. E. Coli was used as an example for the target microorganism. The protein used for docking process was 5C9T.

Keywords – Quinolines; Complex; Antitumor; In Silico

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Bioassay-guided fractionation and identification of antimalarial compounds from *Mucuna pruriens* leaves

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Abstract – Leaves of *Mucuna pruriens* have been used for the treatment of several diseases including malaria. This current study seeks to isolate and identify anti-malarial compounds from *M. pruriens* leaves. A bioassay-guided fractionation of aqueous extracts from *M. pruriens* leaves was performed using column chromatography. Collected fractions were continuously screened *in vivo* (27-day post infection) for their ability to cure malaria caused by the activity of *Plasmodium berghei* (NK65 strain). The isolated compounds were further identified via Liquid Chromatography – Mass spectrometry (LC-MS) analysis. The column was sequentially eluded with methanol/water (9:1, v/v), benzene/methanol (1:1, v/v), ethyl acetate/methanol (19:1, v/v), acetone/methanol (5:3, v/v), and acetic acid/methanol (1:1, v/v). Five different fractions collected and concentrate yields 2.26, 0.50, 0.74, 0.21, and 0.03 g, corresponding to fractions I – V respectively. Fractions (or isolated compounds) with significantly higher antimalarial activity relative to the unfractionated extract were documented. Antimalarial activity of the most potent fraction was confirmed with parasitaemia count and survival rate. The level of parasitaemia were significantly ($p<0.05$) reduced in F1 (4.75 %) and F2 (25.5 %) and survival time lasted till the end of the experiment relative to unfractionated extract (19.9 %). The remaining fractions did not survived the scourge of *P. berghei* parasite and all died before day 15 relative to negative group (infected untreated). LC-MS analysis of the two potent fractions implicated flavonoids, alkaloids, glycosides and steroids as the possible secondary metabolites. Our data suggests potential compounds from *M. pruriens* leaves that might be responsible for its antimalarial activities.

Keywords – Malaria, Plasmodium Berghei, Secondary Metabolite, Parasitaemia, Mucuna Pruriens Leaves

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April 4-6, 2023 : Konya, Turkey

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Enhancing the Safety and Quality of Fish Export: A Practical Approach for Seawater Treatment in Fish Preservation

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Abstract – European Union Standards emphasise that fish imported from a select few countries is frequently polluted with contaminants. The seawater used for fish preservation is a significant source of contamination, thus aggressive steps must be made to treat it to ensure the safety of export fish. Using current techniques, seawater is settled overnight, however, this does not completely remove all pollutants. This problem has been addressed by applying a system comprised of microfiltration membrane and activated carbon to treat seawater used for fish preservation. Turbidity is effectively reduced by more than 98%, and total suspended solids (TSS) are efficiently reduced within the 70-90% range. Additionally, total organic carbon (TOC), which determines the concentration of organic pollutants, can be reduced by 85-90% through activated carbon adsorption. The design approach is appropriate since necessary salty compounds or ions either remain after treatment or experience only small reduction as proven by total dissolved solids (TDS) measurement.

Keywords – Fish preservation, Membrane, Microfiltration, Adsorption, Seawater treatment

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Determination of Optimum Machining Parameters of Incoloy 901 Super Alloy with Cemented Carpide Tools by the Taguchi method

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Abstract **–** In this research work, was made a study on the effects of turning conditions on incoloy 901 nickel-based superalloy and performed a precision analyzes using the Taguchi L27 orthogonal array. Using the results of variance analysis (ANOVA) and signal-to-noise (S / N) ratio and taking into account the "smaller is better" approach were statistically investigated to establish a correlation amongst the speed of cutting, feed rate and cutting tool with respect to surface quality and cutting forces. KCU10, K313 and KCU25 cemented carpide cutting tool were used in experimental study. The experimental results have revealed the most important factor influencing the cutting force and surface quality was the type of the cutting tool and it's had a serious effect on both, KCU10 and followed by KCU25 was found better than the other cutting tool. Optimum parameters for the cutting forces was found 0,150 mm/rev., 90 m/min. with KCU10 cutting tool The found findings can help for revealed the optimization of machining parameters and surface characteristics of Incoloy 901 during high speed turning.

Keywords-Taguchi, Optimization, Incoloy 901, Surface Roughness, Cutting Force.

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THE MOTIVATIONS OF UTAR STUDENTS IN SHARING SOCIAL MEDIA INFLUENCERS' SCANDALOUS NEWS ON FACEBOOK

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Abstract **–** The advancement of social media empowers different industry to explore to a new era. For example, the evolution of the journalism, which changing from offline and traditional to online and digital news. Plus, it develops a new career, Social Media Influencer. The influence of Social Media Influencer cannot be underestimated because Forbes stated that about 92% of the netizens trust a Social Media Influencers instead of television commercial or traditional celebrity. No matter these Social Media Influencers are doing good or bad conducts, their every move has attracted the attention of netizens. Hence, the flourishing development of Social Media Influencer offers many news values for the journalists to produce the news contents. This is because Social Media Influencers offers two news value for news media, which are human-interest and prominence. However, previous research usually put the light on the news sharing behaviour of the readers rather than focus on a specific news beat. So, the researcher aims to investigate the motivations that drive UTAR students to share about Social Media Influencers' scandalous news on Facebook. By focusing the study on particular news types, this study provided a new insight for academics or organization in knowing how the Social Media Influencers scandalous new influence the netizens' sharing motivation. This study applied the Uses and Gratifications Theory. This quantitative survey method used Google Form to target 200 UTAR students. The result of this study found that the core motivation that drive UTAR students to share Social Media Influencers is the entertainment gratification, followed by the information-sharing needs, and the least is socializing gratifications. Meanwhile, the interest level of UTAR students toward the scandals of Social Media Influencers is high.

Keywords – Social Media Influencer, Scandalous News, Uses and Gratifications Theory

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Selective coupling of *N*-alkyl aziridines to yield piperazines catalyzed by simple ammonium zincates

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Abstract – We report the catalytic dimerization of aziridines to yield 2,5 *cis* or *trans* disubstituted piperazines. Piperazines are extremely common moieties in biologically active molecules and play an important role in drug design and synthesis. Aziridines, on the other hand, are common synthetic intermediates, as their pronounced geometrical strain allows them to readily perform ring opening reactions under the stimulus of an appropriate nucleophile. In previous works, we reported the efficient synthesis of oxazolidinones by cycloaddition of CO_2 and aziridines. Simple ammonium ferrates were employed as highly available and convenient bifunctional catalysts. Similarly, ammonium zincates were found to be very active towards the dimerization of the same aziridines when employing higher concentrations and temperatures in the absence of CO_2 (figure 1).

Thus, we developed a convenient and straightforward protocol for the synthesis of symmetrically substituted piperazines from commonly available laboratory reagents. This method yields two different isomers of the same piperazine, one being the (+/-)-form and the other the *meso* form. The two are easily separated by a simple filtration, as the *meso* form readily crystalizes in excellent purity at the end of the reaction. The catalysts, ammonium zincates ($R_4N[ZnX_4]$, X = Cl, Br, I), can be easily and cheaply synthetized from readily available and inexpensive materials, simply by mixing two ethanolic solutions of an alkylammonium salt and a zinc halide. Their scope extends over an ample number of substrates, ranging from deactivated (*N*-alkyl) to activated (*N*-tosyl) aziridines. Excellent yields and purity have been obtained by microwave heating (dielectric heating).

We believe that this work represents a useful addition to an already large set of metalates catalyzed reactions.

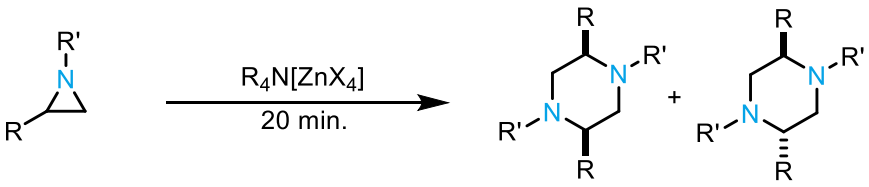

Figure 1 *Catalytic dimerization of aziridines*

Keywords – Zincates, Pyperazines, Aziridines, Homogeneous Catalysis, Stereoselecive Synthesis

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April 4-6, 2023 : Konya, Turkey

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Understanding Homelessness in Malaysia: Effects and Solutions

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Abstract – Homelessness is an emotive term that conjures up images of people sleeping on the side of the road, collecting food, and being dangerous and dirty. Aside from these negative stereotypes, there is no clear understanding of the homeless and their situation. We've all seen homeless people, whether they're begging for alms in the market, sleeping on the sidewalk, or knocking on car windows for money. Their presence may elicit mixed emotions, but once they are out of sight, we forget about them. The presence of homeless people in Malaysia, or at least in Kuala Lumpur, has become a habit in the city's poor areas. If they do not make any noise, we are unaware of their presence. The group has recently attracted the attention of authorities and non-governmental organisations. There is no recent data on the homeless population in Malaysia, but it can be assumed that this number is growing due to the ongoing pandemic. There has clearly been a lack of research on this homeless population. Due to a lack of data, the Department of Statistics Malaysia stated that it was difficult to present the number of homeless people through the census in 2010. This paper examines the impact of homeless people on the country and the government's response to it.

Keywords – Homelessness, Malaysia, Effects, Solutions

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Machine Learning based Diagnostic Approach to Condition Monitoring of Railway Platform Screen Door Systems

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Abstract **–** This study focuses on the use of machine learning-based fault classification to investigate the condition monitoring of Platform Screen Door (PSD) Systems in the railway industry. PSDs are safety systems installed in subway or train stations to prevent passengers from falling onto the tracks. The electromechanical system consists of sliding doors or gates that run along the platform edge and only open when the train is properly aligned with the platform. PSDs provide improved safety, increased passenger comfort, reduced energy consumption, and support transportation efficiency. Failure of PSD systems can result in serious consequences, so monitoring the condition of PSD is important to prevent failures and increase availability. PSD system exhibits signals of faults prior to failing its function. These fault signals can be detected during service times, and necessary maintenance can be performed to ensure high availability. The study employs machine learning algorithms to classify system-induced faulty conditions from collected data. Successful outcomes will enable a future online AI-based predictive monitoring of PSD systems. This work is carried out as a part of the 'Ecological Motor Control and Predictive Maintenance with AI (ECOMAI)' project, which is an industrial R&D project with participation of 2 universities and 8 companies from Germany, Austria, and Turkey. Project objectives include generating a PSD fault library, collecting data from faulty cases, developing AI-based software, and modeling the PSD system in Simulink. Outcomes of these studies will be fed to other partners involved in the project for creating a targeted AI development kit.

Keywords – Platform Screen Door, Condition Monitoring, Machine Learning Algorithms

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April 4-6, 2023 : Konya, Turkey

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Kaynak Eğitiminde Yenilikçi Teknolojilerin Kullanılması

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Özet **–** Bu çalışma, kaynak eğitiminin yenilikçi teknolojiler ile verilmesinin etkilerini araştırmaktadır. Günümüz teknolojilerinden artırılmış gerçeklik ile gerek literatürde yapılan araştırmalar sonucunda gerek se geliştirilen uygulamalar sonucunda eğitimde başarılı etkileri görülmektedir. Ancak bu gelişimler kaynak eğitimi üzerine sınırlı sayıda çalışma ile görülmektedir. Bu çalışma, İstanbul Kalkınma Ajansı tarafından desteklenen Artırılmış / Sanal Gerçeklik Uygulaması ile Robotik ve Kaynak Hibrit Eğitim Modülü Geliştirilmesi ve Uygulanması (SANAL-ARK) projesi kapsamında geliştirilen uygulamanın etkisini sunmaktadır. Literatür araştırması sonrası ortaya çıkartılan uygulamanın kaynak eğitiminde yüksek etkiye sahip olduğu ortaya konulmuştur.

Anahtar Kelimeler – Kaynak Eğitimi, Artırılmış Gerçeklik, Yenilikçi Teknolojiler, Gaz Altı Ark Kaynağı, Elektrot Kaynağı

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2nd International Conference on Engineering, Natural and Social Sciences

April 4-6, 2023 : Konya, Turkey

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A Compact Symmetrical Metasurface Based-Biosensor for Tumors Detection in ISM-Band

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Abstract – The detection of tumors in the human body has become an urgent need for health considerations. In the microwave regime, the detection operation requires special qualities of the biosensors. In this manuscript, a compact biosensor is designed for the detection of tumors in the industrial, scientific, and medical (ISM) band. The proposed biosensor is based on a metasurface formed by an (10×10) array of symmetrical split ring resonators (SRRs). Each SRR has elliptical shape loaded by a folded segment; the metasurface was optimized for the dimensions of $0.282\lambda_0 \times 0.282\lambda_0 \times 0.011\lambda_0 mm^3$, where λ_0 is the free space wavelength calculated at the lowest operating frequency In ISM-band which is 2.4 GHz .The used substrate was FR4 with a relative permittivity of 4.4. The detection principle is based on direct contact with different types of samples (skin, fat and meat). The obtained results show the impact of the designed metasurface on the performance of the biosensor. The latter shows a good quality factor of 218.4, a sensitivity of 6.12% and a figure of merit (FOM) of 1336.6. With these performances, the proposed biosensor represents an efficient structure for the detection of tumors in the ISM band.

Keywords – Biosensor, ISM-band, Metasurface, Sensitivity, Tumor

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April 4-6, 2023 : Konya, Turkey

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A Modified Triangular Metamaterial-based Miniaturized Bandpass Filter for wireless communications Applications

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Abstract **–** Band-pass microwave filters are an essential component for most wireless communication devices. The size and the performance of the filter represent the main criteria during the design and the realization. In this work, a bandpass filter is provided to cover the C-band. The proposed filter is based on a metamaterial unit cell comprising a split ring resonator (SRR) of triangular shape containing six capacitive gaps. The filter contains four SRRs feeded by a matched microstrip line of 8.25mm in length and 0.8mm in width. The SRRs and the feed line are printed on the upper face of the Rogers RO 4003 substrate of relative permittivity of 3.55. The overall size of the filter is optimized for the physical dimensions of 22.4×15 mm^2. The obtained results show a band-pass behavior of the filter at the resonance of 5.28 GHz for insertion losses (*IL*) of 0.12 dB and a transmission (S_{21}) greater than 23 dB. The proposed filter is suitable for wireless communication applications.

Keywords – Band-pass, Filter, Insertion losses, Metamaterial, Triangular SRR

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April 4-6, 2023 : Konya, Turkey

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Advanced Biocomposites: Processing, Characterization and Applications

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Abstract – Nowadays, where environmental management and sustainability gain importance, natural fibers are seen as an alternative to synthetic fibers. Natural fibers are both renewable and biodegradable. In this sense, it provides cost-effectiveness to synthetic fibers. Some of the important properties of natural fibers are high strength and sustainability, low specific density, and low cost. However, the weak properties of natural fibers, such as matrix/fibre interactions and water resistance, limit their use. In addition, synthetic fibers (glass, carbon, and aramid) cause health and environmental problems despite their high mechanical properties. The use of both natural and artificial fibers together is a good solution to overcome the existing disadvantages. Advanced biocomposites are an emerging class of materials that combine the benefits of both natural and synthetic components to achieve desirable properties such as enhanced mechanical, thermal, and biological performance. This research proposal aims to explore the current state of the art in the processing, characterization, and applications of advanced biocomposites. The study will focus on the latest developments in biocomposite materials and their processing techniques, as well as the various methods of characterization and testing. Finally, the research will investigate the potential applications of advanced biocomposites in fields such as automotive, aerospace, biomedical, and environmental. According to future research, expanding the use of these eco-friendly composite materials in many industrial sectors will reduce pollution and raise sustainability standards in society.

Keywords – Natural Fibers, Synthetic Fibers, Advanced Biocomposites, Processing Techniques, Characterization Methods.

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STRUCTURALISM, MODULAR CONSTRUCTION, AND "GRID" AS UNIVERSAL INSTRUMENTS FOR BUILDING DESIGNS

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Abstract **–** Structuralism can be defined as an important concept of using "units" as elements of form and space-giving, where the whole form is made not only up of a "texture", a certain flexible grid, or an algorithm of shape-giving, but it depends also on the relationships created and how people use it. The hypothesis of this study is that "Modular Construction" can also have an aesthetically pleasing outlook and that modular housing can definitely have increasing importance in the future. Modular housing due to its cheap, and manufactural way of construction can be replicable in various locations. Structuralism and Modular Construction have been at the core of the Modernist movement. Although postmodernism marked the decline of modular construction adopting methods known for a more close sense of place, vernacular, and locality, which differs from the ubiquitous model of modernism, it is the universality of space and habitation seen since the times of Hippodamus Grid, Japanese Tattami systems, and rational universal space in housing known in Europe that make grid and modular design an excellent system in obtaining, rationality, functionality, flexibility, and energy efficiency, including quick construction and possibility for replication. In this regard, modular construction has a future, especially in times of crisis and economic instability.

Keywords – Modular Design, Grid, Structuralism, Modernist Ideas, Rethinking Modular Structures

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April 4-6, 2023: Konya, Turkey

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Comparing Fused Deposition Modeling (FDM) Materials in Snap-Fit Design

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Abstract **–** Additive manufacturing is a process of creating three-dimensional objects by adding layers of material, one on top of the other, until the final shape is achieved. This is in contrast to traditional manufacturing processes, which typically involve removing material from a larger piece to create the desired shape. Fused Deposition Modeling (FDM) is a type of additive manufacturing that uses a special type of printer, called an FDM printer, to create objects. In FDM, the printer melts a thermoplastic material and extrudes it through a small nozzle, layer by layer, to create the object. The printer follows a computer-aided design (CAD) model, which specifies the exact shape and dimensions of the object to be printed. Snap-fit designs are commonly used in various industries to assemble and disassemble parts without using additional tools or fasteners. In snap-fit designs, the material's mechanical properties play a critical role in determining the success of the snap-fit mechanism. Fused Deposition Modeling (FDM) is a widely used 3D printing technology that produces parts by extruding melted plastic materials layer by layer. In snap-fit designs, different FDM materials have different mechanical properties that can affect the snap-fit design's performance. In this study, we made a comparison of different FDM materials commonly used in snap-fit designs. Four commonly used materials that we selected; were PLA (Polylactic Acid), ABS (Acrylonitrile Butadiene Styrene), PETG (Polyethylene Terephthalate Glycol), and Nylon (Polyamide). This study was done with 1.75mm diameter solid filament in the open printer without applying any surface treatment.

Keywords – Prototype, Additive Manufacturing, Fused Deposition Modeling, Material, Snap-fit

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2nd International Conference on Engineering, Natural and Social Sciences

April 4-6, 2023 : Konya, Turkey

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Recent Advances in Architecture of Internet of Autonomous Vehicles Communication Infrastructure

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Abstract – In recent years, there has been a growing focus on vehicular communications as part of a wider trend towards modernizing transportation systems and creating more efficient and reliable Intelligent Transportation Systems (ITS), which aligns with the rapid development of smart cities. ITS aims to enhance safety and security by incorporating Autonomous Vehicles (AVs) to reduce the risk of accidents resulting from human error. The integration of AVs into traditional Vehicular Ad-hoc Networks (VANETs) has led to the emergence of a new networking paradigm known as the Internet of Autonomous Vehicles (IoAV), which offers several advantages over VANET in terms of scalability, security, and robustness. However, since the shift from conventional vehicles to AVs will be gradual, both types will coexist in the same environment, requiring a dependable, fast, and flexible infrastructure to serve both. Thus, this paper provides a brief overview of the architecture of the IoAV infrastructure, its communication components, message dissemination, protocols, and services that make up the core of the IoAV framework, along with some additional notes and research challenges.

Keywords – ITS, IoAV, Vehicular Communications, Autonomous Vehicles, Infrastructure

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Determination of Formation Constants of Some Metal Complexes of Naphthoquinone Derivatives

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Abstract **–** Naphthoquinone derivatives and/or metal complexes have an important place in drug research since they show a broad-spectrum pharmacological activities such as antibacterial, antifungal [1], anticancer [2], and anti-inflammatory [3]. Stability constants of the complex provide critical information about complex molecules such as complex formation requests of the metal and ligand, coordination and solubility of metal complex, etc. [4] For this reason, it is important to determine the formation constants of the metal complexes that the compounds containing the naphthoquinone moiety will form with various metal ions. In this study, four compounds containing naphthoquinone moiety were synthesized and their formation constants of the complexes to be formed with Zn(II) and Ni(II) ions of these compounds were calculated using the HYPERQUAD computer program using the data obtained as a result of potentiometric titrations in the dimethyl sulfoxide:water 50% (v/v) hydro-organic solvent system at 0.1 °C ± 25.0 and ionic strength of 0.1 M NaCl. As a result of calculated which performed using HYPERQUAD, it was determined that ML, MHL, MH_2L MH_3L, and MH_4L types which were formed at different pH ranges.

Keywords – Naphthoquinone, Potentiometric Titration, Complex Formation Constant, Zn(II), Ni(II).

Acknowledgments: We are thankful to Mersin University (Project grant 2021-1-TP2-4245) for financial support.

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Levan-chitosan blend films: development, characterization and antibacterial efficiency

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Abstract **–** The levan-chitosan (LE/CS) edible films were successfully fabricated by the casting method, and their applicability for food packaging was systematically evaluated by several analytical techniques. The films were evaluated by Fourier transform infrared spectroscopy indicating the formation of hydrogen bonds between levan and chitosan. The addition of chitosan improved the levan-based films mechanical performance, increasing their resistance to traction rupture and the elastic modulus, and diminishing the elongation at break. The best tensile strength appeared at a ratio of LE/CS (1:3) up to 15.43± 0.04 MPa. An increase in the concentration of chitosan (ranged from 25 to 75%; w/w related to levan dry weight) in the films showed a decreased water solubility (from 73,36±0,25% to 46,64±0,37%). Moreover, Levan/chitosan-based films presented antioxidant activity (76–93% of $ABTS^{\bullet+}$ inhibition after 72 h) and a strong inhibitory effect on food-borne pathogenic bacteria (*Escherichia coli*, *Klebsiella pneumoniae*, *Salmonella typhymirium*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Micrococcus luteus*, *Listeria monocytogenes*, *Enterococcus faecalis* and *Bacillus subtilis*). These results suggest that the developed edible films could be a potential prospect in food packaging technology.

Keywords – Levan, Chitosan, Blend Film, Mechanical-Physical Properties, Antibacterial Film

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April 4-6, 2023 : Konya, Turkey

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Evaluation of Computer in Human-Computer Interaction Based on Material Knowledge in Architecture: Parametric Facades

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Abstract – Studies on human-computer interaction and artificial intelligence as a design tool in architectural design are a current architectural agenda. Open AI bots, which produce images from text based on machine learning technology, are the latest examples of this development. With this method, architectural form, facade, interior, furniture designs are produced, and results that can be evaluated for the concept step of the architectural design are reached. The main motivation of this study is whether the computer recognizes the material in architecture in human-computer interaction. The building elements that make up the space, which is the basic unit of architecture, and the selected materials are very effective on the space. The selection of the material to be used is important for the visual, functional and perceptual features of the design. Because each material has different abilities and different effects in structure with its own properties and possibilities. In this study, the material information query of the computer, namely AI, was examined through parametric facades produced in AI bots. The definition of parametric design is made as a tool created with computer aided design and various software. The reason why the parametric facade was chosen in the study sample is that the parametric design approach is based on computers, algorithms and software. In the study, facade productions were made by entering stone, steel and wood materials in different interfaces as commands. As a result of the study, it has been seen that the different qualities and possibilities of different materials are not reflected in the facade designs, only visual results have been achieved without material knowledge. At this point, when comparing material information in human-computer interaction, it can be said that the material information of AI, which produces images from text, is very limited according to the architect who makes conscious choices in the design processes.

Keywords – Architectural Design, Material in Architecture, Human Computer Interaction (HCI), Text to Image Generation, Parametric Facade Design

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Elektrikli Otomobillerde Kullanılan Dikdörtgen Şeklindeki Polimer Bağlantı Elemanlarının Sonlu Elemanlar Analizi ile Çıkma ve Kopma Kuvveti Saptanması

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Özet – Elektrikli araçların hayatımıza katılmasıyla beraber, mevcut isterler yeniden gözden geçirilmiş ve bu isterler yeni bağlantı elemanları tasarımı yapmayı zorunlu hale getirmiştir. Özellikle batarya mimarisinde kullanılan polimer bağlantı elemanlarında yüksek çıkma kuvvetleri ve dönme engelleyici formlar daha fazla tercih sebebi olmuştur. Bunun yanında, her ana üreticinin kendine özgü bağlantı elemanı çıkma kuvveti değeri olması, yeni klips tasarımında ve geliştirmesinde yeniden bir doğrulama faaliyetinde bulunmamızı zorunlu hale getiriyor. Çıkma ve kopma kuvveti, batarya mimarisi, fren hatları, soğutma sistemleri vb. gibi kritik önem taşıyan hortumları sabitlemede kullanılan bağlantı elemanlarının yanı sıra, panel bağlantılarının da güvenirliliğini teyit etmek adına en uygun ve güvenilir tasarım yapmayı gerektiriyor. Toleranslar ve süreler çok dar olduğundan, süreci hızlandırmak ve prototip maliyetlerini azaltmak için bu tasarımları Sonlu elemanlar analizi ile matematiksel olarak hesaplamak hem zaman hem de maliyet kazancını beraberinde getiriyor.

Bu çalışmada; metal şasiye, batarya soğutma hattındaki hortumların bağlantılarında kullanılan Çapa formlu dikdörtgen bir klipsin, ürün geliştirme sürecinde kullanılan analiz ve gerçek test sonuçlarının karşılaştırılması üzerine çalışılmıştır. Çalışmada; yük ve çevre koşulları gerçek hayata olabildiğince yakınsanmaya çalışılmıştır. Çalışmada kullanılan mesh tipi Tetra Mesh olup, Aspect Ratio ≈%12 dır.

Anahtar Kelimeler – Bağlantı Elemanları, Ürün Geliştirme, Polimer, Otomotiv, Sonlu Elemanlar Analizi

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Kaplin Parçalarında Simülasyon ve Prototip Parça Test Sonuç Karşılaştırması

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Özet – Yeni geliştirilen ürün tasarımlarında prototip parça aşamasına geçmeden önce süreçleri hızlandırmak ve maaliyetleri düşürmek amacıyla sonlu elemanlar analiz yazılımları ile simülasyonlar gerçekleştirilmektedir. Bu şekilde prototip parçaların testlerinde karşılaşılacak tasarım hataları ve deformasyonlar önceden tespit edilerek tasarım iyileştirme süreçlerinde hız kazanılmakta ve prototip parçalardaki hata oranı ciddi oranda düşürülmektedir. Fakat simülasyonu yapılan tasarıma, sınır koşullarına ve mesh kalitesine göre simülasyon sonuçlarında fazla hata payı oluşması riski mevcuttur. Şirketimiz bünyesinde geliştirdiğimiz bir kaplinin gövdesinin yan yük altında simülasyon sonuçlarında gerekli alt sınır değerleri sağlanıp prototip aşamasına gidilmiştir ve laboratuvar ortamında gerçekleştirilen prototip testlerindeki sonuçlar ile simülasyon sonuçları ile prototip test sonuçları karşılaştırılmıştır. Karşılaştırmada sapmaların ve hata payının nedenleri ve tasarımda iyileştirilecek bölgeler saptanmıştır. İyileştirme sonrası ikinci döngü için de hata payını azaltma amacıyla mesh iyileştirmesi ve optimizasyonu sağlanarak gerçeğe en yakın veriler elde edilmeye çalışılmıştır.

Anahtar Kelimeler – Simülasyon, Sonlu Elemanlar, Tasarım, Prototip, Test

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Kemik Suyunun Üretimi, Bileşimi ve Sağlık Üzerine Etkileri

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Özet – Günümüzde nasıl ki hayvanların et, organ ve kemikleri değerlendiriliyorsa yüzyıllar öncesinde de benzer yöntemlerle hayvana ait pek çok kısım değerlendirilmiştir. Özellikle büyükbaş hayvanların ilikli kemikleri kaynatılarak tüketilmiş ve kemik suyunun sağlık açısından çok faydalı olduğuna inanılmıştır. Et tüketimi tüm dünyada artış göstermektedir. Kırmızı et, kanatlı etleri ve balık eti işleme tesislerinden çıkan kemik artıkları da zamanla artış göstererek, gıda endüstrisinin bugün karşı karşıya olduğu önemli çevresel zorluklardan biri olarak kabul etmektedir. İşleme tesislerine gönderilen kemik artıkları ise genellikle hayvan yemi, gübre ve evcil hayvan maması üretimi için et ve kemik unu olarak değerlendirilmektedir. Kemiğin iç ve dış yüzeyleri, kemiği oluşturan hücrelerden ve bağ dokusundan oluşan tabakalarla kaplıdır. Kemik zarı, kemik iliği ve kıkırdak da kemik yapısını oluşturan ana bileşenlerdir. Kemiklerin uzun süre kaynatılmasıyla elde edilen kemik suyu ise; tencere yemeklerinde, pilavlarda ve çorbalarda lezzeti arttırmak amacıyla ilave edildiği gibi doğrudan çorba olarak da tüketilmektedir. Son yıllarda dokuları yenileyen kollajen içeriği ve mineral madde bakımından zengin olması dolayısıyla tüketicilerin yönelimi artış göstermiştir. Kemik suyunun sağlık üzerine faydalarını; kollajen, amino asit, glikozaminoglikan, mineral ve elektrolit ana bileşenlerinin etkileri altında toplamak mümkündür. Bu etkilerin incelendiği çalışmalarda, kemik suyu tüketiminin; cilt sağlığı, intestinal sistem, bağışıklık sistemi, kıkırdak oluşumu ve eklem sağlığı, kas ve bağ doku sağlığı üzerine olumlu etkilerde bulunduğu görülmüştür. Özetle, bu çalışmada et endüstrisinin önemli bir yan ürünü olan kemiğin bileşiminin yanı sıra kemik suyu üretimine ve kemik suyunun sağlık etkilerine yer verilmiştir.

Anahtar Kelimeler – Kemik suyu, kemik, kollajen, sağlık etkisi, mineral madde

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April 4-6, 2023 : Konya, Turkey

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NEW HORIZONS AND OPPORTUNITIES OF MODULAR CONSTRUCTIONS AND THEIR TECHNOLOGY

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Abstract **–** The use of modular construction technology has emerged as a promising solution to the challenges of the construction industry all over the world. This paper examines the new horizons and opportunities that modular construction technology offers not only in the Albanian context but also in some European countries. The paper provides an overview of the status of Albania's construction market and emphasizes the advantages of modular construction technology, including quicker construction, lower costs, and better quality control. Unfortunately, prefabricated constructions are not very present Albanian construction industry, and it is not given the proper attention due to lack of infrastructure, organizational purposes, and lack of proper experience. The paper also examines the challenges associated with the implementation of modular construction technology in Albania, exploring the history of prefabricated constructions, also including regulatory barriers, lack of awareness, and the need for skilled labor. Finally, the paper concludes by suggesting strategies to overcome these challenges and promote the adoption of modular construction technology in Albania, such as targeted government policies, education and training programs, and partnerships between industry stakeholders.

Keywords – Modular Constructions, Prefabricated, Constructions, Technology, Building Materials

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"UTU" COMPACT SOLAR PANEL CLEANING ROBOT

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Abstract **–** The solar photovoltaic sector has grown significantly during the past decade as a result of rising interest in renewable energy sources. However, keeping the panels clean is a significant problem that is frequently neglected because some of them are challenging and dangerous to reach. As a result, the inventive solution of solar panel cleaning robots was developed, which uses advanced technology to navigate and clean solar panels effectively and efficiently without the need for manual labor. To keep solar panels running at their optimum level, they are equipped with a variety of equipment for cleaning dirt, dust, and other contaminants from their surface that can be found in Iraq.

The design of a compact mobile robot that can completely clean solar panels is the main topic of this report, Considering the detailed mechanical and electrical design as well as the robot's operating algorithm.

According to our research, we conclude that this type of cleaning robot is a promising and effective method for cleaning all types of solar panels especially for the growing solar photovoltaic sector in Iraq.

Keywords – Mobile Robot, Solar Panel; Automated Cleaning; Internet Of Things; Solar Panels Dirt Accumulation And Removal; Solar Panel Cleaning Robot

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2nd International Conference on Engineering, Natural and Social Sciences

April 4-6, 2023 : Konya, Turkey

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Ezoterik Öğretilerden Hayat Ağacı Motifinin Osmanlılarda Meşruiyetçilik Anlayışına ve Halk Kültürüne Dönüşümü

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Özet – Ezoterik anlayış yaradılışı bir ağaç sembolü ile ifade etmektedir. Adına Hayat Ağacı denilen bu ağaçtan semavi dinlerde de bahsedilmiştir. Burada Hayat Ağacının yaradılışla olan bağlantısı tüm fiziksel ve ruhsal alemleri tek başına temsil etmesiyle alakalıdır. Ağaç, en üst dallardan en alt dallara kadar tüm alemleri ve dahilindeki her şeyi tek başına tanımlayan bir metafordur. Türk kültüründe köklü ve kalıcı olmayı, başlangıcı ifade eden ağaç motifi, söz konusu mistik öğretinin uzantısıdır. İslamiyet öncesi Orta Asya Türk inanışında ağaç kültü olarak ifade edilen, ilahların ve ruhların mekanları olarak kabul edilen ağaçlar çerçevesinde gerçekleşen bazı ritüellerin Anadolu'ya kadar uzandığı anlaşılmaktadır. Özellikle günümüzde bazı evliya mezarları ve çoğu kez hemen yanında bulunan ağacın kutsal kabul edilip kesilmemesi, bazı ağaçlara çaput bağlanarak dilekte bulunma gibi pratikler, Orta Asya'dan Anadolu'ya uzanmış ağaç kültünün yansımalarıdır. Ezoterik öğretilerde hayat ağacı denilen, Türk kültüründe kutsal ağaç olarak kabul edilen ağaç sembolü, Osmanlı döneminin kuruluş dönemindeki yazılı kaynaklar da yerini almıştır. Devletin kurucusu Osman Bey'in, Vefai tarikatı şeyhi Edebalı'nın evinde uyuduğu bir gece görmüş olduğu rüyada Osman Bey'in göbeğinden çıkıp tüm dünyayı kaplayacak şekilde büyüyen ağaç, Osman Bey'in büyük bir devlet kuracağına yorulmuştur. Türk ve İslam kültüründe benzer rüyalarda içeriğin ortak özelliğinin ağaç olması, bu nevi rüyaların gerçekliğinin ötesinde devletin kuruluşunu ilahi bir zemine oturtma, meşruiyet kazandırma geleneğiyle alakalıdır. Osmanlı kültüründe hanedandan halka kadar önemli mutlu gün merasimlerinde özenle hazırlanmış Nahıl ağaçları da kutsal ağaç kültünün yansımaları olarak karşımıza çıkmaktadır.

Anahtar Kelimeler – Ezoterizm, Hayat Ağacı, Meşruiyetçilik, Nahıl, Rüyalar

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April 4-6, 2023 : Konya, Turkey

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The Transformation of the Life Tree Motif, one of the Esoteric Doctrines, into the Understanding of Legitimacy and Folk Culture in the Ottomans

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Abstract – Esoteric understanding expresses creation with a tree symbol. This tree, which is called the Tree of Life, is also mentioned in heavenly religions. Here, the Tree of Life's connection with creation is related to the fact that it alone represents all physical and spiritual realms. The tree is a metaphor that alone describes all the realms and everything in it, from the highest branches to the lowest branches. The tree motif, which expresses the beginning and being rooted and permanent in Turkish culture, is an extension of the aforementioned mystical doctrine. It is understood that some rituals carried out within the framework of trees, which are expressed as tree cults in the pre-Islamic Central Asian Turkish belief and accepted as the places of deities and spirits, extend to Anatolia. Especially today, some tombs of saints and practices such as not cutting the tree next to it as sacred and making wishes by attaching a rag to some trees are reflections of the tree cult that extended from Central Asia to Anatolia. The tree symbol, which is called the tree of life in esoteric doctrines and accepted as a sacred tree in Turkish culture, has also taken its place in the written sources in the founding period of the Ottoman period. The tree that grew out of Osman Bey's belly and grew to cover the whole world in a dream that Osman Bey, the founder of the state, slept in the house of Edebalı, the sheikh of the Vefai sect, was tired of Osman Bey's going to establish a great state. The fact that the common feature of the content in similar dreams in Turkish and Islamic cultures is tree, is related to the tradition of placing the establishment of the state on a divine ground and gaining legitimacy beyond the reality of such dreams. Nahıl trees, which were carefully prepared in important happy day ceremonies in Ottoman culture from dynasty to the public, appear as reflections of the sacred tree cult.

Keywords – Esotericism, Tree Of Life, Legitimism, Nahil, Dreams.

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2nd International Conference on Engineering, Natural and Social Sciences

April 4-6, 2023 : Konya, Turkey

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Domestic violence against women in Roma families in Romania

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Abstract – The article addressed the topic of violence against women in Romania. Violence against women is a matter of intense debate over the last two decades, including Romania. However, there is little research on violence in the ethnic Roma community, specifically intra-family violence in Roma families. The present article is based on research data collected in 2014-2015 and shows an increased level of violence in these families, as well as a high awareness of need for specialized services and legal instruments to address the problems of domestic violence. The study is a brief radiography on the phenomenon, and although the research data is generous, we cannot consider the study to be representative of the entire Roma population in Romania.

Keywords – Gender Issues, Roma Families, Violence

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April 4-6, 2023 : Konya, Turkey

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The optimization of a residential building envelope using particle swarm method in a warm climate

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Abstract – Energy efficiency in buildings requires an optimization process to reduce energy needs without sacrificing comfort conditions. In this study, a residential building was considered and optimum envelope design options were determined by the particle swarm optimization. Two case were created to evaluate the design options depending on the building orientation. It is shown that the optimum envelope design depending on the building orientation partially affects the energy consumption and has a significant effect on thermal comfort. Finally, it has been shown that the optimum solutions by sensitivity analysis were also applicable in Adana climate conditions.

Keywords – Cooling Load; Heating Load; Thermal Comfort; Building Orientation, Optimization.

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April 4-6, 2023 : Konya, Turkey

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ORGANIC POLLUTANTS IN THE WATER AND SEDIMENT SAMPLES OF THE ALBANIAN IONIAN SEA, SARANDA PORT

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Abstract – The findings reported here belong levels of organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAH) in water and sediment samples of Albanian Ionian Sea. Stations from the port of Saranda were selected for this study. The activity in the ports areas is the main reasons for water pollution by chemical substances. Water currents can influence their levels. Some of these substances that present high risks (because of the high toxicity) are classified as priority substances.

Water and sediment samples were taken in February 2023 for 8 stations of Saranda's port. Organochlorine compounds (pesticides and PCB markers) were extracted simultaneously by water samples by using liquid-liquid technique and n-Hexane as extracting solvent. Their extraction in sediment samples was realized by using ultrasonic technique assisted by n-Hexane/$MeCl_2$ mixture (extracting solvent). PAHs were extracted in water samples by using two steps liquid-liquid technique. Firstly by using $MeCl_2$ and after that n-Hexane as extracting solvent. PAH extraction in sediment samples was realized by using ultrasonic technique assisted by using n-Hexane/Acetone as extracting solvent. Analyzes of priority substances was performed using agas chromatograph (Varian 450 GC) equiped with ECD and FID detectors.

Organochlorine pollutants (pesticides, their degradation products and PCB) were detected in all water and sediment samples because of their previous use and/or atmospheric deposition. New arrivals from water current can influence their levels. PAHs were found in more than 50% of water and sediment samples. Their presence could be because of ship transport in port area, automobilist transport and spillages of gasoil stations or mechanical businesses. The found levels for these priority substances in water and sediment samples of Saranda port were lower than reported levels of them from other ports of Albania.

Keywords: Saranda Port, Organochlorine Pesticides, PCBs, PAH, Water Analyze, GC/ECD/FID

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April 4-6, 2023 : Konya, Turkey

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Çift Enjeksiyon Yöntemi ile Üretilen İki Farklı Termoplastik Malzemeli Parçanın Üretiminin Tasarım, Proses ve Hammadde Çalışmaları

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Özet – Plastik enjeksiyon teknolojisinde, birçok farklı yöntem ile dünyanın birçok sektörü için üretimler gerçekleştirilmektedir. Bunlardan birkaçı; tek enjeksiyon, kalıp içi komponent kaplama (overmold), çift enjeksiyon vb. yöntemlerdir. Günümüzde, global son ürün üreticileri tarafından geleneksel tek malzemeli plastik parçalar yerini, katma değeri ve karakteristiği daha yüksek parçalara yönelmeye başlamışlardır. Bunların arasında çift malzemeli plastik ürünler oldukça tercih edilmektedir. Çift malzemeli plastiklerin tasarım aşamasında en çok dikkat edilen konu olan sızdırmazlık eforu için, iki farklı plastik hammaddenin kimyasal veya fiziksel olarak tamamıyla bütünleşik ve yekpare bir şekilde üretimi son derece önemlidir. Bu sebeple, plastik hammadde üretici firmalar ile çeşitli çalışmalar yapılarak otomotiv sektöründe yaygın şekilde kullanılan PA ve POM hammaddeleri ile uyumlu çeşitli hammadde çalışmaları yapılarak, otomotiv sektörünün isterleri çerçevesinde olan sızdırmazlık testlerinin tamamını başarıyla geçen, üretimler gerçekleştirilmiştir. Bu hammaddeler ile uyumlu TPE bazlı hammaddeler oldukça başarılı sonuçlar göstermiştir. Hammadde çalışmaları dışında, kalıp tasarımı ve enjeksiyon proses parametreleri de bu sonuçları elde etmek için oldukça önemlidir. Fiziksel bağlantılı ürünlerde, kalıp tasarımında özellikle kalıp içi basınç, soğutma sistemi ve enjeksiyon hızı oldukça üzerinde durulması gereken durumlardır. Kimyasal bağlantılı ürünlerde ise iki hammaddenin reçetelerinin birbirleri ile uyumu, kalıp sıcaklığı, hammadde akışkanlık değerleri, enjeksiyon ütüleme (ard basınç) ve kalıp soğutma süreleri oldukça önemli noktalardır.

İki bağlantı yöntemi ile de günümüzde, global olarak plastik parça kullanımı yüksek olan otomotiv, gıda, medikal gibi sektörlerde, parçalar son kullanıcılara ulaşmaktadır. Bu yöntemler ve çoklu hammaddeli parça teknolojileri ileride daha fazla sektörde önümüze birçok farklı türeviyle son kullanıcılara ulaştırılmaya devam edecektir.

Anahtar Kelimeler – Bağlantı Elemanları, Ürün Geliştirme, Polimer, Otomotiv, Çift Enjeksiyon

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April 4-6, 2023 : Konya, Turkey

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Numerical study of wind effect on hydrocarbon storage tanks

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Abstract **–** Petroleum industries need a large number of storage tanks of crude oil and various petroleum products to ensure continuity of production and operation to compensate for supply fluctuations and protect against unexpected crises like weather conditions. This numerical study focuses on the resistance of storage tanks to wind load by the shape of their roofs. The numerical study consists of simulating the wind effect on hydrocarbon two types' storage tanks, the floating roof tank and the geodesic dome tank. For this we used Ansys Fluent for the numerical modeling of fluid flows. We presented numerical simulations for different wind angles of attack and we analyzed the efficiency of each storage tank. The distribution of wind pressure on the exterior of the reservoir structure was explored. Graphs concerning the variations of the coefficient of friction on the floating roof and the dome were commented and discussed. By comparing the pressure and velocity contours and the turbulence assessment around the two types of reservoirs, we noticed that the geodesic dome reservoirs have better advantages such as, the absence of eddies and detachment points the along the surface of the dome; reduced turbulence build-up and reduced breakout force. as an adequate solution , we opted for the use of the dome tank roof which allows us to extend the life of the tanks. In conclusion, we judged that the use of the dome tank roof is a better choice to extend the structural life of a hydrocarbon storage tank.

Keywords – Tank Roof, Hydrocarbon Storage, Dome, Turbulence, CFD, Friction

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April 4-6, 2023 : Konya, Turkey

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EKLEMELİ İMALATLA ÜRETİMDE FARKLI DOLGU PARAMETRELERİNİN DARBE DAYANIMINA ETKİSİ

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Özet **–** Bu çalışmada, üç boyutlu yazıcı ile üretilen numunelerin dayanıklılığının Çentik darbe (Charpy) testi kullanılarak incelenmesi hedeflenmiştir. Numuneler, farklı katman kalınlıkları, dolgu yoğunlukları ve dolgu desenleri kullanılarak PLA (Polylactic Acid) malzemeden üretilmiştir. Çentik darbe testi, malzemenin darbe dayanımını ölçmek için kullanılan bir yöntemdir. Numuneler, belirli bir enerji seviyesinde kırılmaya maruz bırakılarak test edilmiştir. Sonuçlar, farklı katman kalınlıklarının, dolgu yoğunluklarının ve dolgu desenlerinin numunelerin darbe dayanımına etkisini göstermiştir. Özellikle, daha ince katmanlar ve yüksek dolgu yoğunluğu, numunelerin darbe dayanımını artırmıştır. Ayrıca, farklı dolgu desenlerini kullanmanın da numunelerin darbe dayanımı üzerinde belirgin bir etkisi olduğu görülmüştür. Sonuçlar, numunelerin üretiminde kullanılan parametrelerin optimize edilmesi için tasarımcılara ve üreticilere fikir vermektedir.

Anahtar Kelimeler – Eklemeli İmalat, Çentik Darbe, Dolgu Parametreleri, PLA, 3B Yazıcı

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April 4-6, 2023 : Konya, Turkey

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Ticari Araç Süspansiyon Tork Kolu Parçalarının Kaynak Uygunluğunun Statik ve Dinamik Test Ortamında İncelenmesi

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Özet – Ticari araçlar, adından da anlaşılacağı üzere ekonomik bir kazanç sağlayan belirli bir yük ve insan taşıyan vasıtalardır. Bu sebeple bir ticari araç parçasının konforlu, emniyetli ve uzun ömürlü olması ticari araç üreticilerinin ihtiyaç duyduğu önemli bir konu olmaktadır. Ticari araç süspansiyon parçası olan tork kolu; sıcak/soğuk çekim çelik dolu profil ve dikişli/dikişsiz çelik borunun elektrik direnç kaynak operasyonu ile birleştirilmesi sonucunda elde edilmektedir. Kaynak prosesi gerektiren tork kolu parçalarında kaynak işleminin uygunluğu önem arz etmektedir. Uygun kaynak olmaması durumunda kaynakta kırılmalar, can ve mal güvenliğini tehdit edecek durumlar ortaya çıkacaktır. Bu sebeple tork kollarında kaynak prosesi hassas ve dikkatli bir şekilde gerçekleştirilmelidir. Bu çalışmada kaynak yüzey kalitesi ve kaynak ağzının uygunluk durumları irdelenmiştir. Yapılacak deney çalışmalarında uygun parametrelerin yakalanması hedeflenmiştir. Kaynak yüzey parametrelerinde yapılacak olan yüzey işlemi, tork kolu parçasının hem boru, hem de mil tarafına uygulanarak gerçekleştirilmiştir. Statik ve dinamik testlerde alınan veriler sonucunda kaynak yüzey kalitesinin, parçanın mukavemet özelliklerine olan etkisi incelenmiş ve yapılan testler ile beraber uygun yüzey kalitesi ve uygun kaynak ağzı seçimi yapılmıştır. Yapılan bütün çalışmalar ve test sonuçlarına göre borunun ve milin kumlanmış olması ile birlikte Tasarım 1 parçası optimum özellikleri sağlamıştır. Böylelikle mil ucuna yapılan tasarım ile birlikte ikinci kaynak operasyonunda kaynak torcunun ulaşabileceği maksimum sınırlar yakalanmıştır.

Anahtar Kelimeler –Direnç kaynağı, Kaynak nüfuziyeti, Statik/Dinamik test, Süspansiyon, Ticari araç, Tork kolu,

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2nd International Conference on Engineering, Natural and Social Sciences

April 4-6, 2023 : Konya, Turkey

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Is Green Hydrogen a Potential Sustainable Fuel ?

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Abstract – Environmental and anthropogenic factors engendering the rise of environmental carbonization have led to a global growing appetite for introducing the use of sustainable energy in governmental policies. Nowadays Green hydrogen has been brought in the spotlight and recognized as a green alternative to fossil fuels because it is presently enjoying a momentum widespread in Markets, countries, and companies. Hydrogen /energy have shared a long period of history during which hydrogen has gained a great chunk of support from different countries though the wrong starting point. If it is competed by other sources of energy green it has been then adopted as the best energy source in several countries such as Germany, China, the USA, Japan…..because hydrogen is regarded as a 'missing piece in the carbon-free energy puzzle': it is a clean energy career which its sustainability and versatility contributing in decarbonizing the environment due to its near-zero carbon missions, as well as a cost-effective production, and as a cutting edge sustainable and technological production, especially in the domain of mobility. That is why it is used as a fundamental fuel in various applications: energy storage, mobility, and in the industrial field, through three types of processes: thermochemical, electrolytic, and biological Processes. Although green hydrogen is recognized as a promising energy vector, it has some drawbacks that 'should be borne in mind' such as high production costs, and greenhouse gas emissions.

Keywords – Green Hydrogen, Causes,Applications, Processes, Advantages, Challenges

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April 4-6, 2023 : Konya, Turkey

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Artificial Intelligence and Social Networks: A Study of the Effects on Human Relationships

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Abstract – Artificial intelligence (AI) has had a profound effect on social networks and human interactions. The purpose of this research is to look at the impact of AI on social connections within social networks. To investigate the influence of AI on social interactions, a survey of 500 social media users and in-depth interviews with 30 individuals were conducted using a mixed-methods approach. Our findings show that artificial intelligence has both positive and negative effects on social interactions. On the positive side, AI is promoting more personalized and efficient communication, allowing individuals to retain better bonds with their friends and family. Eslami et al. (2019) have shown, for example, that social media platforms such as Facebook and Instagram can aid in the establishment and maintenance of romantic relationships. However, artificial intelligence is leading to more superficial connections as individuals prioritize curated online identities over genuine connection (Tufekci, 2018). Additionally, when individuals hand over control of their personal data to algorithms, the use of AI in social networks raises concerns about privacy and autonomy (Crawford & Calo, 2016). The COVID-19 epidemic has shown increasing inequities in access to digital resources (Hampton & Gupta, 2021), potentially exacerbating the influence of AI on social connections. This study emphasizes the need for further research on the intersection of AI and social networks, and the importance of understanding how technological advancements are shaping our social lives.

Keywords – Artificial Intelligence, Social Networks, Human Relationships

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April 4-6, 2023 : Konya, Turkey

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Yem Katkı Maddesi Olarak Aşotu (*Cymbocarpum anethoides*) İlavesinin Yumurtacı Bıldırcınların (*Coturnix coturnix japonica*) Karaciğer Dokusu Üzerindeki Histolojik Etkisi

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Özet: Bitkisel kökenli yem katkı maddeleri, sistemik fonksiyon düzenleyici, yumurta verimliliği ve çevresel etkilerin olumsuz yönlerinin mimimize edilmesi açısından kanatlı beslenmesinde kullanılmaktadır. Apiaceae familyasına mensup olan Cymbocarpum cinsinin türleri Anadolu coğrafyasında Aşaotu, Öz aşotu yâda Kızıl aşotu olarak tanınmaktadır. Dağ anığı yada aşotu olarak bilinen *Cymbocarpum anethoides* ilkbahar mevsiminde yaygınlık gösteren ve yemeklerde de kullanılan aromatik bir bitkidir. Çalışmamızda bıldırcın (*Coturnix coturnix japonica*) türünden her bir grupta 48 adet bıldırcın olmak üzere biri kontrol ikisi deneme olarak 3 grup oluşturuldu. Deneme gruplarındaki bıldırcınların canlı ağırlıklarına oranla 1 g/kg ve 2 g/kg dozunda rasyonlarına dağ anığı ilavesi yapılarak beslenmeye tabi tutuldular. 8 haftalık uygulama süresi sonunda servikal dislokasyonla öldürülen bıldırcınlardan karaciğer dokusu alınarak %10 luk formaldehit ve bouin solüsyonlarında tespit edildikten sonra rutin doku takip aşamalarından geçirilmiş ve parafin bloklara gömülmüş doku örneklerinden mikrotomla 4-5 µm'lik seri kesitler lamlara alınmıştır. Hazırlanan karaciğer doku preparatları hematoksilen-eozin boyamaya tabi tutulmuştur. Makroskobik inceleme sonucunda karaciğerin tek parça olan lobus dexter hepatis ve pars lateralis ile pars medialis denilen 2 kısımdan oluşan lobus sinister hepatis olmak üzere 2 ana parçadan oluşmuş olduğu gözlendi. Preparatların ışık mikroskobu alında incelemesi sonucu; kontrol grubu karaciğer dokusu lopçuğun merkezinde Vena centralis, lopçukların köşelerinde intersitisyumun azlığına bağlı olarak dağınık halde Vena interlobularis, Arteria hepatica ve Ductus biliferus'dan oluşan karaciğer üçlüsü mevcut idi. Hepatositlerde az miktarda yağ vakuollerine rastlandı. Rasyona dağ anığı ilavesi yapılan deneme gruplarında kullanılan doza bağlı olarak sentral ve portal bölgede homojen olarak dağılmış lipit vakuollerinde bir miktar kontrol grubuna kıyasla artış gözlenmiştir. Dağ anığı ilaveli bazal diyetle beslenen gruplardan alınan karaciğer doku örneklerinde histolojik görünümün hepatik makroveziküler steatoz şeklinde olduğu, hepatositlerde lipidin vakuoller halinde biriktiği gözlenmiştir. Çalışmanın sonucunda rasyona dağ anığı ilavesinin trigliserit ve kolesterol artışına bağlı olarak hepatositlerde kontrol grubuna kıyasla az miktarda lipit birikiminde artışa sebep olduğu kanısındayız.

Anahtar Kelimeler: Cymbocarpum Anethoides, Coturnix Coturnix Japonica, Karaciğer, Yem Katkı Maddeleri

All Sciences Proceedings
http://as-proceeding.com/

2nd International Conference on Engineering, Natural and Social Sciences

April 4-6, 2023 : Konya, Turkey

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Devlet Teşviklerinin KOBİ'ler Üzerindeki Etkisi: Türkiye'de Kaliteli Ekonomik Büyümeye Yönelik KOSGEB Destek Programları Örneği**

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Özet **–** Ülkeler açısından destek programları kamu kaynaklarının genellikle özel sektör işletmelerine aktarılması yoluyla büyüme, istihdam ve yenilik gibi sonuçlar elde edilmesi için uygulanmaktadır. Belirtilen sonuçlara destek programı aracılığıyla ulaşılıp ulaşılmadığının anlaşılması etki değerlendirmesiyle mümkün olmaktadır. KOSGEB ve hedef kitlesi açısından da destek programlarının etki değerlendirmesi yapılarak gerekli önlemlerin alınması gerekmektedir. Bu nedenle bu çalışmada Ekonomik ve sosyal kalkınmada önemli rol oynayan KOBİ'lere, verilen teşviklerin ülkelerin gelişiminde etkilerinin incelenmesi amaçlanmıştır. KOBİ'lere KOSGEB tarafından sağlanan desteklerin kaliteli ekonomik büyümedeki etkisini incelemek ve değerlendirmek amacıyla KOSGEB desteklerinden AR-GE-ÜR-GE ve İnovasyon desteklerinin incelenmesi gerçekleştirilmiştir. Öncelikli olarak verilen destekler üzerinde etkili olan öznitelikler için öznitelik seçimi yapılmıştır. Sonrasında etkili olan öznitelikler için tahminleme yapılmıştır. Son olarak ise tahminleme sonuçlarını da içeren çoklu lineer regresyon analizi yapılmıştır. Bu sonuçlara göre destek programının önümüzde 10 yıllık süreci için tahminlemesi yapılmıştır..

Anahtar Kelimeler – KOSGEB, Öznitelik Seçimi, AR-GE ve ÜR-GE Destekleri, KOBİ, Tahminleme

**Bu çalışma doktora tezinden üretilmiştir.

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2nd International Conference on Engineering, Natural and Social Sciences

April 4-6, 2023 : Konya, Turkey

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The impact of food packaging on food security: A sociological analysis of how packaging design can help address issues of food security, particularly in low-income and marginalized communities

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Abstract **–** Food insecurity is a serious problem that affects low-income and marginalized populations around the globe. Food package design can help to solve this issue by enhancing food accessibility, cost, and quality in such communities. From a sociological standpoint, this research investigates how food packaging design can aid in addressing food security challenges in these areas.

We investigate the present status of food packaging design and its influence on food security using a literature review. Our research shows the potential benefits of innovative package design, such as reduced food waste, improved storage and transportation, and increased shelf life (Muriuki et al., 2021; Neff et al., 2018). Furthermore, we investigate the possible challenges and constraints of package design, such as the cost and accessibility of new technologies, the environmental effect of packaging materials, and the necessity for culturally appropriate packaging design (Neff et al., 2018).

We argue that package design may help to solve food security challenges in low-income and marginalized communities by enhancing food quality and accessibility, reducing food waste, and boosting food distribution system efficiency. We underline the need of creating packaging solutions that take into account the sociocultural context of these areas, as well as the need for collaboration among designers, legislators, and community stakeholders.

Recent research has shown that innovative package design has the ability to alleviate food security challenges in low-income and marginalized groups. A research in India, for example, discovered that using vacuum packing technology greatly enhanced the shelf life and quality of perishable goods, reducing food waste and increasing the availability of healthy food in rural regions (Deshmukh et al., 2020). Another study conducted in Kenya discovered that using biodegradable packaging materials enhanced food cost and accessibility in low-income urban areas while simultaneously lowering the environmental effect of food packaging (Muriuki et al., 2021).

To summarize, food package design has the ability to help solve food security challenges in low-income and marginalized communities. Further study and collaboration are needed to produce sustainable, culturally acceptable, and cost-effective packaging options for these populations.

Keywords – Food Packaging, Food Security, Sociological Analysis

All Sciences Proceedings
http://as-proceeding.com/

2nd International Conference on Engineering, Natural and Social Sciences

April 4-6, 2023 : Konya, Turkey

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Modeling of Photovoltaic Systems with Identical Features for Different Provinces Using SAM Software

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Abstract – Electricity generation in photovoltaic systems varies depending on many different factors. These factors can vary from region to region. Therefore, the locations where these systems are installed are extremely important. In this study, photovoltaic systems with identical 1 MWp power were designed for Kahramanmaraş, Gaziantep and Hatay provinces. The systems were tilted according to the latitude degrees of the locations where the power plants were installed and simulations were performed using SAM software. Among these provinces, the highest electricity production was 1,552 MWh in Gaziantep and the lowest electricity production was 1,453 MWh in Hatay. Kahramanmaraş had an electricity production of 1,457 MWh. According to these results, it was found that determining the latitude angle as the installation angle for power plant installation and designing identical photovoltaic system projects, choosing Gaziantep would be more accurate for installation at the locations examined in this study.

Keywords – System Advisor Model, Different Location, Photovoltaic,Gaziantep,Kahramanmaraş,Hatay,Energy Production

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2nd International Conference on Engineering, Natural and Social Sciences

April 4-6, 2023 : Konya, Turkey

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Energy and Economic Analysis of Photovoltaic Systems with Different Technologies

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Abstract **–** Photovoltaic systems used for electricity production from solar energy consist of photovoltaic panels. With the development of technology, different types of panels are also being produced to achieve higher electricity production. In this study, monocrystalline and monocrystalline bifacial photovoltaic systems with identical features and designed for the Kilis district were compared in terms of electricity production. As a result of this comparison, it was determined that the monocrystalline photovoltaic system had an annual electricity production value of 1,538 MWh, while the bifacial photovoltaic system with bifacial features produced 1,606.5 MWh. When the payback periods of these two systems were compared, it was found to be 3.83 years for the bifacial panel and 3.46 years for the monocrystalline panel.

Keywords – System Advisor Model, Different Technologires, Photovoltaic, Monokristal, Monokristal Bifacial, Hatay, Energy Production

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Energy Analysis of Photovoltaic Systems with 1 MW Power Designed at Different Angles: Adıyaman Province

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Abstract **–** Rising energy prices worldwide have made countries more willing to invest in renewable energy. These investments should be designed according to the renewable energy source to be used. Turkey is in a very rich position in terms of renewable energy potential. Especially the production of energy from solar energy with photovoltaic systems has become widespread in recent years. Many parameters are taken into account when these systems are installed, one of which is the angle of the photovoltaic system to be installed. In this study, simulations were carried out at angles of 22.70° and 52.70° in addition to 37.70°, which is the latitude angle of the photovoltaic system designed using the SAM software with a power of 1 MWp in Adıyaman province, in order to present their annual electricity production values. The simulations revealed that the highest annual electricity production was 1,542 MWh at an angle of 22.70°, and the lowest annual electricity production was 1,430 MWh at an angle of 52.70°. In the 37.70° angle, the annual electricity production was 1,528 MWh. Therefore, it is recommended to use the angle of 22.70° in the power plants to be established in the region, as it provides the highest annual electricity production value among these three angles, while not using the angle of 52.70° due to its lowest annual electricity production value.

Keywords – System Advisor Model, Different Tilt Angle, Photovoltaic, Adıyaman, Energy Production