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BİLDİRİLER
ABSTRACTS

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Influence Of Slip Velocity On Rotating Electro-osmotic Flow In A Slowlyvarying Micro-channel

_O3693

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In this work, new mathematical model and analytical solution for electro-magneto-hydrodynamic rotating flow in a non-uniform micro-channel was derived. The classical model and its numerical solution of this problem was given Shit *at. al*. [1] and is found to be a special case of the problem here presented. The analytical solution is obtained without the use of numerical finite difference method. The derived semi-analytical solutions will be important for assessing the accuracy of approximate numerical and theoretical procedures, as well as experimental practices. TA serious deficiency in [1] modeling was that, they could not expressed their obtained modeling as decomposed along the both axes of the rotational system. Hence, their solution was limited to one frame of reference. To overcome the limitation presented in [1] it is assume that the electromagnetic force can be decomposed into two parts along the both axes. More specifically, I have developed a new analytical model for studying the effects of slip velocity on rotating electro-osmotic flow in a micro-channel, whose walls are varying periodically. The problem is formulated with imposing pressure gradient and magneto-hydrodynamic effect. Finally, the analytical solution to the axial and transverse velocity components have been simulated using Mathcad sofware and simulated results were confirmed.

Keywords: magnetic field,electro-osmotic flow,slip velocity,analytical solution

On The Special Function Characterizations To The Logarithmic Zakharov-kuznetsov Equations

_O3712

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Nowadays, the logarithmic nonlinearities are commonly seen to model the engineering and science processes. In 2014, Wazwaz proposed new classes of logarithmic equations and derived some interesting results with Gaussian solitary wave solutions. Soon after, he employed this hypothesis and exemplified for some class of equations like logarithmic-KdV and logarithmic KP equations, logarithmic BBM equation, logarithmic-regularized Boussinesq equations, logarithmic Klein-Gordon equations and the logarithmic-TRLW models and many others. Further, obtained results are very helpful while analyzing the models illustrating the various phenomena associated to mathematical physics.

In this work, the new traveling wave solutions for several aspects of logarithmic Zakharov-Kuznetsov (ZK) equations with the aid of novel technique called the special function method, which is composed of Hermite and Mathieu differential equations being novel and special functions, are investigated. In order to illustrate the efficiency of the projected scheme, we considered two distinct types namely, the logarithmic ZK (log-ZK) equation, and logarithmic modified ZK (log-mZK) equation. The solutions of the equations are attained by eliminating logarithmic nonlinearity. The behavior of the obtained results and corresponding consequences are illustrated and captured. Finally, the obtained results confirm that the considered solution procedure can be widely employed to find the solution and also capture some interesting and simulating consequences.

Keywords: special function method,logarithmic zakharov-kuznetsov equation,hermite differential equation,mathieu differential equation

Analytical Study Of Generalized Nonlinear Dispersive Wave Equation With Dissipative Term

_O3733

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The generalized nonlinear dispersive wave equation with dissipative term has been proposed

$$u_t - u_{xxt} + \left(f(u)\right)_x - \left(f(u)\right)_{xxx} + \left(g(u) + \frac{f''(u)}{2} u_x^2 \right)_x + \lambda(u - u_{xx}) = 0 \qquad (1)$$

Eq.(1) is classified into three classes;

1. When $f(u) = \frac{u^2}{2}$, $g(u) = \kappa u + u^2$ and $\lambda = 0$, Eq.(1) turns into Camasa-Holm equation which models the unidirectional propagation of shallow water waves over a flat bottom, water waves moving over an underlying shear flow, and also arises in the study of a certain non-Newtonian fluids. Here, κ is a dispersive coefficient related to the critical shallow water speed.
2. When $f(u) = \frac{\kappa u^2}{2}$, $g(u) = (3-\kappa)\frac{u^2}{2}$ and $\lambda = 0$,Eq.(1) turns into the hyperelastic rod wave equation which far-field, finite length, finite amplitude radial deformation waves in cylindrical compressible hyperelastic rods.
3. When $f(u) = \frac{u^{n+1}}{n+1}$, $g(u) = \kappa u + \frac{n^2+3n}{2(n+1)} \frac{u^{n+1}}{2}$,novel class equations with rich properties are obtained.

In this work, our main aim is to obtain analytical solutions for the first two classes considering $\lambda \neq 0$ which are dissipative form of Camasa-Holm equation and dissipative form of hyperelastic rod equation, respectively and the third class i.e. a novel class equations with rich properties. The corresponding processes are proposed and, it is investigated whether the behavior of the solution is suitable for the process. Additionally, its reductions to the other classes can be analyzed so for the first two class, the solution analysis have been studied. Hence, the gap in the literature on this subject has been completed. The obtained results will be helpful in adjusting the models for the new processes and used to improve the engineering processes.

Keywords: nonlinear dispersive wave equation,dissipative term,analytical solutions

φ-weakly Second Submodules

_O3820

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Let R be a commutative ring with identity and M be an R-module. A non-zero submodule N of M is said to be a weakly second submodule if $rsN\subseteq K$, where $r,s\in R$ and K is a submodule of M, implies either $rN\subseteq K$ or $sN\subseteq K$. In this paper we introduce and study the concept of φ-weakly second submodules which are generalizations of weakly second submodules. Let $\varphi:S(M)\rightarrow S(M)$ be a function where S(M) is the set of all submodules of M. A non-zero submodule N of M is said to be a φ-weakly second submodule if, for any elements a,b of R and a submodule K of M, $abN\subseteq K$ and $ab\varphi(N)\nsubseteq K$ imply either $aN\subseteq K$ or $bN\subseteq K$. We give some properties and characterizations of φ-weakly second submodules and investigate their relationships with weakly second submodules. M is said to be a comultiplication R-module if for every submodule N of M there exists an ideal I of R such that $N=(0:_M I)$ where $(0:_M I)=\{m\in M:Im=(0)\}$. We determine φ-weakly second submodules of a comultiplication module. A non-zero submodule N of M is said to be a φ-second submodule if, for any element a of R and a submodule K of M, $aN\subseteq K$ and $a\varphi(N)\nsubseteq K$ imply either $N\subseteq K$ or $aN=(0)$. φ-weakly second submodules are also generalizations of φ-second submodules. As a special case we prove that the concept of φ-weakly second submodule coincides with φ-second submodules when M is a comultiplication R-module. Let $R=R_1\times R_2$, $M=M_1\times M_2$ where R_i is a ring, M_i is an R_i-module for i=1,2. We investigate the structure of φ-weakly second submodule of the R-module $M=M_1\times M_2$ where M_1 and M_2 are R-modules.

Keywords: weakly second submodule,φ-weakly second submodule,second submodule,φ-second submodule,ϕ-prime ideal

Some Results For (s,m)-convex Function In The Second Sense

_O3863

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In this paper, it is given some properties for an (s,m)-convex function defined on [0,d], d>0 the first sense and the second sense with m ∈\\\\\\\\in (0,1). Also, some integral inequalities are examined for some (s,m)-convex function in the second sense for any measure space.

Keywords: integral inequalities,measure space,(sm)-convex function

The Zero Divisor Graph Of A Lattice

_O3906

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Let L be a lattice with the least elemenet 0. An element $x \in L$ is said to be a zero divisor if there exists a non zero element $y \in L$ such that $x \perp y = 0$. The set of zero divisor in L is denoted by Z(L). A zero divisor graph $\Gamma(L)$ with vertex set $Z(L)^* = Z(L) \setminus \{0\}$; distinct $x, y \in Z(L)^*$ are adjacent if and only if $x \perp y = 0$ [1]. The relationship between the zero divisor graph $\Gamma(L)$ and the lattice has been studied by many researchers [1-3].

In this study, we investigate a necessary and sufficient condition on L for the zero divisor graph $\Gamma(L)$ is to be a special graph (like as bipartite, path, star...etc). We give a characterization of the zero divisor graph $\Gamma(L)$ to be a tree. Also, we obtain certain properties of complete bipartite $\Gamma(L)$.

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Keywords: zero divisor graph ,lattice ,bipartite graph

ϕ-s-prime Ideals Of Commutative Rings

_O4035

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The concept of prime ideals and its generalizations have a distinguished place in commutative algebra since they are not only used in the characterization of various types of rings, but they also have some applications in other areas such as Graph Theory, Cryptology, Topology, Algebraic Geometry, etc. This paper aims to introduce and study ϕ-S-prime ideals of commutative rings which is a new generalization of prime ideals. Let R be a commutative ring with unity, S be a multiplicatively closed subset of R and $\phi:L(R)\rightarrow L(R)\cup\{\emptyset\}$ be a function, where L(R) is the lattice of all ideals of R. An ideal I of R is said to be a ϕ-S-prime ideal if there exists a uniform $s\in S$ such that $ab\in I-\phi(I)$ for some $a,b\in R$ imply that $sa\in I$ or $sb\in I$. In fact, prime ideals and its many recent generalizations such as S-prime ideals, weakly S-prime ideals and almost S-prime ideals are particular cases of our new concept. In this study, among other things, we determine the relations between ϕ-S-prime ideals and other classical ones. Also, we investigate the behavior of ϕ-S-prime ideals under rings homomorphisms, in factor rings, in quotient rings, in cartesian product of rings, in trivial extension. Finally, as an application of ϕ-S-prime ideals, we use them to characterize some special rings.

Keywords: prime ideal,s-prime ideal,ϕ-s-prime ideal

Mathematics

A Computational Method For Integro-differential Equation With Initial-layer

_O4231

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In this study, a fitted finite difference scheme on the piecewise uniform mesh (Shishkin mesh) for the numerical solution of the first-order linear singularly perturbed Fredholm integro-differential equation is proposed. The properties of the continuous problem are given and the difference scheme is constructed by the method of integral identities with the use of exponential basis functions and interpolating quadrature rules with the weight and remainder terms in integral form. It has been shown that the approximate solution is second-order uniformly convergent according to the ε-parameter in the discrete maximum norm specified. The obtained results are supported by a numerical example.

Keywords: finite difference method,integro-differential equation,shishkin mesh,singular perturbation,uniform convergence

Mathematics

A New Approach On Generalized Fermi-walker Derivative

_O4288

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To be able to analyze the universe, it needs to be observed. Rest spaces of an observer are transported through Levi-Civita parallelism when the observer γ is freely falling. If γ is not freely falling, the rest space also is not transported by Levi-Civita parallelism anymore. Therefore, Fermi gave the definition of the Fermi derivative for accelerated observers on hypersurfaces and Walker defined the Fermi-Walker derivative on space curves. But the Fermi-Walker connection is only relevant for accelerating observers. Also, this connection and Levi-Civita connection coincide along γ if and only if γ is geodesic. From this point of view, Pripoae [4,5] enlarged the context by defining a rich class of generalized Fermi-Walker connections which are relevant for both accelerating and non-accelerating observers. In this study, generalized Fermi-Walker derivative, generalized Fermi-Walker parallelism and generalized non-rotating frame are investigated along the principal normal indicatrix of any curve in Euclidean 3-space. Initially, we investigate the conditions of the generalized Fermi-Walker parallelism of any vector field along principal normal indicatrix in Euclidean space by considering the Frenet frame. We analyzed the Frenet frame whether it is a generalized non-rotating frame along principal normal indicatrix with the choice of tensor field or not.

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Keywords: generalized fermi-walker derivative,generalized non-rotating frame,tensor field,frenet frame,principal normal indicatrix

Mathematics

On 1-absorbing Vague Ideals Of Commutative Semirings

_O4388

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The goal of this research is to look at the algebraic structure of 1-absorbing ideals and how they may be applied to vague sets, as well as the linkages and algebraic features that exist between them. The 1-absorbing vague ideal is examined in this study as an addition to the literature. In this research, 1-absorbing vague ideals are defined, and 1-absorbing ideals and vague sets are used to illustrate instances and theorems.

Keywords: vague sets ,vague ideals,1-absorbing ideals,1-absorbing vague ideals

On 2-absorbing Bipolar Fuzzy Primary Ideals Of Commutative Semirings

_O4390

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The purpose of this study is to investigate the algebraic structure of 2-absorbing ideals, as well as how they may be applied to bipolar fuzzy sets and the connections and algebraic properties that exist between them. This study adds to the literature by looking at the 2-absorbing bipolar fuzzy primary ideal. In this work, 2-absorbing bipolar fuzzy primary ideals are developed, and utilizing 2-absorbing ideals and bipolar sets, instances and theorems are demonstrated.

Keywords: fuzzy sets,bipolar sets,2-absorbing primary ideals,2-absorbing fuzzy primary ideals,2-absorbing bipolar fuzzy primary ideals

Asymptotic Expressions Of Eigenvalues And Their Numbers For A Second Order Differential Operator

_O4418

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Let H be a separable Hilbert space. In the Hilbert space $H_1 = (L_2[0,1], H)$ we consider the self-adjoint operator L generated by the expression

$l(y)=-y''(x)+Ay(x)+Q(x)y(x)$

with the boundary conditions

$y(0)=0$ and $y'(1)+by(1)=0,\ b>0,\quad (1)$

where A is a positive definite unbounded self-adjoint operator in H , which is the inverse to a compact operator; we may assume that A>I where I is the identity operator and suppose that the operator function Q(x) satisfies the certain conditions.

Let L_0 be the operator generated by the differential expression $l_0(y)=-y''(x)+Ay(x)$ and the boundary conditions (1).

In this study, we investigate the asymptotic behaviour of number of eigenvalues and asymptotic behaviour of eigenvalues for the operators L and L_0.

Keywords: hilbert space,self-adjoint operator,spectrum

Mathematics

Hurst-exponent-based Trading Strategy Of An Index Portfolio In Morocco

_O4438

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The Hurst Exponent (HE) has shown to be very effective in measuring the long-term memory of time series. The theoretical concept says that an HE close to one indicates that high (low) values will be followed by high (low) values while an HE close to zero indicates that high (low) values will be followed by low (high) values. What is close to one and what is close to zero? In reality, HEs of time series do not get too close to one or to zero. In this work, we compute 5-day HEs for a portfolio that has the same composition as the Moroccan All Share Index (MASI) and develop a trading strategy based on the HEs obtained. The data are daily values of the MASI between January 01, 2012, and December 31, 2019. The first five and a half years are used as in-sample to find the optimal thresholds to decide on the closeness of the HEs to zero or to one. We do this using the three HEs: 1) Simple, 2) Empirical, and 3) Corrected Empirical.

The results show that

1. For the Simple HE, an HE <= 0.25 is considered close to zero and an HE >= 0.51 is considered close to one. This gives 216 trades in the in-sample with an accuracy of 74.53%. When testing these thresholds in the out-of-sample 2.5 years, we obtain 111 trades with an accuracy of 74.77%. This yields a return of 12.59% in two years.
2. For the Empirical HE, an HE<= 0.30 is considered close to zero and an HE >= 0.80 is considered close to one. This gives 894 trades in the in-sample with an accuracy of 75.72%. When testing these thresholds in the out-of-sample 2.5 years, we obtain 449 trades with an accuracy of 75.95%. This yields a return of 19.44% in two years.
3. For the Corrected Empirical HE, an HE <= 0.15 is considered close to zero and an HE >= 0.45 is considered close to one. This gives 914 trades in the in-sample with an accuracy of 75.49%. When testing these thresholds in the out-of-sample 2.5 years, we obtain 456 trades with an accuracy of 76.10%. This yields a return of 20% in two years.

The strategy is very profitable and can be developed by using the HE to decide on the optimal time to exit a long or a short position.

Keywords: trading strategy,mena,hurst exponent,morocco

Mathematics

On S-maximal Ideals

_O4449

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Let R be a commutative ring with nonzero identity and S be a multiplicatively closed subset of R. An ideal P of R that is disjoint from S is called S-maximal ideal if there exists a fixed $s \in S$ such that $P \subseteq Q$ for some ideal Q of R implies either $sQ \subseteq P$ or $Q \cap S/= \emptyset$. In this study, first we give some relations between S-prime and S-maximal ideals that are generalizations of prime and maximal ideals, respectively. Moreover, we investigate the behaviour of S-maximal ideals under homomorphisms, rings of fractions, in factor rings.

Keywords: s-maximal ideal,s-prime ideal,maximal ideal,generalization of maximal ideals

Comparison Of Biased Estimators In Logistic Regression Analysis

_O4590

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Regression analysis is a statistical method used to explain the functional relationship between a dependent variable and independent variable(s) and to estimate the dependent variable values. In regression analysis, the dependent variable is generally treated as a continuous and measurable variable. However, in some cases, the dependent variable may be a discrete variable and take a limited number of values. The regression analysis method applied when the dependent variable is discrete is called logistic regression analysis. The most commonly used parameter estimation method in the logistic regression model is the maximum likelihood. As in the linear regression model, there may be multiple interrelationships between the explanatory variables in the logistic regression model. In the case of multiple interrelationships, the size and asymptotic variance of the maximum likelihood estimator are excessively large. As a result, statistical inferences become erroneous. In order to reduce the effects of multiple interrelationships, some alternative parameter estimation methods to the maximum likelihood estimator have been proposed in the literature

Keywords: logistic regression,linear regression ,multicollinearity,biased estimator

Mathematics

On Some Curvature Properties Of Nearly Cosymplectic Manifolds Equipped With Schouten-van Kampen Connection

_O4801

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In manifolds theory, almost contact manifolds have an important place. J. Gray in 1970 has defined an almost contact structure on one-dimensional manifolds with a reduction of $U(n) \times 1$ structional group. A cosymplectic manifold is an odd dimensional analogue of a Kahler manifold which is defined by Liberman 1959 and Blair 1967. A cosymplectic structure on a manifold M; which is $2n+1$ dimensional, is a normal almost contact metric structure (J, ξ, η, g) on M. A nearly cosymplectic structure is an almost contact metric structure (ϕ, ξ, η, g) satisfying $(\bigtriangledown_X \phi) X = 0$. Under this condition an almost contact Riemannian manifold is said to be a nearly cosymlectic manifold.

Schouten- van Kampen connection has been presented formally by Schouten and Van Kampen for studying non-holomorphic manifolds in 1930. We can say that The Schouten–van Kampen connection is one of the most natural connections. A pair of complementary distributions on a differentiable manifold equipped with an affine connection has preserved by parallelism. (Bejancu,, Farran,, 2006), (Ianus, 1917).

In this paper we study on the concircular curvature tensor and projective curvature tensor of nearly cosymplectic manifolds with Schouten-van Kampen connection. Also we focus attention on the properties that concircular curvature tensor of nearly cosymplectic manifolds in terms of the Schouten-van Kampen connection provides that ϕ- concircular flat,pseudo concircular flat, ξ - concircular flat.

Keywords: nearly cosymplectic manifolds,schouten -van kampen connection,concircular curvature tensor,projective curvature tensor

Perfect Fluid Solutions Of Brans-dicke And Gauss-bonnet Cosmology

_O3638

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Cosmological observations show that the universe is expanding with acceleration, and hence galaxies and galaxy clusters are moving apart from each other. Moreover, there are also unknown ingredients in the cosmological era referred as “dark energy” and “dark matter” that constitute 96% of the universe. Cosmologists think that dark energy is responsible for the expansion of the universe. The primary aim of theoretical cosmologists is to understand the structure and behavior of cosmological astronomy. One of the most important and best mathematical descriptions has introduced by Einstein, named as General Theory of Relativity (GR). Although solar system experiments are best fitted to this theory, observations of the large-scale structure of the universe and the expansion rate of the universe have some deviations from GR. Therefore, we need more general theories, such as Brans-Dicke (B-D) scalar tensor theory or Gauss-Bonnet (G-B) theory of gravity. In B-D theory, the Newton’s gravitation constant, introduced in Einstein’s Theory, is not a constant but changes in time and coincides with the scalar field. In G-B theory, this scalar field is coupled with the Gauss-Bonnet invariant term and provides a detalied analysis of the space-time and hence may explain current acceleration of the universe.

In this work, we introduced the homogenous and isotropic cosmological universe model filled with the matter perfect fluid and scalar field, and we obtained the expansion parameter in the framework of B-D and G-B theories. In Standard Cosmology, a homogenous and isotropic description of geometry has given by the Friedmann-Lemaitre-Robertson-Walker line element. We get that the expansion rate of this space-time strictly depends on the scalar field and hence the acceleration of the universe originates from the scalar field. We conclude that we may not need a cosmological constant anymore to explain the dark energy, and scalar fields might be a good candidate to explain the behavior of dark energy. At this stage, we have a remaining problem left, the source of this scalar field is an important issue, and we don’t have any knowledge for the answer yet.

Keywords: brans-dicke theory ,gauss-bonnet theory,cosmology, scalar field theory,dark energy

Energy States And Binding Energies Of Multilayer Infinite Spherical Quantum Dots

_O3804

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In this study, energy states, wave functions and binding energy were calculated depending on layer thicknesses in one and two step infinite spherical quantum dots with and without impurity atoms. In addition to these, the effect of the confining potential on the energies was investigated. The energy eigenvalues and the wave functions were calculated using the Runge-Kutta numerical method. In the results, it was seen that the layer thickness and the confining potential had an effect on the energy states and binding energy. While it was observed that the energies in the one-step infinite spherical quantum dot decreased quickly in small values of layer thicknesses and the energies came to constant values with increasing layer thicknesses, the energies in the two-step infinite spherical quantum dot did not show a rapid decrease and the differences between the energy states became wider with increasing layer thicknesses. This showed that the number of steps of the confining potential is effective in energy states.

Keywords: Enegy States, Confining Potential, Infinite Spherical Quantum Dot.

Keywords: enegy states,confining potential,infinite spherical quantum dot

Silicon-semiconductor Materials For Infrared Photonic Devices

_O3808

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Optoelectronic materials and related photonic devices are used to improve novel technologies in communications, computing, sensing, imaging, and autonomous vehicles. The photonic devices are produced in huge volume due to the increasing demand for high-speed optical transceivers, the rapid growth of personal communication, ultra-low power consumption and ultra-wide bandwidth for data centres. The quality of quantum-engineered heterostructures, material growth and device fabrication are improving and have the potential for high-density integration of optoelectronics. The integration of photonic devices come in the form of a silicon photonics integrated circuit. Silicon photonics is a material platform from which photonic integrated circuits can be manufactured. It uses silicon wafers as the semiconductor substrate material. The silicon used in the photonic devices in the circuit act as the core, the semiconductor substrate in the form of silicon on insulator wafers and bottom or top cladding layers. Today, improved techniques are used to integrate semiconductor materials and photonic devices in the silicon chip to drive the photonic components within the circuit. In this study, the infrared devices and applications of silicon semiconductor materials are investigated. The infrared region of the electromagnetic spectrum is very intriguing for many applications. These devices are used to detect and monitor specific molecules that have bands of absorption lines in the mid-infrared spectrum. The Group IV- and Group III-V semiconductor materials and some structures integrated on Si wafers are selected and compared. The integration of mentioned systems underline the potential of novel, cost-efficient and highly scalable devices, and applications for expanding the field of silicon photonics.

Keywords: photonic,silicon,infrared,semiconductor ,heterostructure

Effects Of Al Addition On The Mechanical Properties Of Zr50cu50-xalx (0≤x≤50) Bulk Metallic Glass

_O3825

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The evolution of microstructural and mechanical properties of ternary Zr-Cu-Al metallic glass under tensile loading was investigated by molecular dynamics simulations using embedded atomic potentials to describe interactions between atoms in the system. Special attention was paid to the variation of these properties according to the Al content in the $Zr_{50}Cu_{50-x}Al_x$ ($0 \leq x \leq 50$) system. The results showed that there is no systematic relationship between the elastic properties and the amount of Al, but the local structure of the system is significantly affected during the tensile load. The elastic modulus and yield stress were found to be maximum for 40% and 20%, respectively. It was also revealed that the addition of Al decreased the fraction of Al-centered <0,0,12.0> polyhedra, and increased the fraction of the same polyhedra around Cu and Zr.

Keywords: molecular dynamics simulations,elastic modulus,voronoi polyhedra,mechanical properties,zrcual metallic glass

Physics

Determination Of The Theoretically Created Surface Profile By Generalized S-transform

_O3926

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Surface profiles of thin films are mandatory for improving an optoelectronic device. The surface topography of a thin film connects with optical, magnetic, physical, and chemical properties. Hence many technologies and scientific studies, like Scanning Electron Microscope (SEM), Atomic Force Microscopy (AFM), stylus and optical methods etc., are improved to determine the surface profile. Because of the cost-performance and user friendly advantages, optical methods have gained a more critical role in this purpose with respect to other methods. In optical methods, thin film surface images are taken by the optical systems, and various algorithms analyze the images to determine 3D surface profile.

In this study, Generalized Stockwell Transform (GST) method were improved as an 3D surface profile analysis algorithm. The GST was selected because of the ability to control the resolution of the window function, which is an essential effect of the analysis. The analysis was executed for a simulated surface with various phases to liken the natural thin film surface. The analysis results were calculated for multiple resolution values of the window, and the effect of the control of resolution was discussed. The results show that the suggested method is suitable for determining the thin film surface profile taken by optical systems like white light diffraction phase microscopy. The mean difference between the input and analyzing phases is calculated as 2.281×10^{-3} as minimum error for multiple resolution values.

Keywords: thin film surface,profile,generalized stockwell transform

Physics

Surface Profile Determination By Generalized Morse Wavelet: A Simulation Study

_O3936

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In recent years, the use of non-contact techniques to quantitatively measure surface roughness, at the micro or nano scale, quickly and accurately is the most remarkable topics in the optoelectronics industry. Interferometry is one of the useful tools that non-destructively provides highly accurate information about surface morphology. With interferometric microscopy, an interferogram, is created by the interference of the sample beam and an off-axis reference beam, which is analyzed with a preferred phase calculation method and surface phase information is calculated.

To achieve precise quantitative surface profile of the simulated thin film, Generalized Morse Wavelet (GMW) has been proposed. For the calculation of phase, there are lots of studies using the continuous wavelet transform (CWT) method with different wavelets. For the CWT method, the selection of the analyzing wavelet is a crucial step to obtain accurate results. The generalized Morse wavelet (GMW) has been prefered due to the capable of controlling the resolution. GMW has two variable parameters. It is an advantage that two degree of freedom improves the sensitivity of phase. Simulated thin film surface has been analyzed by GMW for different variable parameters and the mean difference between the input and analyzing phases is calculated 3.980×10^{-3} as minimum error.

Keywords: thin film,surface profile,generalized morse wavelet,contiuous wavelet transform

Physics

Algebraic Classification Of Higher Dimensional, Vacuum Robinson-trautman Spacetimes With Large D Method

_O4090

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Petrov classification of a spacetime, enable us to understand the several aspects of the spacetime for *D=4*. This classification generalized for any arbitrary dimension *D>4* by examining boost weight. Boosts are defined by rescaling of the null basis such as; *k→λk*, *l→l/λ* and *mi→mi* and they are obtained *+1,-1,0*, respectively. When the corresponding Weyl tensors of the boost weight of *+2* vanish the null direction of *k* becomes primary Weyl aligned null direction (WAND). According to primary WAND, the spacetime can be Type I with subtypes Type I(a)-I(b), Type II with subtypes Type-II(a)-II(b)-II(c)-II(d), Type III with subtypes Type III(a)-III(b), Type N and Type O. For fixed *k*, if the boost weight *-2* components of the Weyl tensor are zero, the null direction of *l* becomes secondary WAND and the spacetime is classified Type Ii-IIi-IIIi and Type D for secondary WAND. In general, without solving field equations, Robinson-Trautman spacetime is classified Type I(b) for both any arbitrary dimension *D>4* and *D→infinity*. When the Einstein vacuum field equations are applied, all Robinson-Trautman vacuum solutions in *D>4* are of Type D which is in striking contrast to the classical *D = 4* case, which is much richer. As *D→infinity*, the algebraic classification of the shearfree, twistless and expanding spacetime was studied without solving field equations. Although the Weyl scalars become more simpler, the classification of the spacetime paralell to the any arbitrary dimension *D>4* case. In our study, we will investigate the algebraic classification of vacuum Robinson-Trautman spacetime by applying Einstein vacuum field equations when the number of dimension of the spacetime goes to infinity.

Keywords: vacuum robinson-trautman,higher dimensional,algebraic classification,large d limit,wand

A Theoretical Investigation On 4-bromo -5-fluora-2-((3-nitrophenylimino)methyl)phenol Schiff-base With Cobber Complex Towards Designing Solar Cells

_O4350

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Schiff base molecules are one of the most studied organic materials in recent years. It has excellent thermal, mechanical, optical, electronic and fiber forming properties. Furthermore, because of non-toxicity, good electrical conductivity and easy production, schiff base compounds are very promising in optoelectronic devices such as photodiode and photovoltaics. Because of all these fascinating properties, this material is extremely attractive in different fields of application. As is known, Schiff bases are considered as a very important class of organic compounds due to their ability to form complexes with transition metal ions. It has even been proven that metal complexation of Schiff bases can strongly influence their activity as well as their optoelectronic properties. This makes them potential sensitizer and acceptor materials in dye-sensitized solar cells.

In this study, cobber complex based on a Schiff base structure is performed and investigated the structural, spectral, optical and electronic properties using quantum mecanic methods. In addition, the optical observations in different solvents show a good absorption in visible. Moreover, the Density Functional Theory (DFT) calculations reveal that the Cu complex has an energy gap equal to 3.17 eV. Quantum parameters, such as the electronegativity, the chemical potential, the softness and the hardness of the studied complex are calculated and reported. Finally from the corresponding energies levels of the different structures, we have plotted the total density of states. All these interesting results reveal that Cu complex has good optical and electronic properties that make this material as suitable for dye sensitized solar cell devices.

Keywords: schiff base,dft,complex,solar cell

Physics

Investigation Of The Effect Of Cooling Rate On Atomic Structure Of Liquid Calcium During The Cooling Process: A Molecular Dynamics Simulation Study

_O4498

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In this study, the evolution of the atomic structure of liquid calcium (Ca) cooled with different cooling rates (10-0.02 K/ps) was investigated using the classical molecular dynamics simulation method. In this process, the embedded atom method many body potentials, which are widely preferred in molecular dynamics simulations, were used to describe the interactions between Ca atoms in the system. Volume temperature curves, pair distribution functions, structure factor and Honeycutt-Andersen method were used to examine the changes in the atomic structure of liquid Ca during the cooling process. A good agreement was observed between the pair distribution functions and structure factors curves calculated from molecular dynamics simulations for liquid Ca and the experimental and other molecular dynamics simulation results in the literature. Current findings have shown that liquid Ca, which is cooled faster, exhibits properties unique to amorphous structures at lower temperatures. On the other hand, it has been found that when the system is given more time to cool (or is cooled more slowly), crystal nucleation begins and the size of this nucleation increases, eventually making the system transition from a liquid to a crystalline structure. According to the results of Honeycutt-Andersen pair analysis method, 1551, 1431 and 1541 bonded pairs are more common in amorphous systems, while 1441 and 1661 bonded pairs are more popular in crystalline structures. It is believed that the results of the study will provide useful information to the literature about the development of the atomic structure of Ca, which has a wide range of uses in our lives.

Keywords: calcium,molecular dynamics simulations,honeycutt-andersen method ,embedded atom method

Physics

Fabrication Of Inverted Solar Cells With Zno Thin Film By Using Spin Coating Method

_O4715

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In the previous work, we investigated of the optical, morphological and structural properties of P3HT:PCBM based inverted organic solar cells. In this study, we have successively fabricated inverted OPV employing ZnO and MoO_3 as electron and hole selective layers, respectively. Firstly, pre-prepared ZnO solution was coated on the ITO surface by spin coating at 2500 rpm for 50 sec followed by annealing at 150 ˚C for 10 min on a hot plate in ambient and this annealing process was repeated three times. The zinc oxide coated ITO was transferred into the glove box. Later, the ITO/ZnO layer was coated with a 1:0.8 ratio P3HT:PCBM mixture at 800 rpm for 50 sec with a spin coating device in a glove box, and then annealed on a hot plate at 115 ˚C for 5 min. Subsequently, 10 nm thick molybdenum trioxide (MoO_3) was coated on the ITO/ZnO/P3HT:PCBM layer using thermal evaporation in high vacuum in the glove box. Finally, 100 nm thick Al metal was coated using thermal evaporation in glove box system and ITO/ZnO/P3HT:PCBM/MoO_3/Al inverted OPV structure were obtained. Under simulated AM 1.5 illumination at 100 $mWcm^{-2}$, the power conversion efficiency of I-OPV was calculated as approximately 0,92%. In the future, we will have found the optimum ZnO buffer layer by using the spin coating method to enhance the power conversion efficiency of the inverted organic solar cells.

Keywords: inverted solar cells,zno,spin coating,p3ht:pcbm

Physics

From Galilean To Lorentz Transformations: A Pedagogical Viewpoint

_O4797

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Galilean transformations and Lorentz transformations are part of the curricula in modern physics at the upper-secondary schools (such as Grade 11, 12, or Grade 13) and in physics undergraduate programs at any university. However, learning outcomes are different for these courses taught at the upper-secondary schools and physics undergraduate programs at the universities because the prerequisites are different. Furthermore, Einstein's special theory of relativity is related to Lorentz transformations and is part of the physics curricula taught at upper-secondary schools and undergraduate physics degrees at universities. Moreover, that theory is based on the framework of the four-dimensional space-time concept and its fiber-absolute time. These concepts are necessary for a high level of mathematics; therefore, the difficulty in acquiring the desired outcome knowledge can be different for the students of upper-secondary schools and physics undergraduate programs at the universities. The need to balance the mathematical skills necessary to understand materials has increased efforts in designing syllabuses with a gradual development and implementation of modern physics courses in curricula.

This study discusses the pedagogical frameworks that can be established in the syllabuses of physics courses for teaching the topics, such as Galilean and Lorentz transformations and special theory of relativity, at different levels of secondary school and undergraduate university curricula aiming for a gradual transition from the secondary school to the careers in science, technology, engineering, and mathematics.

Keywords: galilean transformations,lorentz transformations,special theory of relativity,space-time,metric tensor

Targeting Of Il-4 Receptor On Cancer Cells With A Natural Peptide

_O3720

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Cancer is one of the diseases that leading cause of death worldwide. Advances in understanding the process of cancer formation and development have allowed the design of new strategies in anticancer treatment approaches. A wide variety of bioactive peptides exist in nature and have been used for anticancer therapeutic designs in recent years. Palm fern (*Cycas revoluta*) seeds contain a small peptide with the sequence AWKLFDDGV and with a molecular mass of 1,050 KDa. This peptide has been shown to induce inhibition of cancer cell proliferation and apoptosis by targeting nucleosome structures in colon carcinoma and human epidermoid cancer cells. As an approach to colon cancer disease therapy; Poly (caprolactone-co-glycolide) as a biocompatible polymer can be modified with ligands that recognize receptors on cancer cells for higher specificity, due to their large amount of drug transport and long circulation time. The current strategy towards this aim is to design a novel complex to target interleukin-4 receptor (IL-4R) expressed colon cancer cells using an IL-4R-binding peptide-1 (IL4RPep-1) with the sequence CRKRLDRNC. Poly (caprolactone-co-glycolide) surface has IL-4R-binding peptide-1 as a ligand for IL-4R of colon cancer cells that can bind receptors expressed by target cells. Eventually, with conjugating this complex to the *Cycas revoluta* peptide can be driven inside particular cell compartments where it can exert its pharmacological action.

In the present work, molecular dynamics (MD) simulations studies are performed using the LAMMPS package. All MD simulations were performed at the constant volume and constant temperature (NVT) ensemble and the temperature is kept in 300 K using Nose-Hoover thermostat. The time step of each MD simulation was 1 fs, and periodic boundary conditions (PBC) applied in all three dimensions. The van der Waals interactions are truncated at 1.0 nm, and the long-range Coulomb interactions are computed by utilizing the particle-particle particle-mesh (PPPM) algorithm.

Keywords: cancer ,interleukin-4 receptor ,cycas revoluta ,poly (caprolactone-co-glycolide) polymer,ligand

Plant Growth Promoter Activity Of Two Purple Non Sulfur Bacteria On Marrubium Vulgare L.

_O3780

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The trend to turn back to nature popularize the use of medicinal aromatic plants all over the world. One of these plants is horehound (*Marrubium vulgare* L) which is a perennial flowering plant with a white dense woolly stem. It belongs to the *Lamiaceae* family whose members such as mint, thyme, basil, sage etc. are well known for their medicinal and industrial uses. This plant has been suggested to be used in agriculture for its herbicide and insecticide properties. Moreover, it can be used as antiparasitic and against some diseases in husbandry. Therefore, the popularity of this plant is on the rise and its cultivation therefore may increase in the future. The productivity of the agricultural soils, however, are decreasing day by day due to unconscious applications. In order to recover the productivity, organic fertilizers, and especially biofertilizers are suggested to be used. In this study, two purple non sulfur bacteria, which are well known for their nitrogen fixing and plant growth promoter abilities have been tested on the growth of horehound in a lab experiment. The antibacterial activity of the ethanol extracts of aerial parts of the plants were also tested on 2 Gram-negative and 2 Gram-positive bacteria. The results showed that *Rhodobacter sphaeroides* stimulated the growth of horehound when applied to the root area. The fresh weight and length of the plant of the plant was greater than the control condition ($p=0.010$) upon application of *R. sphaeroides*, while *R. capsulatus* did not significantly affect the growth of horehound plant compared to the control. On the other hand, root length of the plant decreased significantly upon the application of both bacteria ($p=0.003$). These results are meaningful for the understanding of biofertilizer activities, which will be crucial to increase the productivity of agricultural soils.

Keywords: marrubium vulgare l.,antibacterial activity,purple non sulfur bacteria,plant growth promoter

A Review Of Aphid Parasitoids (hymenoptera: Braconidae: Aphidiinae), Host Aphids And Their Host Plants Of Turkey

_O3788

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This study presents available data in Turkey about the members of the subfamily Aphidiinae (Braconidae: Hymenoptera) determined as natural enemies of aphids in the country, the related aphid species, and the host plants the aphids damage.

The survey of a total of 108 published literature revealed presence of aphid species classified within 7 subfamilies (Aphidinae, Calaphidinae, Chaitophorinae, Eriosomatinae, Lachninae, Pterocommatinae, Thelaxinae) among which Aphidinae is the most diverse one with 82% of the determined species.

The survey also revealed that the determined species belonged to 47 genera. Among these genera, *Aphis* was represented with 31 species, *Uroleucon* with 8 species, *Brachycaudus* with 7 species and *Dysaphis* with 6 species while the other genera were represented with 4 or less species.

The investigation of faunal, taxonomic, plant protection or plant-host-parasitoid based studies showed that 64 Aphidiinae species existed in Turkey as parasitoids of aphids. *Praon volucre, Lysiphlebus fabarum, Aphidius matricariae* and *Aphidius colemani* appeared to be the species which were determined in most of the studies.

The number of plant families that aphis damaged in Turkey is 46. Compositae is the most common preferred family followed by Rosaceae, Leguminosae, Graminea and Crucifera.

Determination of aphids with their hosts, parasitoids and habitats and revealing data about their ecology and biology is concluded to be helpful to contribute required data in natural and agricultural ecosystems.

Keywords: hymenoptera,braconidae,aphidiinae,aphid,fauna

Biology

An Application Of Geographic Information System To Evaluate The Water Quality Of Ergene River

_O3810

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Ergene River is the most significant watershed for the Thrace Region. However, it is one of the most polluted lotic ecosystems of Türkiye and known that exposed to an intensive domestic, agricultural and industrial pollution almost from its source region. The aim of this research was to determine the water quality of Ergene River by measuring a total of 15 significant water quality assessment parameters including dissolved oxygen (DO), oxygen saturation (%O_2), pH, electrical conductivity (EC), total dissolved solids (TDS), salinity, turbidity, suspended solids (SS), nitrate (NO_3), nitrite (NO_2), ammonium (NH_4), phosphate (PO_4), sulphate (SO_4), biological oxygen demand (BOD) and chemical oxygen demand (COD) and (2) to assess the water quality by using Geographic Information System (GIS). For this purpose, surface water samples were collected from 5 stations (from upstream to downstream; E1 – E5) located on the Ergene River in winter season (December) of 2020. As a result of this study, the mean recorded values of investigated water quality parameters in Ergene River were found as: 5.30 mg/L for DO, 46.50 % for %O_2, 9.16 for pH, 743 µS/cm for EC, 502 mg/L for TDS, 0.50 ‰ for salinity, 186 NTU for turbidity, 136 mg/L for SS; 11.79 mg/L for NO_3, 1.08 mg/L for NO_2, 2.34 mg/L for NH_4, 1.69 for PO_4, 93.66 mg/L for SO_4, 10.80 mg/L for BOD and 41. 16 mg/L for COD.

Keywords: ergene river ,water quality ,geographic information system

Green Food For The Pet Food Industry

_O3899

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Microalgae are defined as single-celled aquatic organisms. They are grown in nutrient solutions created by combining sunlight or artificial light and different fertilizers so that they can develop in environments such as ponds, aquariums, tanks or photobiacators in open systems and closed systems. In particular, microalgae grown under controlled conditions are fully traceable, sustainable, clean and safe with a high quality source of DHA (docosahexaenoic acid) long-chain omega-3 fatty acids as well as lower levels of heavy metals and other pollutants. Microalgae have begun to take their place in pet food formulations today due to their high content of vitamins A, C, E and Beta-carotene. Thus, it has been found to increase appetite in animals in general, strengthen immunity and help protect them against harmful microorganisms. The pet food industry has a high growth rate as of 2020. Now, pet owners prefer the product to provide better nutrition and health to their four-legged friends rather than being cheap. Microalgae generally contain high amounts of protein, fatty acids, antioxidants, different vitamins as mentioned above, fiber and minerals such as phosphorus, iron, zinc, magnesium. Among its most important advantages over many natural products, it is a quality product free from heavy metals, pesticides and harmful microorganisms. Considering the general health functions, it has been proven that it improves the intestinal flora and increases the immune system, provides oral hygiene, and increases the shine of the hair. In addition, with its high DHA content, it contributes to the brain development of living things. The most commonly used microalgae in pet foods are spirulina and chlorella. These microalgae are used as supplements, treats and staple food for dogs and cats. With this research, the use of microalgae in the pet industry and the benefits it can provide to living things will be explained.

Keywords: chlorella,dha,spİrulİna,pet food

Biology

Investigation Of Protein-protein Complexes By Computational Geometry Methods: Delaunay Tesselation Of Three-dimensional Structures Of Proteins

_O3902

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Protein-protein interactions have a critical role in all life processes and are important for biomedical research but how the proteins form protein-protein complexes is still not fully understood. To investigate the formation of these complexes, the interfaces of them were analyzed by using Delaunay tessellation, a computational geometry method that converts a set of points in space to a set of adjacent tetrahedra so that the points are coordinated optimally with the points around them. This method is applied to the 3-dimensional (3D) coordinates of the atoms of selected proteins which are deposited in the Protein Data Bank. The proteins used in this study were obtained from the list of proteins in ComSin database. The two measures of tetrahedra obtained from Delaunay tesselation of the 3D structures of either single proteins or homodimers, volume and sphericity values were calculated in this study. Sphericity value of a tetrahedron is a measure for its shape which is the highest for a regular tetrahedron. The tetrahedra that are at the outermost layer are called surface tetrahedra. These tetrahedra have larger volumes than the inner tetrahedra and have lower sphericity values, which point to the irregularity of the tetrahedra. Most of the surface tetrahedra in single protein structures have only one of their faces at the surface, and a few of them have two faces at the surface and they are called “sharp tetrahedra” in this study. It is observed that the residues at the sharp tetrahedra of single proteins have higher frequency at the interface of homodimers than the residues at the tetrahedra that are not “sharp”. Furthermore, among the residues on sharp tetrahedra in HIV-1 protease structures are residues that are determined to be important by experiments. These results imply that determination of sharp tetrahedra in protein structures may compliment the research findings on protein-protein interactions.

Keywords: delaunay tessellation,protein-protein-complexes,three-dimensional structure

Amonyum Nitratın Sivrisinek Balığı (Gambusia Holbrooki) Üzerindeki 96 Saatlik(24, 48, 72 Ve 96 Saatlik) Subakut Davranış Değişimi

_O3975

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Amonyum nitrat hem Türkiye'de hem de dünyada yaygın kullanılan gübredir. Tüm tarım kimyasalları gibi gereğinden fazla ve yanlış kullanımı sucul ekosisteme girer Amonyum ve nitritin olarak su ekosisteminde yayılır. Balıklar üzerine toksik etkisi olan amonyum nitrat gübresinin balık solungaçları üzerine toksik etkisi bulunmaktadır.

Bu araştırmada subakut dozlarda (ortalama 18 ºC , 7,5 pH ve 800 µS) Amonyum nitrat maruz bırakılan sivrisinek balığı (*Gambusia holbrooki) i* farklı dozlarda (100, 200 ve 300 ppm) ve farklı sürelerde (24, 48, 72 ve 96 saatlerde) davranış değişimi analizi Miranda3 Balık davranış sistemi donanımı ile ve ANY-maze versiyon 6.3 yazılımı ile incelenmiştir.

Deneysel çalışmada sivrisinek balığını toplam yüzme mesafesinin, ortalama yüzme hızının artan Amonyum nitrat konsantrasyonlarında azaldığını belirlenmiştir. Tüm deney süreleri için (24, 48, 72 ve 96 saatlerde) kontrol grubu ile doz grupları arasında önemli istatistiği fark gözlenmiştir.

Keywords: amonyum nitrat ,gambusia holbrooki),davranış değişimi

Biology

Mitochondrial Functional Disorder In Multiple Sclerosis

_O4063

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Mitochondria is one of the double-membrane organelles in eukaryotic cells. One of the most important roles of mitochondria is oxidative energy metabolism. Mitochondria contain the respiratory chain, where energy is most efficiently produced in the form of adenosine triphosphate (ATP). Mitochondria are an important source of reactive oxygen species (ROS) in most mammalian cells. Therefore, any damage that disrupts the function of the respiratory chain can also have an impact on cell survival.

Disturbances in mitochondrial function are manifested by a decrease in ATP levels and gradually increase neuronal dysfunction or neurodegeneration. Recent research shows that mitochondria are increasingly linked to the pathogenesis of many neurological disorders, including multiple sclerosis (MS).

Neurodegenerative diseases pose a great threat to human health due to the presence of chronic oxidative stress and dysregulation of the inflammatory response. The chronic course of neurodegenerative diseases makes their treatment an increasing medical, social and economic problem worldwide. An estimated 7 million people die each year from neurological disorders.

Keywords: reactive oxygen species,mitochondrial dysfunction,neurodegenerative diseases,multiple sclerosis

Morphological Investigations On The Bresslauides Sp. (ciliophora, Colpodea) Isolated From Moss Samples Around The Steam Vents In The Nemrut Caldera (bitlis, Turkey)

_O4102

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The *Bresslauides* sp. population was isolated from the mosses around the steam vents in the Nemrut Caldera. The steam vents are located at an altitude of 2335 m and emit steam at a temperature of 40−60 °C in every period of the year, and the surrounding of the chimney has a constantly moist moss cover. The moss samples collected to isolate the ciliates were brought to the laboratory in plastic bags and dried in the shade for a one month. Then, the dried moss samples were taken into 10 cm diameter Petri dishes and cultures were prepared using the non-flooded Petri dish method. From the 2nd day to a week, liquid was taken from the prepared cultures and the ciliates were examined both live and using various silver staining techniques.

Cells sizes is highly variable; Individuals newly excysted in the early stage of Petri culture are 60−80 × 50−60 µm in size, and 130−220 × 100−170 µm in later stage. Shape is usually broadly oval rarely slightly reniform. Laterally flattened about 2-3:1. The cytoplasm is colourless and granular in appearance. Food vacuoles contain small ciliates and various algae. Vestibular opening is wide and deep, occupying almost anterior half of the body. The macronucleus is spherical and located slightly dorsally on the anterior half. The micronucleus is spherical and located close to the macronucleus. The contractile vacuole, surrounded by small vesicles, is located in the last quarter of the cell. Somatic cilia are about 10 µm long and form 70−100 spiral kinety. Left oral polykinetid is about 20−25 µm long, consist of 30-35 rows and is perpendicular of long axis of the cell. The right oral polykinetid does not form a regular row, its size is approximately twice that of the left, and is located almost parallel to the long axis of the cell.

Although *Bresslauides* sp. is similar to the previously described populations in terms of general morphological characters, it differs in cell size, somatic kinetic number, location of the contractile vacuole and habitat. Considering these differences, this population is probably to be a new species. However, since our morphological and molecular phylogenetic studies are still continuing, no species new definition was made here and it was reported as *Bresslauides* sp.

Keywords: bresslauides sp.,morphology,moss ciliates,nemrut caldera,turkey

An Investigation On Aquatic Bird Species Important Breeding Sites In Meriç Basin

_O4104

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This study was performed in Meriç Basin located along Greece border in Edirne province in southern Thrace Region during the period from March 2021 to September 2021. The field observations for 23 days and evaluation of the relevant literature showed that 103 aquatic bird species are present in the delta and 52 of these species breed in the area. 12 areas where breeding was dense were determined and plotted on a breeding map. Regional status (resident, migratory), conservation status (UICN, CITES, BERN, MAK), population densities, habitat preferences, the means of breeding determination and species distributions with respect to breeding areas were presented in two data tables. In addition, threats on the birds and the study area and solution offers were discussed.

Keywords: aquatic birds,breeding,meriç basin.

Determination Of Single Nucleotide Polymorphism In Cattle Myo1a Gene Using Dna Sequencing

_O4186

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Heat stress causes significant economic losses, especially in dairy cattle breeds. Therefore, it is important for future cattle breeding studies to identify the genetic mechanisms associated with heat stress tolerance. One of the important phenotypic traits that enable mammals to adapt to high temperatures is the coat structure characteristics. Animals with black color absorb heat and solar radiation more than white-colored animals. There is evidence that the coat colour of cattle chronically exposed to high temperatures may lighten. Melanocytes are the main cells responsible for the pigmentation of the skin, hair and eyes of mammals. Melanocytes produce a broadband UV absorbing pigment called melanin. Melanin pigment is stored within melanosomes. Myosins help the transport and the positioning of melanosomes in melanocytes. Myosins are a superfamily of motor proteins that convert ATP energy into mechanical energy. They are best known for their role in muscle contraction but are also responsible for variety of cellular functions such as nonmuscle cell movements, including cell division. Myosins are generally divided into two groups: conventional and unconventional myosins. Conventional myosin is the myosin-2 expressed in contractile rings in muscle cells or nonmuscle cells. All other myosins with a wide variety of cellular functions including movements of melanosomes in epidermal melanocytes are classified as unconventional myosins. The Myosin1A (MYO1A) gene encodes the member that class 1 unconventional myosin of the myosin superfamily. Research in recent years has suggested that MYO1A is associated with pigmentation and heat stress in cattle. In this study, polymorphisms in the MYO1A gene in Turkish Holsteins were investigated by DNA sequencing. Primers were designed to amplify exon 6 and exon 7 of the MYO1A gene. The primer pair successfully amplified the target region of all samples (n=30). A synonymous SNP (rs110123931 C>T, codon 176 GGC>GGT) was observed in the exon 7. The T allele frequency was found to be 0.700. In this study, it was shown that the MYO1A gene is polymorphic in Turkish Holstein.

Keywords: myo1a,snp,heat stress

Evaluation Of Harvest Efficiency Of Three Different Microalgae Species (chlorella Sorokiniana, Scenedesmus Obliquus, Tetraselmis Suecica) With Aluminum Sulfate

_O4191

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Microalgae are photosynthetic organisms that have received increasing attention in recent years with their different usage areas. This excess of commercial interest is due to the fact that they grow much faster than terrestrial plants and the resulting product has a very high added value. The high value of the resulting product is also due to the fact that microalgae contain the main nutrients such as high protein, fat, carbohydrates, carotenoids, vitamins and minerals. However, the most important problem in microalgae cultivation is the harvesting process, which has approximately 15-20% of the farm cost. This problem is especially caused by the fact that the microalgae that will be harvested are very small in size. In our study, the harvesting efficiency of aluminum sulfate, which is used as a precipitator at different rates during the harvesting process of three different microalgae species grown in our laboratory environment, was evaluated. Accordingly, the change in the number of cells from the first planting to the harvest of Chlorella sorokiniana and Scenedesmus obliquus freshwater species and Tetraselmis suecica saltwater species produced in f/2 environment in our laboratory was observed. This change was based on counting cells under the microscope with The Fuchs-Rosenthal Counting Chamber and calculating with the following formula:

Number of cells in the rearing system

Harvest efficiency was calculated and compared in the precipitation of these three different microalgae species at different rates with aluminum sulfate used at different rates. The calculation was made according to the formula shown below:

Harvest efficiency = 100* Sample dry weight (g) / Sample wet weight (g)

According to the results obtained, the use of aluminum sulfate used in three different microalgae species as a precipitator was efficient.

Keywords: aluminum sulfate,chlorella sorokiniana,harvest efficiency,scenedesmus obliquus,tetraselmis suecica

The Distribution Of Invasive Species Dreissena Polymorpha (pallas, 1771) (bivalvia) In Lentic Ecosystems At Turkish Thrace

_O4254

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In this study the presence of the Zebra Mussel *Dreissena polymorpha* (Pallas, 1771), which known as an invasive species in inland waters, was investigated at some lentic ecosystems located in Turkish Thrace. Although a total of 16 locations were investigated, the individuals were observed in a total of 9 locations (Altınyazı, Armağan, Çerkezmüsellim, Çokal, Kadıköy, Karaidemir, Kayalıköy, Kırklareli and Süloğlu Dam lakes). Also, some physicochemical features (pH, temperature, conductivity, dissolved oxygen, salinity, total dissolved matter, calcium, magnesium, total hardness, nitrite and nitrate nitrogens) of the ecosystems were measured to evaluate the environmental factors could affect the distribution of *D. polymorpha*. In the previous studies, while *D. polymorpha* has been reported from the lakes Büyükçekmece, Karpuzlu, Küçükçekmece, Terkos and some sampled localities in this study (Altınyazı and Kadıköy), the species was also determined in 7 lentic ecosystems in this study. In addition, some environmental features of the examined ecosystems were evaluated in terms of their suitability for the distribution of the species.

Keywords: bivalvia,dreissena polymorpha,zebra mussel,turkish thrace

Biology

A Study On Spatial And Seasonal Densities Of The Invasive Species Cercopagis Pengoi (ostroumov, 1891) In The Kirklarelİ Reservoir (kirklarelİ/turkey)

_O4341

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Cercopagis pengoi is a species of planktonic cladoceran crustaceans that is native in the brackish fringes of the Black Sea and the Caspian Sea. In recent decades it has spread as an invasive species to some freshwater waterways and reservoirs of Eastern Europe and to the brackish Baltic Sea. *Cercopagis pengoi* is a predatory cladoceran and thus has become a pest classified among the 100 worst invasive species of the world. It was detected for the first time in this study carried out in Kırklareli Reservoir. Kırklareli Reservoir was built between the years 1985 and 1995 for irrigation and flood control on Şeytandere Stream. The reservoir provides drinking and using freshwater supplies for Kırklareli province. It is located 7 km to the northeast of Kırklareli city center (41°44'08.6"N and 27°16'59.0"E).

This study was carried out to determine the abundance and seasonal distribution of *Cercopagis pengoi* in Kırklareli Reservoir. *Cercopagis pengoi* samples were collected from May 2018 to April 2019 at three stations in the reservoir and some water quality parameters were measured. While *Cercopagis pengoi* was found in August (444 ind/m^3) and September (529 ind/m^3) during the study, it was not found in other months. Likewise, while it was found at 1st and 2nd stations, it could not be found at the 3rd station. The density of the species appears to vary greatly depending on temperature. The quantitative evaluation of the samples showed that 88 ind/m^3 *Cercopagis pengoi* on average was found in the reservoir. The maximum organism number was found in the autumn season (529 ind/m^3).

Keywords: kırklareli reservoir,cercopagis pengoi,invasive,population structure

Effects Of Ampicillin, Gentamicin And Ciprofloxacin Antibiotics On The Development Of Microcystis Aeruginosa (kützing) Kützing 1846

_O4356

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In this study, laboratuarial studies were performed to determine the effects of the antibiotics Ampicillin, Gentamicin and Ciprofloxacin on development of a cyanobacteria species Microcystis aeruginosa. For this purpose, cultures in BG-11 media were kept at 23-25 oC in a cabinet with an 16h-8h light/dark regime provided by cool white fluorescent tubes with an illumination level of 50 µmol.m-2s-1, and trials were performed in the same conditions. Following pretreatments, antibiotic levels were adjusted as 1024µgL-1 for Ampicillin, Ciprofloxacin and Gentamicin and further tests were performed by 50% dilutions of the antibiotics. Experiments were performed in 3 replicates in the plates including 24 holes methods. To observe the effects of the antibiotics on M. aeruginosa culture development, cultures were sampled once every 3 days and spectrophotometric cell counts, chlorophyll-a amounts and microscopic cell counts were measured. The end of the study, it was observed that chll-a 52%, cell count 36% at ciprofloxacin; chll-a 41%, cell count 33% at ampicillin and chll-a 42%, cell count 20% at gentamicin increasing at the smallest ratio of the antibiotics. The results showed that the antibiotics which have negative effects on development of M. aeruginosa was Ciprofloxacin, Ampicillin and Gentamicin, respectively.

Keywords: microcystis aeruginosa,ampicillin ,gentamicin,ciprofloxacin,antimicrobial activity.

Modifications In The Isoquinoline Pathway In Opium Poppy By Vigs.

_O4369

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Papaver somniefrum L. (opium poppy), a species of the Papaver genus of the Papaveraceae family, is an annual herbaceous plant with watery or milky capsules that leak when all plant parts are cut except the seeds. Although this plant, which has been cultivated for 5000 years, is considered an oil plant whose seeds are preferred in industrial areas such as food, dyeing, and soap making. Its capsules and capsule shells contain highly added and medically valuable alkaloids such as noscapine and buprenorphine, morphine, papaverine, thebaine, and codeine. It is an important commercial raw material for the manufacture of semi-synthetic drugs, with effects ranging from pain relief and spasm relief, cough suppression, euphoria, drowsiness, and addiction.

Virus-induced gene silencing (VIGS) involves the induction of PTGS (post-transcriptional gene silencing), a nucleotide sequence-specific defense mechanism that targets both viral and cellular mRNAs in plants using a viral vector to generate single-stranded RNA. Although VIGS has been used to analyze the function of specific genes in various plant species, it has recently been shown as an effective tool to reduce transcript levels of specific alkaloid synthase genes and increase or decrease the function of related genes.

In this study, silencing of the Morphine gene was studied using the VIGS technique. Total RNA was isolated from plants obtained from *Papaver somniferum* Ofis1 (TMO). The cDNA was amplified using gene-specific designed primers and then the terminal ends of this cDNA were cut with restriction enzymes and inserted into the TRV2 vector in *Agrobacterium tumefaciens* as a silencing fragment. Plant leaves obtained from sterilized seeds were transferred to somatic embryo-inducing medium and subcultured once a week to obtain white dispersible somatic embryos in approximately 5 weeks. These embryos were cultured into hormone-free MS medium and suspension cultures were formed. When the suspension cultures reached a sufficient amount, they were infected by Agrobacterium cultures containing TRV1 and TRV2 silencing fragment in the prepared combinations. Then infected cells were lyophilized for further analysis and preservation. Some of the cells were extracted with acetic acid and the contents were run through HPLC for the determination of secondary metabolites that decrease or increase as a result of gene expression. And finally, for the control of gene expression level, real-time PCR was used with primers designed specifically for genes.

Keywords: papaver somniferum,vigs,morphine pathway,pathway engineering,opium poppy

Biology

A Comparison Of Species Richness For The Shallow Coast Of Gokceada (imbros) Island (northern Aegean Sea) Using Different Methods: Underwater Visual Census (uvc) And Quadrat Sampling

_O4419

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This study examined the marine species richness of Gokceada Island in the north Aegean Sea in 2012. Direct visual and Quadrat methods were used with three replicates taken at ten stations, one of which was situated within a Marine Park. The survey was carried out at three different depth ranges of 1 - 2 m, 5 - 7 m and 10 - 12 m. The Underwater Visual Cencu method was applied to transects of length 20 m and 5 m width, while the quadrat method was undertaken on 20 x 20 cm quadrats at each station. The aims of this study were a) to compile an inventory of marine species present around the shallow coast of Gokceada (Imbros) Island using two different sampling methods b) to compare marine community differences in sample stations in respect of at depth, their locale and conservation status condition. A total of 384 species were identified from both sampling methods, but only 27 species were found to be common to both methods. A total of 124 new species were recorded for Gokceada Island. Possible bias arising from each sampling method is also discussed. Significant differences in the abundance of species were detected only between the different depth ranges for both sampling methods. To our knowledge, this study is the first to compare different methodologies for deriving patterns of community structure in the context of Turkish Mediterranean coastal environments.

Keywords: biodiversity,underwater visual cencu,quadrat,aegean sea,gokceada

Preliminary Research On Gastropoda Fauna In Some Fresh Waters Of The Black Sea Region, Turkey

_O4509

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Commonly found in terrestrial and aquatic ecosystems, Gastropoda members are the class with the highest number of species within the Mollusca. Freshwater Gastropods play a crucial part in aquatic environments by feeding numerous fish species and vertebrate species. They include species that are widely distributed in rivers and lakes and are used as indicators in aquatic systems monitoring studies. In Turkey, the Black Sea Region is also a privileged geography in terms of its topography and historical development history of aquatic systems, rich in rivers and lakes. In this research, field studies were conducted from 20 different stations in the Black Sea region in 2017-2018. Benthic macroinvertebrate samples were collected from lakes and rivers with an Ekman grab sampler and hand net. Samples were washed *in situ* and fixed with 70% ethyl alcohol. Totally 9494 benthic macroinvertebrate members belong to 21 taxa were determined in the study. In the region, Oligochaeta was the dominant taxa with 55.65% dominancy value and followed by Chironomidae and Gastropoda with 19.13 and 8.23, respectively. As third dominant taxa, Gastropoda members were consist of 861 individuals belong to 11 taxa. It was determined that *Radix labiata* and *Gyraulus* sp. from Gastropoda were widely distributed in the region. These species have broad tolerance to pollution. In the study, it was determined that both densities of species and population were increased in the regions of the rivers that are far from the settlement areas or that have not been intervened and in the littoral parts of the lakes. In general, a decrease was observed not only in the Gastropoda members but also in the expected population density of the macrozoobenthos members in the parts of the streams that are under pressure (such as the parts of the rivers that have been changed due to bridge or road works, water has been drawn for irrigation purposes, use as a discharge place, etc.).

Keywords: gastropoda,black sea region,mollusca,taxonomy

Biology

Morphological Characteristics Of The Populations Of Genus Blepharisma Perty, 1849 And Genus Frontonia Ehrenberg, 1838 (protista, Ciliophora) Isolated From The Soils Of İğneada Longoz Forests (floodplain) National Park

_O4510

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İğneada Longoz Forests represent an important part of biological richness in our country. Longoz forests, which are semi-terrestrial ecosystems, remain under water at certain times of the year, while at certain times they turn into a terrestrial ecosystem. Because they are periodically submerged, they have significant differences from other habitats around them, such as moisture, nutrient content and related vegetation differences. These forests attract a lot of attention with their biological and ecological importance as well as their economic value. İğneada Floodplains have been studied to some extent in terms of plants and animals. However, there is no data on the assessment of both local and global species richness of ciliates (Ciliophora). Therefore, İğneada Longoz Forests are an important source for new species and new records. For this purpose; in order to reactivate the ciliates, cultures were prepared using the "non-flooded Petri dish" method from soil samples taken from different stations. The morphological characteristics of the populations of the genus *Blepharisma* (Heterotrichea) and genus *Frontonia* (Oligohymenophorea) isolated from the floodplain forests soil were studied by methods in accordance with the literature. The in vivo cell sizes of the *Blepharisma* populations we studied were about 150 × 56 µm (population 1, Mert longozes), 159 × 52 µm (population 2, Erikli longozes), 94 × 29 µm (population 3, Erikli longozes); the in vivo dimensions of the populations belonging to the genus *Frontonia* were recorded as 81 × 54 µm (population 1, Erikli longozes), 79 × 49 µm (population 2, Mert longozes). The morphological data obtained here is a preliminary study that will help the taxonomic part of the study. This study is the first to evaluate the hidden ciliate diversity in the soil of İğneada Longoz Forests, which has great potential for biodiversity.

Keywords: blepharisma,frontonia,longoz forests,ciliophora

Biology

Production, Characterization And Biotechnological Applications Of Thermophilic Xylanase Enzymes From Geobacillus Species

_O4531

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Lignocellulose represents a renewable energy reserve of undiscovered sustainable carbon, and hemicellulose, the second largest fraction of lignocellulose, consists mainly of xylan. Endo-β-1,4-Xylanases (3.2.1.8) play an important role in the reduction of xylan by randomly cleaving the β-1,4-glycosidic bonds between xylopyranosyl residues in the xylan backbone. Recently, these enzymes are of great interest for a wide variety of biotechnological applications due to their use in industrial processes including pulp bleaching, animal feed additives, xylooligosaccharide production, food processing, and biofuel production from lignocellulosic materials. Therefore, the global xylanase market, which has been expanding since the 1990s, is estimated at US$ 500 million annually. In industrial processes, mostly thermophilic xylanases, which can be active at high temperatures, are used and these enzymes are produced especially by bacteria and fungi. *Geobacillus* bacteria species are generally isolated from hot springs and geothermal regions, and have the ability to thrive and grow at high temperatures. These properties of *Geobacillus* bacterial species make them attractive to be used as a source of thermophilic xylanase enzyme. The xylanase enzymes can be produced in a different host strain using recombinant DNA technology or in natural source *Geobacillus* using their substrates. The best working conditions for these enzymes from *Geobacillus* are usually high temperature and wide pH range. Thermophilic enzymes originating from *Geobacillus* have applications in the production of prebiotic xylooligosaccharides, fruit juice enrichment processes and pulp bleaching processes. In this study, the production methods of thermophilic xylanase enzymes originating from *Geobacillus*, the properties of these enzymes and their use in biotechnological processes have been considered.

Keywords: xylanase,geobacillus,xylooligosaccharide production,paper pulp biobleching,fruit juice enrichment

Biology

Assessment Of Apoptosis Signal Pathways And Abc Transporters Of 2-hydroxyanthraquinone Substituted Spiro/ansa Cyclotriphosphazenes Derivatives In Mcf-7 And Dld-1 Cancer Cell Lines

_O4565

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Cancer is one of the most complex diseases of our age and requires a long process for research. Preclinical studies with compounds that may be potential anticancer agents in cancer constitute the basic studies. Anthraquinones and phosphazene compounds are known as active biological compounds identified in many biochemical and pharmacological studies of cancer.

In this study, it was purposed to examine the 2-hydroxyanthraquinone-substituted spiro/ansa cyclotriphosphazene compounds that that affect chemotherapy resistance and anti/pro apoptotic cell death pathways in MCF-7 and DLD-1 cancer cell lines.

mRNA expression of ABC transporters, apoptosis signalling pathways, heat shock and endoplasmic reticulum chaperone genes were determined by qPCR method in MCF-7 and DLD-1 cell lines. In addition, the protein level-expressions of anti/pro apoptotic signalling pathways were measured with human apoptosis antibody array.

The compounds showed the effective results on the ABC transporters MCF-7 and DLD-1 cancer cell. The compounds decreased heat shock and endoplasmic reticulum chaperone genes expressions in breast and colon cancer cell. In addition, in the protein array results, it was determined that the compounds gave effective results in anti/pro apoptotic signalling pathways.

The compounds have a decisive effect on the mechanism of apoptosis by abolishing drug resistance, acting on heat shock, endoplasmic reticulum chaperone genes, anti-apoptotic and pro-apoptotic signalling pathways in MCF-7 and DLD-1 cancer cells.

Keywords: cancer ,abc transporters ,anti/pro apoptotic ,hydroxyanthraquinone ,spiro/ansa cyclotriphosphazenes

Habitat Types In The Littoral Zones Of The Canakkale Strait According To Eunis And Barcelona Convention

_O4645

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Dynamic and productive coastal ecosystems are faced with factors such as decreased biodiversity and degradation of habitats as a result of negative pressures caused by human influence. For the studies to be carried out on the objectives of the protection of coastal areas, it is necessary to determine and monitor the species diversity in our seas and to map the marine habitats by evaluating the abiotic factors in these regions. Therefore, in order to monitor and report biodiversity, it is of great importance to follow the European Nature Information System (EUNIS), which was established by the European Union countries to cover common marine, terrestrial and freshwater habitats of Europe. The Barcelona Convention classification system, aims to define benthic marine habitat types in the Mediterranean Sea. However, there are no enough studies on both habitat classification systems in Turkish seas. We carried out on the hard and soft bottom in supra-, medio- and upper infralittoral regions of 16 selected stations in the Canakkale Strait between May and August 2019. Macrobenthic flora and fauna and sediment structures of each zones were analysed. Based on these information habitat types were investigated according to the EUNIS habitat classification system and the Barcelona Convention. Within the scope of this subject, long-term monitoring studies are needed to protect the species diversity in our seas and to determine the habitat types in our seas.

Keywords: macrobenthos,canakkale strait,eunis,barcelona convention,benthic habitat types

Actn3 Gene Polymorphism In Elite Turkish Athletes

_O4662

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The ACTN3 gene encoding the protein α actinin-3 is possibly associated with human physical performance. The gene has been examined in a wide spectrum, from exercise adaptation, exercise recovery, sporting injury risk to athletic performance, including speed, strength, power and endurance. The goal of this study was to examine the frequency distribution of ACTN3 R577X polymorphism in elite Turkish marathon runners and football players.

71 professional football players (age = 24,31 ± 4,60; weight = 75,87 ± 5,85; height = 178,81 ± 5,79; sporting age= 13,82 ± 4,34) and 34 elite marathon runners (age = 25,18 ± 4,08; weight = 62,45+5,98; height = 172,89 ± 5,37; sporting age = 12,94 ± 4,24) were included in the study.

Human genomic DNA was isolated from blood stains by phenol–chloroform extraction. Genotyping of the ACTN3 R577X polymorphism was determined for 71 Turkish football players, 34 Turkish marathon runners, and 56 control subjects by PCR technics. PCR fragments were digested with DdeI restriction enzyme. Individuals with the RR genotype had bands of 205 and 85 bp, and those with the XX genotype had bands of 108, 97 and 85 bp.

The genotype distribution of ACTN3 R577X was found to be 43.7% RR, 40.8% RX, 15.5% XX and allele frequency 64.1% R allele, and 35.9% X allele for Turkish football players. The genotype distributions and allele frequency in elite Turkish marathon runners was 32.4% RR, 47.1% RX, 20.6% XX, and 55.9 R allele, 44.1% X allele, respectively. However, no statistical significance was found between Turkish football players and Turkish marathon runners for the ACTN3 genotype distribution and allele frequency ($p>0.05$).

Our findings confirmed that the ACTN3 gene is similar for different sport disciplines, such as marathon and football, though they are very distinct over mechanical and metabolic requirements.

Keywords: actn3,physical performance,football ,marathon

Toprak Kurbağası, Pelobates Syriacus Boettger, 1889 Juvenil Örneklerinin Morfolojik Değerlendirilmesi

_O4671

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Toprak kurbağası, *Pelobates syriacus* Boettger, 1889 Türkiye'nin hemen her yerinde parçalı bir dağılış göstermektedir. Fossorial bir yaşam süren *P. syricus*, yaşam tarzı ve çevresel uyaranlara bağlılığı (nem, basınç vb.) sebebiyle arazi çalışmalarında oldukça az rastlanan türlerden biridir. Muğla iline 2019 yılında yapılan arazi çalışmaları sırasında *Pelobates syriacus*, Toprak Kurbağası'na ait çok sayıda juvenil ve iribaş örnekler doğal bir su birikintisinde tespit edilmiştir. İribaşlar genelde derinliğin çok yüksek olmadığı kıyıya yakın bölgelerde gözlenmiştir. Ayrıca alanın etrafındaki taş altlarından metamorfozunu yeni tamamlamış bireyler de tespit edilmiştir. Doğal su birikintisinden toplanan iribaş örnekleri laboratuvar ortamında metamorfozları tamamlandırılarak, metamorfoz sırasında ve sonrasında çeşitli vücut ölçümleri alınmıştır. Labotuvar koşullarında iribaşlar sırasıyla haşlanmış marul ve Tenebrionidae familyasına dahil un kurduyla beslenmiştir. Metamorfozunu tamamlamış örneklerde morfolojik ölçümlerin ortalama değerleri; SVL= 29.57±0.74 mm, FU= 11.31±0.26 mm, TU= 9.76±0.27 mm, PU= 12.71±0.34 mm, ÖBU= 15.69±0.21 mm, ABU= 35.75±0.86 mm, ÖBBP= 3.43±0.11 mm, ÖBİP= 4.68±0.11 mm, ABUP= 11.52±0.29 mm, MTU= 2.03±0.05 mm, BU= 9.69±0.21 mm, BG= 10.84±0.28 mm, İOU= 5.91±0.19 mm, İAU= 2.31±0.06 mm, GU= 3.32±0.05 mm, GKU= 4.48±0.07 mm, GKG= 2.36±0.07 mm, BGU= 4.73±0.12 mm, BGU= 2.78±0.08 mm olarak ölçülmüştür. Örnekler metamorfozunu arazide bulundukları tarih olan 6 Mayıs 2019 ile 17 Haziran 2019 tarihleri arasında yaklaşık olarak 43 günde tamamlamıştır. Metamorfozunu bu sürede tamamlayan 18 örneğin dışında beş örnek ise kuyruklu şekilde metamorfozunu aynı sürede tamamlayamamış olup, ortalama KU= 9.81±0.98 mm olarak ölçülmüştür.

Keywords: pelobates syriacus,juvenil,morfoloji,metamorfoz,muğla

Biology

Hatay Kertenkelesi, Phoenicolacerta Laevis (gray, 1838) Osmaniye, Düziçi Popülasyonunda Yaş Tayini

_O4673

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Hatay Kertenkelesi *Phoenicolacerta laevis* (Gray, 1838), İsrail, Ürdün, Suriye, Türkiye ve Gürcistan'ın Karadeniz kıyısında izole bir popülasyonu bulunan, Lacertidae familyasına dahil kertenkelelerden biridir. Türkiye'de Ege ve Akdeniz kıyı hattı boyunca dağılışı bilinmektedir. Bu çalışmada Osmaniye'nin Düziçi (350 m.) ilçesinden toplanan 49 (21 ♂♂ ve 28 ♀♀) örnekte iskelet kronolojisi metodu kullanılarak yaş tayini yapılmıştır. Falanjlarının histolojik kesitlerindeki Dinlenme Çizgileri (LAG) sayılarak örneklere ait yaşam uzunlukları ve cinsel olgunluk yaşları hesaplanmıştır. Buna göre, Düziçi popülasyonuna ait erkeklerin dişilere göre hem yaş hem de baş + gövde uzunluğu (SVL) olarak daha büyük olduğu tespit edilmiştir. En büyük yaş, SVL değeri 71.82 mm ve 70.80 mm olan iki erkek örnekte 10 yıl olarak tespit edilirken, en düşük yaş ise bir erkek (SVL= 48.12 mm) ve yedi dişi örnekte (SVL= 52.76 mm, 56.52 mm, 56.15 mm, 50.78 mm, 53.34 mm, 56.54 mm ve 53.08 mm) 3 yıl olarak tespit edilmiştir.

Her iki cinsiyet için cinsel olgunluk yaşı 3 yıl olarak belirlenmiştir. Ortalama SVL erkekler için 61.14 ± 1.37 mm (48.12 mm – 71.82 mm), dişiler için ise 59.69 ± 0.82 mm (50.78 mm – 67.59 mm) olarak hesaplanmıştır. Ayrıca erkeklerde yaş 3 – 10 yıl arası değişirken ortalama yaş 6.90 ± 0.45; dişilerde ise yaş aralığı 3 – 6 yıl arası değişirken ortalama yaş 4.25 ± 0.18 olarak hesaplanmıştır. Her iki cinsiyette de yaş ve boy arasında pozitif bir korelasyon bulunmuştur.

Keywords: phoenicolacerta laevis,hatay kertenkelesi,yaşam uzunluğu,İskelet kronolojisi,osmaniye

Biology

Pollen Morphology Of Linum L. (linaceae), Sect. Linopsis (rchb.) Engelm. From Turkey

_O4751

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Pollen morphology of 6 taxa belonging to section *Linopsis*, genus *Linum* from Turkey was investigated using light and scanning electron microscopy.

Pollen grains are trizonocolpate, isopolar, radiosymmetric, spheroidal and suboblate in shape, and large in size. Exine is intectate in all. Homostyly is predominantly present in the section. The only distylous is *L. maritimum* L. The exine sculpturing of the homostylous species and of the long-styled distylous morph is dimorphic and composed of bacula and clavae. Bacula are ending in a central microechinus, while clavae are ending with a ring of scabrae at the margins. The exine of the short-styled morph is monomorpic and composed of gemmae, with a ring of marginal papillae at the top and without prominent central papilla.

Keywords: linum,linopsis,pollen morphology,turkey

Biology

Effects Of Exogenous Glutamine Applications On Germination And Vegetative Growth Properties Of Gypsophila Pilulifera Under Salt Stress Conditions

_O4872

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Gypsophila pilulifera, an endemic species in the CR category, is sensitive to salt stress. This species, which has commercial importance due to the saponins it contains, also has the potential to be used as an ornamental plant. It is predicted that this endangered species will be more difficult to survive due to possible drought and salinity stresses in the future as a result of climatic and ecological changes. In this study, the effect of glutamine (Gln) pretreatment on germination and vegetative growth parameters was investigated in order to increase the production potential of *G. pilulifera* under salt stress conditions. For this purpose, seeds that were pre-treated with different doses of Gln (1,2,3,4 mM) were germinated under stress-free and salt-stress (150 mM NaCl) conditions. Germination percentage (GP), mean germination time (MGT), germination rate coefficient (CVG), germination rate index (GRI), germination index (GI) and germination time spread (TSG) were calculated as germination parameters. In order to determine the effects on early seedling growth, seedling vigour index (SVI), shoot and root length (mm), leaf width and length (mm), shoot, root and plant fresh weights (g) were measured. At the end of the study, it was determined that the application of 3 mM Gln under both stress-free conditions and salt stress had a statistically significant positive effect on the germination and vegetative growth parameters of the plant. Especially the increase in seedling vigour index and root length is remarkable. The SVI value, which was 1.59 in 150 mM salt application, increased to 31.34 mm in the seeds treated with 3 mM Gln, and the root length, which was 17.76 mm, increased to 62.96 mm.

Keywords: germination,glutamine,gypsophila,salt stress

Investigation Of Some Azo Dyes By Qsar Method And Acute Toxicity Test With Daphnia Magna

_O3645

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Azo dyes represent the most important class of textile dyes. Biotransformation of azo dyes may release aromatic amines. Certain aromatic amines are well known to have genotoxic and/or carcinogenic properties.

Aromatic amines are used as raw materials or intermediates in the synthesis of azo dyes. According to recent studies, it has been observed that aromatic amines, especially aromatic amines carried into consumer products pose a risk to human health due to their toxicological, ecotoxicological, mutagenic, and/or carcinogenic properties. Aromatic amines are generally defined as chemical compounds that have one or more aromatic rings in their molecular structure bearing one or more amino substituents.

This study, it is aimed to investigate the effects of aromatic amines on the environment. Azo dyes commonly used in the textile are Disperse Brown 27-1, Disperse Brown 19, Disperse Orange 30, Disperse Blue 291, Disperse Yellow 27, Disperse Blue 79, Basic Red 46, Orange 73-1, Basic Yellow 28 were examined Acute Toxicity in *Daphnia Magna* experimental and theoretical by QSAR method.

As a result of *Daphnia Magna* Acute Aquatic toxicity studies, it was seen that theoretical calculations and experimental test studies were parallel to each other. In experimental tests and theoretical calculations, Disperse Blue 291, Disperse Brown 27-1, and Basic Yellow 28 azo dyes were found to be the three most toxic azo dyes among the azo dyes studied. When the molecular structures of these three azo dyes were examined, it was seen that the nitro group and the ester group were present in the structures. In addition, it can be said that the presence of halogens in the structure of azo dyes with high aquatic toxicity is effective in toxicity.

Keywords: theoretical chemistry,ecotoxicology,azo dyes,molecular modelling,daphnia magna

Chemistry

Experimental Photodegradation Of Organophosphorus And Carbamate Pesticides Via Advanced Oxidation Techniques In The Presence Of Aqueous Tio2 Suspensions

_O3646

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The reaction of pesticide with the OH radical is the most dominant among the annihilation reactions in the atmosphere. Azamethiphos, Coumaphos and Temephos compounds were used as organophosphorous pesticides (OPs), and Methiocarb, Carbofuran and Pirimicarb were used as carbamate pesticides (CMs) with the aim of investigating the kinetics of the reactions of pesticides with the OH radicals. In aqueous TiO_2 suspensions, the degradation reactions under UV light of the six pesticides selected as pollutants were analysed, and the impact of the initial concentration was calculated. All experiments were conducted in the same photoreactor and under the same conditions as three repetitions. The optimum amount of photocatalyst for the studied pesticides were determined and TiO_2 concentration for all experiments were taken as 0.2 g/100 mL. Considering that organic pollutants are present in water in trace amount, the initial concentrations for all organic compounds were added so that the total amount of suspension and solution containing organic pollutants was $1.0x10^{-4}$ mol L^{-1}. In this study, degradation speed of pesticides were determined experimentally, and the fastest degrading pesticide was tried to be found out.As a result of this study, there was no concentration change in the studied substances when they were only illuminated. When the studied substances were kept in the dark in the presence of TiO_2, there was a concentration change of 1-3% due to absorption. In an environment with both light and TiO2 at the same time, it was determined that there was a degradation to a great extent in all the substances. By the end of 100 minutes, the concentration change was calculated as 78% for OP1, 85% for OP2, 76% for OP3, 87% for CM1, 95% for CM2, and 94% for CM3. Based on these results, it was determined that the most degraded pesticide among organophosphorous pesticides was OP2, while CM2 was the one among carbamate pesticides.

Keywords: organophosphorous pesticides,carbamate pesticides,tio2

Hirshfeld Surface Analysis Of Antimony (iii) Chloride Complexes With Thioamides

_O3648

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Antimony, one of the heavy-pinictogen elements, is a chemical element with atomic number 51, represented by the symbol Sb in the p block of the periodic table. Antimonials have been known since ancient times and were often used as medicine and cosmetics. In recent studies, it has been determined that antimony(III) compounds containing thioamide derived ligands may have cytotoxic effects against various cancer cells such as human breast adenocarcinoma cells (MCF-7) and human cervix carcinoma cells (HeLa). Therefore, the molecular design of antimony(III) complexes and attempting to determine their non covalent contacts may be an interesting aspect of metal-based drug research and bioinorganic chemistry.

Hirshfeld surface analysis is a unique method used to investigate intermolecular contacts in crystalline structures. The two dimensional fingerprint plots are used to give the exact percentage of intermolecular contacts in a molecule. Understanding the intermolecular interactions can be used to design new solids with desired properties. In the present work, the intermolecular contacts of five antimony(III) chloride complexes with heterocyclic thioamides formulated as $[SbCl_3(HL)_2]$ (HL: 2-mercapto-thiazolidine (MTZD), 2-mercaptopyridine (PYT), 2-mercapto-3,4,5,6-tetrahydro-pyrimidine (tHPMT), 2-mercapto benzimidazole (MBZIM), 5-ethoxy-2-mercapto-benzimidazole (EtMBZIM)), previously synthesized, and whose chemical structures were elucidated by various spectroscopic techniques and X-ray diffraction, were investigated by using Hirshfeld surface analysis via Crystal Explorer Program Version 17.5. Hirshfeld surface analysis shows that the interactions that contribute most to the crystal packing of the antimony(III) chloride complexes (1-5) are $Cl^{\cdots}H/H^{\cdots}Cl$, $S^{\cdots}H/H^{\cdots}S$ and $H^{\cdots}H$.

Keywords: antimony(iii) chloride,heterocyclic thioamides,hirshfeld surface analysis,two-dimensional fingerprint plots,non-covalent contacts

Chemistry

Photo-sonophysicochemical Investigation Of A Novel Synthesized Silicon Phthalocyanine Derivative As A Sensitizer

_O3779

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Photodynamic therapy (PDT) is a therapeutic procedure that involves the application and activation of a photosensitizer by light with an appropriate wavelength [1]. Among all the thrapy strategies, sonodynamic therapy (SDT) has been extensively investigated for cancer treatment in clinical researches during the past several years [2]. It can be defined as ultrasound-triggered delivery system. In this process ultrasound activated sonosensitizers are used to generate reactive oxygen species (ROS) that directly damage cancer cells and tumors. . Although many sensitizers exist, phthalocyanine derivatives are those most commonly used as cancer treatment [3] especially silicon phthalocyanine derivatives. In this study, to contribute to the development of SPDT, a promising silicon phthalocyanine based phot-sono sensitizer was synthesized, characterized, and its photophysico-chemical properties were analyzed. Afterwards, the singlet oxygen quantum yield of the sensitizer was calculated by both photochemical and sono-photochemical studies.

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Keywords: photodynamic therapy,sonodynamic therapy,silicon phthalocyanine,singlet oxygen

Preparation, Characterization And Tenofovir Disoproxil Fumarate Release Behavior Of Chitosan Grafted β-cyclodextrin Hydrogel

_O3817

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In this study, a glutaraldehyde cross-linked chitosan (CS)-graft (g)-β-cyclodextrin (β-CD) hydrogel system was synthesized using CS biopolymer produced from crayfish *Astacus leptodactylus*. Characterization of the prepared CS and CS-g-β-CD hydrogel was performed by Proton Nuclear Magnetic Resonance Spectroscopy (^{1}H-NMR), Fourier Transform Infrared Spectroscopy (FTIR), X-ray Diffraction (XRD), and Scanning Electron Microscopy (SEM) analyze. The antiviral drug release behavior of the CS/β-CD hydrogel was investigated for the model antiviral drug tenofovir disoproxil fumarate (TDF). The CS-g-β-CD hydrogel had a swelling capacity of up to 16 times its dry weight in pure water. The swelling ability of the CS-g-β-CD hydrogels increases with the increasing amount of β-CD. FTIR, SEM, XRD, and ^{1}H-NMR analyses revealed the CS-g-β-CD hydrogel was successfully synthesized and loaded with the antiviral drug. XRD analysis indicated that the synthesized hydrogel had a broad amorphous peak around 20°, while the hydrogel loaded with the antiviral drug had 2 amorphous peaks, one of which was wider. The ^{1}H-NMR analysis also revealed the structure of the synthesized drug-loaded hydrogels and their interaction with antiviral drugs. The synthesized hydrogel had an almost homogeneous pore structure. In drug-loaded hydrogels, the pores were filled with drug molecules. From drug release experiments, 73% of the loaded TDF was released into PBS buffer at 37ºC. The drug release data was fitted to various kinetic models to study the drug release behavior. The drug release from all the prepared hydrogels fitted the Korsmeyer-Peppas model. The obtained results suggested that the addition of β-CD in the gel structure improved the swelling and drug release capability of the hydrogel system for the first use of TFD.

Keywords: antiviral drug,crayfish cs,β-cyclodextrin,copolymerization,drug release

Chemistry

Optimization Of The Different Conditions For C-h Activation/suzuki Miyaura Cross-coupling

_O3867

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Traditional cross-coupling reactions have revolutionized organic chemistry and are widely used in modern organic synthesis. With the rapid development of C-H activation in recent years, C-H activation / cross-coupling reactions have attracted a lot of attention from researchers. Among the traditional cross-coupling reactions, the Suzuki Miyaura cross-linking reaction, which was awarded the Nobel Prize in 2010, is of particular importance. These syntheses are carried out between halide (R2-X) and organoboron species (R1-BY2) using palladium catalyst and base. The uniqueness of the method is that the reaction has a high yield, mild conditions, the availability of reagents, and the ability to use water as a solvent. The suitability of the method from an ecological and economic point of view increases the interest in this research, and various studies are conducted in this direction. In the studies, it was observed that the reactions were carried out in the presence of different temperatures, reaction times, solvents and different bases.

Taking all this into account, our research team used the Suzuki Miyaura reaction to synthesize new substances from the reaction of benzo [b] thiophene-2-boronic acid with various halogenated derivatives of heterocycles. Tetrakis(triphenylphosphine)palladium(0)was used as a catalyst in all syntheses. The presented work is to optimize these syntheses depending on different conditions. These dependencies are:

- temperature room temperature, 80ºC, 130 ºC
- solvent and solvent mixture: Dioxane, toluene, benzene, dioxane -water, dioxane - ethanol
- base - NaOH, Na_2CO_3, K_3PO_4
- reaction time: 12 hours, 24 hours, 48 hours

The reaction yield was calculated after each experiment.

In addition, several studies in the literature have studied the dependence of the reaction yield on the catalyst (Tetrakis(triphenylphosphine)palladium(0), bis(triphenylphosphine)palladium(II) chloride, palladium acetate, etc.). It is planned to study them in future research.

Keywords: c-h activation,palladium catalyst,suzuki miyaura cross-coupling,heterocycles derivetives

Chemistry

Synthesis Of New Benzofuran Derivatives With Their Site-selective Properties

_O3878

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Heterocyclic compounds have been the subject of intense study and considerable effort has been devoted to the synthesis of these heterocyclic systems as they are found in a wide range of biologically active molecules and alkaloids. Among these heterocycles systems, benzofuran continue to play a central role in the development of new structures for both chemical and biological properties. Benzofuran is a planar bicyclic molecule formed by the fusion of benzene and furan nuclei, which are the moth famous example of the oxygen-containing heterocyclic compounds due to their pharmaceutical properties especially in drug desing and development studies. It has been reported that ebenfuran II, which is a natural product and isolated from Onobrychis ebenoides, has a significant antiestrogen effect on breast cancer [1]. In addition to this, benzofuran-derived compounds synthesized in studies in the literature have a strong neuroprotective effect against glutamate-induced cell death in SK-N-SH cells [2]. It has also been reported that these compounds inhibit the uncontrolled proliferation of liver cancer cells [3]. Bergapten, another benzofuran derivative, is a photochemotherapy drug traditionally used in psoriasis during cancer treatment [1].

In this current study, 4,6-dimethoxybenzofuran and 4,6-dimethylbeznofuran have been successfully synthetsized from the commercailly available 4,6-dimethoxyphenol and 4,6-dimethylphenol, respectively. Regioselectivity of the synthesized 2-substituted benzofurans at C3 or C7 have also been studiey by employing vaiorus electrophilic aromatic substitution reactions.

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Keywords: heterocyclic compounds,benzofuran,site-selective,synthesis

Investigation Of The Anticancer Effects Of Some Novel N-substituted Phthalimide Derivatives Via Molecular Docking Studies

_O4001

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In recent years, many compounds were synthesized to use in the treatment of malignant tumors and very few of them have been approved as a drug[1]. Many mechanisms in tumor cells have developed resistance to many chemotherapy drugs used traditionally and commercially to treat irregularities in the DNA cell cycle. Therefore, the discovery of new anti-cancer drugs with few side effects is inevitable. For this purpose, the anticancer effects of some phthalimide compounds (1-3) synthesized by our group [2] were investigated via molecular docking studies. Many therapeutic targets have been investigated via docking studies in anti-cancer drug discovery. Mammalian targets of rapamycin (mTOR) and human ribosomal S6 kinase 1 (hRS6K1) are important therapeutic targets[3] in anti-cancer studies. In this study, it was investigated the interactions of the phthalimide compounds with mTOR and hRS6K1 via molecular docking studies. According to the docking studies, phthalimide compounds 1-3 showed pretty good interactions with both targets. Consequently, they may be considered a new inhibitor candidate for the mTOR and hRS6K1 targets according to *in silico* studies, and hence, their inhibitor effects can investigate via *in vitro* and *in vivo* anticancer studies.

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Keywords: anti-cancer,phthalimide,mtor,hrs6k1,molecular docking studies

Enhancement Of Co2 Response Of Hpts Along With Tio2 Nps And Tio2@ag Nps

_O4060

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In chemical, industrial, medical, biochemical and clinical analysis, the continuous and accurate detection of dissolved and/or gaseous CO_2 is very important. In recent studies, 8-hydroxypyrene-1, 3, 6-trisulfonic acid (HPTS) dye, which is a pH sensitive fluorescent indicator with high sensitivity to CO_2 gas, is preferred. Researches relating to the improvement of gas sensitivity of HPTS-based optical sensors are very popular. The aim of this study is to enhance the CO_2 response of HPTS along with the sol-gel synthesized TiO_2 and TiO_2@Ag nanoparticles (NPs) as additives. The characterizations of the synthesized metal oxide powders were carried out through XPS, XRD, FT-IR, SEM, and PL spectroscopy. The sensing slides were prepared in the form of a thin film by immobilizing the HPTS dye and TiO_2 and TiO_2@Ag NPs additives into the ethyl cellulose polymer matrix. Steady state and decay time based spectral responses of the HPTS-based composites were measured as analytical signal in the concentration range of 0–100% [CO_2]. Additions of TiO_2-based additives to HPTS resulted in many advances such as high relative signal change and larger linear response range, improved sensor dynamics, and higher sensitivity with respect to the additive-free forms. Whereas the CO_2 sensitivities were measured as %39, 52%, and 70% for undoped form and TiO_2 and TiO_2@Ag NPs doped forms of the HPTS-based thin films, respectively. The response and the recovery times of the HPTS-based sensing slide along with TiO_2@Ag NPs have been measured as 15 and 45 s. These results make the HPTS along with the metal oxide additives promising candidates as CO_2 probes.

Keywords: optical co2 sensor,hpts,fluorescence,tio2 nps,tio2@ag nps

Chemistry

Waste Management In “smart City”, The Urbanization Model Of The Future

_O4070

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In our century, factors such as rapid and uncontrolled urbanization, globalization, industrial development, disproportionate increase in population, and climate change are the sources of many problems around the world. In addition to the serious population growth in the world, migration from rural areas to cities is also increasing [1]. According to a study conducted by the United Nations (UN), it is predicted that the rate of population living in cities will reach 66% in 2050. While this rate is 65% in our country today, it is around 80% in European countries. This current disproportionate population growth causes rapid energy consumption and consequently, climate changes and environmental pollution raises [2]. At this point, the importance of waste management is understood. In regions where waste management is not carried out effectively, great damages occur in the environment, thus, public health is endangered. Urban planning strategies are needed to make city life more sustainable and to design a livable environment. Planning effective waste management solutions is an important part of these strategies for the future.Bringing a new understanding of urban problems, finding effective and feasible ways to coordinate technologies, developing new technologies for communication and dissemination, designing forms of urban management and organization reveal the concept of 'Smart City'. In smart cities, a wide network with different levels of expertise in different fields can be established and accessible infrastructures can be developed so that every citizen can be included in the system.

The smart city provides us with facilities to produce solutions for the future and to bring the current situation to a better position. Citizens living in new generation cities will be aware of many situations quickly by means of the internet of things (IoT) [3] . The biggest contribution will be with the aid of information and communication technologies. Nature-friendly, functional, competitive and innovative cities that invest in more effective and efficient resources, have plans and policies that will increase the quality of life are targeted. Considering that the waste management is an important part of urbanization, waste management solutions in smart cities and future smart application suggestions regarding waste management are discussed in this study.

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Keywords: smart city,waste management,sustainability,sensor,iot

Chemistry

Ultrasensitive Detection Of Cancer Biomarker Using A Nanocomposite Of Reduced Graphene Oxide And Amino-substituted Poly(pyrrole) Polymer Modified Immunosensor: Application Toward Crt Sensing

_O4075

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Cancer is certainly one of the most serious disease of the 21 st century. Early and accurate diagnosis of cancer biomarkers has medical importance and provides the suitable treatment. Calreticulin (CRT), which is located in endoplasmic reticulum, is a calcium binding chaperone protein. CRT has a role in calcium homeostasis, chaperone activity, cellular proliferation, cancer invasion and metastasis. The over expression of CRT may cause breast, bladder, colon, prostate, esophageal, gastric cancer and leukemia. The CRT concentration in biological samples is usually detected by sandwich ELISA. Although this method is trusty, it needs long analysis time, high-cost equipment and experienced analyst. For this reason, fabrication of a simple and cheap technique for highly sensitive and ultra-selective quantification of CRT level in real samples is quite necessary[1]. With this approach, electrochemical biosensors offer a rapid, low-cost and ultra-sensitive method for diagnosis of cancer, especially in its early stages[2].

In this paper, a simple and innovative electrochemical immunosensor based on indium tin oxide (ITO) functionalized with nanocomposite of reduced graphene oxide and amino substituted poly(pyrrole) polymer was designed for detection of calreticulin (CRT) biomarker. This nanocomposite with high conductivity was employed as an immobilization matrix for anti-CRT antibodies. The modification process of the bioelectrode was examined using cyclic voltammetry, electrochemical impedance spectroscopy and scanning electron microscopy (SEM). Under the optimized experimental conditions, the designed biosensing system permitted a wide linear detection range and a low detection limit. Furthermore, the bioelectrode illustrated great repeatability and reproducibility, long storage-stability and high selectivity for CRT antigens.

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Keywords: cancer biomarker ,amino substituted poly(pyrrole) polymer ,calreticulin,electrochemical biosensor

Chemistry

Treatment Of Simulated Reactive Dyehouse Effluents With Uv-c-activated Hydrogen Peroxide, Percarbonate And Persulfate

_O4121

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Among the different textile dye classes (fiber acid, basic, direct, disperse, mordant, reactive, pigments, solvent, sulfur and vat dyes) the fiber reactive dyes are among the most problematic ones due to significant losses that occur during cotton and cellulose fiber dyeing processes. Reactive dyes are discharged in their alkali-hydrolyzed form into the total textile effluent and cannot be re-used in their exhausted state. Besides, color is the first contaminant to be recognized and hence aesthetically very objectionable. In fact, environmental regulations in most countries have made it mandatory to decolorize textile wastewater before discharge. However, an efficient and at the same time economically/technically feasible and ecotoxicologically safe treatment solution still remains a challenging issue for the textile industry sector. Several advanced treatment methods have been proposed so far for color from reactive dyehouse effluent. For example, advanced oxidation processes (AOPs) typically involve the activation of common oxidants such as peroxides with short ultra violet (UV-C) light as well as other means to produce reactive oxidizing agents. Peroxides such as hydrogen peroxide, persulfate and also percarbonate can be activated with UV-C light to produce free radicals such as hydroxyl, sulfate and percarbonate radicals, respectively. Free radicals are very strong oxidants used for the treatment of refractory and/or toxic pollutants found in water and wastewater. Their selectivity of these free radicals changes according to their oxidation potential. In the present study, Reactive Black 5 (RB5) dye-bearing dyebath effluent was simulated to study the effects UV-C-activated percarbonate, hydrogen peroxide and persulfate treatment on color and TOC removals. Treatability experiments were conducted at varying pH, peroxide concentrations and light intensities. At the same time *Vibrio fischeri* acute toxicity changes were examined during photochemical treatments of RB5 dyebath effluent. UV-C activation of both peroxides resulted in fast and complete color as well as TOC removals. UV-C activated persulfate of RB5 dyebath effluent outperformed the other two photochemical treatment processes both in terms of color as well as TOC removals. A reduced inhibitory effect was evident after application of all peroxide-activated dyehouse effluent treatment processes.

Keywords: textile industry,reactive dyebath effluent,advanced oxidation processes,uv-c-activation of peroxides,color-organic carbon-acute toxicity removal

Chemistry

Synthesis Of Organic Frameworks Using Suzuki-miyaura Cross-coupling Reaction

_O4126

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Synthesis of novel or known organic compounds via an efficient way is one of the most important aims for the synthetic organic chemists. Especially logical carbon-carbon bond making process for designing and generation of the target products is quite important in organic synthesis. For this purpose, transition metal catalyzed cross-coupling reactions have been a significant recent interest in the synthesis of simple and complex molecules. One of the recent most popular carbon-carbon bond making organic reactions is Suzuki-Miyaura cross-coupling reaction. This type reaction requires relatively mild reaction conditions and allows chemist to generate new carbon-carbon bond between organo halides and organo boron compounds which are environmentally friendly boronic acid-ester derivatives. With this transition metal catalyzed reaction when mono-halide and mono-organo boron compounds are used a new carbon-carbon bond can be generated in addition in the presence of di-halide electrophile and mono-organo boron compounds two new carbon-carbon bonds can be obtained even in one pot reaction. This work herein presents efficient double Suzuki-Miyaura cross-coupling reaction of various di-halides and mono-organo boron compounds in the presence of palladium catalyst to produce useful novel important organic frameworks.

Keywords: carbon-carbon bond generation,suzuki-miyaura cross-coupling reaction,transition metal catalyzed reaction

Chemistry

Emergency Service Preparations In Cbrn Events

_O4165

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Chemical, Biological, Radiological and Nuclear (CBRN) events; It covers situations that pose a danger to humans and the environment by being used as a weapon in acts such as war and terrorism, by spreading it accidentally as a result of its use in health, industrial sectors and laboratories, by causing damage and leaks in places with CBRN danger.

The threats and dangers posed by CBRN agents on behalf of the society have existed throughout history and will continue to exist. CBRN threats and dangers, infectious diseases, wars, terrorist incidents, industrial plant accidents, nuclear reactor accidents are just a few of the situations where many events pose risks for individuals and society. It is not possible to completely eliminate the risk, but with the right knowledge and equipment, it is possible to manage the risk and be prepared. CBRN events are an important area that requires the right knowledge and equipment.

Hospitals must be prepared to respond quickly to CBRN incidents in cases of mass injury. Emergency services, which provide uninterrupted service on a 24/7 basis, are also at the forefront of CBRN interventions and serve as the teams that will provide the most accurate treatment to people who have experienced exposure. CBRN incidents require a protocol that includes prompt removal of the contaminating agent from the victim's body followed by treatment of a significant number of casualties, while ensuring the safety of the respondent. That's why it's important for first responders to develop their skills and reflexes. Education and research are two integral critical components to combating the evolving threat of CBRN events.

In our study, it was aimed to evaluate the preparation, equipment and training of emergency workers involved in the first response to manage CBRN risks and alleviate emergencies.

Keywords: emergency service,cbrn,intervention,health,emergency service workers

Countering Chemical, Biological, Radiological And Nuclear (cbrn) Terrorism

_O4166

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Terrorism refers to all kinds of actions that disrupt the unity of the society, create an environment of turmoil and chaos, and disrupt the political and social balance, organized in line with the targets determined for civilian or military groups. Some terrorist groups can use Chemical, Biological, Radiological and Nuclear (CBRN) substances in their actions to create an atmosphere of mass injury and fear, which is their main purpose. CBRN agents have been used for centuries to leave societies vulnerable. The risk of using these agents still raises serious concerns today. For this reason, an international legal framework has been established in order to prevent and counter current dangers and threats. Seven of the nineteen international legal documents against terrorism are related to CBRN terrorism. Universalization and implementation of these legal instruments are among the aims of the United Nations Office on Drugs and Crime (UNODC). It is aimed to contribute to the fight against terrorism by ensuring that UNODC member states comply with the legislation and obligations created against the risk of terrorism and include them in national legislation. This study is handle in order to evaluate how to countering CBRN terrorism. In our study, it is aimed to contribute to the literature by examining CBRN counter terrorism methods and legal regulations.

Keywords: cbrn,terrorism,countering,legal legislation

Investigation Of Co2 Adsorption Of Porous Carbons Obtained From Biomass By Zncl2 And Amine Based Catalysis

_O4209

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Global warming is the biggest threat to the environment and public health in this century. There are greenhouse gases such as CO_2 (79%), CH_4 (11%), NOx (7%) and CFC (3%) that cause global warming to increase. The largest share of greenhouse gases that cause global warming is CO_2. For this reason, it is of great importance to capture and store CO_2 emissions before they are released into the atmosphere. Chemical adsorption, membrane technologies and physical adsorption methods are used to capture CO_2. A lot of energy is required for the regeneration of chemical solvents or sorbents such as monoethanolamine. Therefore, the most promising way of capturing CO_2 from flue gases is physical adsorption. Numerous adsorbents have been developed to capture CO_2, such as activated carbons, zeolites, porous silicas, metal-organic frameworks (MOFs), metals, porous carbons, and polymers. Among the adsorbents, porous carbons; It is the most promising adsorbent due to its low cost, chemical stability, high porosity, thermal stability and low energy requirements for regeneration. In this study, three different porous carbons named as PCZn, PCN and PCZnN were obtained from the biomass as a result of chemical activation with $ZnCl_2$ and Hexamine. The CO_2 capture capacities of the obtained PCZn, PCN and PCZnN at 273 and 298 K were determined. According to the experimental results, the CO_2 capacities at 273 and 298 K were obtained as PCZnN > PCZn > PCN. The CO2 capacity of PCZnN, which had the highest capacity, at 273 and 298 K, was 6.90 and 3.69 mmol/g, respectively. According to these results, it was found that hexamine as an activation agent is an effective method especially in porous carbons developed for CO_2 adsorption.

Keywords: porous carbon,co2 uptake,hexamine

Polyphenol Oxidase Enzyme Inhibition With Honey

_O4236

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Polyphenol oxidase enzyme (PPO) is an enzyme that contains copper in its active center and causes enzymatic browning by catalyzing the conversion of phenolic compounds to *o*-quinones. The enzymatic browning reactions, which cause negative changes in food quality, and appearance, reduce the nutritional value, marketability, and shelf life of the food, thereby affecting the economic situation of the country, are undesirable in most food processes. Various chemicals or natural ingredients are used to prevent enzymatic browning reactions. It is more advantageous to use natural alternative anti-browning agents instead of chemical substances that may be harmful to human health. Numerous studies have been done to investigate natural inhibitors. One of these natural inhibitors that have been studied is also honey.

Honey, which is the only available concentrated form of sugar has gained an appreciation and has been used worldwide since ancient times. It is traditionally used as a flavoring in foods. It also functions as a food protective. Honey is known to function as a protective that contains ascorbic acid, α-tocopherol, flavonoids, and other phenolic compounds, enzymes such as catalase, glucose oxidase, and peroxidase. Honey has the potential to be used as a natural inhibitor in food processing to reduce the negative effects of enzymatic browning caused by the PPO enzyme.

Keywords: honey,inhibition,polyphenol oxidase

Chemical, Biological, Radiological, Nuclear-explosive (cbrn-p) Crime Scene Management

_O4246

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Chemical, Biological, Radiological, Nuclear and Explosive (CBRN-P) events that pose a global threat are natural, accidental or intentional events that involve the release of chemical, biological, radiological or explosive substances. Apart from war and terrorist incidents, assassination attempts, increasing attacks using acid, illegal trade, production and possession of CBRN materials, illegal transportation and dumping of toxic materials and hazardous waste, etc. situations like these encourage countries to be prepared for CBRN-P events. As these events cause panic and turmoil, contamination and health problems, crime scene management is very important, including the development of an effective response mechanism. Crime scene management principles include identification of the incident, selection of appropriate personal protective equipment, establishment of a safety circle, decontamination, triage, first aid, clinical evaluation, isolation, antidote application and psychological management. Especially in terms of evidence collection and quality crime scene management, law enforcement and security forces; decontamination, triage, first aid, clinical evaluation, isolation, antidote application and psychological management in terms of health care providers have great tasks. In these events, it is important to adopt a multidisciplinary approach in order to meet the needs quickly and to act in cooperation with the relevant institutions and organizations in terms of increasing the level of preparation and the development of the crime scene management mechanism. In our study, it is aimed to define the basic features of CBRN-P crime scene management and to establish a procedural framework.

Keywords: cbrn-p,crime scene management,pre-hospital ,decontamination,triage

Chemistry

Antimicrobial Peptide-conjugated Graphene Oxide: Synthesis, Characterization And Antimicrobial Activity

_O4264

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Multi-drug resistance is a growing problem in the treatment of infectious diseases and the widespread use of broad-spectrum antibiotics has produced antibiotic resistance for many human bacterial pathogens. In this era of ever-increasing antibiotic resistance, the creation of novel antimicrobial agents with superior characteristics and specificity is essential. The majority of novel drugs are generated by structurally or functionally modifying already existing antibiotics. However, developing drug-resistance against the antibiotic derivatives is also fast. Antimicrobial peptides (AMPs), which are used to prevent bacteria from developing resistance, have demonstrated considerable potential. Among natural peptides, indolicidin, a 13-residue peptide belonging to the cathelicidin family, deserves special attention. Indolicidin has a broad spectrum of biological activity and is active against a wide range of targets, such as bacteria (Gram+ and Gram-), fungi, and viruses [1-2].Antimicrobial nanoparticles have attracted attention as an alternative to antibiotics because of their beneficial qualities and unique modes of action toward microorganisms. Through complex mechanisms, they prevent bacteria from developing drug resistance and kill cells, while significant health concerns related to biocompatibility still exist for practical usage. Carbon-based materials, particularly graphene oxides (GO), are potential candidates among the various antibacterial nanomaterials since they are simple to produce and functionalize, have a high degree of dispersibility in aqueous conditions, and have promising biocompatibility [3-5]. The goal of the current study is to design and synthesize a suitable antimicrobial agent that contained Graphene oxide conjugated to Indolicidin, taking into account their unique antibacterial capabilities. Antimicrobial indolicidin peptide will be synthesized via solid phase peptide synthesis method. Furthermore, the biological interactions of individual GO and indolicidin in bacterial suspensions and conjugated structure will be compared. With this study we expect to decrease the MIC (Minimum Inhibition Concentration) and therefore improve therapeutic index. Our findings have important implications for the design of novel graphene-based antimicrobial materials.

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Keywords: graphene oxide,indolicidin,antimicrobial activity,antimicrobial peptide

Chemistry

Synthesis And Some Physical Properties Of Poly(azomethine)s Containing Benzophenone Hydrazone Unit

_O4281

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Polymers containing conjugated pi system in their structure are used in many industrial areas due to their conductivity properties. An alternative to conjugated polymers can be polyazomethines or Schiff base polymers including azomethine linkages (-HC=N-) in the backbone. Condensation polymerization of diamines with dialdehydes or diketones resulted in polyazomethine synthesis with high yield and purity. Schiff base polymers (polyazomethines) have attracted the attention of researchers. Aromatic compounds containing hydroxyl and other functional groups in their structure are converted into macromolecules products from the combination of phenoxy-structured radical units in the presence of oxidants such as air, H_2O_2 and NaOCl in alkaline and acidic aqueous media or organic solvent [1, 2]. These types of poly(azomethine)s are used in many fields in industry because of they contain both phenyl unit and different functional groups in their structures. Since the phenyl units in the main chain give rigidity to the structure, the thermal stability of these types of polymers are quite good [3].

Schiff base compounds were synthesized from condensation reactions of *ortho*-vanillin, 5-bromo salicyl aldehyde and 4-hydroxy benzaldehyde with benzophenonehydrazone. Tthe polymers containing imine bonding were synthesized via oxidative polycondensation by oxidants such as sodium hypochlorite, H_2O_2 or air [1]. The solubility tests of Schiff bases and polymers were performed in acetone, THF, chloroform, acetonitrile, methanol, ethyl acetate, hexane, DMF and DMSO.

Structures of synthesized Schiff bases and poly(azomethine)s were confirmed by FT-IR, UV-Vis, ^{1}H-NMR, ^{13}C-NMR measurements. Thermal properties of Schiff bases and poly(azomethine)s were determined by TGA-DTA and DSC techniques. Surface morphologies of poly(azomethine)s were determined by SEM measurements. The electrochemical and optical band gaps values of all compounds were determined from CV and UV-Vis measurements, respectively. Photoluminescence properties of the synthesized compounds were determined from spectrofluorophotometer measurements in solution forms in DMF. The number-average molecular weight (Mn), weight average molecular weight (Mw) and polydispersity index (PDI) values of the synthesized compounds were determined by the gel permeation chromatography.

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Keywords: poly(azomethine)s,optical band gap ,oxidative polycondensation,thermal properties

Synthesis Of Indole Based 1,3,4-oxadiazoles

_O4296

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The design and synthesis of nitrogen containing heterocyclic compounds for biological studies is an active area of research especially in the fields of organic and medicinal chemistry. Among the various nitrogen containing heterocycles, indole moieties have been attractive targets within drug discovery due to the fact that naturally occurring indoles often display diverse and interesting biological activities. Being a good bioisostere of naturally occurring indole alkaloids, azaindoles are a class of heterocycles consisting of a fused electron-deficient pyridine ring with electron-rich pyrrole ring. Oxadiazoles, a five-ring furan derivative frequently encountered in patents and literature, remain an indispensable product in the fields of synthesis, medicine, and material chemistry. Because of their metabolic profile structure and their tendency to hydrogen bonding, they are also of interest to synthetic organic chemists. A variety of synthetic approaches have been employed to synthesis of 1,3,4-oxadiazole ring systems. The most commonly used method is the oxidation of imino acetyl hydrazines formed as a result of Schiff base reaction. Within the scope of this work; 4,6-dimethoxyindoles and an 7-azaindole platforms were chosen as starting materials to the construction of novel 1,3,4-oxadiazole systems.The full characterization data of the novel compounds were obtained by utilizing ^{1}H NMR, ^{13}C NMR, FT-IR, high-resolution mass spectrometry and single crystal X-ray diffraction techniques.

Keywords: indole,7-azaindole,134-oxadiazole

Chemistry

Examination Cbrn-e Knowledge, Attitude And Behavior Level At Institution Level And Learned From Covid–19

_O4363

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Chemical, Biological, Radiological, Nuclear and Explosive (CBRN-E) materials, accidental spread due to reasons such as major industrial plant accidents, transportation and transportation accidents, agricultural activities that may occur as a result of natural disasters, or malicious and deliberate release for war and terrorism can cause acute or chronic poisoning in living organisms, as well as cause great damage to the environment. CBRN-E incidents, which create an atmosphere of turmoil in the society and cause serious social anxiety, place great pressure on local and national opportunities and resources. In this context, it is of great importance for countries to be prepared for CBRN-E incidents that may occur accidentally or intentionally. Risk management studies should be carried out effectively in order to prevent injuries, loss of life, environmental damage, heavy economic and social losses caused by CBRN-E events, the frequency and severity of which are increasing day by day, and to perform a fast and correct response when such events occur. As a result of the training and exercises carried out within the scope of risk management studies, the personnel in charge of the institutions involved in CBRN-E incidents should have a comprehensive knowledge and analysis ability about CBRN-E substances, as well as be able to perform a fast and effective response to such incidents. In our study, a questionnaire was applied to the institutions involved in the CBRN-E incidents and the personnel of the institutions involved in the CBRN-E incidents in Tekirdag for the Examination of CBRN-E Knowledge, Attitude and Behavior Level at the Institutional Level and Learned from Covid-19. In the survey, together with 10 questions containing the demographic characteristics of the participants, there are a total of 40 questions, 11 in the field of knowledge level determination, 7 in the field of attitude determination, 7 in the field of behavior level determination, and 5 in the field of learned from Covid-19, obtained by the researchers as a result of the literature review. With this study, it is aimed to determine the level of knowledge, attitudes and behaviors of the institutions involved in CBRN-E incidents and the personnel of the institutions involved in these incidents in Tekirdag province, and to determine what has been learned about the Covid-19 pandemic in the field of CBRN-E, and to make suggestions.

Keywords: cbrn-e,preparedness,response,afad,fire brigade

A Computational Study Of Degradation Reactions Of A Marine Musilage

_O4383

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Marine mucilage, which emerged at different times in different geographies of the world, changed the aquatic ecosystem, and caused intense concern among the public when it was seen on the sea surface, was first recorded in the Marmara Sea in 2007 in our country. Following this, it was observed again in the Marmara Sea in 2021. In many different parts of the world, especially in the Adriatic Sea, the problem of marine mucilage has been encountered frequently. There are many scientific studies on the causes of marine mucilage formation, prevention studies or its use in purification and new applications after it is formed. Marine mucilage has a very complex chemical structure. Mucilage consisting predominantly of carbohydrates; It consists of polymeric substances produced by sea creatures, extracellular simple sugars, polysaccharides, other organics such as humic, fulvin, humin, proteins, nitrogen and phosphorus components, inorganics such as aluminum, silicon, and substances such as calcium iron. In this study, the possible reaction pathway of carrageenan molecule, a marine mucilage agent, was determined. Then, geometric optimization was made with the Gaussian 09 program and the lowest energy states were found. The bond lengths and bond angles were calculated by performing geometric structure analysis. The aim of this study is to determine the most likely interaction route of carrageenan and OH in gas and water phase. COSMO, the effect of solvent water, is used as a dissolution model and has a stabilizing effect in reducing the energy in reactions. The lowest energy molecule has the most stable structure. As a result of this study, 5 possible fragments as F1,F2,F3,F4,F5 were obtained and calculations were performed for all molecules. These results will guide experimental studies and determine the fragmentation mechanism.

Keywords: marine musilage,dft,gaussian09

New Applications In Dispersive Liquid Phase Microextraction: Switchable Solvent-based Microextraction, Deep Eutectic Solvent - Based Microextraction

_O4464

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In the rapidly developing world, it has become very important to develop sensitive, accurate and fast methods in the quantitative analysis of many samples such as biological, environmental, food and pharmaceutical products. Pretreatment is usually required to separate and enrichment the analytes from the matrix medium. Extraction methods have been developed to overcome the difficulty of measuring sensitivity of trace amounts of analyte due to the matrix effect. The dispersive liquid–liquid microextraction method uses much less solvent than conventional liquid–liquid extraction, is environmentally friendly, practical, and has a low cost.

In recent years, many methods have been developed in the analysis of organic and inorganic substances, based on dispersive liquid-liquid microextraction, with different solvent systems.

Switchable solvent-based and deep eutectic solvent-based microextraction methods are the most widely used techniques. These methods are easy to apply and provide high pre-enrichment factor. It also contributes to new studies called green chemistry, since natural chemicals that do not create waste as solvents are used. The methods are also compatible with instruments such as AAS, GC, HPLC that can detect trace amount of analytes. In this study, the recent innovations of switchable solvent-based microextraction, deep eutectic solvent - based microextraction techniques will be discussed.

Keywords: preconcentration,microextraction,environmentally friendly

Investigation Of Polymerization Condition Of N-substituted Pyrrole Monomers And Effect Of The Polymerization Conditions On Polymerisation Yield

_O4507

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Conductive polymers are the materials which have incomparable structures and combine some properties of metals and conventional polymers. These polymers, with light and corrosion – resistant properties, are also known as synthetic metals and they can conduct electrical current like metals. In recent years, studies on conductive polymers have been expanding due to their superior properties such as corrosion prevention, electrochromism, electroactivity and biological compatibility. Among the most investigated conductive polymers, polypyrrole has a special importance because it is easy to obtain, has high conductivity and durability. However, the most important disadvantage is that it has a fragile structure and therefore difficult to process. Binding of various functional groups to the pyrrole ring can create differences in the physical and chemical properties of the polymer obtained, such as conductivity, solubility and processability.

At this study, we aimed to investigate polymerization conditions and to determine the effect of this conditions on the properties of polymers obtained. In the first step, seven different N-substituted pyrrole monomers, (4- (1H-pyrrol-1-yl) phenol, 2,6-dichloro-4- (1H-pyrrol-1-yl) phenol, (4- (1H-pyrrol-1-yl) phenil palmitoat, 2,6-dichloro-4- (1H-pyrrol-1-yl) phenil palmitoat, ethyl 4- (1H-pyrrol-1-yl) benzoate), 1- (benzo [d] [1,3] dioxol-5-yl) - 1H-pyrrole and (2- (1H-pyrrol-1-yl) ethyl acetate were synthesized. These N-substituted pyrroles were used in oxidative chemical polymerization as monomer. Polymerization was carried out in the presence of Potassium persulfate, Iron (III) chloride, Cerium ammonium nitrate and PIFA as an oxidant. N-substituted pyrroles were polymerized by the oxidative chemical polymerization technique at different temperatures, oxidant / monomer ratio and reaction times with the most suitable oxidant selected for each monomer. While the increase in temperature, oxidant / monomer ratio and reaction time increased yields.

Keywords: n-substituted pyrrole monomers,poly(n-substituted pyrroles),conductive polymers,chemical polymerization,oxidant

Chemistry

Design Of Hybrid Supercapacitor Electrode Materials

_O4582

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In this study, we synthesized electric double layer capacitance (EDLC) and pseodocapacitance (PCs) electrode materials such as graphene oxide (GO), reduced graphene oxide (rGO), Sulfur (S) added GO, active carbon (AC), cobalt (II, III) oxide (Co3O4), Iron (III) oxide (Fe2O3), Nickel (II) oxide (NiO), Titanium (IV) oxide (TiO2), Copper (II) oxide (CuO), Molydenum (IV) sulfide (MoS2), polyaniline (PANI), poly(3,4-ethylenedioxyhtiophene) (PEDOT), polypyrrole (PPy), polythiophene (PTh), etc. These systems were combined to form hybrid supercapbattery with 2032 coin cell.

Keywords: hybrid supercapacitor,pseudocapacitance,electric double layer capacitance,supercapacitor,energy storage systems

Synthesis And Characterization Of A New Schiff Base With Triphenyl Amine Group

_O4597

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In recent years, it has attracted the attention of researchers due to its ease of synthesis and its ability to form complexes with almost all metals. Triphenylamine, the simplest triarylamine, was first synthesized in 1873 by Merz and Weith using aniline or diphenylamine, with potassium and bromobenzene [1]. Triphenylamine is known as an important donor group in the literature with its very good electron donor properties.

Carbazole and its derivatives are widely used in optical materials and solar energy collectors due to their superior properties such as excellent solubility, stability, intramolecular charge transfer, and sensitivity to structural change [2-6]. Due to their fluorescence properties, compounds containing the carbazole ring are used in the production of electroluminescent materials, polymers and paints [7]. Therefore, in this study, a new Schiff base containing triphenylamine and carbazole groups was synthesized and its structure was analyzed with spectroscopic methods.

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Keywords: carbazole,schiff base,spectroscopy

Analytical Studies On Drug Active Substances Used In The Treatment Of Migraine

_O4603

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Aim: Migraine is the most common unilateral primary episodic headache associated with sensory symptoms, characterized by recurrent attacks, accompanied by neurological, gastrointestinal and autonomic changes. The treatment approach in migraine is divided into two main groups. The first is called non-pharmacological treatment, informing the patient about the disease, regularizing the lifestyle, avoiding triggering factors and cognitive approaches. The second is the pharmacological treatment approach. Pharmacological treatment approach is applied in two subgroups: symptomatic to relieve pain, nausea and vomiting, and preventive treatment to prevent migraine attacks. The purpose of the study; to research, analyze and present analytical studies that have been conducted in recent years for the active ingredients of almotriptan, fravatriptan and eletriptan, which are used in the treatment of migraine headache, which has a high prevalence all over the world, and which have proven the parameters approved by ICH.

Results: It has been observed that the researchers analyzed the active substances using analytical methods such as for almotriptan; RP- HPLC and HPTLC for frovatriptan; UV-visible spectroscopy and RP HPLC for eletriptan; UV-Visible spectroscopy and TLC.

Conclusions: In the results of the studies examined, the researchers stated that the methods they developed for the quantification of active substances were simple, precise, accurate, sensitive, fast and economical.

Keywords: migraine ,almotriptan ,frovatriptan ,eletriptan ,analytical studies

Chemistry

Analysis Studies Of Drug Active Ingredients Used In The Treatment Of Alzheimer's Disease

_O4607

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Aim: Alzheimer's is a type of dementia that causes memory, thought, and behavioral problems. The most important clinical findings of AD are; loss of memory, difficulty in performing daily tasks, impaired language functions and visual perception. The disease can be divided into three phases as early, middle and advanced stages. Symptoms usually develop slowly and become more severe in time to interfere with daily work. Criteria for the clinical diagnosis of the disease are insidious onset, progressive deterioration in memory and other cognitive functions. The definitive diagnosis can be made by the characteristic pathological findings in the brain; these are senile plaques, neurofibrillary tangles, neuropathological changes such as amyloid deposition and plaque formation in the blood vessels. Among the causes of the disease; head trauma, presence of long-term depression, chronic alcohol use, and vascular risk factors include hypertension, high cholesterol, and diabetes. In this study, researches and articles related to chemical analysis methods of the drug active substances used in the treatment of Alzheimer's disease were examined.

Results: Although there is no known definitive treatment for Alzheimer's disease, the disease is associated with a decrease in cholinergic function and an increase in glutaminergic functions. Recently, treatments have been developed on improving symptoms to delay disease progression.

Conclusions: Currently, approved pharmacological agents for the treatment of Alzheimer's disease; for the determination acetylcholinesterase inhibitors (donepezil, rivastigmine and galantamine) and NMDA receptor antagonists (memantine), LC-MS/MS; LC-ESI/MS/MS; HPLC-PDA-MS; HPLC; UPLC MS/MS quantitative determinations methods were investigated.

Keywords: memantine,donepezil ,rivastigmine ,galantamine,analytical studies

Inhibition Of Polyphenol Oxidase With Natural Inhibitor Onion

_O4614

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Polyphenol oxidase (PPO), which is a copper-containing enzyme is also known as catechol oxidase, phenolase, phenol oxidase, *o*-diphenol oxidase, and tyrosinase depending on its substrate specificity. PPO is the main enzyme responsible for the enzymatic browning reaction in damaged fruits and plant tissues. Enzymatic browning usually becomes in certain vegetables and fruits during handling, processing, and storage after harvest and it is major problem in the food industry. The enzymatic browning reaction is undesirable because it causes changes in the appearance, taste, texture, and nutritional value of foods. Therefore, controlling or preventing the enzymatic browning by several compounds and approaches have been studied by researchers. To inhibit the activity of PPO physical and chemical methods have been developed. Several natural anti-browning agents and chemical compounds have been used as PPO inhibitors in fruit and vegetable products, but the use of some chemical inhibitors to control browning reactions could be harmful. Consumers widely prefer to use compounds of natural origin because these inhibitors could be a problem for human health. Therefore, the identification of natural inhibitors specifically in the case of fruits and vegetables, and their use for PPO inhibition is very important. Onion is one of these natural inhibitors that has been studied by researchers. Studies on this subject have reported that fresh and heated onion extracts have a good inhibitory effect on enzymatic browning.

Keywords: enzymatic browning ,inhibition ,natural inhibitor ,polyphenol oxidase ,onion

Chemistry

Synthesis And Physicochemical Characterization Of Block Copolymers By Using Macro Raft Agents

_O4630

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Reversible Addition−Fragmentation Chain-Transfer (RAFT) polymerization of styrene (St), vinyl benzyl chloride (vbc),N-isopropylacrylamide (NIPAM) and methyl methacrylate (MMA) tertbutyl methacrylate (tertBMA) and n-butyl methacrylate (nBMA) was investigated using carboxylic acid functionalized trithiocarbonate (R2). Polyethylene glycol (PEG) based macro-RAFT agents were synthesized by the condensation reaction of PEG (Mn: 2000 Da and 8000 Da) with the carboxylic acid functionalized trithiocarbonate [SDodecyl-S0-(a,a0-dimethyl-a00-acetic acid) tritiocarbonate (DDMAT)] using dicyclohexylcarbodiimide (DCC)/4 (dimethylamino) pyridine (DMAP) as catalyst at room temperature. Then, N-isopropylacrylamide (NIPAM) and methyl methacrylate (MMA) monomers were polymerized, respectively, using synthesized new macro-RAFT agents and N,N′-azo bis isobutyronitrile (AIBN) as the initiator. In all RAFT polymerizations, dispersity values were found in the range of 1.04 to 1.47, which showed that RAFT polymerization was applied successfully. The synthesized polymers were characterized using Fourier Transform Infrared Spectroscopy (FTIR), Proton Nuclear Magnetic Resonance Spectroscopy (1H-NMR), Gel Permeation Chromatography (GPC) and Differential Scanning Calorimetry (DSC) techniques. The fractured surface images of PEG-b-PMMA block copolymers were obtained by Scanning Electron Microscopy (SEM). SEM images PEG-b-PMMA block copolymers have shown that the copolymers have a microporous structure. In addition, the swelling ratios and LCST values of the PEG-b-PNIPAM block copolymers were measured which were found to be very high. The lower critical temperature values of the copolymers are closer to that of the PNIPAM homopolymer, 32 C, indicating its usability in drug delivery systems.

Keywords: raft polymerization,peg based macro-raft agent,amphiphilic block,thermoresponsive block copolymer

Preparation Of Nanocomposites And Supercapacitor Applications

_O4631

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Energy storage systems for energy conversion and storage are used for large amounts of renewable energy. Nanocomposite fabrication is a simple, versatile, nano architecture materials in supercapacitor applications

In this paper, three different nanocomposites including graphene oxide or reduced graphene oxide (GO/rGO), polythiophene (PTh), and carbon black (CB) as (PTh, GO/PTh/CB, and rGO/PTh/CB) were synthesized using an easy, low cost and sustainable approach. The designed hybrid nanocomposite was supplied to the advanced structural, morphological properties along with the synergistic phenomenon between PTh and CB over the GO or rGO surface in alkali medium.

Electrochemical measurements were performed using Iviumstat model potentiostat/galvanostat instrument. The total weight of each material was ~5 mg in supercapacitor devices.

Specifically, the specific capacitance retention of rGO/PTh/CB nanocomposite remained about 92.57% even after 1000 cycles at 100 $mV \times s^{-1}$ by CV method, which shows considerable long-term cycling stability. The equivalent circuit model of $R_s(C_1R_{ct}(C_2R_1))$ was used to compare experimental and theoretical values. The fabricated rGO, PTh, GO/PTh/CB and rGO/PTh/CB nanocomposites can be attractive application prospects in energy storage systems.

Nanocomposites were characterized by Fourier-Transform infrared spectroscopy-Attenuated total reflectance (FTIR-ATR), scanning electron microscopy-Energy dispersive X-ray (SEM-EDX), atomic force microscopy (AFM) analysis, Thermogravimetric and differential thermal analysis (TGA-DTA), Brunauer-Emmett-Teller (BET) analysis, and solid-state conductivity analysis.

Keywords: polythiophene,nanocomposite,graphene,supercapacitor,equivalent circuit model

Synthesis And Characterization Of Poly(azomethine)s Containing Triazine Unit

_O4955

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Aromatic compounds containing hydroxyl groups in their structure are converted into polymer products from the combination of phenoxy-structured radical units in the presence of oxidants such as air, H_2O_2 and NaOCl in alkaline and acidic aqueous media [1, 2]. These types of macromolecule compounds are used in many fields in industry because of they contain both phenyl unit and different functional groups in their structures. Since the phenyl units in the main chain give rigidity to the structure, the thermal stability of these types of polymers are quite good [3].

Schiff base compounds were synthesized from condensation reactions of vanillin, 5-bromo salicyl aldehyde, 4-hydroxy benzaldehyde, 2-hydroxy benzaldehyde and 2-hydroxy-1-naphthaldehyde with 2,4-diamino-6-phenyl-1,3,5-triazine. Reactions were performed as in the literature [1] and all of the Schiff bases were obtained at white and yellow colored powder. Yields of Schiff bases were found between 60-70%. The polymers containing imine bonding were synthesized via oxidative polycondensation by sodium hypochlorite as oxidant [1]. The solubility tests of Schiff bases and polymers were performed in acetone, THF, chloroform, acetonitrile, methanol, ethyl acetate, hexane, DMF and DMSO.

The structures of synthesized Schiff bases and their polymers were confirmed by FT-IR, UV-Vis, ^{1}H-NMR, ^{13}C-NMR measurements. Thermal properties of Schiff bases and polymers were determined by TGA-DTA and DSC techniques. Surface morphologies of polymers were determined by SEM measurements. The electrochemical and optical band gaps values of all compounds were determined from cyclic voltammograms and UV-Vis measurements, respectively. Photoluminescence properties of the synthesized compounds were determined from spectrofluorophotometer measurements in solution forms in DMF. The number-average molecular weight (Mn), weight average molecular weight (Mw) and polydispersity index (PDI) values of the synthesized compounds were determined by the gel permeation chromatography

Keywords: poly(azomethine)s,thermal degradation,oxidative polycondensation,band gap

Derin Öğrenme Ve Görüntü İşleme Metotları Kullanılarak Akciğer Kanseri Türü Tespiti

_O3632

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Dünya'da her gün yüzbinlerce insan kanser sebebiyle hayata gözlerini yummaktadır. Öte yandan, erken teşhis edilirse ve doğru tedavi protokolleri uygulanırsa hastalar iyileşebilmekte veya hastaların yaşam süreleri uzatılabilmektedir. Erken teşhis bu kadar önemli iken çoğu zaman hastalığın zamanında fark edilememesi sebebiyle istenmeyen sonuçlar görülmektedir. Hastalığın geç fark edilmesinin veya hiç fark edilmemesinin en önemli sebeplerinden birisi geleneksel analiz yaklaşımının insan algısına bağlı olmasıdır. Şüphe oluşması durumunda radyoloji uzmanları genelde destekleyici tanı yaklaşımlarına başvurmaktadırlar.

Bu çalışmada derin öğrenme yaklaşımı ve görüntü işleme metotları kullanılarak akciğer kanseri türü tespiti gerçekleştirilmiştir. Ön işleme teknikleri kullanılarak işlenen bilgisayarlı tomografi görüntüleri değerlendirilerek, bu veriler üzerinde evrişimsel sinir ağları uygulanmıştır. Sinir ağları yardımıyla gerçekleştirilen öğrenim işlemleri esnasında incelenen akciğer görüntüleri, hastaya ait kişisel bilgiler saklanmaksızın bulut üzerinde veri seti olarak depolanmaktadır. Bu veri setinin içerisine yorumlanan kanser görüntüleri atılarak, sistem yorumlaması için kullanılan verilerin çoğalmasında ve başarı oranının artırılmasında kullanılmaktadır. Sisteme öğretilen veri setleri sayesinde bir hastanın akciğer kanseri türü yüksek doğrulukla tespit edilebilmektedir. Elde edilen sonuçlar, akciğer tarama görüntülerinin sınıflandırılmasında derin öğrenme modellerinin kullanılmasının başarılı sonuçlar verdiğini kanıtlamaktadır. Derin öğrenme sayesinde daha yüksek başarımla akciğer kanseri tespiti gerçekleştirilebileceği ortaya konmuştur. Geliştirilen bu sistem sayesinde akciğer kanseri hastalarının teşhislerinin daha başarıyla yapılabilmesi, böylece tedavi süreçlerinin daha iyi planlanabilmesi sağlanacaktır.

Keywords: derin Öğrenme,görüntü İşleme,akciğer kanseri teşhisi,doğruluk,başarım

Paclitaxel-loaded Graphene Nanocarriers Functionalized With Triblock Copolymers

_O3698

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The development of novel and effective drug delivery systems with the ability to exhibit the desired therapeutic profile and efficacy is one of the fundamental problems confronted by modern nanomedicine. Various investigations have been carried out to develop new approaches for effective drug delivery systems using numerous nanocarriers, such as dendrimers, polymeric particles, liposomes, and micelles. Two dimensional (2D) nanomaterials such as graphene and its derivatives have been under investigation due to their structural characteristics at nanoscale level which make them suitable for biological settings. Herein all-atom molecular simulations were employed to study graphene functionalized with PLA-PCL-PLGA triblock copolymers. The graphene nanocarriers functionalized with triblock copolymer were further decorated with anticancer drug paclitaxel. The objective was to investigate the configuration and arrangement of triblock copolymer and paclitaxel drug with different loading amounts in graphene. The Particle-Particle Particle-Mesh (PPPM) algorithm was used to calculate the long-range electrostatic interactions, and the cutoff distance for van der Waals interaction is set to be 12 Å. The time step of the simulation is set to be 1 fs. Nose-Hoover thermostat was used to control the constant temperature at 300 K. All MD simulations were carried out with the velocity Verlet numerical integrator. An initial equilibration phase is implemented in the microcanonical ensemble (NVE) for 5.0 ns. After the relaxation period, the system is undergone MD simulation in the canonical ensemble (NVT) for a total duration of 10.0 ns using a 1.0 fs time step. All the simulations are performed using the LAMMPS software package.

Keywords: triblock copolymer,nanocarrier,graphene,paclitaxel,molecular dynamics

Introduction Of Hardware Components With Virtual Reality

_O3718

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In self-developing societies, the individuals have to adapt to changing technologies. Since information is constantly changing, societies in the information age must adapt to change. For this reason, scientific researches on new techniques and methods are carried out by both instructors and learners in the field of education. The old techniques and methods in education have begun to lose their effects of keeping up with technology in terms of learning. The most appropriate solution to this situation will be to benefit from the opportunities of information technologies. The concept of virtual reality, which these technologies have brought and is on the agenda, has brought a different perspective to the education system. Virtual reality can be defined as a series of sounds and images processed by computers and mobile devices to simulate past, present and future materials or people in the environment. Virtual reality is used without isolating from the real environment in order to enrich the reality with virtual objects. It is a structure that allows the user to feel the intuition of being close to reality when he enters the environment. The success of the system shows a similar development when the person's intuition is taken under control in the best way. Three-dimensional visuals and videos used in the field of education offer new experiences to learners thanks to learning by living in the virtual world. It is thought that it can be used as an effective tool in distance education. In this study, it is aimed to introduce virtual reality and computer components. The developments in virtual reality and its accompanying technology are mentioned. It is explained how virtual reality technology is used for educational purposes for the benefit of instructors and learners.

Keywords: virtual reality ,technology,education,hardware components

Dumlupinar Ünİversİtesİ KampÜsÜ İÇİn SÜrdÜrÜlebİlİrlİk Alaninda SÜrdÜrÜlebİlİrlİk Stratejİsİ

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Bu çalışmada Dumlupınar Üniversitesi'nin sürdürülebilirlik konusunda değerlendirmeleri yapılmıştır. Değerlendirmelerde GreenMetric sistemleri kullanılmıştır. Dünyanın farklı ülkelerinden birçok üniversite katıldığı 2020 yılı Dünya GreenMetric sıralamasına Kütahya Dumlupınar Üniversitesi, listeye 786. sıradan girebilmiştir.. DPÜ bu yıl ilk kez başvurmasına karşın ulaşım kategorisinin dünya sıralamasında 282., Türkiye sıralamasında da 23. sırayı alarak önemli bir başarıya imza atmayı başardı. Bu değerlendirme sistemleri katılımcı sayılarının çok olması ve ulaşılabilir veriler sağlamasından dolayı tercih edilmiştir. Değerlendirmelerin sonuçlarına göre üniversitede kısa (1-2 yıl), orta (3-4 yıl) ve uzun (4 yıldan fazla) vadelerde üniversitenin hangi konularda gelişebileceği finansal açıdan incelenmiştir. Mali yatırıma ihtiyaç duyulan alanların neredeyse tamamının çevresel konuların olduğu ve sosyal ve ekonomik alanlarda politikaların eksikliklerinin puan kaybına sebep olduğu görülmüştür. Ayrıca üniversitede su kullanımı, binaların oturma alanı, sera gazları dökümü, üniversiteye gelen gerçek araç sayısı, toplam akademik ders sayısı, atık miktarı gibi verilerinin eksik olduğu ve bazı verilerin izlenmediği görülmüştür. Yapılan değerlendirmeler ışığında üniversitedeki boşluklar ve fırsatlar ele alınmış ve geliştirilen stratejilerin GreenMetric değerlendirmelerinde puan karşılıkları incelenmiştir. GreenMetric değerlendirmesinde kısa vadede, orta vadede, uzun vadede puan artışı hesaplanmıştır. Kısa vadedeki artışla Dumlupınar Üniversitesi'nin ilk 100 üniversite arasına girilebildiği görülmüştür. Fiziki altyapının iyileştirilmesine ve daha yeşil bir yerleşke oluşturulmasına yönelik çalışmalara Dumlupınar üniversitesinde önem verilmektedir. Yapılan çalışmalar uluslararası nitelikteki GreenMetric sıralamasında yer alması üniversitemiz adına gurur vericidir. Dumlupınar üniversitesi olarak hedefimiz bundan sonraki yıllarda daha üst sıralarda yer almaktır

Keywords: greenmetric,sürdürülebilirlik değerlendirmeleri,,yerleşkede sürdürülebilirlik,dumlupınar üniversitesi

Optimization Of Bioactive Components Of White Grape Juice

_O3766

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Grape is one of the most widely produced fruits in the world compared to other fruit types in terms of climate and soil requirements. With the richness of the bioactive components capacity, mineral and vitamin content in the content of grapes are consumed with pleasure; It is recommended to be consumed as a useful product for human health. This study aims to optimize the bioactive components of the white grape variety with ultrasound technology, which has superior properties compared to thermal pasteurization. For this purpose, the response surface methodology (RSM), which is highly preferred in scientific studies, has been preferred. In the study, ultrasound treatment duration (2, 4, 6, 8, and 10 minutes) and amplitude (40, 50, 60, 70, and 80%) variables were preferred. In response to the process application, total phenolic content (TPC), total flavonoid content (TFC), and DPPH (1,1-Diphenyl-2-Picryl Hydrazyl) analyzes were performed. As a result of RSM optimization, the model showed high R^2 values. TPC was determined as 99.12%, 99.19% and 99.09% for TFC and DPPH, respectively. In the one-way analysis of variance (ANOVA) of TPC and TFC samples, time and amplitude were statistically significant ($p<0.001$). TFC was not found to be statistically significant in the two-way interaction ($p>0.05$). However, statistically, significant differences were found in DPPH antioxidant value ($p<0.001$). As a result of the optimization applied to white grape juice, the best conditions were determined as 6.8 minutes and 80% amplitude. Bioactive components of untreated white grape juice were enriched after ultrasound treatment. As a result of optimization, the best bioactive values of white grape juice were determined as 440.3 mg GAE/L, 42.3 mg CE/L, and 55.5 inhibition for TPC, TFC, and DPPH, respectively. Compared to thermal pasteurization, ultrasound technology applied to white grape juice has successfully preserved and enriched bioactive compounds. As a result, it was concluded that the effects of thermal pasteurization and ultrasound technology on white grape juice on other quality parameters should be evaluated in further studies.

Keywords: white grape,white grape,ultrasound

Surface Modification With Laser On 316ti Alloy

_O3767

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316Ti alloys is used in hard tissue implants. Thanks to its chemical composition, 316Ti offers some important advantages of stainless-steel and Ti group biomaterials together. In addition to material composition, surface properties also affect biocompatibility at a high level. Surface treatment studies that allow the controlled shaping of the surface topography with high precision attract attention. Ø20 mm 316Ti bar was provided for the experimental study. Afterwards, the sample preparation process started. Sample preparation processes consist of rough cutting, precision cutting, sanded with water sandpaper and polishing with diamond pastes. The surface was sanded with water sandpaper until the rough roughness was removed and then polished with 6 µm and 3 µm diamond pastes, respectively. After the preparation of the samples, the mean roughness value before laser treatment was measured as R_a=0.006 µm. Afterwards, in the fiber laser system, the process was carried out at 20 kHz frequency with 60% power, 90 mm/s feed rate. The circular sample was divided into 4 quadrants and the drawings with 0.025 mm, 0.05 mm, 0.1 mm, 0.5 mm intervals were used in quarter sections as a pattern. Microstructure images were taken with an optical microscope and surface patterns were examined. In addition, measurements were taken from different points to determine the average roughness values. Average roughness values were measured as R_a=0.165 µm for 0.025 mm intervals, R_a=0.251 µm for 0.05 mm intervals, R_a=0.145 µm for 0.1 mm intervals, and Ra=0.090 µm for 0.5 mm intervals. It has been shown that different surface roughness values can be obtained by changing the process parameters as a result of laser processes. It is known that surface roughness has a significant effect on cell adhesion in biomaterials. While the highest average roughness value was obtained in the process with 0.05 mm intervals in the 4 different intervals tested, the lowest roughness value was obtained in the 0.5 mm interval. The interval value can be reduced in order to increase the roughness value caused by the particles removed from the surface by melting on the laser processing path with a interval value of 0.5-0.05 mm. However, this is not valid in the 0.05-0.025 mm range. The reason for this can be shown as the effect of the spreading regions of the particles removed from the surface by the laser process of the processing range, which can be seen in microscope examinations, and their accumulation with different layer thicknesses.

Keywords: 316ti,biomaterials,laser modification,surface patterning

Comparison Of Different F-mune Calculation Methods With The Newly Developed Software

_O3794

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F-waves are used in routine EMG studies and they are useful for diagnosing and monitoring the diseases of peripheral nerves. While examining the patients, it is important to follow the changes in the number of motor units in diseases with motor neuron/axon loss. There are different methods such as multi point stimulation (MPS), MScanFit and MUNIX for estimating the number of functional motor units. They are proper techniques, but some have limitations inherent to their methodologies and some require special instrument and software. On the other hand, F-waves can also be used in calculating motor unit number estimation (MUNE) without using special equipment. However, manual calculation can be very time consuming, and there is a need for an automated method for quick analysis. MUNE can be calculated from the size of the M response and those of the surface motor unit action potentials (sMUP) by using peak to peak amplitude, positive peak area, or total area of F-waves and those of the M response. Authors of the current study have previously performed an F-wave study by using peak to peak amplitude of F-waves and have calculated lower MUNE values than the values revealed by other studies. In this study, a new algorithm was developed to calculate different MUNE measurement values automatically. The algorithm can do all calculations under 1 minute and it can auto-correct the baseline of F-waves for a more precise result. Mean values of normal F-MUNE were calculated from peak to peak amplitude, positive peak area and total area as 104.8, 171.9 and 160.3 respectively. sMUP values calculated with different methods were significantly different from each other ($p \leq 0.001$). Similarly, significant differences were also found for different F-MUNE measurement methods ($p \leq 0.001$). It was observed that, there was a strong to moderate correlation between the sMUP and F-MUNE values revealed by each method. The results were compared with the other prominent studies in the field. F-MUNE values that are calculated by using the positive area values of the F-waves were found to be more realistic and closer to the other researchers' results. As a result, it is logical to use area parameters for calculating the MUNE values.

Keywords: electromyography,automated f-wave analysis,f-mune,signal processing

Görüntü İşleme Teknikleri Kullanılarak Ana Arı Davranışlarının Takibi

_O3799

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Arıların izlenmesi bilimsel anlamda 18. yüzyılda Fransız doğa bilimcileri Réaumur ve Huber ile başlar. Kendi tasarladıkları camdan arı kovanıyla yaptıkları gözlemler sonucunda erkek arı, işçi arı ve kraliçe arıların varlığını ilk tespit eden kişiler olmuşlardır. 19.yüzyılda Amerikalı arı yetiştiricisi L.L. Langstroth tarafından iki çerçeve arasında arının geçebileceği kadar bir arı boşluğu olması gerektiği keşfedildi. Bu şekilde günümüzdeki arı kovanı tipi meydana gelmiş oldu. Dünyada arıcılık faaliyetleri incelendiğinde ülkemiz bal üretiminde 2. , kovan sayısında 3. sıradadır. Az sermaye ile kısa sürede gelir getirdiği için tarımsal faaliyetlerde arıcılığın önemli bir yeri vardır. Ülkemiz zengin bitki florasına ve farklı coğrafi yapılara sahip olduğu için arı ırkı bakımından zengindir. Ülkemizde gezginci arıcılık yaygın olduğu için çeşitli arı hastalıkları kısa sürede yayılabilmektedir. Bundan dolayı arıcıların kovanlarını sürekli takip edebilmesi oldukça önemlidir.

Bu çalışmada arıları tüm gün izlenilebilmesini sağlayan arı kovanın içerisine bir gece görüş özelliği olan bir kamera sistemi kurulmuştur. Sistem enerjisini güneş paneli ve bataryalardan sağlamaktadır. Kayıt edilen videolar birleştirilip perspektifi düzeltilir. Videolardan rastgele ekran görüntüleri alınır. Bu görüntülerden ana arı ve işçi arılar etiketlenir. Etiketlenen görüntüler, Darknet sinir ağı iskeleti üzerinde Yolov4 algoritmasıyla Google Colab platformunda eğitilir. Bunun sonucunda oluşan ağırlık dosyası tüm video üzerinde arıların konumlarının tespit edilmesini sağlar. Bunu yaparken Google Colab platformunun işlem gücünden yararlanılır. Ana arının gözlemlenmesi arı kolonisinin genel durumu hakkında bilgi verir.

Keywords: arıcılık,görüntü İşleme,kamera,google colab

Artificial Intelligence, Big Data, Robotics Systems And The Future Of Jobs Or Jobs Of The Future

_O3831

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Many scholars and futurist agree that Artificial Intelligence, Big Data and Robotic Systems will take place much more in our lives in the future. In fact, they are already used by many companies, governments and organizations today and are becoming more and more common. AI, Big Data and robotics systems are used in many areas, from our search results to our online dating expectations and the way we shop etc... Especially big companies which use the AI and Big Data very effectively make big profits by using these systems and programmes and they make serious investments in this field. Particularly technology giants such as Google, Facebook, Amazon, Apple, Microsoft, Nvidia and IBM which use AI and Big Data very effectively and invest more and more in this field.

Therefore, statistics show that the use of AI and Big Data in many business sectors has increased by at least 270% in the last four years. With the increasing use of AI and Big Data, some companies are reducing the number of employees by using AI and Big Data. In other words, AI and Big Data work in place of people in many areas, providing companies with more advantageous opportunities and increased productivity. Especially in some professions which can be quite boring and take many times for human workers AI, Big Data and robotics systems is being used very effectively.

While some experts state that on the one hand with the increasing use of AI, Big Data and robotics systems millions of people will lose their jobs in the coming years, some experts report that many new jobs and professions will appear due to use of these systems and programmes on the other hand. So, how will AI, Big Data and robotics systems affect the future of jobs and professions? What are the advantages and disadvantages of AI, Big Data and robotics systems? What will the jobs of the future be? In parallel with the developments in the field of computers, AI, Big Data and robotics systems such questions are becoming more and more crucial. This study aims to investigate and examine the impact of AI, Big Data and robotics systems on jobs and professions in the future.

Keywords: artificial intelligence,big data ,robotics systems ,jobs of the future,future of professions

Interaction Of Protein Based Hydrocolloids With Phenolic

_O3871

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Hydrocolloids, known as gum and stabilizer in the food industry, are widely used for purposes such as thickener, encapsulator, coating, stabilizer or foam holder. Phenolic compounds, on the other hand, are compounds commonly found in plant-derived foods and beverages, many of which have antioxidant and anti-inflammatory functions. Therefore, they are frequently used as additives in functional diet products. Phenolic compounds as plant secondary metabolites are attracting increasing market demand due to their potential benefits for health. Foodstuffs contain protein and phenolic antioxidants in their structure. These components can interact with each other or with a number of structures in the human body such as enzymes and membranes, so various changes can occur in their antioxidant activities and biological roles. Thus, various questions arise, such as the types of interactions, their activities, and what kind of results they cause. Interactions between protein and phenolic compounds are also attracting increasing attention. Major food processing conditions have a major influence on the interactions between these ingredients in foods. Gelatin is a food additive, a water-soluble hydrocolloid found in the protein structure obtained by hydrolysis of collagen. The most important feature of gelatin in the food industry is that the difference between the gelation and melting temperature is small. Interactions between protein and phenolic compounds are mainly carried out through covalent or non-covalent (hydrogen, ionic and hydrophobic bonds) bonds. In this study, the interaction mechanisms of hydrocolloids of protein origin and gelatin, which is widely used due to its functional properties, with phenolic compounds were investigated. In this context, by examining the bonds between proteins and phenolic compounds, the formation of the interaction mechanism, its types, as well as the factors affecting them and their importance have been tried to be explained. As a result of these interactions between proteins and phenolic compounds, it is seen that various changes occur with the studies carried out in their structures. The interactions between proteins and phenolic compounds can be affected by various internal (protein and phenolic compound type or structure) and external (temperature, pH, etc.) factors. In order to develop new food products with better nutritional, functional and sensory qualities as well as bioactive properties, there is a need for intensive research of studies to achieve the desired effects by examining the interaction engineering of proteins and phenolic compounds from different food sources in depth.

Keywords: hydrocolloid,gelatin,phenolic compound,phenolic compound-protein interaction

Design Of A Parallel Robot With Ccc And Spc Leg Structures With 6 Degrees Of Freedom

_O3897

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Mechanisms formed by combining fixed and mobile platforms with two or more joint structures are called as parallel robots. It has been shown that 3850 GSP mechanism exists in the fixed and mobile platforms of parallel robots by using the constraints defined between six pairs of points, lines and/or planes. They divided these mechanisms into 4 classes as 3D3A, 4D2A, 5D1A, and 6D types. To make the applicability of this 3850 GSP mechanism practical, another study has been conducted on the same subject. The possible combinations of GSPs have been reduced to 195 without using planar joints. As a result, they reduced the GSP mechanisms to 20 types 3D3A, 35 types 4D2A, 56 types 5D1A and 84 types 6D. In these notations, 'D' denotes the length constraint and 'A' denotes the angular constraint.

In this study, a design proposal has been made for the $D_2^3A_1^3$ type mechanism, which is one of 20 different mechanisms in the 3D3A class. In the designs, CPAC (A: Active rotational joint) leg structure provided with A_1 type constraint, which is also known as CCC leg structure in the literature, and SPC (P: Active prismatic joint) leg structure provided with D_2 type constraint were used. In the design proposal, fixed and mobile platforms are considered regular hexagons. If the joint structure where the leg structures used are connected to the platform, it forms an edge of the hexagon if it has a cylindrical joint. If it has a spherical joint, it is positioned at the midpoint of one side of the hexagon. In the design, 3 CCC leg types are connected from the edges of the regular hexagons on the fixed and mobile platforms. The 3 D_2 type leg structures are connected to the midpoints of the hexagonal sides, which is the movable platform, and the hexagonal sides, which is the fixed platform. The cylindrical joint lengths used in the fixed and mobile platforms are considered equal. In the study, the inverse kinematics and Jacobian equations and the design image of the $D_2^3A_1^3$ type asymmetric parallel mechanism are also given.

Keywords: parallel robot,inverse kinematic,jacobian,robot design

Otel Kuruluş Yerinin Belirlenmesinde Entropi-copras Bütünleşik Yaklaşımı: Afyonkarahisar Ili Uygulaması

_O3903

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Lokasyon seçimi problemleri hemen her alanda ve konuda çalışılmaktadır. Lokasyon bir işletme için alınan uzun vadeli kararlar arasındadır. Alınabilecek yanlış bir kararın işletmelere maliyeti çok yüksek olabilmektedir. Bu nedenle lokasyon seçiminin bilimsel teknikler kullanılarak detaylandırılmış şekilde incelenmesi potansiyel maliyetlerden korunma konusunda büyük öneme sahiptir. Lokasyon seçimi problemlerinde Çok Kriterli Karar Verme Yöntemleri kullanılabilmektedir. Birçok kriterin amaç doğrultusunda ağırlıklarının belirlenmesi ve karar alternatiflerinin belirlenmiş kriterler ve ağırlıkları doğrultusunda incelenmesi doğru kararın alınmasında oldukça etkili görülmektedir. Bu çalışmada Afyonkarahisar ilinde otel lokasyonu seçim problemi ele alınmıştır. Bu doğrultuda literatürdeki çalışmalar incelenmiş ve otel lokasyonu seçiminde etkili olabileceği düşünülen kriterler belirlenmiştir. Çalışmanın kapsamının Afyonkarahisar il sınırları olarak belirlenmesi ve bu ilin nüfus bakımından görece küçük bir il olması sebebiyle literatürde yer alan ve çalışmanın kapsamındaki coğrafyada değişiklik göstermeyecek insan kaynağı, ulaşım imkanları, iklim gibi kriterler değerlendirmeye alınmamıştır. Afyonkarahisar doğal kaynakları ve son yıllarda gastronomi anlamında da öne çıkması ile turizm anlamında gelişim gösteren bir ildir. Bu anlamda turizmin gerekliliklerinden olan otellerin kurulması ve işletilmesi ile ilgili kararlar önemli görülmektedir. Çalışmada şehrin farklı alanlarından 5 alternatif konum belirlenmiş bu alternatifler 13 kriter ele alınarak değerlendirilmiştir. Kullanılan kriterler; hastaneye uzaklık, alışveriş merkezine uzaklık, emniyete uzaklık, rakiplere uzaklık, doğal kaynaklara uzaklık, otobüs terminaline uzaklık, tren garına uzaklık, şehir merkezine uzaklık, Afyon Kalesi'ne uzaklık, Frig Vadisi'ne uzaklık, Mevlevihane'ye uzaklık, Ulu Cami'ye uzaklık ve arazi maliyetidir. Doğal kaynaklara uzaklık ve rakiplere uzaklık kriterleri puanlama ile değerlendirilmiş olup arazi maliyeti kriteri ise mevcut arsa satım ilanlarından edinilen bilgiler neticesinde elde edilmiştir. Geri kalan 10 kriter için veriler ise Google Maps platformu ile koordineli çalışabilecek bir Excel makro komutu hazırlanarak elde edilmiştir. Verilerin objektif bir şekilde elde edilmesi dolayısıyla kriter ağırlıklarının belirlenmesi Entropi yöntemiyle tamamlanmıştır. Bunun için de şehrin farklı yerlerindeki seçilmiş 5 otelin konumları 13 kriter ile değerlendirilmiştir. Ardından elde edilen kriter ağırlıkları COPRAS yönteminde kullanılmış ve 5 alternatif arasından en iyi alternatif belirlenmiştir. Araştırma sonucunda en önemli kriter Alışveriş Merkezlerine uzaklık olmuştur. Bunu takiben hastane ve polis merkezlerine uzaklık da önemli kriterler olarak öne çıkmıştır. Belirlenmiş kriter ağırlıkları ile yapılan sıralamada en iyi alternatif "Şehir Merkezi" olmuştur.

Keywords: kuruluş yeri seçimi,otel kuruluş yeri,Çkkv,entropi,copras

Coating 1.4122 Steel On Mold Steel With Laser Coating Technique And Investigation Of Its Effect On Wear Resistance

_O3918

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The need for coating techniques in industrial applications is increasing every day. In this area, laser coating technologies have been preferred for aerospace, automotive, health and defense applications, especially in recent years. In this study, 1.4122 wire material with a diameter of 1.0 mm and a higher Cr ratio was coated on 1.2367 mold steel using the single-axis wire-fed laser coating method, and it is aimed to improve the wear resistance of the main material. Coating processes were carried out at 750/6 Watt energy level, 14 mm/sec wire feed speed and 4 bar argon gas environment. Within the scope of the study, first, the samples were prepared metallographically, and the interface between the coating and the substrate was examined with optical and scanning electron microscopy. Then, Vickers microhardness test and dry friction wear tests at room temperature were applied to determine the mechanical properties of the samples. Finally, dry sliding wear tests were carried out on a ball-on-disc type wear device under 20N load at a sliding distance of 1000 meters and a rotational speed of 300 rpm. Si3N4 balls with a diameter of 6 mm were used as counterface materials for all wear tests. The test results are compared to the wear rates of heat-treated 1.2367 steel and laser-coated samples. It was determined that the wear resistance of the laser-coated sample was approximately two times higher than the heat-treated sample. Moreover, compared to non-hardened mold steel, it exhibited about five times enhanced wear behavior. According to these results, the material with high Cr content emerges as a promising material in the coating of mold steels.

Keywords: laser cladding,1.2367 steel,1.4122 steel,ball-on-disc wear test

Effect Of Silanization In Photosensitive Epoxy Resin Reinforced With Tio2 Nanoparticles

_O3924

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Three-dimensional (3D) printers are an additive manufacturing technology permitting the creation of three-dimensional items by layering materials and stacking them without using molds. Photochemical 3D printers use UV-light to polymerize photo-crosslinkable resin, to fabricate well-detailed objects without using molds. Photosensitive resin are used as the starting material in photochemical 3D printers. These resin contain monomers, oligomers, photoinitiators, preferably nanoparticles and color pigments. With the addition of TiO_2 nanoparticles, nanocomposite resin may have high conversion degree and mechanical properties after polymerization. However, the tendency of TiO_2 nanoparticles to agglomerate is high, but this behavior can be prevented by the silanization process. In this study, the effects of silanized and not-silanized TiO_2 nanoparticles at different amounts (0.5%, 1%, 1.5%, 2% and 5% by weight), which are used as reinforcement materials in epoxy resin, on the mechanical properties and conversion degrees of 3D printed parts were investigated and compared. TiO_2 nanoparticles were synthesized using the sol-gel method and silanized. Then mixed with epoxy photosensitive resin and printed. Prepared nanoparticles, resin and polymers were characterized using FT-IR, XRD, XPS, SEM, PSD, tensile and three-point bending tests. The results showed that the highest conversion degree was in the sample containing 1% additive about 79.97%, and the highest increase with silanization in the conversion degree was in the sample containing 2% additive about 53.98%. But flexural, yield and tensile strength was affected negatively after silanization. Flexural strength increased after silanization only with the sample contains 0.5% additive about 11%. Yield and tensile strength increased only with the samples contain 0.5% and 1.5% additive with the rate of 5% and 7%, respectively. But other samples showed decrease in flexural, yield and tensile strength with the rate of 15%, 13% and 14%, respectively. It has been determined that the effect of silanization process on the conversion degree is quite positive. However, it has been investigated that the same situation is not valid for mechanical properties.

Keywords: photopolymerization,resin,silanization,nanocomposite,3d printer

Conceptual Design Of Drone Pigeonhole Docking And Charging Station

_O3931

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Unmanned aerial vehicles (UAVs) have been entered to our life from defense industry to children toys. In the Industry 4.0 concept, they can play much more important roles, especially in logistic industry. Today's world is looking for new ways on logistics, transportation etc. It is essential to find a more optimal and necessary design to make a difference in many factors. It looks like one of the main new ways will be drones. Thus, they will need to be cared for. This paper includes a conceptual design about drone docking and charging station. The conceptual design that the paper includes aims to create a solution for future problems in the drone sector. The design's name is The Drone Pigeonhole Station (DPS), and it will make new thoughts about drone care. There are specific problems for drones right now, one of them is the battery problem. Drones lose a lot of energy during the takeoff and landing stages to charge their batteries. DPS will be located at certain heights and at certain standards to save fuel (energy) and time. DPS has aimed to solve this problem properly. DPS's height will be specific and optimal. This is because of take-off energy. The main purpose is to prevent unnecessary energy consumption by deciding the optimal height for drones. By calculating drone fly height, the station will be at the optimal height for the drones. In system engineering, conceptual design is the first step to get realize complex systems. In this paper, the conceptual design of the drone pigeonhole docking and charging station (DPS) is introduced. The conceptual design of DPS is demonstrated by using of the functional tree, the functions and product relation matrix, the product tree and the use cases. DPS is a structure like a birdhouse. Birds are flying around it and they eat, rest in the birdhouse. The idea is identical to this. Drones are the birds, and the DPS is the birdhouse. DPS design is made to fulfill the needs of the future drones properly. As we look to the current technology, we are getting closer and closer to the autonomous sky era. As we reach this era, these high-tech drones will be everywhere in the sky working on different missions. With achieving that, another problem pops up. Thanks to the DPS conceptual design, this crucial problem can be solved.

Keywords: unmanned aerial vehicle,drone,docking and charging station,pigeonhole

Image Processing-based Navigation For Unmanned Aerial Vehicles

_O3942

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Unmanned aerial vehicles (UAVs) have been important day by day according to improvements in technology and changes in social life. Although UAVs have played critical roles in cases of current customer demands, one question has always remained the same important in the navigation domain: Where am I? Especially, it is not an easy issue to find the position of a UAV at a strict precision rate. In order to obtain precise position information of UAVs, one of the approaches is by using an image processing-based sensor system in addition to accelerometer sensors and Global Navigation Satellite System (GNSS) based sensors. In this paper, an image processing-based navigation approach is proposed for navigation in UAVs. Interest point selection-based image processing approach is used in the proposed method. The selected interest points and the ground truth landmark locations are all together analyzed; and then, the position estimation using image processing is obtained. Image processing-based position values are fused with the accelerometer sensor and the GNSS-based sensor values. The Kalman Filter-based multi-sensor fusion approach is used in the fusion step of the proposed method. A detailed simulation study is conducted in order to verify the proposed method. A Unity Engine based 3D simulation environment of a football field with different landmarks has been created with various image resolutions and been used to simulate UAV flights and record simulation data. In the simulation study, the proposed method (the fusion of the image processing-based position estimation with the accelerometer sensor and the GNSS-based sensor values) is compared with the baseline method (the fusion of the accelerometer sensor and the GNSS-based sensor values). According to experimental results, a promising method has arisen for navigation applications in UAVs.

Keywords: unmanned aerial vehicle,image processing,features extraction,kalman filter,sensor fusion

Production Of Tungsten Oxide (wo3) As Thin Film Produced By Sol-gel Method Used In Gas Sensors

_O3971

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Today, the production, development and use of electronic materials are of great importance due to the state of technology. Gas sensors, which are one of these electronic materials, have also become increasingly necessary for monitoring toxic and hazardous gases, especially as concerns about the environment and human health have increased. Tungsten oxide (WO_3) is a broadband (~2.6 - 3.0 eV) range semiconductor with excellent conductivity (2×10^{-2} - 9×70^{-7} Ω^{-1} cm^{-1}) and high electron mobility (~12 cm^2 V^{-1} s^{-1}), which is considered a candidate material for gas sensor applications. In this study, WO_3 solution was produced by sol-gel method. Turbidity and acidity/basicity analyses of the obtained solution were performed by turbidimeter and pH meter measurements and as a result of the measurements, a clear, transparent and acidic solution with a pH value of ~2 was obtained. This solution was coated on prepared glass surfaces at different rotation speeds (2000-3000 rpm) and times (30-50 seconds) to produce thin films by spin coating method and the obtained thin films were dried at 220 °C and calcined at 500-600 °C for 2 hours in the light of the data obtained from differential thermal analysis and thermogravimetric analysis (DTA-TGA) analysis. After calcination, surface morphology and particle size, crystal and phase structure, Hall mobility, conductivity and film thickness were carried out by scanning electron microscope (SEM), X-ray diffraction (XRD), Hall Effect and Film Thickness devices respectively. As a result of the phase analysis, a fully crystalline, orthorhombic WO_3 phase desired in gas sensors was obtained. The film thickness was measured to be ~500 nm, and its mobility (~$5.44x10^2$ $cm^2V^{-1}s^{-1}$) and conductivity (~$1.85x10^{-4}$ cm^{-1}) were measured and found to be suitable for use in gas sensors. The WO_3 coatings were then successfully coated on glass and gas measurements were performed against toxic ammonia (NH_3) gas. The response speed against 50 ppm ammonia gas under 250°C temperature was determined as 20 seconds. The results of these gas sensor studies coincide with the electron mobility and conductivity data obtained with the Hall Effect device at the beginning of the study.

Keywords: tungsten oxide (wo3) ,gas sensor ,spin coating ,nanomaterials,electronic materials

Cnn-based Classification Of Recyclable Wastes

_O3972

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The purpose of this study is to offer suggestions for waste management and smart waste classification through deep learning. For this purpose, recyclable waste images are tried to classify by Alexnet, GoogleNet, and Resnet50 models deep learning models. TrashNet dataset is used for experimental study. The TrashNet dataset consists of six categories: paper, glass, metal, garbage, cardboard and plastic with different images. 2527 images that make up the dataset preprocessed and normalized before the training. At the end of the pre-processes, in this study 9970 images were used for classification which is consist of 360 Mb data set. To train the dataset, the old architecture Alexnet and the newer GoogleNet and Resnet50 deep learning architectures is used. Deep learning architectures which are Alexnet, GoogleNet, and Resnet50 used for training the dataset. After the training process, the lowest training performance was AlexNet (75.08%). On the other hand, this rate is higher GoogleNet (94.04%) and ResNet50 (97.59%) models. As a training period, the Resnet50 model takes the most training time, on the other hand, the GoogleNet model provides faster and more certain results. As a result, it's an opportunity to use innovative technologies like deep learning models for waste classification. Smart devices like deep learning tools will enable recycling and waste reduction and contribute to ecological development.

Keywords: cnn,waste classification,deep learning

Poly(vinyl Chloride) (pvc) Coated Impact Resistant Mdf-hdf Composite Production

_O3977

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Medium-density fiberboard (MDF) or high-density fiberboard (HDF) based and painted parts in different colors and patterns are used to close the vehicle body in the cargo and passenger transportation areas of commercial and light commercial vehicles. After applying paint processes in various colors on these MDF or HDF parts, which are used as interior trim parts, the insulation material is coated underneath. Scratching and peeling problems are seen due to the various blows it receives due to the painting process. In addition, due to the cut applied to the outer geometry of the MDF or HDF panel, swelling and blistering problems occur on the panel as a result of water or moisture intake from these areas.

In this study, poly(vinyl chloride) (PVC) which was supplied in coil form, and MDF or HDF panels were combined with the help of a laminating machine. During the production of the composite, polyacrylic (PA) or polyurethane (PU) based glue was used. The semi-finished product, which has been combined with the laminating machine, is cut in accordance with the geometry of the finished product.The laser cutting process was done for the cutting process. The semi-finished product, which was cut by laser, was turned into a finished product by mounting the relevant sound and heat insulation materials. With this study, paint-related problems that affect the life of the product and swelling-blistering problems caused by cutting have been eliminated. Product tests carried out; paint adhesion test device (cross-cut), chemical resistance, scratch test, flammability test, and cleanability tests. Prototypes have passed all tests successfully.

The developed product is a product that has not been produced before in the automotive industry globally. The use of PVC coating instead of paint on the product provides endless color and pattern possibilities, while at the same time it has emerged as a much more long-lasting product due to its high abrasion resistance compared to paint.

Keywords: mdf,hdf,composite,pvc,lamination

System Engineering Approach To An Indoor Navigation System Of Unmanned Aerial Vehicles

_O3985

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Unmanned aerial vehicles (UAVs) have been become important day by day because of advantages in our life use cases. Specially, they can play important role in the industry 4.0 concept such as automation in production plant. System engineering approach is planning the design and production phases. Every system, subsystem, component, or mission of the systems are investigated before project starts and each requirement is set. The investigation of compatibility between systems and products minimizes the risks during the production phases. In this paper, the system engineering approach is discussed in two topics: Mission analysis and functional analysis. The mission analysis investigates how the operation will be continued, which functions do the system needs. The functional analysis investigates what are the needs to execute the functions. Image-based navigation systems have designed to use at places where GNSS is not available. The main problem is choosing the references to measure movement because the positioning needs to a reference point to calculate where the object is in a decided coordinate system. For GNSS applications, these references are satellites, and the movement of object is calculated depending on the satellites. To find a reference, indoor navigation systems use different sensors to detect environment and find visual or perceptible references to calculate previous and instant positions. After customer needs are determined, the system requirements can be set. The requirements can be handled into two parts: "Phases and Modes" and "Operational Specifications". This paper proposes the usage of system engineering approach to the conceptual design of an UAV navigation system which aims to be used in indoor environments. In order to provide autonomous indoor flight, system requirements are set by using system engineering approach. Then step by step, the basic functions that UAV needs to complete operation are specified. The required products are listed as a tree and the relation between products and functions are investigated. Thus, the conceptual design of the UAV indoor navigation system is demonstrated by using of the functional tree, the functions and product relation matrix, the product tree and the use cases. Moreover, the system operational requirements are investigated and the requirement operation phases, modes and use cases are also determined. Thanks to system engineering, all these complex systems are put together systematically and the conceptual design is achieved.

Keywords: unmanned aerial vehicle,indoor navigation,system engineering,functional analysis,mission analysis

High Visibility Cotton T-shirt Production

_O4034

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Textiles with high visibility have become a necessity not only for use in preventing accidents, but also due to the existing legislation in developed countries today. Highly visible materials are essential in protecting pedestrians. In the dark, highly visible clothing increases visibility. It has been observed that high visibility clothing applications reduce road accidents by 40%. An important approach for the production of highly visible textiles is the use of fluorescent dyes. When the literature on dyeing with fluorescent dyes is examined, it is noteworthy that the studies are quite limited. Within the scope of this study, it is aimed to produce t-shirts with high visible by using fluorescent dyes in the production of polo t-shirts, especially in children's wear. Fluorescent dyes are actually a known issue. However, since creating a product group in children's t-shirts in this way is a subject that has not been studied before, the study is considered to be innovative. Within the scope of the study, cotton fabrics were dyed with fluorescent reactive dyes in light (1%) and dark (4%) shades according to the exhaust method and then treated with UV absorbers of 2 different chemical structures to improve the light fastness of dyeing. CIE L*a*b* values and color yield (K/S) values of the fabrics were measured with a spectrophotometer. In addition, washing, rubbing and light fastness tests were performed on the samples. Beyond that, a high-visibility summer polo t-shirt to be used in children's clothing was produced by dyeing under operating conditions under optimum conditions.

Keywords: fluorescent,highly visibility clothing,dye,fastness

Novel Testing Methods For The Examination Of The Mechanical Properties Of Textiles And Flexible Composite Sheets

_O4048

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The research area of our group includes examining the mechanical properties of textiles and textile-reinforced flexible composite sheets, also called membranes. Our research group has been developing novel methods for testing mechanical properties for more than 10 years.

Textiles and membranes undergo far greater deformation due to bending and shear loads than other solid structural materials, making it more difficult to examine their mechanical properties. They bend considerably under their own weight and suffer considerable shearing deformation; they don't keep their shape. As a result of their fibrous structure, they are inhomogeneous and anisotropic. Therefore their properties cannot be examined with the same methods as properties of homogeneous structural materials, such as metals and ceramics.

Recently, we have witnessed an intensive modernization of testing methods, largely due to the dynamic development of digital technology and to processing of huge amounts of data faster and faster. We have also used these possibilities to develop our novel testing methods.

In this paper, we present these novel testing methods developed by us for examining the mechanical properties of textiles and flexible composite sheets based on former related work of the research group. The novelty of the presented testing methods is that we examine mechanical properties with our custom designed and made testing equipment. In the case of apparatuses to perform draping and bending tests, we scan the 3D surface of samples, apply digital image processing, and calculate mechanical properties based on mechanical material models. The apparatus to perform shearing and yarn pull-out tests is a kind of gripper, which can be mounted on a universal material testing machine that provides force and deformation for measurement.

In our lecture, we present our apparatuses to perform draping, bending, shearing, and yarn pull-out tests and methods for determining mechanical properties.

Keywords: textiles,flexible composite sheets,mechanical properties,drape and bending test,shear and yarn pull-out test

Predicting Used Car Prices With Machine Learning Algorithms

_O4061

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In today's world, the use of personal cars has increased considerably. Due to financial concerns, second-hand cars are preferred by users more often than first-hand cars. In the used car market, while sellers are trying to sell their vehicles at the highest price, buyers are looking for a high-quality and high-performance vehicle at a low price. In our country, there is not yet a pricing policy in the sale of second-hand vehicles. This situation sometimes causes users who want to sell their vehicles to set very high prices and increase the market average. In this study, an application has been developed to determine the most appropriate buying-selling price for buyers and sellers. In the application developed with Python, a data set was created by automatically collecting 46,000 pieces of data from websites selling second-hand vehicles. The obtained data set was used to train and test the models created with Artificial Neural Networks (ANN), Random Forest (RF) and Linear Regression algorithms. The highest success rate in the models created was 93% with the Random Forest algorithm. Thanks to the developed application, a person who wants to sell his vehicle can determine the most suitable price for his vehicle by entering information such as brand, model, engine volume and mileage. Likewise, a person who wants to buy a vehicle will know how much of an estimated budget he should allocate by entering the information in question.

Keywords: machine learning,random forest,data scraping,regression,used car market

Online Alışveriş Siteleri Üzerinden Duygu Analizi Ile Tüketici Güven Endeksi Oluşturma

_O4066

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Veri, bir veya birden fazla bilgiden oluşan kümedir. Bilgi çağının bize kazandırdığı yazılı, sözlü, görsel ya da haraketli verilerin her biri çok önem taşımaktadır. Öyle ki bu veriler sektörde satılan ürün veya hizmetin kendisinden bile daha önemli hale gelmiştir. Bu yüzdendir ki dünyanın her yerinde insanların ortak gayesi veri toplamak ve bu verilerden anlamlı bilgi çıkarmaktır. Günümüzde çok sık kullanılan online alışveriş platformları işlenebilecek verileri toplamak için altın değerindedir. Bu platformlar üzerinden web kazıma araçları kullanılarak online alışveriş sitelerindeki tüketici yorum verileri elde edilebilmektedir. Yorum, makale, fikir gibi doğal dil verilerinden içeriğe yönelik tutumu ölçme işlemine duygu analizi denir. Doğal dil verilerinin işlenmesinde dilin morfolojik ve semantik yapısından ötürü her dilin farklı kökenlere sahip olması nedeniyle doğal dil verilerinin işlenme süreci diğer verilerin işlenme sürecine nazaran daha zordur. Konuyla ilgili yapılan literatür araştırmasında Avrupa ülkelerinde doğal dil işleme alanındaki çalışmalar hızla ilerlerken Asya, Afrika ve Orta Doğu ülkelerinde bu alanla ilgili çalışmaların sayısı, bu bölgelerde konuşulan dillerin yapı bakımından analizlenmesinin zor olması nedeniyle diğer bölgelere oranla geride kalmıştır. Bu nedenle Türkçe verilerle doğal dil işleme konusunun ele alınması büyük önem arz etmektedir. Bu arz neticesinde oluşturulan bu makalede, tüketicilerin satıcılar hakkında satılan ürünler üzerinden yorumlar yaptığı popüler online alışveriş siteleri kullanılarak duygu analizi ile satıcıların kullanıcı güven endekslerinin oluşturulması amaçlanmıştır. Yapılan araştırmanın özgünlüğü, ironik tüketici yorumlarını tespit ederek daha güvenilir bir kullanıcı güven endeksi ortaya koymasından gelmektedir. Araştırmanın gerçekleştirilebilmesi için LSTM, GRU gibi Yinelemeli Sinir Ağları(RNN) mimarilerinden yararlanılarak oluşturulan modeller ile tüketici yorumları pozitif, negatif ve nötr olmak üzere sınıflandırılarak kullanıcı güven endeksi elde edilmiştir.

Keywords: veri,web kazıma araçları,duygu analizi,kullanıcı güven endeksi,yinelemeli sinir ağları

A Hybrid Rice Leaf Diseases Detection And Classification Approach

_O4100

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Rice is an important alternative food source in Turkey as well as all over the world. Trakya region and especially the İpsala district in Edirne province hold first place in paddy production in Turkey. If the diseases that start in rice or paddy leaves are not intervened in time, the disease spreads and as a result, yield loss is inevitable. In order to prevent this problem and to use it in smart agriculture technology, deep learning-based research was carried out with a public rice leaf database. A database with a total of 120 images and 3 diseases was first augmented, and then an automatic system was developed that can perform both classification and detection, taking into account the boxes that the detection algorithm has low confidence in with the Yolo architecture. With the hybrid method, in which 10 test images per disease were used, 8 brown spot, 10 leaf smut, and 10 bacterial leaf blight diseases were classified, and an accuracy rate of 93.33 % was achieved in total. Moreover, thanks to the YOLO detector added to the deep learning-based classification output, false-positive predictions were eliminated by looking at the reliability of the detected boxes. In addition, unlike the classification studies in the literature, this hybrid deep learning-based approach also detects the regions where diseases are present on the leaves. In future work, we plan to test and optimize our algorithm on a large rice leaf database.

Keywords: deep learning,smart agriculture,rice,paddy leaf diseases,transfer learning

Design Of Naturally Friendly Hybrid Yarns Containing Hemp Fiber For Garment Production

_O4109

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Clothing is a basic human requirement, and the clothing industry provides goods to meet this need. However, these vital industries cause considerable social and environmental problems all the way through the production of clothes, from the production of fibers through spinning and manufacturing of fabrics to dyeing and finishing. As a result, sustainability has been a hot topic in the textile and clothing industries, and clothing companies ought to design more sustainable products. Eco-design is one of the three main ways that apparel producers are promoting environmental sustainability.Currently, cotton fibers are the key raw material for the garment industry and account for 40% of all clothing production. However, it is one of the most chemically dependent crops and requires more natural resources (such as land, water, and energy) than other textile fibers. There is a desire for sustainable clothing manufacturing that uses fewer natural resources and exposes individuals to fewer harmful chemicals as a result of growing awareness of environmental pollution and human health in the clothing manufacturing industry, as well as growing clothing demand, environmental protection constraints, raw material resource requirements, and ecological effects.

Hemp fiber, one of the greenest textile plants on the planet, is the alternative fiber highlighted in this study and has a number of benefits for the textile and apparel industries. There are some studies in the literature on hemp concerning its harvesting, extraction process, and its use in composites. Despite a thorough review of the literature, we have been unable to find a specific study analyzing or producing organic cotton-hemp-viscose blended hybrid yarns.

This research aims to develop hemp-containing green yarns as an alternative to the 100% cotton yarn used in the apparel industry in order to address the aforementioned problems. To achieve this, traditional ring, core-spun, and dual-core spun yarns have been created using a 40/20/40 blend of organic cotton, hemp, and viscose fibers. For the first time, a statistical analytic method has been used to compare yarn’s physical properties such as unevenness, yarn imperfections, and hairiness.

Our study results revealed that sheath fiber type has a great influence on the physical properties of the yarn. Generally, the use of hemp fibers in the yarn structure slightly has worsened the yarn physical properties. But, the physical characteristics of 40/20/40 OCHVS blended yarns have been adequate. As a result, for more sustainable production, these blended yarns can be utilized to make garments instead of utilizing cotton alone

Keywords: sustainability ,hemp ,viscose ,organic cotton,hybrid yarns

A Sensory Substitution Device With A Sensorized Glove For Proprioceptive Feedback In Motor Prosthesis: Preliminary Findings

_O4124

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Motorized prostheses provide functional improvements for amputees, but they lack tactile and proprioceptive senses. Among the techniques proposed for sensory feedback implementation in these devices, sensory substitution is popular since it's noninvasive and easy to implement. Sensory substitution proposes to use an intact sensory organ to deliver information related to a missing sensory organ. We proposed a tactile sensory substitution device for proprioceptive feedback. It consists of a sensorized glove, a microcontroller unit and three linear servo motors. The sensorized glove was equipped with sensors for acquiring positions of first three fingers. The microcontroller unit controls the motors according to measurements from the sensors. The motors were equipped with tactile contactors which intended the skin ~2mm when mounted on the forearm. The contactors moved in proximo-distal axis depending on the position of the fingers. The device was tested on 10 healthy subjects (males/females:5/5, age:21.8±1.6). Subjects were looking on a screen and listened to white noise. The motors were mounted on their left forearm and covered with a box. 5 sessions with one week interval were performed. Subjects guessed the hand postures from motor positions. Each hand posture was tested 10 times. In the first 4 sessions, the glove and the microcontroller unit were not used, and the motors were controlled by a custom program. In the 5th session, a researcher wore the glove on his left hand, and the motors were controlled by the microcontroller unit based on the hand movements performed by the researcher who was instructed with which hand posture to perform on a second screen. The experiments were repeated for volar and dorsal montage of the motors. Confusion matrices were built and analyzed. Accuracy, precision, recall and specificity were tested with a linear mixed-effects model. Subjects always identified each posture better than the chance level but mistook some movements. Session, skin location and posture significantly affected performance ($p<0.05$). Scores increased until the third session and then plateaued above 0.8. Performance of subjects were significantly better if the motors were mounted on volar skin rather than dorsal skin. Subjects also performed better if the posture includes one finger movement. Confusion matrices for the 4th and 5th sessions were similar. Therefore, subjects predicted the researcher's hand posture as good as they predicted the postures in an idealized scenario. In conclusion, the proposed sensory substitution device can be used to provide proprioceptive feedback from a prosthetic hand.

Keywords: prosthesis,somatosensory,sensory substitution,proprioception,touch

Lubrication Properties Of Biodiesel Fuels Produced From Different Feedstocks

_O4134

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One of the most important causes of environmental problems, which become more critical each year, is transportation sector and its share in total pollution is gradually increasing. With the accelerating effect of this situation, intensive studies are carried out on the electrification of automotive industry. However, this should be underlined that diesel engines will continue to be used in medium and heavy-duty vehicles for a long time. In addition, diesel engine usage in seaway and railway transportation should also be taken into consideration. Thus, studies on reducing exhaust emissions especially from diesel engines should be continued. SO_2 (sulphur dioxide) released from diesel vehicles combines with water vapour in the atmosphere and forms H_2SO_4 (sulphuric acid) which cause acid rains having many environmental problems. In order to alleviate this environmental problem, the sulphur content of diesel fuel was dramatically reduced in two stages and the fuel was first technically named low-sulphur diesel fuel (LSD, known as euro diesel in fuel market) and then ultra-low-sulphur diesel fuel (ULSD). However, it should be considered that sulphur, which causes harmful exhaust emissions, is a very good lubricant and so significantly improves the lubrication quality of the fuel. As an inevitable result, lubricity of ULSD is significantly less compared to diesel fuel with high sulphur content. This should be strongly emphasized that diesel fuel pump, which is one of the most important parts of diesel fuel injection system, generally does not have a separate lubrication system and it is lubricated with diesel fuel itself. Since the lubrication of ULSD fuel is not sufficient, it may cause serious wear problems in diesel fuel pumps. In addition to many important advantages, biodiesel has a superior lubrication feature than petro-diesel. Nevertheless, this should be stressed that the lubricating quality of biodiesel is highly dependent on the feedstock from which it is produced. For example, fatty acid chain length and saturation level increase the lubrication quality. In this experimental study, 11 different biodiesel fuels of different origins were produced and then their lubricating properties were compared. In order to determine the lubricity capabilities of the produced biodiesel fuels, High Frequency Reciprocating Rig (HFRR) Method (ASTM D6079-11) was used. According to the HFRR test results, it was concluded that sunflower oil biodiesel, palm oil biodiesel and rapeseed oil biodiesel had the best lubricating properties whereas soybean oil biodiesel, waste frying oil biodiesel and algae oil biodiesel had the worst lubricity.

Keywords: biodiesel,feedstock,lubrication,wear,sulphur content

Investigation Of Light Crude Oil Removal Using Peanut Shell Waste

_O4145

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Damage to aquatic ecosystems is a worldwide problem caused by oil spills. However, cleaning up oil spills can be time consuming and costly. Researchers' interest in green biomass-derived materials has increased significantly in recent years because these materials offer an attractive combination of low cost, nontoxicity, accessibility, and environmental friendliness. In this study, peanut shell waste was used to investigate the efficient and environmentally friendly methods for treating oil spills. Structural and morphological analyses of the peanut shells show a porous that is advantageous for removing oil spills from seawater. Kinetic analysis was also used to evaluate the effectiveness of the adsorption process. It was found that peanut shells have high adsorption capacity, indicating that they can be used as an effective adsorbent in the removal of oil spills.

Keywords: biomass,peanut shells,oil spill,adsorption,kinetics

A Machine Learning Approach For Prediction Of Syngas Composition From Gasification Of Food Waste In Downdraft Gasifier

_O4147

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Food waste, which is considered a typical form of municipal biomass waste, has become an urgent problem due to its high generation rate and large volume. For this reason, it is important to explore efficient food waste treatment methods.

Gasification is a promising method for food waste treatment because it uses dry food waste as fuel for the gasification process, which converts the organic matter content of food waste into usable syngas at high temperatures. This method could be used for food treatment in the future.

In this study, a novel artificial neural network model was used as a deep learning model with a 6-18-1 tangent sigmoid architecture to predict hydrogen production from food waste gasification in a downdraft gasifier. Compared to commercial simulators that require significant modeling effort and test runs, this model was minimally specific. As a result of this study, the developed machine learning approach demonstrated that food waste can be rapidly converted to hydrogen, the energy source of the future, with high efficiency.

Keywords: hydrogen,food waste,downdraft gasifier,deep learning,aspen plus

Investigation Of Soil Parameters And Soil Improvement Of A Church In Istanbul: A Case Study

_O4163

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This study is carried out in order to determine the geological and geotechnical characteristics of the ground of a church located in Istanbul province. In the geological survey, the distribution of the samples selected from the predicted levels is investigated by conducting foundation drilling studies, in-situ tests are carried out, soil mechanics tests are performed on the undisturbed samples, and soil engineering properties of the ground are determined. The geophysical survey determines the bedding status, layer thickness and depths, elastic dynamic soil parameters, and seismicity by applying geophysical seismic refraction methods. In accordance with all these studies, the geotechnical properties of the ground are determined. Foundation design studies are carried out. The field definitions, soil survey drilling, and laboratory tests carried out within the scope of the study are carried out in accordance with the technical specifications of the soil investigation services in Turkey and the BS 5930 "Code of Practice for Site Investigations" standards. With the scope of results, the necessities of the foundation area are determined. The paper includes a literature review on the Soil improvement methods. The most suitable soil improvement for the soil characteristics is determined. Foundation design analysis is made for the improved soil properties to show that the enhanced foundation system is safe.

Keywords: soil improvement,soil mechanics,foundation engineering,micropile

Optİk İŞaret Tanima TeknİklerİyIe Sinav KaĞitlarinin DeĞerlendİrİlmesİ

_O4184

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Optik İşaret Tanıma (OIT), basılı formlardaki kareler ve baloncuk alanları gibi işaretli alanlardan amaçlanan verilerin elektronik olarak çıkarılması işlemidir. Bu çalışmada, eğitim öğretim sürecinde sınavların daha hızlı değerlendirilmesi için bilgisayar tabanlı güvenilir ve geliştirmeye açık bir uygulama geliştirilmiştir. Geliştirilen uygulama kullanılarak cevap kağıtları taranmış ve öğrenci cevapları değerlendirilmiştir. Ayrıca şimdiye kadar literatürde yer edinmiş benzer çalışmalar incelenmiş ve karşılaştırılmıştır. Buna ek olarak sınavda kaydırma riski bulunan öğrencilerin tespiti yapılarak incelenmesi için sistemde bir uyarı üretilmesi sağlanmıştır. Düzgün ve kurallarına uygun olarak doldurulmuş sınav kağıtlarının okunması ve değerlendirilmesinde %100 başarıya ulaşılırken, bazı sınav kağıtlarının okunmasında ise cevap kağıtlarının doldurulmasından kaynaklı hatalı sonuçlar elde edilmiştir.

Keywords: image processing,optical mark reader,opencv

Latest Tendencies In Denim: Aspirations & Challenges Of A Sustainable Industry - Design, Fitting & Finishing

_O4196

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The denim industry, known as one of the most polluting industries of the textile industry, is challenging the Gen Z consumers' demand for transparency. Denim mills are making considerable efforts to minimise their impact on climate change by inventing new, sustainable materials made from recycled fibres. Designers are choosing environmentally friendly finishing and creating more smooth designs. Denim brands are taking steps to reduce the water used during the production and are about to make the finishing processes more environmentally friendly. Manufacturers strive to handle the pre-production processes more carefully to save material; the whole denim industry is trying to incorporate sustainability into all the parts of the production process. All the denim supply chain actors strive to organise design and manufacturing processes according to the new paradigm shift using the most innovative technologies and techniques and involving 4.0 industry solutions and Artificial Intelligence. The article introduces innovations of the global denim industry in the processes mentioned and summarises critical matters impacting the current trends in designing and fitting.

Keywords: fashion engineering,sustainability in denim,denim fitting & finishing,denim manufacturing,denim design

Spice Models Of Voltage-controlled Cubic Memristors

_O4198

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The memristor has been first introduced by Dr. Leon Chua in 1971. According to his suggestion, in addition to the resistor, capacitor, and inductor, there must be a passive circuit element that connects the flux and the charge. Dr. Chua and his student Kang extended the concept of memristor and introduced the concept of memristive systems in their work in 1976. The memristive system behavior of TiO_2 thin films is shown by a research team which is led by Dr. Stanley Williams in 2008. After the publication of the memristive system behavior of TiO_2 thin films, memristors have become a hot research area. Memristors and memristive systems are energy-consuming circuit elements and the value of the memristor is named memristance. A pinched hysteresis loop is seen in the current-voltage curve of memristors. This hysteresis passes through the origin and when it is excited by the high-frequency signals, the memristor begins to show LTI (Linear Time-Invariant) resistor-like behavior.

Although it is commercially available, memristors or memristive systems are still not easy to be physically purchased and used by researchers. Therefore, memristor models are very important and various memristor models have taken their place in the literature. The well-known of these models is the TiO_2 memristor model. This model is current dependent and the ions in the memristor move with the same velocity at every point of the memristor's physical area. For this reason, this model is called the linear ion drift memristor model. There are also various memristor models which model the nonlinear ion drift memristors. Some of them are cubic memristor models. Muthuswamy proposed the well-known cubic memristor model to model the cubic behavior of the Chua's diode. One of the voltage-controlled cubic memristor models is proposed by Liu et al.

SPICE (Simulation Program for Integrated Circuits Emphasis) based simulators are the most familiar and widely used circuit simulators. LTspice is one of the widely used Spice simulator types because it is free of charge.

Best of our knowledge no one has proposed the Spice model of the voltage-controlled cubic memristors. In this study, two of the voltage-controlled cubic memristor models are created and proposed for the LTspice simulator. The models which are created are those proposed by Muthuswamy and Liu et al. The simulation results of the models have shown that the models are working as expected.

Keywords: memristor,memristive systems,spice modeling,cubic memristor

Evaluation Of Removal Methods Of Perfluorinated Compounds From Water

_O4199

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Perfluorinated compounds called perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), are used in fire extinguishing foam, impregnation agents, food packaging, household cleaners, cosmetics, teflon manufacturing, electronic products manufacturing and telecommunications and many other areas, have a wide spread in aquatic environments. They have recently attracted attention due to the uncertainty of the physicochemical properties, transformations and transports of these substances in groundwater causing limited studies on their removal from the aquatic environment. Studies show that these components can bioaccumulate and cause cancer, liver damage and increased cholesterol levels in humans, as well as create health problems for other living things. Their physicochemical properties show that these substances are water-soluble and permanent in the environment and are not volatile. Therefore, the treatment of these substances by conventional methods does not provide an efficient removal. In order to remove these substances from water, advanced treatment technologies that provide more efficient treatment are studied instead of traditional treatment methods. In the present study, more cost-effective ex-situ treatment technologies and in-situ treatment technologies applied for the removal of perfluorinated compounds were examined. In the studies, sorption, biomaterials and molecularly imprinted polymers, filtration and sonochemical methods are frequently applied as ex-situ treatment techniques. Sorption, biomaterials and molecularly imprinted polymers and filtration techniques provide more than 99% removal, but the sonochemical method provides up to 44% removal of perfluorinated compounds in water. Bioremediation, chemical oxidation, chemical reduction and treatment chain are used as in-situ treatment techniques, while bioremediation provides 30% removal and other methods over 90% removal. In addition, a much longer time is needed to achieve biological treatment. When all studies are evaluated, it is recommended to apply sorption (active carbon) and filtration (reverse osmosis) technologies for the removal of perfluorinated compounds from groundwater.

Keywords: pfos,pfoa,reverse osmosis,sorption ,water contamination

Energy Management Model For Electric Vehicle Charging Stations With Photovoltaic System In Power Network Considering Power Line Losses

_O4200

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The transportation sector accounts for a significant portion of the global total carbon emissions. The resulting greenhouse gases cause the atmosphere to warm up by keeping the heat in the atmosphere, and as a result, it causes the problem of global warming and climate change. In this respect, electrification of vehicles for a clean environment is among the most important issues on the agenda, and it is seen that the number of electric vehicles (EVs) is increasing day by day. But the extreme increased number of EVs will create a load on the electricity grid. As a result of this, additional losses will occur due to the charging power flow to feed the EV load within an electric power system. In this context, for an efficient power system operation, cable losses should be taken into account while performing the charge management of EVs. In addition, if the energy supplied for EVs is provided from conventional energy sources, then carbon emissions will increase. For this reason, EVs must be supported with a renewable energy source. In this study, the optimum charge management model of EVs in EV parking lots with photovoltaic (PV) system is presented, taking into account cable losses in a power system. Besides, various case studies are carried out to prove the effectiveness of the proposed framework in the paper. The results obtained from the study show the effectiveness of the presented model.

Keywords: electric vehicle,electric vehicle charging station,photovoltaic system,power line losses,optimal energy management

MİNİ Cnc Lazer Yazici Tasarimi

_O4201

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Bu çalışmamızda büro tipi kullanımı basit mini CNC lazer yazıcı sistemi kurulmuş ve çalıştırılmıştır. Tasarım aşamasında Solidworks programı kullanılmış olup tasarım esnasında ürünler montajlanmıştır.Sistemin gövdesi, ara bağlantı elemanları ve makine boyutu sistemin sağlıklı çalışmasına engel olmayacak şekilde tasarlanmış, diğer parametreler incelenmiş ve en uygun malzeme seçimi yapılmıştır. Polietilen malzeme kullanılarak torna, CNC, matkap gibi makinelerde işlenen parçalarımız sisteme uygun hale getirilmiştir. Bu esnada birçok elektronik ürünlerin özellikleri, çalışma prensipleri, bağlantı şemaları, yazılım programlama gibi teknik detaylar araştırılmıştır. CNC Lazer Yazıcı için Grbl yazılımı Arduino Uno kartına aktarıldıktan sonra makine ile bağlantı kurulmuştur. LaserGrbl ve Ugs programları ile sistem çalıştırılmıştır. İlk kullandığımız program Universal G-code Sender (ugs platform), lazeri ilk çalıştırdığımızdan itibaren gerek step motorların yön tayinleri olsun gerekse sıfırlama ve motorların adım sayıları olsun ilk kullanım için gayet kolay ve uygulamada başarılı bir program olmuştur. Ugs programında ilk kalibrasyon işlemleri yapıldıktan sonra LaserGrbl programına geçilmiştir. Programlar arasındaki geçişlerde yapılan ön ayarlar iki programda da otomatik kaydedilebilmektedir. Ugs programında yapılan ilk kalibrasyon ve motor step adım sayıları LaserGrbl programına geçildiğinde aynı ayarlar ile devam edilmektedir. LaserGrbl programı ile png.svg,g-cod vb. uzantılarda resim ve 2 boyutlu çizimlerin kullanımı gayet kolay olduğu görülmektedir. Gerekli boyut ve güç parametrelerini ayarlayarak başarılı kazıma ve kesme işlemleri yapmak mümkün hale gelmektedir. Makinemizde bazı uygulamalar gerçekleştirilip yazdırma sonrası makine ve basım üzerindeki sorunlar üzerinde çalışılmış ve uygun metotlar kullanılarak başarılı bir şekilde kullanılmıştır.

Keywords: cnc,lazer,lazergrbl,ugs,arduino

Using Wavelet Transform And Artificial Neural Networks For The Estimation Of Surface Roughness

_O4229

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In this study, in order to guess the surface roughness (Ra) on milling of Ti-6Al-4V it is aimed to design different Artificial Neural Networks (ANN). In the experiment which was executed by using T16 orthogonal series; cutting speed, advancing rate and cooling liquid pressure value is defined in four different levels. During the experiment, 10752 samples of vibration and force in x-axis(Fx) were taken from the sensors, then these samples were divided into 21 segments which contains 512 samples each. Haar wavelet was applied to each segment, and each segment were decomposed at level five. For vibration signals; CD1, CD2 and CD3 coefficients, for the Fx force signals; CD4, CD5 and CA5 coefficients were calculated. 5 different ANN, which take the cutting speed and coefficients extracted by wavelet, as input and try to guess the Ra value, were created by using SPSS Clementine 11.1 packaged software. The neural network which was created by using "Quick" method, had a success rate of 84,7% and it was above the four others.

Keywords: ti-6al-4v ,surface roughness,artificial neural network,wavelet transform

Wireless Model Vehicle Control With Surface Electromyography (semg)

_O4234

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In this study, it is aimed to remote control the model vehicle by using the data of Myo armband (sEMG), one of the wearable technologies.

In recent years, the control of prostheses, robots and other devices has been provided by integrating sEMG into wearable technologies and transmitting this data wirelessly. Thanks to this technology, small muscle movements can be read and the control function can be performed naturally and easily. The movements corresponding to the sEMG values read from our arm muscle are classified by the Myo Armband. Myo Armband is used for many different purposes such as smart home systems, drone control, television and music systems. Unlike conventional EMG devices, it can be used comfortably without affecting the portability and quality of life of the person. When these 5 different movements defined in the device are detected, the model is sent to the vehicle via bluetooth. With the motion data coming to the microcontroller (arduino) on the vehicle, the vehicle will continue to move in the determined direction and direction. Our work consists of building the model vehicle, writing the microcontroller codes and sending the sEMG data and controlling the system correctly.

As a result, an interface software that provides control of the model vehicle was developed and the forward-backward/right-left movement of this model vehicle was realized with the sEMG signals measured by the armband.

Keywords: surface electromyography,digital signal processing,wearable technologies,remote control

Determination Of Biogas Energy Potential Of Some Agricultural And Animal Wastes In Thrace Region

_O4235

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Technological developments, increasing population and industrialization cannot meet the increasing demand for energy, which is needed in production, consumption and every moment of daily life. Thus renewable energy sources, which are alternative energy sources, are preferred for a green, sustainable environment on a global scale. Renewable energy sources are tidal, wave, hydrogen, hydroelectric, solar, wind, geothermal and biomass energy. Biomass energy, which is one of the renewable energy sources; is a source of energy obtained from substances of vegetable and animal origin. Bioethanol, biogas, biodiesel, wood briquettes and many fuel types can be obtained from biomass.

The main purpose of this study is to determine the biogas energy potential of animal and some vegetable wastes on the basis of the Thrace region, by using TUIK 2021 data. Thus, energy maps will be created based on these data. According to TUIK data, the number of animals was determined as 696009 units for cattle, 2045955 units for sheep and goats and 8461882 units for poultry in the Thrace Region in 2021. Based on these values, the energy equivalent of biogas that can be produced from animal manure has been calculated as approximately 3611 TJ/year.

Keywords: agricultural waste,animal waste,renewable energy,biogas,map

An Experimental Setup To Test The Simon Effect With The Sense Of Touch

_O4276

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The Simon effect refers to the difference between the accuracy and/or duration of people's responses to certain visual stimuli in a psychophysical test and under different conditions. The location of the stimulus and the response associated with this stimulus directly affect the mental load and thus the duration and accuracy of the response. Therefore, tests to observe the Simon effect measure cognitive control skills. Cognitive control is the ability of the response to change harmoniously while performing desired tasks. In this test, there are two different stimuli for monitoring cognitive control and two positions in which these stimuli can be displayed. Thus, there are four different conditions to react to. However, even if the position of the stimulus changes, the location of the button that will give the response related to the stimulus doesn't change. Therefore, four conditions are divided as compatible and incompatible conditions. In our study, the Simon effect refers to the time difference between compatible and incompatible conditions. We aimed to prepare an experimental setup in which the Simon effect can be tested with the sense of touch. Thus, it'll be possible to determine if the Simon effect can also be observed with the sense of touch. In the designed experimental setup, vibration motors were fixed on two gloves to create tactile stimuli. Two different vibration modes (continuous and intermittent) are associated with two different buttons. Subjects are expected to wear gloves and keep their hands on the right and left buttons. Subjects will be asked to press the button associated with the vibration mode applied, no matter which hand the vibration is applied on. The system is controlled with an Arduino development card. A 40-trial pilot experiment was done in one subject. She responded correctly in 38 trials and the average response time was 397.6ms. The response accuracy was 100% and the average response time was 380,3ms in the compatible conditions. On the other hand, the accuracy was 85.7% and the average response time was 429.3ms in the incompatible conditions. Therefore, the observed Simon effect was -49ms in favor of compatible conditions. The direction of the effect is consistent with the literature on visual stimuli, but the effect size seems to be smaller. Nevertheless, this is a pilot experiment performed on only one subject. We plan further experiments to gather enough data to reveal if the Simon effect is observed systematically.

Keywords: touch,simon effect,psychophysics,cognitive load

Analysis Of The Modal Frequency Parameters Of A Domestic Production Unmanned Combat Aerial Vehicle With Ansys Program

_O4277

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Bayraktar TB2 (Tactics Block 2) armed unmanned aerial vehicle is considered one of the greatest achievements of the Turkish defense and aerospace industry with its unique design and technical parameters. It is accepted in the middle class armed unmanned aerial vehicle class with its dimensions and the amount of useful load it can carry. Baykar Bayraktar TB2 (Tactical Block 2) is a domestically armed unmanned aerial vehicle produced by Turkey-based Baykar Defense. In the fully loaded flight test on 14 June 2014, 8240 m. At the flight test carried out on 5-6 August, it reached a height of 5500 m with full load. It flew 4,040 km at an altitude of 24 hours and 34 minutes. As of March 2022, it has been exported to 19 countries. The solid model was used ready-made in 1:1 scale. All of the parameters were obtained using the Rotax 912 engine with two blades used in the design of the first models. The entire infrastructure of Baykar Bayraktar TB2, designed by Baykar Defense R&D team in accordance with military and civil aviation standards, has been produced in Turkey. The system started to be used by the Turkish Armed Forces in 2015. The total flight time in many wars and operations where Bayraktar TB2 is used has exceeded 400,000 hours. As a result, Bayraktar TB2 became the longest-serving Turkish-made aircraft in the sky. Modal analysis is the study of dynamic properties of systems under vibration. Accelerometers help calculate the vibration of the system when attached to a shaker. Modal analysis on aircraft emerges as the analysis of the vibration period and modes of the wind on aircraft. Analyzing the solid model according to the correct design criteria in the analysis program, making the correct simplifications, obtaining the mesh network properly and successfully, directly affect the accuracy of the modal analysis results.

Keywords: defense and aerospace technologies,unmanned combat aerial vehicle (ucav),bayraktar tb2,mechanical engineering

A Case Study On Evaluation Of Hazardous Substances And Microplastics In Textile Industry Wastewaters

_O4278

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In the textile industry, which has an important place in many sub-industries such as fashion and technical textile (medical, construction, environment, etc.) in order to meet the end customer requirements and the increasing world population, besides natural fiber such as cotton, wool and silk, many different chemical fiber derived from petroleum has been developed. Textile wet dyeing, printing and finishing processes are at the top of the processes in which physical properties are given to yarn, fabric and products offered to the market, starting from fiber, in which dyestuffs and chemicals with very different properties are used. This industry, where water and chemicals are used extensively in wet processes, is among the top in the world in terms of creating environmental pollution and using natural resources As far as latest devolopments are promising on sustainable production, textile value chain is very complicated the development and increasing production speed in production technologies also puts an intense pressure on water resources, which are the most fundamental resource of our lives. Permanent environmental pollution as a result of production activities is caused by organic components that cannot be biodegraded in nature. This pollution, released to nature by wastewater, solid waste and emissions, joins the food chain by mixing with soil, water and air. Studies conducted in the field of industrial micro-pollutants are determinant in legislation standard wastewater discharge limits, which have been reduced considerably in recent years.

In this study, the effects of pollution and microplastic relase caused by textile chemicals hazardous substances, synthetic fibers and the effects of these parameters in terms of wastewater recovery criteria were investigated. The study, a literature review of hazardous materials from textile dyeing&finishing processes, microplastic emission sources originating from fibers and advanced treatment applications for the recovery of textile wastewater was conducted. Characterization studies were carried out for the detection of hazardous substances and microplastic pollution in the raw and treated wastewaters of polyester blended woven fabric production, and the results obtained were compared with the literature. Finally, wastewater characterization results were evaluated on the basis of textile wastewater recovery criteria and technologies.

Keywords: hazardous substances,microplastics,wastewater recovery and reuse,environmental pollution

Hydrodynamic Analysis Of Cavitating Flow Past A High Speed Torpedo

_O4285

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The hydrodynamic analyses of cavitating flows past high speed torpedos are of great interest for military engineering applications. This present study investigates the flow around ORKA, high speed and lightwheight torpedo, which is manufactured by Roketsan, Turkey. This examined torpedo has a diameter of 324 mm and a length of 2.8 m which can reach speeds of 90 kilometres per hour. This high speed of the submerged torpedo reduces the static pressure around the body and thus results in cavitation. In the current study, the cavitating bubble formations around this torpedo are simulated by means of computational fluid dynamics technique. The governing equations are the Navier-Stokes equations coupled with the SST k-ω turbulence model. Schnerr-Sauer cavitation model of the Ansys/Fluent software is also used within the multiphase mixture model. In addition to the determining cavitating regions in the flow, the lift and drag forces acting on the torpedo are also calculated. For this purpose, the flow around the torpedo is simulated at various angles of attack from 0° to 12°. Numerical results reveal that the cavitating bubbles appear in the vicinity of the torpedo close to its leading edge. It is also observed that these bubble formations move towards the trailing edge of the torpedo with an increase in the angle of attack. Furthermore, both the lift and drag forces acting on the surface of the torpedo are reported for the specified range of the angle of attack. It has been concluded that the present study may be beneficial for the production and improvements of such torpedos in conjunction with appropriate supplementary experimental investigations.

Keywords: cavitating flow,hydrodynamic,multiphase flow,numerical simulation,torpedo

Upgrading Biodiesel Obtained From Leather Tanning Waste With Using Crab Shell-based Catalyst

_O4335

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In this study, the objective is to expand the use of waste resources for biodiesel production arising from the increasing need for renewable energy use in the world. Leather tanning waste with high-fat content and crab-shell catalyst with Ca-rich content were used as catalysts for biodiesel production. It was aimed to examine the catalyst loading, reaction time, and the molar ratio of ethanol to LTW factors by Multiple Linear Regression to obtain the highest yield of biodiesel, which also can be called fatty acid ethyl esters in this study, and to observe which factors were more effective on this yield. Multiple regression method is a suitable method to examine the relationship of multiple independent variables with the dependent variable.

Keywords: renewable energy,categorical multiple regression analysis,crab shell catalyst,biodiesel production

An Optimization Model Capable Of Considering Dynamic Space For Pandemic

_O4360

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During COVID19, people have confronted different forms of social isolation, and experienced the significant difficulties in their social life. So, this paper aims at helping organizations to manage large events such as social-gathering by taking safely people the streets as soon as possible in the case of a new outbreak. In this regard, we introduce a novel optimization model, aiming at proposing safe as well as efficient utilization of the gathering place. The proposed model is the first optimization model capable of considering dynamic space (where individuals freely move). Later, an algorithm is proposed to further decrease the needed computational time while obtaining the optimal solution.

Keywords: dynamic space,optimization model,social distancing

Investigation Of Thermal Stability Of Carboxymethyl Cellulose/polyethylene Glycol/citric Acid Hydrogels

_O4378

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Biopolymers with different chemical compositions have been studied with respect to their application in various scientific and technical fields. In this context, carboxymethylcellulose (CMC), a plant-derived biopolymer, is of particular interest. The combination of CMC and polyethylene glycol (PEG) has been shown to be a good absorbent material and is of great interest to the scientific community. This study is an attempt to evaluate the thermal stability of CMC/PEG/citric acid (CA) superabsorbent hydrogels.

The results provide a basis for the use of CMC/PEG/CA hydrogels as potential biomaterials. The influence of the degree of swelling on the thermal stability of the CMC/PEG/CA hydrogel was also investigated. From the experimental results, the CMC/PEG/CA hydrogels exhibit high absorption capacity and good thermal stability.

Keywords: carboxymethylcellulose,polyethylene glycol,hydrogel,thermal stability

Industrial Energy Efficiency Tecnologies And Management Applications In Turkey

_O4384

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The demand for energy is increasing with the economic development due to urbanization, industrialization and population growth. The solution to meeting the increasing energy demand in line with the low-cost, sustainable environment target is based on renewable energy investments. The industrial sector uses more energy than any other end-use sector and consumes about 37% of the world's total supplied energy. It is an important sector that should be addressed in energy saving studies, as industries have high energy saving potential and most of the energy they consume is commercial energy. Industrial sector uses 24% of primary energy and 47% of electricity in Turkey.

Efforts to ensure sustainability in energy, reduce foreign dependency and combat climate change require efficient use of energy and energy resources in Turkey as well as in the rest of the world. Implementing environmentally friendly policies and methods in energy production/consumption and creating resource alternatives, and increasing efficiency by avoiding waste has been a policy that has been emphasized in Turkey. Energy efficient technologies in the industry is to use energy with high efficiency and savings without sacrificing production quality. The application of benchmarking methodologies to determine the efficiency of the industrial plant in terms of energy consumption and to compare it with similar enterprises in the same industry will provide a solid basis for the steps to be taken according to the current situation of a particular industrial plant. Therefore, for such a comparative analysis a set of criteria should be determined and applied. For this purpose, there are two main types of criteria that can be used by grouping them as general and sector-specific criteria. In this study, considering both criteria, energy efficiency technologies and management practices that can be applied for different sectors in Turkey have been compiled. Studies conducted in the literature within the scope of good practices in energy efficiency and management for the Textile, Iron-Steel, Cement and Glass sectors were examined, and policy and strategy proposals for the dissemination of these studies to the locomotive sectors in Turkey were discussed.

Keywords: energy policy and strategy,industrial energy,energy efficiency,energy management

Additive Manufacturing For Marine And Offshore: Key Breakthroughs And Future Perspective

_O4391

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Additive manufacturing (AM) started its own process with its first commercialization in the late 1980s, and then took its place as a research topic in the current world literature with the development and popularization of this method. In this adventure, which initially only involved the production of polymer materials, additive manufacturing came up with many advantages over traditional manufacturing. This has resulted in the rapid development of additive manufacturing as a promising production method. In addition, in the continuation of this adventure, methods supporting the production of many other different materials emerged and additive manufacturing developed rapidly. Additive manufacturing is freed from the disadvantages such as expensive molding and high labor required by traditional manufacturing methods. However, it provides critical advantages such as the near net shape production of complex designs and the production of lighter components with equivalent mechanical properties. Additive manufacturing methods are used in numerous industries that undertake the production of aircraft, automobiles, chemicals, clothing, computers, consumer electronics, electrical equipment, furniture, heavy machinery, refined petroleum products, ships, steel, tooling and molds. Although additive manufacturing also finds use in the maritime sector, it has not performed satisfactorily in its entry into this industry and has been the subject of discussion. This study predicts and evaluates the current position and future of additive manufacturing in the maritime industry.

Keywords: additive manufacturing,maritime,marine,production on demand

Energy Storage In Urban Areas: The Role Of Energy Storage Facilities

_O4429

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The energy generated in urban areas can be self-used by the residential population immediately. But, production of extra amount of energy in any form needs to be used by others or, if there is no consumption needs, it should be stored. The storage of energy depends on form of existing energy and the length of storage time. In general, households or stakeholders generate electricity (from photovoltaics and wind turbines) and heat energy (from solar heat systems and biomass). Therefore, the main energy exchange system must contain energy storage facilities for electricity (batteries) or heat storage with the use of latent or sensible heat. These storage systems are not perfect for long-term storage. There is energy as the time period is longer. Other types of energy storage are available for long-term keep of generated energy. Some of them are conversion of electricity and heat into potential energy of water, but perhaps the most efficient is electrolysis of water with keeping electricity (generated as electricity or converted from heat) or heat as chemical energy. Chemical energy can exist as a reversible chemical reaction (chemical pumps - changing the direction of the chemical reaction as the endothermic and exothermic reaction), as well as the generation of hydrogen (electrolysis), methane (hydrogen methanization process) and higher hydrocarbons as fuels for long-term storage of energy. There are many expectations for increased Power-to-X or Power-to-Hydrogen technologies that can be a source for the generation of clean fuels for transportation using hydrogen, hydrocarbon, or hybrid use of electricity and clean source fuels.
Keywords: energy storage,electricity,heat,chemical energy,ped

Evaluation Of Ergonomic Risks In The Welding Process With Reba And Rula Methods

_O4433

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Today, with the rapid increase in technological developments, the use of physical manpower in production processes is quite high. In studies that require intensive manpower, unsuitable working postures, challenging physical workspace conditions, faulty work planning, incorrect use of work resources cause musculoskeletal disorders that have acute or permanent effects on employees. In addition, it is seen that it causes a decrease in the business continuity of the employees, a negative effect on the quality results and inefficiency in the general business results. In order to obtain effective results in this regard, there is a need for the implementation of studies in the field of ergonomics. Ergonomics basically aims to improve the working conditions and environment in order to protect and develop the mental and physical well-being of the employees. In addition, it is seen that harmonizing the process conditions with the employees has a positive effect on the work performance, the employee's commitment to the work, and the productivity results. Ergonomic risk assessment is one of the studies used in ergonomics in order to obtain positive work results. The application of ergonomic risk assessment contributes to taking precautions before potential risks occur. The use of ergonomic risk assessment methods to eliminate inefficiencies helps to plan work positions in the most appropriate way in terms of employee and work results. There are many methods in the field of ergonomic risk assessment. In this study, the ergonomic risk assessment methods REBA (Rapid Entire Body Assessment) and RULA (Rapid Upper Limb Assessment) were applied and the results were analyzed. The methods were applied to the employees determined in the welding workshop of an operator in the metal sector with challenging working conditions and many ergonomic risks. The risk classes obtained as a result of the application were compared statistically.

Keywords: ergonomic risk assessment,reba (rapid entire body assessment),rula (rapid upper limb assessment)

Evaluation Of Leather And Fur Production In The View Of Environment And Health

_O4444

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Leather industry is one of the most common industries in the world and in Turkey. The raw materials used in the leather processing industry consist of raw or semi-processed leathers. Raw leather is made suitable for use by using various chemical substances and undergoing processes. Leather Industry uses very large volumes of water depending on the type and amount of leather processed and the process performed, and as a result, large amounts of wastewater are generated. These wastewaters contain high amount of hair, wool, dowel, dissolved proteins, lime, sodium sulfate, sodium hydroxide, phenolic substances and different chromium compounds. The fact that the leather industry is an industry that creates a lot of pollution is entirely due to production. During the production made from semi- products, especially toxic substances in dyeing process can mix with the wastewater. The vast majority of leather factories in Çorlu OSB, export their products. For this reason; It is imperative that these products, which will not harm to the environment and human health, be produced with an environmentally friendly production method and high quality. In this study, different material production formulas used in the dyeing phase of fur production and the production-related toxicity effects of "organic or chemical dyestuffs" in these formulas were examined. In this study; The possibility of toxic effects of the production processes on human health and the receiving environment has been evaluated in terms of consumer and environmental health.

Keywords: fur production,toxicity,health,wastewater

A Deep-learning Based Object Detection Approach For Rainy Image Dataset

_O4456

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Rain is one of the most common weather conditions that negatively affects object detection from the image. Rain streaks distort the image, and object detection from the distorted image is a difficult task. Therefore rain removal from the image improves the performance of object detection algorithms. Although there are many studies on this subject in the literature, it is still a complicated and unsolved process. In this study, a deep learning-based two-step approach is proposed for object detection in the rainy image dataset. In the first step, rain streaks and image backgrounds are discriminated by image processing techniques. In the second step, objects are detected from the clear images without rain streaks using a deep learning model. Experimental studies show that the proposed approach is promising in improving classification performance.

Keywords: deep learning,object detection,classification,image processing,machine learning

BİR MOTOR PARAMETRELERİNİN SCADA SİSTEMİ İLE DENETLENMESİ VE UZAKTAN KONTROLÜ

_O4457

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Günümüz otomasyon teknolojileri bilgisayar tabanlıdır. PLC ve SCADA sistemleri günümüz teknolojilerinin en çok kullanılanıdır. Gelişmekte olan teknoloji ile birlikte endüstriyel sistemlerde yüksek verimli, mekanik olarak sağlam ve bakım gereksinimi az olan elektrik makinalarına ihtiyaç vardır. Çalışmaları sırasında elektrik arkı meydana gelmemesi, yapılarının basit olması, yüksek hızlı çalışma kabiliyetleri, diğer makinelere kıyasla ucuz olmaları ve az bakım gereksinimi gibi başlıklardan dolayı asenkron motorlar endüstride en fazla tercih edilen elektrik makinalarıdır. Asenkron motorların kontrolü, karmaşık denklemler içermesi ve lineer kontrol bölgesine sahip olmaması nedeniyle zordur. Bu zorluğu aşmak için çeşitli yöntemler geliştirilmiştir. Bu çalışmada, tek fazlı bir asenkron motorun parametrelerinin izlenmesi, uzaktan kontrolü ve veri toplanması için bir sistem gerçekleştirilmiştir. Sistem SCADA tabanlıdır. Tek fazlı asenkron motorun hız kontrolünün yapılabilmesi için kullanılan frekans invertörü sistemin temel donanım parçalarından birisidir. Frekans invertörü üzerinden alınan veriler kullanılan haberleşme protokolü ile anlık olarak oluşturulan SCADA arayüzünde gösterilmekte ve istenilen periyotlarda da veri tabanına kaydedilmektedir. Veri tabanına kaydedilen veriler geriye dönük olarak raporlanabilmekte ve grafiksel olarak da oluşturulan web arayüzünde gösterilmektedir. SCADA arayüzünde asenkron motorun akım, gerilim, güç, tork ve hız bilgileri gerçek zamanlı olarak gösterilmektedir. Sistem için oluşturulan web arayüzü ile TCP/IP protokolü üzerinden uzaktan bağlanma imkanı da vardır. Oluşturulan bu model sistem pandemi döneminde uzaktan eğitim derslerinde eğitim materyali olarak kullanılmış ve verimliliği hakkında dersleri alan öğrencilere bir anket çalışması yapılmıştır.

Keywords: scada ,frekans İnvertörü,asenkron motor

Current Segmentation Methods For Detection Of Meniscal Tears On Mri Images

_O4471

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Meniscal tear is the most common form of painful and debilitating cartilage injury in the knee. Humans have two C-shaped pieces of cartilage in their knees that serve as a cushion between the femur and tibia bones. These are referred to as meniscus. A meniscal tear is an example of an anomaly. If meniscal tears are not detected in time, they can lead to degeneration of the articular cartilage and require surgical treatment. For this reason, early diagnosis and treatment of meniscal tears should be started. Computer-aided detection systems and automated solutions are used for early detection and treatment, providing fast and accurate results.

MRI (magnetic resonance imaging) plays an important role in the meniscus examination. MRI images consist of multiple images taken from different slices in different axes. This makes automatic segmentation of the meniscus region difficult.

Image segmentation involves dividing the image into meaningful subregions in which different features are preserved. In medical imaging, segmentation can be used to detect anatomical structures, abnormalities, tissue degeneration, and pathological changes.

Although there are classical segmentation methods used to detect meniscal tears, new generation segmentation methods have emerged with the development of deep learning networks. Deep learning is a subfield of artificial intelligence that includes hidden layer artificial neural networks and machine learning algorithms. Recently, it has been widely applied to the study of biomedical images. In this study, we describe the current segmentation methods and their performances in meniscus tear detection.

Keywords: segmentation,meniscus,deep learning,orthopedics,image processing

Classification Of Histopathological Breast Cancer Images By Deep Learning Methods

_O4485

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Histopathology is the branch of science that distinguishes between malignant and benign using various methods in organs, tissues or cells that show signs of disease. Tissues to be examined histopathologically are obtained by biopsy method. Pathologists evaluate the microscopic structure of the tissue histologically and make the final diagnosis by visual inspection. At this stage, the pathologist's experience, attention, level of fatigue, etc. conditions increase the rate of misdiagnosis. Deep learning methods inspired by the human brain are needed for accurate and higher detection of cancer.In the study, histopathological images in the BreakHis dataset were classified by applying pre-trained convolutional neural networks with different transfer learning methods.The main goal of this study is to classify tumors on histopathological images using the most popular computer-based methods, namely deep learning architecture.

Breast tumors were first classified as “Beneign” and “Melignant” according to their characteristics. Then they were classified as “Adenosis (A)”, “Fibroadenoma (F)”, “Phylloid Tumor (PT)”, “Tubular Adenoma (TA)”, “Ductal Carcinoma (DC)”, “Lobular Carcinoma (LC)”, “Mucinous Carcinoma (MC)” and “Papillary Carcinoma (PC)” according to their types. In both classification methods, deep learning architectures are applied separately to each magnification: 40X, 100X, 200X and 400X.

As a result, the highest accuracy was 96.38% with the DenseNet201 model for 100X magnification in binary classification, and 88.88% with the MobileNetV2 model for again 100X magnification in multi- classification with 8 different tumor types.

The accuracy rates of the models in which the magnification ratios were the most successful according to the tumor types and types are summarized in Table 1 and Table 2. When Table 1 and Table 2 are examined, it is seen that binary classification has a higher accuracy rate. This can be interpreted as the separation of classes from each other becomes more difficult as the number of classes increases.

In future studies, accuracy rate can be increased to a higher level with different hyperparameters in different architectures. In addition, it is thought that improvements can be made in issues such as the segmentation of diseased areas on images of malignant tumors. Considering the success of deep learning networks such as U-net in segmentation, it is thought that good results can be produced in terms of segmentation on the images.

Keywords: histopathological images,breast cancer,deep learning,convolutional neural networks,classification

a Device For Observing Differences In Bilateral Muscle Activity During Sports Or Rehabilitation

_O4491

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In our daily lives, we rely on our muscles for every movement we make. However, muscle activity may degrade or could be completely ceased after certain diseases or traumas such as infections and stroke. Electromyography (EMG) is an important method to observe muscle activity. It measures the electrical activity as a result of muscle contraction. The characteristics of the EMG signals are used to diagnose any problems related to muscles and/or nerves. Additionally, these signals can be used to control electrical or mechanical systems such as rehabilitation devices, limb prostheses or exoskeletons. In this study, we developed an EMG-based device that can be used in rehabilitation, robotic control and sports activities. The device has two EMG recording circuits, a rotational servo motor and an Arduino development card. The EMG recording circuits are identical and have the stages of instrumentational amplifier, first-order band-pass filter, fullwave rectifier and integrator. Noise from electronic circuit elements, arm movements or various environmental influences are largely eliminated by the bandpass filter. The signal at the output of the EMG circuits is the envelope of the raw EMG signal and had positive polarity. The script written in Arduino acquired the EMG envelopes from two EMG circuits with a period of 0.5s and controlled the position of servo motor based on the amplitude difference between two signals. The script also normalizes each signal based on maximum muscle contraction, so that differences between two recording sides are compensated. The initial position of the servo motor was at its center of movement path. At each signal acquisition, the servo motors rotor is moved 5 degrees in favor of the EMG channel with higher amplitude. Once the armature of the motor hit one of its maximum, the script stops the session. In this way, a person who performs a sport or rehabilitation session can visually observe any differences in bilateral muscle activity. Alternatively, two people can work together or race for sportive or rehabilitative purposes. The design is cost-efficient and built with off-the-shelf components. It is also promising for biomedical applications in sports and rehabilitation.

Keywords: electromyography,rehabilitation ,sports, signal processing

Mathematical Modeling Of The Response Of A Buck Converter To Disturbing Influences.

_O4494

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Switching power supplies are widely used in electronics. The main types of pulse voltage converters are: the first is step-down (Buck), the second is step-up (Boost) and the third is inverting (Buck-Boost). Simulation of pulse converters allows you to reduce the time and cost of developing the final device.

Today, many leading manufacturers of PWM controllers offer free software that allows you to conduct the most accurate analysis of the reactions of the electrical circuit under the control of their products. The main disadvantage of the proposed software is the limited ability to analyze the pulse converter as a non-linear dynamic object.

Mathematical analysis makes it possible to describe the pulse-width converter by various differential equations. Due to the periodic switching of power switches (transistors, diodes), pulse converters are state-of-the-art circuits The state changes when a power switch is switched, so the mathematical analysis of such circuits is reduced to solving systems of differential equations at different time intervals and “crosslinking” according to the switching laws of the obtained solutions at the boundaries of the intervals (the matching method).The calculation is simplified when passing from a sequential solution of systems of equations to an averaged system of differential equations. The impulse converter consists of nonlinear dynamic objects that, depending on their structure and type of feedback, have complex behavior, including instability, bifurcations, chaos, etc. Therefore, the use of linear control laws is not able to provide the desired stability region for such nonlinear systems as a pulse-width converter. Mathematical analysis makes it possible to introduce disturbing influences and, by solving a new system of equations, to obtain a nonlinear control law.

In this paper, we will consider the construction of a basic mathematical model and simulation in the Matlab Simulink software package in order to further study the reactions of a buck converter to disturbing influences.

Keywords: buck converter,mathematical modelling,non-linear dynamic system,matlab simulink

Transversal Skills In Applied Artificial Intelligence – Curriculum Development

_O4500

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Advanced technologies such as artificial intelligence (AI) have a profound impact on modern society. Although the concept of AI is somewhat confusing, individuals are increasingly encountering digitalization and artificial intelligence in the way they live, work, and communicate, e.g., exchanges as diverse as applying for a loan and scrolling through social media or similar. The Erasmus+ project Transversal Skills in Applied Artificial Intelligence - TSAAI (KA220-HED - Cooperation Partnerships in higher education) aims to establish an educational portal that will encompass all its training content available to as many interested parties as possible. For this purpose, a curriculum composed of the teaching guides for nine modules is going to be developed. To this end, the needs in the field of artificial intelligence from the social, educational, and business points of view will be rigorously analyzed in all consortium countries (Spain, Estonia, North Macedonia, Croatia, Germany, and Slovenia). The methodology applied in the analysis of business applications of AI in different economic sectors follows an approach based on three main stages: Analysis of the evolution of Information and Communication Technologies (ICT), Information from public institutions such as National Employment Services, National Chambers of Commerce, etc., and Information from a private institution. This work aims to determine the current needs in employability and requirements in different economic sectors regarding the ICT and AI technologies and propose a teaching curriculum focused on satisfying the labor market needs through the adequate preparation of new technicians.

Keywords: transversal skills,artificial intelligence,curriculum development

Consolidation Of Cocr Alloy Powders By Pressure Assisted Sintering

_O4503

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Stainless steel, titanium and cobalt alloys are the most commonly used metallic biomaterials. However, especially for the dental industry, CoCr alloys are most widely preferred. CoCr alloys can be produced by conventional and powder metallurgical production processes. In this study, CoCr alloy powders were consolidated by pressure-assisted sintering. Powders with a size range of 15-45 μm were used for the productions. First, the characterization of the CoCr powders supplied as raw material was carried out; then, the sintering process was conducted by applying pressure and temperature simultaneously under vacuum with the hot press method. Sintering was performed at 950 (30 min) and 1050 C (30 and 60 min). The heating rate and applied pressure were kept constant for the whole sintering process. After the production, densities of the sintered samples were measured. Then, hardness, bending, and wear tests were applied to determine the mechanical properties of CoCr samples produced at different temperatures and times. The ball-on-disc dry sliding wear test at room temperature was used for the wear tests. After the wear and bending tests, the surface of the samples was investigated by scanning electron microscopy. The sintered compacts were also characterized microstructurally, and the results were evaluated in detail.

Keywords: cocr alloy,biomaterial,sintering,pressure assisted sintering

OyunlaŞtirma İle ZengİnleŞtİrİlmİŞ ÇevrİmİÇİ ÖĞrenme Ortamlarinin ÖĞrencİlerİn AkademİK BaŞarilari Üzerİndekİ Etkİsİ: Kahoot ÖrneĞİ

_O4517

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Kahoot eğitim kurumlarında çevrimiçi öğrenme aracı olarak kullanılan öğrenme tabanlı bir test oyunudur. Oyunlar web tarayıcısı ve Kahoot uygulaması aracılığı ile erişilen ve kullanıcılar tarafından oluşturulan çoktan seçmeli sorulardan oluşmaktadır. Tüm katılımcılar ekranda kullanıcılara sunulan oyun PIN'ini kullanarak uygulamaya bağlanırlar. Katılımcılar soruları cevapladıktan sonra, doğru cevapladıkları sorular karşılığında ödül puanı alırlar. Puanlar, her sorudan sonra skor tablosunda gösterilir. Kahoot uygulamasında oyunculara verilen rozetler aracılığıyla sistemdeki hedeflerin tamamlanması ve oyunda/uygulamada sürekli olarak ilerlemenin devam etmesi sağlanır. Bu çalışmanın amacı, oyunlaştırılmış çevrimiçi bir öğrenme aracı Kahoot aracılığı ile Meslek Yüksekokulu Bilgisayar Teknolojileri bölümü öğrencilerinin Temel Bilgi Teknolojileri dersi kapsamında başarı düzeylerini gözlemlemektir. Ayrıca çalışmada dersi alan 32 öğrenciye öğrenme sürecini değerlendirmeleri adına açık uçlu bir değerlendirme formu (süreç çıktı değerlendirme formu) uygulatılmıştır. Bu araştırmada nicel ve nitel yöntemlerin eşzamanlı kullanıldığı karma araştırma deseni kullanılmıştır. Elde edilen nitel veriler içerik analizi yöntemi ile analiz edilmiştir. Sonuç olarak; öğrencilerin büyük çoğunluğu sınıf içi ders uygulamalarında Kahoot uygulamasının başarılı bir çevrimiçi öğrenme aracı olduğunu ve diğer ders içeriklerinde de kullanılması gerektiğini vurgulamışlardır. Ayrıca Kahoot'un sınıf içinde kendileri arasında yarışma heyecanını tetiklediğini ve derse olan motivasyonlarını arttırdığını dile getirmişlerdir. Öğrenciler öneri olarak ise sorulara verilen düşünme süresinin arttırılmasından yana olduklarını belirtmişlerdir.

Keywords: Çevrimiçi öğrenme araçları,kahoot,oyunlaştırma,akademik başarı,temel bilgi teknolojileri

Development Of Sio2 Reinforced Nanocomposite Resins Used In 3d Printers

_O4523

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Three-dimensional printing technologies are an additive manufacturing technology that is becoming increasingly common in the world, allowing the layered production of digitally created shapes instead of traditional molds. Among the existing three-dimensional printers, those working with the principle of photochemical method are based on the photopolymerization of cross-linkable resins in liquid form under ultraviolet light, and the production of finely detailed objects is much easier in this method. In photochemical method-based three-dimensional printers, the essential material is monomers polymerized by light. The components of the polymer to be produced using this method are monomers, oligomers, photoinitiators and optionally added nanoparticles. In addition, it is known that resins can be show low mechanical properties. To eliminate this disadvantage, SiO2 nanoparticle supplements used. In this way, nanocomposite production with low shrinkage rate and high mechanical properties completed. Within the scope of the project, first of all, SiO2 nanoparticles synthesized by the sol-gel method. Then, elemental analysis, morphological structure, organic bond structure, particle size and phase structure of nanoparticles determined by the results of XPS, SEM, FT-IR, DLS and XRD analyzes, respectively. After these measurements, it was seen the sample with 5% SiO2 added gave the best results in shrinkage and strength rate. The particle size measured as 32 nm. After polymerization, shrinkage rate measured as %2.39, the viscosity of nanocomposite resin was 0.24 Pa.s and the flexural strength was 175 MPa. In this study, it was determined that the Sio2 nanoparticle added nanocomposite resin is suitable for use in three-dimensional printers.

Keywords: resin,nanocomposite,3d printer

The Potential For Evaluation Of Wine Lees

_O4529

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The winemaking industry produces a huge amount of by-products, and they are considered to be a good alternative with enormous potential for producing bioproducts. Among winemaking waste and by-products, grape pulp accounts for 60% of its products, while wine lees (WL) account for 25%. In our study, the sediment of wines produced from cabernet sauvignon grapes was used. After the dried WL was dried in an air-flow dryer at 25^{o}C, its analysis was performed. According to the results, DPPH scavenging activity (IC_{50}) and ABTS radical scavenging activity were found respectively at 14.32±0.21 µg/ml, and 2429 µg trolox/ml in WL. Also, the total phenolic content of dried WL was found to be 1976.57±57.15 mg GAE/L. The pH value of WL was found to be 3.32, while the total acidity value in terms of tartaric acid was found to be 121.25±11.25 mg/g. WL has been found to be extremely rich in anthocyanin (660.94 mg/100g). The winemaking by-product has also been examined in terms of organic acid, phenolic component composition, and mineral substance content. Thanks to its rich content, it is thought that this waste can be used as a natural additive in increasing the nutritional value of many products and improving color, taste, and structural properties.

Keywords: agro-industrial waste,anthocyanin ,phenolic compound ,winemaking lees

Analysis And Evaluation Of Raw Material Needs Of Offshore Wind Turbines

_O4530

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The developments in the maritime field are followed almost by the whole world. At the same time, developments in the whole world should be followed by the maritime sector. In this direction, it can be said that one of the most critical developments today has emerged with electric vehicles. In addition to reminding the importance of the production and efficient use of energy, the world market and stock status of the raw materials of the batteries used in these vehicles came to the fore again. This situation had different repercussions in the maritime field. So much so that some raw materials used in the construction of offshore structures, which is one of the issues closely related to maritime, and their prices have fluctuated with these developments. Factors such as the small amounts of some raw materials in the earth's crust, the limited production capacity of some of the raw materials such as steel, aluminum, copper, dysprosium, and neodymium used in the production of offshore wind turbines, which are one of the most attractive systems as a clean energy production source in the sea and the ocean, have closely affected issues such as the manufacturability of these systems and the efforts to increase efficiency. The fact that many developed countries are also moving to clean sources has made these materials more attractive and increased the effect of the importance of their proper use. This study examines the criticality levels of the use of these raw materials used in offshore wind turbines, as well as researches the reserves, stock status, and price fluctuations of the ores.

Keywords: offshore wind turbines,raw materials,mineral resources,ore reserves

Kinetic Analysis Of The Pyrolysis Of Orange Peels Using The Differential Model-free Method

_O4534

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Pyrolysis of organic matter such as orange peel has attracted considerable interest as a cost-effective method for producing bio-oil, biochar and biogas. This process is important due to its potential for renewable energy production and the possibility of producing valuable chemicals and biochemicals. The objective of this study is to investigate the pyrolysis of orange peels using the Friedman method.

Pyrolysis of orange peels was studied non-isothermally between 25°C and 900°C under an argon atmosphere using Netzsch STA 449 F3 thermogravimetric analyzer. Friedman method, which is one of the most used differential model-free methods in the literature, was used for the kinetic analysis of the pyrolysis of orange peels under an argon atmosphere. The results of this study showed that the pyrolysis of orange peels can be studied in two parts. It was found that mass loss occurred very rapidly, especially below 300 °C, and that the activation energy values calculated for primary pyrolysis were lower compared to secondary pyrolysis. These results are also consistent with the literature.

Keywords: kinetic analysis ,pyrolysis,orange peel,friedman method,model-free kinetics

Sipariş Gecikmelerinde Veri Madenciliğine Dayalı Bir Sistem Tasarımı

_O4538

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Dijitalleşmenin artmasıyla birlikte, üretim ve hizmet işletmelerinde yaygın olarak kullanılmakta olan veri madenciliğinin öneminin daha da arttığı gözlemlenmektedir. Gelişen bilişim teknolojileri ile veri toplama kaynaklarına ulaşım kolaylığı, kurumların bünyesinde oldukça ciddi veri tabanlarının oluşmasına neden olmaktadır. Günümüzde büyük miktardaki verileri işleyebilmek amacıyla birçok tekniğin kullanılmasına imkan sunan veri madenciliği; veri setlerinde saklı durumda bulunan örüntü ve eğilimleri ilişkilendirebilmesi nedeniyle, oldukça fazla önem arz etmektedir. Bu kapsamda; yapılan çalışmada, Tekirdağ bölgesinde faaliyet gösteren bir üretim işletmesinde, kapasite ve sipariş miktarlarındaki artışa bağlı olarak, sipariş gecikmesi sorunun yaşandığının gözlemlenmiş olması nedeniyle, işletme için çok kritik bir konu olan sipariş gecikmelerinin minimize edilmesi amaçlanmıştır. Bu çalışmanın amacı; uygulama yapılan işletmede yaşanan sipariş gecikmelerinde, veri madenciliği tekniklerinin kullanımının etkisini ortaya koymak ve elde edilen sonucun işletmeye yaratacağı katma değerin boyutunu irdelemektir. Bu çalışmada, veri madenciliğinin model ve algoritmaları konusunda detaylı bir literatür araştırması yapılmış, kullanım alanları açıklanarak üretim sektöründe faaliyet gösteren bir işletmenin verileri üzerinden analizler yapılmıştır. Analiz için SPSS Clementine 9.0 yazılımı kullanılmıştır. Çalışma sonucunda, veri madenciliğinin işletmelerde müşteri profilleme, siparişlerdeki ürün türünün sırasının belirlenebilmesi, yerleşim planının buna göre oluşturulması süreçlerinde önemli kazanımlar elde edilmiştir. Ayrıca yapılan analizler sonrasında; sipariş gecikmeleri tahmin edilerek, sipariş gecikmelerinin nedenleri öngörülmüş ve gecikmelerin aslında hangi problemler ile yakından ilişkili olduğu saptanmıştır.

Keywords: veri madenciliği,sipariş gecikmeleri,süreç analizi

Classification Of Tire Tracks With Deep Learning Techniques

_O4563

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Tire traces are among the most important physical evidence in traffic accidents, murder and various criminal cases. By examining vehicle tire tracks, a lot of information can be obtained about the vehicle involved in a crime or traffic accident. Thanks to the fact that vehicle tire types have various standards, information such as the model, type, weight of the vehicle, the road it has followed before, the damage status, novelty or old age can be determined. When this information is combined with license plate recognition and MOBESE camera records, they can turn into very important information for lawsuits. In this study, classification application was made on the data set consisting of image processing and deep learning techniques and tire traces images and the success rates are evaluated. The dataset contains a total of 1100 images of 10 different tire types. Of these images, 770 are used for training, 165 for validation, and 165 for testing. There is also a mixed class where more than one tire traces has the same image. In this case, it was tried to classify with convolutional neural networks (CNN) in the data set with 11 different classes.

Keywords: tire traces,deep learning,image classification

Flight Maneuver Classification Using Artificial Neural Networks

_O4568

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There are globally known basic flight maneuvers performed by fighter and aerobatics pilots with agile aircraft. These basic flight maneuvers have strict rules that the pilots should follow to complete the maneuver and can be used to evaluate the pilot's or aircraft's capabilities. Flight data is classified into flight maneuvers by aviation professionals before evaluation. The need for this classification created a research area to be filled: Automatic flight maneuver classification.

This study proposes a solution to the automatic flight maneuver classification problem by exploiting artificial neural networks. It also contributes a flight maneuver classification database to the literature. This database was generated using professional flight simulation tools. The flight data attributes were evaluated and selected to give the optimum performance in terms of precision. The types of artificial neural networks used and compared were single hidden layer neural networks, deep neural networks, recurrent neural networks, and convolutional neural networks. Combinations of these types, activation functions, optimization methods, and gradient descent algorithms were tested against the problem to maximize the performance of the solution.

The solution proposed by this study successfully classified ten distinct flight maneuvers such as basic descent and ascent, but also more complex ones such as Immelman, split-s, and lazy-eight. The results were evaluated using k-folds cross-validation for suitable types and calculating accuracy, precision, recall, and loss parameters on test data. The best performing artificial neural network type, which is deep neural networks, gave over 95% accuracy and less than 0.1 loss in the test set. All the artificial neural network types and solutions gave over 85% accuracy with correctly chosen attributes. This study also contributed a software program that classifies the flight maneuver in real-time while the flight maneuver is being performed in a simulation. It was seen that this software was also accurately predicting the pilots' intended maneuvers in real time.

Keywords: neural network,flight maneuver,classification,identification

Sugar Beet Pulp As A Source Of Pectin, Fiber And Arabinose

_O4580

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Sugar beet is a two-year plant named as *Beta vulgaris saccharifera* in botany. At the first year of this plant, it stores saccharose its roots as a food stock. Sugar beet pulp is a by-product obtained after the sugar and solved components are extracted from sugar beet and usually used as animal feed. Sugar beet contains pulp at the rate of %4-5 of its own weight. About 4-5 million tons of sugar beet pulp is produced every year only in the USA, however it is not effectively used as a voluable product. There should be more research about this by-product in order to make it more valuable and useful for many field of industry. To make better use of sugar beet pulp, bio refining process has been tried and achieved to isolate high-value components. These components have been utilized as ingredients for food, non-food applications and chemical industry. The components obtained from bio refined sugar beet pulp are fibers, arabinose and galacturonic acid. They are very well components that can be used in high-value markets such as detergents, paints, coating and composites. Especially fibers provide opportunities to develop solutions for particle-carrying compounds in fluid-based compositions. This property of cellulosic fibers makes it use at numerous application areas as abrasive cleaners, dishwasher detergent gels, liquid laundry detergents and softeners and other applications about personal care.

Keywords: sugar beet pulp, fiber,pectin,biorefining

Investigation Of Mechanical Properties Of Polyester Woven Fabrics With Sirofast System

_O4584

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In line with the increase in the human population in the world and the increase in the welfare and cultural levels of the people, the need for a more comfortable, quality life and clothing has increased. In parallel, fiber consumption per person in the textile sector has also increased and natural fibers such as cotton, wool and linen have not been able to meet the need. This has led to the production and consumption of man-made fibers, and the production of synthetic fibers such as polyester, polyamide and polyurethane, obtained from synthesis-derived polymers, has increased rapidly in the man-made fibers group. Polyester fiber, which has the highest production rate among all fiber groups, is produced from polyethylene terephthalate polymer by melt spinning method. The fiber cross-section shows different features according to the shape of the nozzle holes used during fiber spinning. In this study, the effect of the change in fiber cross-section shape, weave and weft density on the mechanical properties of fabrics woven in three different weave and two different weft densities using polyester filament (PET) yarns with three different fiber cross-section was investigated objectively. Using SiroFAST test devices, thickness/compression, bending and elongation values were measured for each fabric sample, and by using these measurement values, the formability, bending stiffness and shear stiffness, surface and free thickness values of the fabrics were calculated. In the test results; It has been determined that plain fabric has the highest formability values in both warp and weft directions. While the warp elongation values of all fabrics are within the limit values, the weft elongation values are low. Fabrics woven with 45 and 38 weft density from yarns with five-channel (W) fiber cross-section shape have the highest weft elongation value. Plain weave has the highes bending stiffness values. According to the fiber cross-section shapes; fabrics woven from yarns with (W) fiber cross-section with 45 and 38 weft density have the lowest warp and weft bending stiffness values. SiroFAST thickness measurement results on the basis of weave showed that the basket weave is the thickest. According to different fiber cross-sections in the same weave structure; fabrics woven from yarns with a five-channel (W) fiber cross-section shape are thicker. Yarn fiber cross-section, fabric weave and weft density affect the mechanical properties of woven fabrics.

Keywords: sirofast,fiber cross-section,polyester,woven fabric,mechanical property

Fabrication Of Polyurethane Films By Synthesis Of Vegetable-based Polyols Having Phosphorus Groups

_O4587

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Environmental concerns continuously lead scientists to find alternatives to petroleum-based constituents in a greener way. In the last decades, due to the growing ecological trend in chemistry, a great effort has been made to study the possibility of utilizing biorenewable resources in the polymer industry [1].

Polyurethanes (PUs) are high combustible materials and burn completely in case of fire. Recently, many different studies have been done to reduce the flammability of PU. To minimize environmental impact, one potential solution is to use reactive flame retardants which bond directly to the polyurethane structure, and cannot leach out the environment with time. Different kinds of additive and reactive flame retardants containing phosphorus are increasingly successful as halogen-free alternatives for various polymeric materials and applications [2]. The regulations applied due to the environmental and human health hazards of halogenated flame retardants cause the preference for phosphorous and similar halogen-free flame retardants.

The purpose of this study is to synthesize bio-based flame retardant polyols from epoxide soybean oil (ESO) and use these polyols to produce flexible and flame retardant PU films for coated fabric industry with good mechanical properties. In this study, PU films were synthesized by biobased polyols which were synthesized by a ring-opening reaction of epoxidized soybean oil with phosphoric acid in the presence of inert conditions at 100°C. PU films were obtained by using hybrid polyols which are phosphoric acid-containing polyols and petroleum-based polyols in different ratios. Three types of isocyanates were used in the PU film synthesis MDI, H12MDI and IPDI.

The synthesised PUs was characterized for the evaluation of properties and the effect of isocyanates loading into PU on these mechanical properties is also being presented. Polyols characterizations were obtained due to the OH test, acid test, humidity test and viscosity test. At the same time, we compared the effect of the polyols ratio between ESOP and petroleum-based polyols on the structure of the film.

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Keywords: vegetable oil-based polyol,epoxidized soybean oil,phosphoric acid,bio-based polyurethane film

Evaluation Of Rain-induced Floods Effeective In Western Black Sea Region In Framework Of Predesigned Probable Scenarios

_O4598

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This study covers the analysis of rain-induced floods that have been occurring in the Western Black Sea Region for the last two years; negative situations and destructions they caused in the region and the natural disaster scenarios that were prepared for this region; scenarios that include short, mid, and long term effects, and the analysis of these scenarios.

The study primarily discusses floods and negative effects of floods, and the connection of these effects to settlements and damage on nature. Then, it elaborates particularly on floods and dense flow effect in connection to this, slope sediments and landslides, and the effect of these landslides on rehabilitated and unimproved river sections.

With the possible flood scenarios and directives (EU funded projects) that were conducted or are being conducted by the Ministries and related institutions in our country, a “rain-flood-effect” analysis has been made for Western Black Sea Region cities in the last two years.

Furthermore, complete or semi rehabilitation of rivers in the region, and the master and municipal structural plans for these rehabilitations have been analysed. The risk posing effect of construction, which is structured as a result of technically insufficient local administrations and the pressure of political demands, has been highlighted.

Keywords: western black sea region,rivers and flood,contamination scenarios,public and local administrations

Investigation And Evaluation Of Survey Studies On E-waste Collection And Disposal

_O4605

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Waste Electrical and Electronic Equipment (e-waste) are materials that have expired and contain one or more electrical transmission elements. Electrical equipment completes its useful life in a short time and emerges as a problem waiting to be managed. However, if these items, which come out as waste, are not evaluated in accordance with their qualifications, they create a problem for the environment, human health and the country's economy. When these wastes are left to nature indiscriminately, the harmful and dangerous substances in their content are mixed with nature, and then they interact with water, soil and air and participate in the food chain. Its journey in the food chain continues as plants, animals and humans. If we look at it from an economic point of view, there are a significant amount of valuable components in electronic goods such as mobile phones. Uncontrolled and unregulated release to nature instead of proper disposal also destroy the gains we can make from precious metals. Although there are laws and regulations regarding e-waste in many countries, including our country, societies do not have much information about the collection, evaluation and disposal of e-waste.

In the current study, in order to measure the consciousness level of the society on e-waste, various survey studies were conducted based on concepts such as empathy, personal moral norm scales, awareness and responsibility towards the environment in national and international studies. The results of the survey that allows the measurement of the consciousness level of the society about e-waste, the individuals of the society who are informed and have a high level of consciousness are more affected by the personal moral norm scale and social pressure, which are internal variables, in the e-waste transformation, and the external variable socio-demographic characteristics are e-waste. It has been determined that it does not have much effect on waste recycling. In line with the studies examined, it has been determined that it is necessary to implement facilitating measures, training and encouraging policies to raise awareness in society and collect and dispose of e-waste separately. The primary step in the proper collection and disposal of e-waste is to raise awareness of people by creating appropriate regulations, and in this context, it will be appropriate to establish easily accessible collection centers and inform society about these centers. In addition, the addition of new legal provisions to the existing regulation will contribute to the awareness of the public.

Keywords: environmental risk,e-waste,e-waste regulation,informal recycling,survey

Overview Of Flexible Manufacturing Systems

_O4606

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In order to be able to survive for a long time, the enterprises that produce under the developing technology and competition conditions must meet certain conditions. These are possible with manufacturing quality, responsiveness to customer requests, on-time delivery and easy access to post-production service processes of the produced material.

In the study, what flexible manufacturing systems are and where they are used (such as space, aviation, medicine industry) are explained. In addition, this study has been carried out in order to introduce and disseminate flexible manufacturing systems that will help solve the problems in existing manufacturing systems as a manufacturing system.

Keywords: flexible manufacturing system,flexible manufacturing cell,manufacturing line

Energy Harvesting Analysis and Control of Regenerative Active Suspension System _O4611

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In vehicles to ensure both safety and comfort the suspension system should carry out its duties in a strict sense. However, there exists a reasonable energy loss in vehicle suspension systems due to the vibrations caused by the road roughness. Nowadays, the popularity and the usage percentage of electric and hybrid electric vehicles are increasing rapidly all around the world. The energy optimization in these vehicles has become very important since it directly affects the range value. In order to overcome this compelling issue, researchers focus on various aspects of vehicles for energy regeneration. One of the possible solutions is the regenerative suspension system. In some research, it has been shown that approximately 400 W energy waste occurs in a basic car that is traveling on an average road [1], and a large amount of this energy can be regained with the help of regenerative suspension systems. For example, having an efficiency of 75%, 300 W of electrical power can be obtained which can be utilized in other electrical parts of vehicles, which would directly improve the fuel efficiency. Since then, many researchers resort to these systems and there has been a large number of works on regenerative energy suspensions for one decade. The main objectives of the proposed work are to investigate the energy harvesting potential of quarter car active suspension systems for various vehicles under different conditions and then to introduce a multi-objective optimization algorithm in which passenger comfort and safety are ensured with energy recycling suspension systems.

Keywords: energy harvesting,regenerative vehicle suspension,active control,quarter car active suspension system

Chest Ct Images Classification As Covid-19, Pneumonia And No-findings Using Deep Convolutional Neural Networks

_O4620

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Pandemic is an important problem in the world. Some pandemics spread very quickly and death rates are high. The COVIT-19 epidemic, which has recently affected the world, is one of these epidemics. It takes time for medical test tools to be produced and used worldwide in rapidly spreading diseases. The disease, which cannot be detected during this lost time, spreads rapidly and becomes difficult to control. There is a need for non-medical digital systems that can predict the disease more quickly. Artificial intelligence studies show that the disease can be predicted faster. The best estimation method will provide the opportunity to overcome the pandemic process with less damage. Detecting the disease early saves lives.When the studies are examined, it is seen that chest X-ray images are used for disease prediction. actual correct result is reachable with more detailed chest imaging. In the literature, mostly works used chest X-ray images, this research used chest CT images which has more detailed and cross-sectional area feature. The main goal of this research is classification chest CT images as COVID-19, pneumonia and no-findings. We used COVIDx CT-3 dataset has published over website of a data science community called Kaggle. Our dataset is splitted into three parts as train, validation and test. Train dataset includes 600 images(200 COVID-19, 200 pneumonia, 200 no-findings), validation dataset includes 225 images(75 COVID-19, 75 pneumonia, 75 no-findings) and test dataset includes 225 images(75 COVID-19, 75 pneumonia, 75 no-findings). We choosed a deep learning model called nCOVnet which is formed by added 5 custom layers on top of the VGG16 convolutional neural network model. We have implemented the experimental application of this nCOVnet deep learning model through Keras, a Python deep learning API. Our model trained with different hyper-parameters. We tried different learning rates(1.0, 0.1, 0.01, 0.001, 0.0001, 0.00001) and 0.00001 learning rate was more successful than others. Hyper-parameters of our model are categorical cross-entropy loss function, adam optimizer with 0.00001 learning rate, batch size 16, epoch 40. We reached 98%, average accuracy of our model with these hyperparameters in our research.

Keywords: covid-19,deep learning,convolutional neural network(cnn),ncovnet,vgg16

Investigation Of The Heavy Metal Content Of Thrace Region Honeys

_O4622

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Honey is a natural and nutritious food produced by honeybees. However, the quality of honey varies depending on the environmental conditions around the honey bee collecting area. Honey may be contaminated with some metals that come from external sources such as industrial pollution, non-ferrous metallurgy, factory emissions, leaded petrol from busy highways, Furthermore, these metals may come from agrochemicals such as cadmium-containing fertilizers, organic mercury and arsenic-based pesticides. For this reason, analysis of the heavy metal content in honey obtained from different locations is important for honey quality and safety and for monitoring of environmental pollution. Determination of heavy metals in honey samples is significant as their presence indicates serious environmental pollution. Furthermore, the presence of metals in honey may threaten the health of human consumers. Prolonged exposure to heavy metals such as cadmium, copper, lead, nickel, and zinc can cause serious health problems in humans.

In this research, the heavy metal content of different types of honey samples locally produced in Thrace Region were investigated. A total of 25 honey samples were analyzed, including 16 sunflower, 2 gorse, 3 canola, 3 oak and 1 linden honey. For this purpose, the levels of copper (Cu), lead (Pb), cadmium (Cd), aluminum (Al), nickel (Ni), chromium (Cr), cobalt (Co), silver (Ag) and manganese (Mn) in five types of honey collected in Edirne, Kırklareli and Tekirdağ province were determined by inductively coupled plasma optical emission spectrometry (ICP-OES). Al, Ni, Co, Ag were not detected in any of the tested honey samples. Pb was detected in two of 25 honey samples and Cd was detected in six of them. While the highest concentration of Mn was found in oak honey samples obtained from Kırklareli, the higher concentrations of Cd, Pb, and Cr were found in two honey samples (sunflower and linden honey) obtained from Tekirdağ compared to other provinces.

Keywords: heavy metal,icp-oes,honey,thrace region

The Effect Of The Number Of Terms In The Taylor Series On The Static Behavior Of Carbon Nanotubes

_O4632

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Knowing the value of the scale parameter is one of the important problems for understanding the mechanical behaviors of nanostructures. Determination of scale parameters in doublet mechanics directly corresponds to the atomic structure of the material. Thus, this value is known definitely for carbon-carbon bond length as 0.1421 nm [1].

In the doublet mechanics, the deformation is expressed with the Taylor series. The number of the terms used in the Taylor series expansion gives information about the discreteness of the material and it is not associated with accuracy. If only the first term in Taylor series expansion is considered, the obtained equations correspond to the equation given by the classical theory of elasticity. The first three terms in the Taylor series expansion are used to investigate the mechanical behavior of carbon nanotubes via doublet mechanics [2-4]. If more terms are considered, the solution of the governing equations will become more difficult.

In this paper, considering only axial micro stress, the static behavior of carbon nanotubes is examined by using the first two terms in the Taylor series expansion. The equations of motion or Hamilton Principle is used to solve the governing equations. The results obtained in this study will be compared with those given in the literature.

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Keywords: carbon nanotubes,doublet mechanics,nanorods,static behavior

Solution Of The Cauchy Problem In Fourier Series For A Linear Rc Circuit With Two Capacitors

_O4640

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Recent conditions, the production of information communication systems, computers, and other electronic equipment has become one of the priority areas of scientific research. In modern information transmission systems, electrical signals whose physical size is current or voltage are used, information transmission tools contain very complex electronic circuits, and therefore, the complexity of the electronic circuits being developed has necessitated the use of modern computational facilities.

In this study, by determining the mathematical models that allow the analysis of transient processes occurring in electrical circuits, it has been shown that the mathematical model of a problem can be examined depending on the physical formulation of this problem and the properties of the circuit elements.

The main purpose of this study is to solve the Cauchy problem defined for the linear RC electric circuit in terms of the Fourier series and to derive expressions that allow determining voltages and currents depending on time. As is known, the Fourier series represents an expansion of functions in terms of trigonometric functions or the overlapping of harmonics at different frequencies. In this sense, mathematical models can be described using the Fourier series for a more detailed examination of most engineering problems. In this study, based on the defined mathematical model, a second-order differential equation for the linear RC electric circuit was obtained and the solution was determined using the Fourier series. Assuming that the current function satisfies the Dirichlet conditions, special cases that take into account the variation of the current in the form of periodic and unit step functions are considered.

As a result, the solution of the Cauchy problem defined for a linear RC electric circuit with two capacitors is shown by realizing the existence and uniqueness of the solution in terms of the Fourier series.

Keywords: mathematical model,rc circuit,fourier series,differential equations

Determination Of Transformer Parameters With No-load And Short-circuit Experiments And Experimental Investigation Of Changes In Iron Losses And Copper Losses

_O4674

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The idle run test in transformers is done to find the iron losses of the transformer. In the no-load test, the secondary winding ends of the transformer are open-circuited and the rated-rated voltage is applied to the primary winding ends. Since the current drawn from the network in idle operation is small, no-load copper losses are neglected and all of the idle power drawn is considered iron losses. In the study, the variation of iron losses at various voltage values applied to the primary of the transformer was examined, and the iron losses showed a non-linear change depending on the applied voltage. When a load is connected to the secondary of the transformer, it has been observed that as the load increases, the iron losses do not change depending on the load and remain constant. Copper losses in transformers are found by short circuit tests. The test is done from the primary or secondary side. Since the applied voltage is small in the short circuit test, iron losses are neglected. The copper losses at various loads were calculated by increasing the load connected to the secondary of the transformer. It has been shown experimentally and by calculations that the copper losses show a non-linear variation depending on the load.

Keywords: transformers,iron losses,copper losses

Network Optimization Suitable For Green Supply Chain Abstract

_O4681

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There is a growing understanding that environmental pollution issues associated with industrial expansion should be handled alongside supply chain management. Such condition is contributing to green supply chain management with the rise in environmental concerns over the last decade,.The awareness of individuals, non-governmental organizations, and companies that make up the society about the environment and global climate change is increasing, and states are also taking precautions one after another. As a natural consequence, companies that are the biggest stakeholders of the economy have started to voluntarily establish a green supply chain or to comply with government regulations. However, ultimately having a green supply chain is more difficult, complex and costly than it seems. Although this situation is easier for companies that will start their operations, it can sometimes be impossible to achieve this transformation with affordable costs for companies that have been operating for years. The main difference is that newly established businesses have the knowledge and equipment to establish the green supply chain at the most optimal points. However, for companies that are already established and operating with great costs, they are faced with the dilemma of moving the facilities in order to comply with the green transformation or being at a competitive disadvantage by incurring high transportation costs. The aim of this study is to explain the concept of a green supply chain and to try to show a roadmap where companies can make network optimization while establishing a green supply chain.

Keywords: green supply chain,network optimization,sustainability

Üniversiteler Için Bulut Bilişim Servis Sağlayıcısı Seçiminde Bulanık ÇÖkv Yöntemlerinin Kullanılması

_O4683

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Teknolojinin hızla gelişmesi ile beraber, artık bilgisayarlar çağımızın vazgeçilmez bir parçası haline gelmiştir. Özellikle son yıllarda bilgisayar teknolojisi yeniden şekil almaktadır. Bulut teknolojileri ile bilgisayar sistemleri yeni bir döneme giriş yapmışlardır. Ancak hızla gelişen teknoloji, bazı dezavantajları da beraberinde getirmektedir. Bunların başında, satın alınan pahalı sistemlerin yeteri kadar etkin kullanılamaması ve kısa sürede yetersiz kalması gösterilebilir. Bunun bir sonucu olarak eldeki sistem çoğu zaman yükseltilemez ve yenisisin alınması gerekir. Özellikle üniversitelerde bilgisayar laboratuvarlarının kullanım süreleri düşük kalabilmektedir. Derslere göre değişen teknik gereksinimler ile donanımların âtıl kalması durumu ile sıklıkla karşılaşılmaktadır. Bu çalışmada üniversiteler için bulanık AHP ve TOPSIS yöntemleri ile bulut bilişim servis sağlayıcısı seçimi gerçekleştirilmiştir. Bu süreçte öncelikle AHP yapısında kullanılacak olan kriterler belirlenmiş, ardından kriter ağırlıkları hesaplanmıştır. Bulunan ağırlıklar, bulut bilişim servis sağlayıcı sisteminden seçilen hizmetlerin karşılaştırılması için TOPSIS yönteminde kullanılmış ve en uygun servis sağlayıcı seçilmiştir.

Keywords: bulut bilişim,teknoloji yönetimi,bulank ahp,topsis,Çkkv

A Linear Programing Framework For Seru Production System In Production Planning

_O4687

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It is critical that the production plan be established in accordance with the objectives in enterprises that generate multiple product types. In order to achieve these goals, it is necessary to reach the optimum benefit by moving many criteria to the most appropriate values. In this regard, preparing a production plan is one of the most essential factors of the decision-making process required for the organization to achieve its objectives. Therefore, it is quite important to determine the most appropriate production system during the planning process. In this study, the assignment problem was examined according to the seru production system, which is the reconstructed version of a conveyor assembly line. The developed mathematical model aims to minimize the total cost by ensuring that the right job is assigned to the right seru. Thus, a mathematical model is established for the master production plan of a factory. When making business-level decisions in the seru loading problem, the findings reveal that the suggested strategy is successful in terms of both solution quality and solution time.

Keywords: production planning,seru production system,assembly line,linear programming

Investigation Of Post Welding Distortions In Industrial Fixtures

_O4699

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With industry 4.0 today, it has become inevitable to apply up-to-date and innovative systems in industrial areas where unit production costs are high and the production process is difficult, especially from health to defense industry, from informatics to aviation and automotive. In the production world that maintains its dynamism and develops, auxiliary production personnel are needed to provide ease of production, increase efficiency, reduce errors. Among these elements, fastening elements called fixtures have an important market place. In this study, samples from the same type of steel-based materials were taken and special welding fixtures were designed according to these samples, and post-welding distortions were experimentally investigated. In general, it's possible to express welding fixtures as auxiliary production elements, apparatuses or equipment that allow serial welding and spotting of complex parts that are difficult to assemble, complex in geometrical structure. In order to evaluate the effect of the designed welding fixture, S235JR+AR steel and SG3 (EN ISO 14341-A) type welding wire (Ø1.2 mm) were used for the sample welding studies. SG3 type welding wire can be used for welding parts operating at temperatures between –50 and 450 °C. As shielding gas, 86% Ar + 12% CO_2 ± 1.0 and O_2 ± 0.2% were used with a flow rate of 12 lt/min. Welding processes were carried out at room temperature of 20 °C. At 3 different currents (200/220/250 A), 6 different samples of the same thickness were obtained. For each welding current, 2 bracket type samples were welded, one cooled on the fixture and the other outside the fixture. With this process, the effects of welding current and fixture on distortions were determined. After the parts are welded; angular distortions of varying degrees from 0.10-0.60 were obtained. As a result of the study carried out on 6 sensor holder bracket samples, the effect of the welding fixture on reducing distortion was clearly observed in the study, and the effect of different cooling conditions was discussed by going into more detail. As the welding current increased, the distortions in the part increased as a result of the increase in the heat input. After the welding processes, the samples were left to cool under different conditions, and it was observed that the distortion occurred in the cooling process on the fixture was less than the distortion that occurred in the cooling process performed without being connected to a fixture in the free state.

Keywords: industrial fixtures,distortion,welding

Green Supplier Selection Using Aras Method

_O4702

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One of the most important decision-making issues in supply chain management is supplier selection. In many ways, selecting the perfect supplier is crucial for the company: it improves customer satisfaction, lowers purchasing costs, reduces lead times, boosts production quality, and gives the company a competitive edge. Businesses are beginning to use green supply chain management due to rising consumer awareness of the environment and severe regulatory requirements. The goal of green supplier selection is to incorporate environmental considerations into the standard supplier selection procedure. Five green criteria—green image, sustainability, environmental credentials, green innovation, and green application—were utilized in this study to choose green providers. One of the multi-criteria decision-making techniques, the ARAS approach, was used to select the best environmentally friendly supplier for a Turkish company that manufactures plastics. Three decision-makers assessed four suppliers for the chosen firm based on five green criteria.

Keywords: green supplier selection (gss),additive ratio assessment method (aras),ahp,multi-criteria decision-making (mcdm)

Colorful Hydrogen: Hydrogen Production Technologies And Colors Of Hydrogen

_O4703

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In the study, it is aimed to examine the innovative technologies developed specifically for hydrogen, under the title of "colors of hydrogen" in order to create an alternative solution to the energy bottleneck that requires the development of special management mechanisms worldwide. The definition of hydrogen produced with innovative approaches with different colors shows that hydrogen, which is generally accepted as a green energy source, leaves different traces depending on the way it is produced. Hydrogen, known as the most intense energy source, is a clean energy source that can be a solution to global environmental problems and energy dependence, produced by different processes around the world and has real-scale applications. As a result of important global environmental problems, reducing the effects of climate change and adopting solutions has become a necessity for all countries. For example, the European Union has aimed to reduce carbon emissions due to climate change by 80-95% by 2050 compared to 1990. As a clean and renewable resource, hydrogen is seen as a very efficient way to reduce global carbon emissions and pollution. The classification of the produced hydrogen is expressed with different color codes according to the technology used and the fuel source. Mainly green, gray, blue, brown; pink, yellow, turquoise, and black are expressed in hydrogen terms. Green hydrogen is defined as hydrogen produced from renewable energy sources. Blue hydrogen, on the other hand, is produced from fossil fuel sources such as natural gas, and carbon emissions generated during production are captured and stored or reused. While gray hydrogen is formed as a result of the steam-methane reforming process of natural gas, brown hydrogen is formed as a result of gasification of coal and similar organic waste/residue materials. Today, although fossil fuels are the main fuel sources used, there is a need to develop especially green hydrogen production methods in order to limit the average temperature rise to 1.5°C. As a result, it has been concluded that in order for the hydrogen ecosystem to become widespread in our country, it is necessary to give importance to the issue of green hydrogen in parallel with the European Union and to support the transition from gray hydrogen to green. For this purpose, clean energy production studies should be supported throughout the country, and this process should be seen as a priority policy and approached to the world standard.

Keywords: hydrogen,climate change,greenhouse gas,clean energy,sustainability

Management Of Domestic Solid Wastes Via Lab-scale Gasification

_O4710

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In this study, it is aimed to manage domestic solid wastes by gasification. In the light of the experiments carried out in the laboratory-scale fixed bed reactor, syngas was produced and its energy potential was determined depending on its content. As a result of rapid population growth, industrialization and excessive consumption, the amount of solid waste and the rate of waste production are increasing day by day. The limited and rapid consumption of energy resources brought along the search for solutions and revealed the concept of sustainability. The organic content of domestic solid waste makes it possible to recover energy from these wastes with some specific technologies. In this context, the need for management mechanisms that play an important role in the production of alternative useful products that can be recycled for the country's economy and in approaching the sustainable waste management targets becomes mandatory. Gasification, known as zero waste technology, is one of the alternative technologies to incineration, which is applied with the goal of "energy from waste" in cases where priority waste management mechanisms cannot be applied well. In the study, the gasification process of the synthetically prepared domestic solid waste mixture was applied in the fixed bed steel reactor at the temperature range of 600 ^{o}C -750 ^{o}C. In the gasification process, different agent flow rates (0.05, 0.1, and 0.3 L/min) were studied, and the gas components forming the obtained synthesis gas composition were measured with a continuous gas analyzer and the approximate energy content of the obtained syngas was calculated. As a result of the study, it has been determined that the maximum heating value level of 2500 kcal/m^3 is reached when dry air is used with the gasification process. The calorific values of the solid residues collected at the end of the experiments were also analyzed, and as a result of the gasification experiments carried out at 600 ^{o}C and 700 ^{o}C, the thermal values were determined in the range of 3000-4500 kcal/kg.

Keywords: gasification,synthesis gas,waste management,waste-to- energy,zero waste

Evaluating Performance Of Automatic Speech Recognition (speech-to-text) Systems For Turkish Language

_O4711

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Automatic speech recognition (also known as speech-to-text) technology is getting popular day by day due to increased usage in virtual assistants, call centers, in-car systems, and education. Though one of the main focuses is to search through the spoken data, the technology also opened new ways for people with disabilities to interact with computers, enabling people without limbs to write without touching the keys or screen, or helping people with loss of hearing by subtitling a speech or video automatically.

The technology requires different fields of computer science to work together, such as signal processing and natural language processing.

Recent developments in the field of neural networks and deep learning significantly increased the performance of automatic speech recognition systems. However, performance tends to be affected by various factors such as accent, number of speakers, background noise/music, age and gender of the speaker.

Western languages such as English, French and German widely studied and have acoustic and language neural models that perform significantly better than non-Indo-European languages. They have relatively similar grammar, which makes it easy to fine-tune models from one to another. Training models for languages that have different alphabet (or writing system) or grammar requires extra work.

Though Turkish is using Latin alphabet, it differs from most Germanic and Italic languages by having vowel harmony, agglutination and lack of grammatical gender.

Various free and commercial solutions exist for Turkish ASR including cloud offerings and open-source alternatives.

In this study, we compared performance of existing ASR systems for Turkish language, using metrics such as Word Error Rate. We used both publicly available Turkish speech datasets and recorded speeches of native speakers which read predefined Turkish utterances that selected specifically by not only considering frequency of usage in day-to-day speech but also whether if the utterance reflect particular language features or not

Keywords: speech to text,asr,turkish language,speech recognition,natural language processing

Steam Gasification Of Biochar Obtained From Orange Peels In Downdraft Gasifier

_O4713

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In recent years, there has been a considerable increase in the amount of importance put on the acquisition of energy from renewable energy sources in order to advance carbon neutrality. Thermo-chemical conversion of biomass is a promising technological alternative for energy production and waste disposal reduction. The production of biochar from orange peels is a renewable option that has attracted increasing interest in recent decades. This paper presents the results of a model based on steam gasification of orange peels in a downdraft gasifier, with the objective to assess the feasibility of hydrogen production from gasification by means of Aspen PLUS. As a result of this study, it was found that the hydrogen composition in the syngas increased due to the presence of steam. It was found that when the temperature in the gasifier was increased, the amount of methane decreased while the amount of hydrogen increased. In addition, this study provides a new alternative for energy production and the use of waste generated from the use of oranges, which are produced in large quantities in the Mediterranean region of Turkey.

Keywords: biochar,gasification,orange peel,downdraft gasifier,hydrogen production

Neutrosophic Todim Framework For Hospital Location Selection: A Case Of Ankara

_O4721

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Today's cruel economic conditions cause a competitive climate that is highly challenging. The majority of the issues that enterprises must resolve in order to remain sustainable fall under the purview of multi-criteria decision-making (MCDM). In cases when the data provides certainty, managers making investment choices can employ conventional MCDM procedures as a decision support element. However, in the real market conditions enterprises faces a vague environment with many uncertainties. These uncertainties contain various risks. In such cases, Classical MCDM methods based on precise data are not sufficient to create algorithms by modeling human thought systems and perceptions in such cases. Decision-makers use decision support elements based on fuzzy logic principles in order to produce realistic and optimum solutions to real-life problems that are not based on precise data, contain uncertainties, and include the variability of human perceptions. In this study, the problem of choosing a hospital location for investment purposes is solved by the TODIM method, which is reconstructed by using neutrosophic fuzzy logic and examines human behavior through the loss-again relationship function. The most suitable hospital location model was applied to 5 different buildings/land in the districts of Ankara. As a result of the application, considering the effectiveness of the criterion weights and the loss reduction factor among the alternatives and criteria are analyzed. The results imply that the N-TODIM method can achieve effective results for different scenarios. One of the important contributions of this study is the absence of another N-TODIM method, which is created by using single-valued neutrosophic sets, in studies conducted for the selection of an investment area.

Keywords: multi-criteria decision making,fuzzy logic,single valued neutrosophic sets,todim

Tedarİk Zİncİrİ YÖnetİmİnde DaĞitim Kanali SeÇİmİne Etkİ Eden FaktÖrlerİn Dematel YÖntemİ İle DeĞerlendİrİlmesİ

_O4726

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Küreselleşmeyle birlikte liberal pazarların oluşması, müşteri taleplerinin çeşitlenmesi ve müşterilerin tatmin düzeylerinin yükselmesi, hammadde fiyatlarında dalgalanmaların yaşanması, rekabet üstünlüğü sağlamak isteyen işletmeler için tedarik zinciri yönetiminin önemini artırmıştır. İşletmeler rekabet avantajı elde etmek amacıyla esneklik ve çevikliklerini artırabilecek farklı yöntemler bulmaya çalışmakta olup bu yöntemler arasında tedarik zinciri stratejileri etken bir unsur olmuştur. Tedarik zinciri; tedarikçi, imalatçı, dağıtıcı, toptancı, perakendeci gibi çeşitli iş unsurlarından oluşan bir ağ içerisinde, hammaddenin temin edilmesinden ürünlerin nihai müşterilere ulaştırılmasına kadarki tüm süreçlerin entegre bir şekilde hareketini sağlamak üzere, mal, hizmet ve bilginin çift yönlü akışını yöneten bütünleşik bir sistem olarak tanımlanmaktadır. Bu ağ yapısının üyeleri, sayıları ve yerlerinin tespit edilmesi gibi unsurlar ise tedarik zinciri yönetiminde stratejik bir öneme sahiptir. Günümüzde özellikle ürünlerin tam zamanında talep edilen yerde hazır bulunması çok önemli hale gelmiştir. Müşterilerin taleplerinin tam zamanında karşılanması maliyetlerde düşüşe yol açacağı gibi tedarik zincirinin hizmet kalitesini de artıracaktır. Önemli bir maliyet unsuru olarak görülen dağıtım kanalının da değişimlere uyum sağlayabilecek şekilde tasarımlanması tedarik zinciri yönetiminde önemli bir fonksiyon olarak görülmektedir. Dağıtım kanalın seçiminde sağlanacak başarı müşteri memnuniyeti ve pazar payı artışı gibi işletmelere önemli avantajlar sağlayacaktır. Bu durum işletmelerin dağıtım kanalı yapılarını optimum düzeyde oluşturma ihtiyacını ortaya çıkarmakta ve işletmeleri çeşitli arayışlar içerisine itmektedir. Bu nedenle etkin bir dağıtım kanalı tedarik zincirinin başarısını ve rekabet konumunu da olumlu yönde etkileyecektir. Tedarik zinciri yönetiminde dağıtım kanalı seçimlerine etki eden faktörlerin tespit edilerek değerlendirilmesi işletmelerin önceliklerini doğru belirlemelerine destek olacak ve başarılarına etki edecektir. Çalışmada bu amaçla literatürdeki veriler ile dağıtım kanalı seçimlerine etki eden unsurlar belirlenmiş ve işletme yöneticileri tarafından değerlendirilmiştir. Elde edilen veriler DEMATEL yöntemi ile analiz edilmiştir.

Keywords: tedarik zinciri ,dağıtım kanalı ,dematel

Thermogravimetric And Kinetic Analysis Of Polymeric Composite Material Formed By The Blend Of Polyaniline And Hazelnut-derived Biochar

_O4749

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Polymeric composite materials containing biochar and polyaniline are of interest in the energy field due to their conductivity and light weight. The purpose of this work is to study thermal stability of the polymeric composite material formed by the blend of polyaniline and hazelnut-derived biochar. The thermal stability of the polymer composite material was investigated non-isothermally between 25°C and 900°C under argon atmosphere using Netzsch STA 449 F3 thermogravimetric analyzer. The kinetic analysis of the thermal degradation of the polymer composite material was studied using the Flynn-Wall-Ozawa method, which is one of the most commonly used integral model-free methods in the literature. The data obtained from this study can be used to develop polyaniline-based polymeric composites with better physical properties and high thermal resistance.

Keywords: conductive polymer,thermogravimetric analysis,kinetics,polyaniline,biochar

Application Of Single Phase Invertor Circuit Made With A Middle-termino Transformator And The Calculation Of The Commuting Capacitor According To Output Load Status And Investigation Of Output Waveform

_O4750

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In this study, the medium triple transformer was used and two SCRs were used as switching elements. SCRs are normally controlled rectifiers and power electronics sets are used to trigger them. Since these sets are compatible with 50Hz frequency, the switching frequency is 50 Hz and therefore the frequency of AC voltage on the secondary side of the transformer is 50Hz. To change the switching frequency, the frequency and amplitude of the AC obtained from the inverter output are changed. The value of the commutation capacitor is calculated according to the ohmic load connected to the secondary at the inverter output. A shock bib is used at the input to prevent damage to the switching elements to the DC source output. It has been observed that the trend at the inverter output is a distorted presentation wave. The waveform contains various harmonics.

Keywords: power electronics,inverter,scr

Streamlining Programming Courses By Employing Github Classroom And Automatic Code Evaluation

_O4753

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Programming assignments are essential for various courses in Computer Science curriculums such as Algorithms, Data Structures and Object Oriented Programming. Without hands-on programming challenges full comprehension of the concepts of programming-heavy courses is unlikely. Despite the known necessity of adequate amount of programming assignments for various Computer Science courses they are quite often neglected by lecturers because of difficulties in management of student's code submissions; evaluation of assignments in a timely manner and giving proper feedback to students regarding their coding mistakes.

As a teaching assistant for the Data Structures Course (BMB212) in Namik Kemal University in the Spring semester of 2021-2022 education year I used Github Classroom extensively. This choice made management of assignments very easy and introduced many sophomore students to Github for the first time. It is very easy to retrieve all student assignments; see student's progress live since they could push their code changes to their assignment repositories anytime they would like to and give feedback to students regarding their code.

I also automated evaluation of programming assignments and this automation gave me the opportunity to prepare more assignments. Automation also meant quick feedback for students. In this system students could see many details about their grades such as which tests their code passes, whether their code is compiled, what is the expected output for tests they failed to pass.

Course web page could be found at https://github.com/gusanmaz/BMB212_Algorithms . Details regarding Github Classroom, my automatic code evaluation system and possible future work will be presented in the congress.

Keywords: education,github education ,coding,data structures,automation

Advanced Nonlinear Modelling In Structural Analysis Under Earthquake Effects

_O4762

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In many specific cases of dynamic analysis of reinforced concrete structures, engineers and researchers are dealing with requirements for detailed nonlinear response of structural components, elements and in some cases whole systems. For many complex problems, there is a need for a more refined approach that has been in development and somewhat limited application in the last couple of decades. In the late 1970s the multi-slice fiber element for inelastic analysis was adapted in such way to take the advantage of two previous approaches: (1) First improved approach was based to the use of many single component elements connected in series. This procedure takes into account spreading of yielding and cracking, but it results in additional degrees of freedom. In most dynamic analyses, the additional degrees of freedom can develop significant unbalanced loads that when disregarded, may result in numerical instabilities; (2) Second improved approach was based to the use of interpolation functions in order to distribute the yielding along the member. These functions need to be predefined and are limited to representation of mainly elastic behavior of the element under general loading histories.

This particular multi-fiber modeling approach allows for sections at various positions along the length of the member current state to be observed and additional degrees of freedom can be avoided by use of interpolation functions. The modelling of the slices, that are also called “fibers” is different from the conceptual approach of discrete element modelling because it implements detailed analytical description of the geometric and material stress-strain properties in order to assess the behavior of critical regions.

In this paper presented will be an example of a typical prototype of a large prefabricated industrial hall with characteristic connections, where the critical reinforced concrete column sections will be modeled applying the advanced local nonlinear fiber modeling approach, in order to get a detailed insight into their nonlinear response from selected representative scaled input earthquake record.

Keywords: nonlinear behavior modelling,seismic structural analysis,prefabricated reinforced concrete halls

Halochromic Films For Intelligent Food Packaging

_O4765

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Nowadays, consumers are more aware about what they eat and demanding high quality and fresh foods. To ensure food safety, it is essential to monitor the freshness of food products from the beginning of manufacturing until they reach to the consumers as most commercially available foods are perishable in nature. Recently, increasing attention has been paid to the development of intelligent packaging films. Intelligent packaging films are developed to deliver information about packaged food products to consumers including food quality and microbial activity or gives comprehensive information about environmental changes that could affect food quality or safety. The real-time condition of the packaged food can be visually monitored with pH-sensitive (halochromic) substances incorporated into intelligent films. Halochromic films tend to change their color based on variations in the pH. The color change of halochromic films enables the consumers to differentiate the fresh and spoiled foods without opening the package. The synthetic pH indicators have been previously incorporated into polymeric matrix to detect the byproducts of microorganism. However, the increasing trend over production of eco-friendly materials forces researchers to develop biodegradable intelligent packaging films embedded with natural dyes. Anthocyanins are natural dyes that response the pH changes of the products regarding with microbial growth. The recent studies have focused on using anthocyanins in intelligent films as anthocyanins are capable of changing color from red to purple, blue, green or yellow. Addition of anthocyanin rich extracts to biodegradable films not only gives a sensing ability to the film but also develops the antioxidant and antimicrobial properties of the film. Incorporation of the anthocyanins into the films also enhances mechanical and barrier properties of the film. Therefore, the applications of biopolymeric films have been greatly broadened after incorporating anthocyanins and show great potential for use as active/intelligent food packaging film.

Keywords: sensors,intelligent packaging,anthocyanins,biodegradable films

Nanosensors In Food Safety Applications

_O4774

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Food safety is one of the top global issues affecting public health and global economy. Consumers often evaluate food freshness and safety relying on expiration dates printed on food packages. However, several factors may affect safety and quality of food during processing, storage or transportation. Therefore, it is needed to monitor, detect and track the state of food with a system such as sensors. Sensors can detect and sense certain signals including optical, electronical, electrical, physical or mechanical. Nanosensors can detect materials at nanoscale, atomic or molecular level as well as nanostructures can be used for precise sensing. Nanotechnology has brought a revolution in modern science. The intervention of nanotechnology enhances electrical, magnetic, optical, and catalytic properties of sensors. Nanosensors are sensitive, selective, and reliable tools suitable for food applications. To ensure food safety and quality, sensors are designed to detect food pathogens and their metabolites, mycotoxins, and food contaminants. In sensor development, various strategies have been applied such as electrochemical, fluorescence, colorimetric, nanostructures, Surface-Enhanced Raman Scattering (SERS), Surface Plasmon Resonance (SPR). Fluorescens biosensors measure optical signals emitted from fluorophores such as proteins, nucleotides, quantum dots or carbon dots when the analyte is detected by receptors. This allows a rapid and precise detection of the targets (pathogens, metabolites or contaminants etc.) in food. Most of fluorescent sensors are mainly based on the fluorescence quenching (“turn-off”), fluorescence enhancement (“turn-on”). Surface-Enhanced Raman Scattering (SERS), Surface Plasmon Resonance (SPR) exhibit excellent performance for sensing targets at low concentrations. The surface enhancement of substrates with nanostructures has improved the SERS signals in the detection of food analytes. Nanoparticles are capable of enhanced detection via electrochemical, optical and mass detection methods. Functionalization of nanoparticles enables them to be used for detection of various substances in food as well as pathogens and allergens. Furthermore, nanoparticle integrated sensor platforms are capable of boosting signal intensity which allows accurate analysis of the target analyte. Nanosensors hold great potential for rapid, high-sensitive, and on-site detection of contaminants, allergens, toxins, microorganisms and their metabolites in food.This presentation will focus on new methods and approaches in designing nanosensors and highlight applications in foods to maintain food safety and quality.

Keywords: nanosensors,food safety,quantum dots,biosensors

Software Trends Supporting The Evolution And Democratization Of The Metaverse Ecosystem

_O4776

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The Metaverse is a trending concept of virtual reality (VR). It has attracted attention by the end of 2021, which has been publicly defined by Facebook as a new social interaction between virtual reality, augmented reality, and the people. Many leading companies, including Snapchat, Microsoft, Google, and Meta itself, support the concept and evolution of virtual environments. This trend has accelerated especially in the post-covid era. This acceleration has created many horizons in this field and is gradually adopted by many innovations. Having stable software infrastructures is very important for the faster expansion and adoption of a metaverse in every segment of human life. Software trends and technologies such as Artificial Intelligence (AI), Augmented Reality (AR), VR, 5G, and Gamification concepts are going to form the basement of any further Metaverse Ecosystem evaluation.

In this paper, we will review the available software trends that support this evolution. Additionally, we will discuss the software democratization efforts of the system. The overall aim is to make a literature review, that would serve as a basis for further improvements.

Keywords: metaverse,evolution,democratization,virtual reality ,augmented reality

Advanced Architectures Supporting The Evolution Of The Metaverse Ecosystem

_O4779

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The post-covid era has stimulated many innovations throughout the world. Some of these innovations have changed the lifestyle of many of us. As nearly a high percentage of countries promoted the lock-down, the remote working style has attracted focus. One of the artifacts of working remotely was the need to keep social with especially virtual experiences. The concept of the Metaverse was especially introduced at the moment when people needed it most. With its introduction, leading IT companies, including the hardware and software giants, have started to support the Metaverse by gradually adopting it. The architecture of the metaverse is under development, there are many ongoing studies with propositions for the best architectures. Up until now, every suggestion for metaverse architecture has followed a tiered framework. For instance, American live gaming platform inventor Jon Radoff has proposed at least seven layers, starting from the bottom-up infrastructure, human interface, decentralization, spatial computing, creator economics, discovery, and experience. A three-layer architecture consisting of infrastructure, interaction, and ecosystem could be ideal for creating a metaverse architecture from a more macro perspective. These adoptions should also be accelerated in the middle and small enterprises. In this paper, we will review the advanced architectures supporting the evaluation of the metaverse ecosystem. Our research is of a literature review character and aims to help the companies to adopt the future much faster.

Keywords: advanced architectures,metaverse,evolution,virtual reality,augmented reality

Tek Tarafli Artirma YÖntemİyle GÜclendİrİlen Betonarme Elemanlarin Kisa SÜrelİ StatİK YÜkleme Altinda GerİlmE-deformasyon Durumunun AraŞdirilmasi.

_O4807

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Makalede, betonarme donatı ile güclendirilmiş dikdörtgen kesitli elemanın çekme bölgesindeki gerilme-deformasyon durumunun incelenmesi için beton ve donatının doğrusal olmayan deformasyon diaqramları uygulanarak sayısal bir yazılım metodolojisi geliştirilmiştir. Bu metodoloji yüklenmenin istenilen seviyyesi için genel durumda gerilime-deformasiyon etkileşimini karakterize eden parametrlerin belirlenmesine izin verir. Geliştirilen yazılım modeli, sayısal deneylerin yapılmasına olanak sağlar ve bu yöntemin etkinliği sayısal örneklerle ispatlanmıştır.

Keywords: beton,donatı,gerilime,deformasyon,güclendirme

Using The 3d Printer As A Programmable Syringe Pump

_O4837

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Syringe pumps are essential tools widely used in fields such as molecular biology, chemistry and bioengineering to control fluids in various applications. 3D printing is an emerging technology that gives researchers the opportunity to design novel customized or improved or low-cost tools and gadgets for their research. Thanks to recent 3D printing achievements in both FDM and SLA technology, as well as in printing materials, great innovations have been made in wet laboratory devices. On the other hand, the open source hardware and software movement is expanding very rapidly. In the scientific world, hardware and software projects such as Python, Arduino, RepRap and Openscad were appreciated and started to be used instead of commercial products due to their interchangeable advantages. Therefore many researchers and lab groups have designed their own custom microfluidic flow devices and fluid control systems, including the well-known syringe pumps, using 3D technology and an open source ecosystem. In this article, we present for the first time designing a 3D printer plug-in that makes it possible to use the 3D printer itself as a syringe pump without a disassembly process. We named it as "3D printer to pump converter", the 3DP2PC. The 3DP2PC can be mounted on both the X-axis and Z-axis of popular gantry-based 3D printers built on 20x20 sigma profiles. It can reach 0.1mm precision and has a customizable syringe connection hub. 3DP2PC can be controlled via g-code using PC or any other UART supported device like microcontroller or microcomputer. The 3DP2PC costs under $2. The system can be printed using ordinary PLA filaments. The 3DP2PC can be easily integrated to Arduino and Pyhton based applications.

Keywords: 3d printer,microfluidics,instrumentation

Trends In The Development Of The Azerbaijani Mobile Apps' Market: Forecast In The Visible Period

_O4849

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This article provides an overview of the current status and the development perspectives of the mobile application market in Azerbaijan in light of recent trends and practices. The study demonstrates that in Azerbaijan mobile applications are already commonly used for business purposes in several sectors of the economy, including B2C services. However, it is established that businesses have not managed to reach market saturation in this regard due to the lack of sufficient use of mobile applications. Considering the current state of affairs the main impediments and challenges that are faced by businesses in Azerbaijan with respect to the development and use of mobile applications are thoroughly analyzed in the article. Such challenges include, among other things, the unavailability of data, the integration with corporate information systems, high cost of development resources, customer behavior, etc.

The article examines and analyzes in detail the reasons why business in Azerbaijan does not use mobile applications sufficiently to reach the global level in this area. First of all, this concerns increasing the availability of data for mobile employees and simplifying individual elements of business processes using corporate applications - route planning, processing various applications, obtaining statistics, etc. At the same time, the tendency to seek additional benefits from processing the received volume of large data has not been reflected in the market of national mobile applications at all, because the latter requires the subsequent development of server and cloud infrastructures. The same applies to client services and image applications.

The opportunities that could be taken advantage of to ensure the desired progress of the mobile application market in Azerbaijan are also discussed by the authors.

Keywords: mobile market,mobile application,client services,mobile payments,software

Fabrication Of Superhydrophilic Ormosil Surfaces

_O4873

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Ormosil surfaces are organically modified silicates with superior properties having high mechanical properties and specific applications such as antifogging, self-cleaning, and sensor applications. Solid surfaces with water drop contact angles lower than 10° are called "*superhydrophilic*" governed by both the surface chemical composition and the surface roughness. This study fabricated transparent superhydrophilic Polyethylene glycol (PEG) tetraethyl orthosilicate (TEOS) ormosil composite surface by a sol-gel method having 50 wt% of TEOS. The AFM results indicated that the PEG-$TEOS_{50}$ surface is almost smooth, and the contact angle value was 8º. However, an increase in the PEG content of the ormosil surface from 50 to 65 wt% resulted in an increase in the water contact angle from 8 to 36º. In addition, the surface roughness effect was investigated by adding the silica content in PEG-$TEOS_{35}$ composite solution. It was found that the water contact angle was decreased from 36 to 24º, and the underwater hexadecane contact angle was increased from 145 to 158º by increasing the surface roughness with 0-5 Wt% silica content. The surface morphology of the PEG-TEOS rough ormosil surface was characterized by AFM and scanning electron microscope (SEM). The chemical, mechanical stability, and durability of the superhydrophilic ormosil surface were investigated using chemical, adhesive tape, and hardness tests (scratching). The increase in the PEG content of the composite films resulted in a decrease in the surface hardness from 9H to B due to the softer organic part of the thin films. In addition, the surface hardness decreased by increasing the silica content form from 0 to 5 wt%. Nevertheless, the stability of the superhydrophilic nanocomposite coatings remained nearly constant for several months under stored ambient conditions.

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Keywords: superhydrophilic ,ormosil ,teos ,peg

Study Of The Workload Of Specialized Waste Treatment Equipment

_O4877

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In the modern world, the problem of collection, processing and safe storage of household waste is growing. The process needs to be as efficient as possible. In order to achieve this efficiency, it is necessary to maintain the equipment used in municipal waste landfills in a working condition, with the lowest possible costs. In this article, statistical information is collected on the work of specialized equipment in a landfill for the storage and processing of household waste for the period from January 2021 to March 2022. Information is collected on the load on this equipment and, based on this data, and the requirements of the producers of for the corresponding machines, an optimal mode for their maintenance has been developed.

Keywords: special equipment,workload,maintenance,optimal maintenance

Experimental Testing Of Rubber Buffer Models Used For Upgrading Bridges Under Earthquakes And Floods

_O4883

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Extensive experimental and analytical study was performed devoted to development of integrated earthquake and flood protective (EFP) bridge system. It represents extension of the conducted integral research project led by the fourth author during three and a half years, in the Institute of Earthquake Engineering and Engineering Seismology (IZIIS), Ss. Cyril and Methodius University (Skopje), realized in the frames of the innovative NATO Science for Peace and Security Project "Seismic Upgrading of Bridges in South-East Europe by Innovative Technologies (SFP: 983828)", involving five European countries. From the conducted original experimental quasi-static cyclic tests conducted with simulated gradually increasing displacement amplitudes, confirmed were very stable hysteretic responses of created prototype models of rubber buffer (RB) devices applicable for efficient protection of common and isolated bridges exposed to either strong earthquake or flood disasters. Following upgrading of seismically isolated (USI) bridge system with energy dissipation devices, the adopted original rubber buffer (RB) devices represent important line of defense against abrupt loadings.

Keywords: bridge,model testing,earthquake,flood, rubber buffer

Refined Modeling And Seismic Response Of Prefabricated Hall System With Tested Upgraded Connections

_O4884

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The design and construction of modern, globally upgraded, seismically safe industrial hall systems (GU-SSIH Systems), is presently of an extraordinary importance since these structures most frequently house new modern (advanced and robotically conceptualized), industrial machines and equipment whose value multiply exceeds the value of the integral structures. The GU-SSIH systems are of vital importance because only by their practical application provided is efficient and continuous functioning of important production industrial systems and compounds. It is known that our region and the wider region of Europe are characterized by a pronounced to high seismicity. In this paper presented are original results from the conducted nonlinear seismic response analysis of the selected representative industrial hall prototype structure transformed through re-design in the qualitatively upgraded seismically safe system (USS-system) with implemented upgraded connections. With application of the formulated advanced 3D nonlinear analytical model, demonstrated is high seismic safety of the upgraded system confirmed with stable hysteretic responses of the upgraded connections and favorable nonlinear response characteristics of the integral structure under simulated real strong earthquakes.

Keywords: prefabricated system,connections,nonlinear response,seismic safety

A Mixed Integer Optimization Formulation For The Reduction Of Complex Systems Based On Uncertainty

_O4892

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Chemical reactions are typically represented by the mathematical models that comprise ordinary differential equations. Increasing the number of parameters and variables in the models produces significant computational complexity in some circumstances. Furthermore, the uncertainty of the parameters and the cumulative rise of impacts on computations diminish the model's prediction accuracy. The elimination of uncertainty is critical during the analysis and decision-making process.

In this study, it is aimed to reduce the amount of uncertainty and computational cost with mixed integer nonlinear programming integrated with forward sensitivity analysis. The problem is solved with Python/PYOMO by using various solvers (SCIP, BONMIN, etc.). In the objective function, equations describing the forward sensitivity analysis and nonlinear cumulative accumulation are included. The parameters that reduce the uncertainty of estimation without any significant change in the mean prediction value were determined and removed from the reaction network. In addition to that, a reduced reaction network structure was obtained as a result of parameter elimination. The mixed integer nonlinear optimization formulation is flexible and extensible for different applications and needs.

Keywords: mixed integer programming,uncertainty,mathematical modeling

Study On The Effectiveness Of Intelligent Transport Systems After Their Implementation In Urban Public Transport

_O4900

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Intelligent Transport Systems (ITS) are systems that apply information and communication technologies to road transport, including infrastructure, vehicles and users, traffic management and mobility management. One of the priority areas for the development and use of specifications and standards is "connecting vehicles to the transport infrastructure, i.e. equipping vehicles with data or information exchange devices". Intelligent transport systems in urban environments contribute to reduced congestion, faster and easier passage through busy intersections and, not least, a beneficial impact on the environment. The benefits of the implementation of intelligent transport systems in the organisation of the urban transport network lead to the promotion of the use of urban passenger transport and a reduction in the use of private vehicles by citizens. This report presents a study on the effectiveness of the introduction of ITS in the urban public passenger transport of the city of Ruse. The study shows an increase in passenger flow in urban public passenger transport after the introduction of ITS.

Keywords: intelligent transport systems,urban public transport,transport efficiency

Fire Risk Assessment Of Primary School In Republic Of North Macedonia

_O4906

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A fire risk assessment of Primary School in Kumanovo, North Macedonia, was conducted and the results are presented in this paper. The level of fire risk was defined by using qualitative and quantitative methods and depending on the defined level of risk, adequate measures for risk reduction are proposed. The elementary approach of Five Steps and the Matrix method were applied as qualitative methods for fire risk analysis and the Euroalarm method was used as a quantitative method for fire risk analysis. The analysis showed that the school does not meet the fire safety measures and this is due to a number of factors: lack of appropriate fire protection measures, lack of trained staff, lack of fire departments, lack of fire stairs and doors. Based on the results of the analysis, it can be concluded that firefighting is a serious and responsible work that requires serious approach, regardless of its purpose, to provide preconditions for the implementation of fire protection measures in accordance with relevant regulations and standards. In that way, the probability of fire would be reduced, if it happened, the intensity of the damages would be reduced, i.e. the risk of fire would be reduced. For a quick and initial, but still sufficiently accurate risk assessment qualitative risk assessment methods like Matrix Method and Five step Method can be applied. If a more detailed analysis is required, a quantitative method, such as Euroalarm Method, or semi-quantitative method should be used.

Keywords: five step method,matrix method,euroalarm method,hazard,risk

Sürgü Kapak Mekanizmalarında Kullanılan Tekerleklerin ömür Testi Için Plc Kontrollü Test Düzeneği Tasarımı Ve Uygulaması

_O4914

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Bu araştırmada farklı tip sürgü kapak mekanizmalarında kullanılan tekerleklerin ömür testlerini gerçekleştirebilmek için PLC kontrollü bir test düzeneği tasarlanmıştır. Sistem, ihtiyaç durumunda farklı iyileştirme ve değişikliklere uygun analog ve dijital giriş/çıkış modülleri ile donatılabilir yapıdadır. Geliştirilen sistem bir servo motor ile tahrik edilmektedir. Düzenek üzerinde bulunan bir proxy sensor ile çevrim sayısı ölçülüp kaydedilmektedir. Sistem bir HMI operatör paneli ile kumanda edilmekte ve ihtiyaç durumunda farklı reçeteler oluşturularak hazır test prosedürleri oluşturulabilmektedir. Araştırmada geliştirilen sistemin başarısı yürütülen deneysel çalışmalar ile test edilmiştir. Dört farklı POM (Polioksimetilen) malzemeden üretilmiş olan sürgü mekanizması tekerleklerinin ömür testleri gerçekleştirilmiştir. Testlerde endüstriyel olarak kullanılan MO2S POM, Kocetal POM, Kocetal UR302 POM, Kocetal SO301 POM malzemeden üretilmiş tekerlekler kullanılmıştır. Testler sonucunda tekerleklerde meydana kütle kayıpları ve boyutsal değişimler ölçülerek metin içerisinde sunulmuştur.

Keywords: sürgü kapak mekanizması,Ömür testi,plc

Development Of New Generation Technical Sportwear For Base Jumpers And Parachutists Taking Into Account Dynamic Movement And The Anatomical Structure Of The Body

_O4942

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In this article, we present the development of sportswear for the ever-growing extreme BASE jumping and skydiving sports, from the clothing needs of beginners to professional competitors. Zoltán Dolhai, owner and managing director of Intrudair Ltd, manages a unique business in Hungary, manufacturing custom-made parachute and wingsuits for 25 years for skydivers all over the world. The research work was supported by the GINOP-2.1.2-8-1-1-4-16-2019-00901 grant, with the participation of colleagues from the Institute of Product Design of Obuda University. As a result of the tender, we made 1-1 close-fitting tunnel suit clothes for wind tunnel as well as 1-1 wing suit were created and will be presented from design to prototyping. All suits are required to be form-fitting and comfortable.

The athlete needs to feel the flow of air through the body, as it helps him to feel the force, he needs to move his body parts, where he needs to put force by tensing his muscles to keep his balance. The choice of fabrics for making the clothes is very important, as they need to have both good strength properties and high elasticity.

Developing tunnel suits: beginners and wind tunnel visitors start training in so-called ‘first-flyer’ passenger suits with professional trainers. These suits should be fitted with handles so that the trainer can hold the student anywhere in the wind tunnel during the training. An important aspect is that the placement of the ‘handles’ on the suit is adapted to the skill level of the wearer. The next level is the clothing of professional competitors who are already performing acrobatic movements in the wind tunnel. Both suit types have been tested at different wind speeds in a wind tunnel.

One of the two wingsuit designs is a further development of the "Freestyle wingsuit". In wingsuit flying, a style of wingsuit is becoming increasingly popular, where pilots fly in groups in a fleet and add acrobatic elements (backflying, carving) to their flights, and is also used in competitions and world championships.

The other development is the suit used for tracking, a popular sport for BASE jump jumps, where the suit is used to assist the movements of the athlete who wants to fly away from the rock face, making the "flight" safe and enjoyable.

Keywords: skydiving sportwear,formfitting clothes,custom made wind tunnel suits,custom made wing suits,dynamic movement

Geotechs And Their Usage Areas In The Area Of Technique

_O4944

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Technical Textile, with its reliability, performance, aesthetic and ergonomic structure and with many more aspects, is taking more and more place in our daily life and making life much easier for us.

The usage areas of technique textile products are expanding day by day. Along with the necessity of classification of fibers, the necessity of classifying textile products according to their intended use arises. This year, they are classified according to their usage areas in technical textiles.We can classsify those usage areas of technique textile under 12 groups. These areas are CLOTHTECH in technical clothes and shoes area, SPORTECH in sports and recreation textiles area, GEOTECH in geology textiles area, AGROTECH in agricultural textiles area, PROTECH in individual and not indiviual textiles area, INDUTECH in industrial textiles area, OEKOTECH in acological textiles area, ; MEDTECH in medical and hygienic textiles area, BUILDTECH in construction and structure textiles area, HOMETECH in home and floor textiles area, MOBİLTECH in vehicles textiles area, PACKTECH in package textiles area.

In this study, geotextiles and their current usage areas have been examined. Technical textiles used especially in ground-related studies; It is used with a non-woven, woven or knitted surface in road construction, pavement and similar works.

Keywords: textile science,technical textiles,geotextiles,application areas,composite textiles.

Assessment Of Rainfall-induced Landslide Reactivation Through Hypo-plastic Material Model

_O4950

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Landslides are recognized as one of the major hazards, reflected through large material and human loss throughout the world. They can be triggered by anthropogenic, but also due to a natural and/or climatic factors. Rainfalls are noted as one of the most important natural triggers for landslides re-activation, while the positive trend in the climate change shown recently, implies that this type of weather-related hazards would be even more frequently prevalent in future. Thus, rainfall induced landslide arises large interest among the professionals that are working in this field recently, and is main concern of this research paper. The long-term stability, as well as the landslide reactivation susceptibility due to rainfall, of one well documented slope is going to be assessed in time, through FE analysis in program package PLAXIS. In the model two different hydrologic scenarios measured on the aforementioned location, are going to be analyzed; average annual precipitation data for the period between 1961-1996 and average annual precipitation data for the most recent period between 2005-2014. The soil behavior in time is represented with the non-linear hypoplastic material model, which is considered that will provide the most reliable results for the deformations, taking into account the strain-softening behavior. One of the main interests of this paper is the slope failure mechanism in time, the spatial position of the failure plane due to the rainfall infiltration and pore water fluctuation, as a result of changes in the meteorologic data. Furthermore, this paper provides a comprehensive analysis of the laboratory tests needed for the hypo-plastic material model.

Keywords: landslide reactivation susceptibility,rainfall infiltration,hypo-plastic model

MakİNa İmalatında Kestirimci Bakım

_O4960

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Makine imalat sektöründe yaşanan zorlu rekabet koşulları, akıllı firmaları ön plana çıkarmaktadır. Firmalar rekabet güçlerini arttırmak, verimliliğini ve üretkenliğini üst noktalara çıkarmak için yeni nesil uygulamalara ihtiyaç duymaktadır. Kestirimci bakım uygulamaları da bu çalışmaların başında gelmektedir. Kestirimci bakım; makine ekipmanlarının, çalışma süreleri boyunca veri kayıt yöntemleri ile izlenerek verilerinin kaydedilmesi, verilerin analiz edilerek arızalanmadan önce ömürlerinin tayin edilmesine dayanmaktadır. Bu sayede ömrü dolan ürün önceden tespit edilerek kontrollü bir şekilde değiştirilmekte, fabrika içerisindeki kontrolsüz duruşların önüne geçilmektedir. Kontrolsüz duruşlarda kaybedilen zaman ve maliyetin önüne geçilmesi planlanmaktadır. Bu çalışmada da, takım uçları için kestirimci bakım uygulamaları araştırılmış, takım uçlarından alınan veriler analiz edilerek ömür tayinleri yapılmıştır.

Keywords: kestirimci bakım,makina Öğrenmesi,endüstri 4.0

Identity In The Urban Context

_O3660

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Urbanization, developed with modernism, started to standardize the cities known for their distinctive qualities in history. The city is expressed by only daily activities or functions in modern age. However, the concept of the city has a meaning beyond this. This hidden meaning is explained by *identity*. The identity of a city is that each city has its own unique qualities due to its nature, built environment and human structure. Therefore, what defines the features that distinguish a city from others is, its identity. Since identity is the product of a great process extending from the past to the future, every city has an identity, albeit buried. Based on places, people, culture and time evolve, the socially engaged urban identity will not remain the same and will undergo certain changes over the years. However, what is desired in this change that will be experienced in the triangle of space, people and identity is that the change takes place on the axis of existing/constant identity and in a way that supports it. The main problem in the context of new generation urbanism is not this change, but the unplanned progress of the change. While it is a cliché to create the physical spaces to be designed for the city according to certain needs lists, the element that decides whether any kind of intervention about the city is appropriate or not is the identity of the city. Within the scope of this article, the concepts of space and people were determined as the determinative factors in order to reveal the intricate relationship between the concepts of city and identity. While the space is personalized as the passive element of the city, this article, which examines the human as the active element of the city, prioritizes the active human being in the urban design process too, as in all spatial design types. The human being is both the creator and carrier of the urban identity with the social elements such as collective memory, history and culture - at the same time, it is both the producer and the user of the urban design/ environment. Thus, the aim of this article is to reveal how the space, as a passive player of the city and its identity, is shaped by the identity acquisitions transferred by the active user (human) in the tides of time and the context of the urban design.

Keywords: urban identity,urban design,space,human factors,urbanization

Walkability: A Field Study In Tekirdag

_O3664

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The most primitive form of transportation, “walking” is recalled nowadays. Walkability can be defined as a desire to walk and the satisfaction of walking from one destination to another. While leading a more introverted life with increasing technological opportunities, vertically rising cities and the vehicle traffic, the walkability of places where modern people can socialize, meet, or experience the city, is being researched by many different disciplines today. This research includes the examination of various streets in Tekirdağ city center according to the walkability criteria. Four different reference sources were used in the determination of the walkability criteria and a research base as a checklist was created for the field study. Jan Gehl, known for his approaches that prioritize people in the city, will contribute to the human dimension of the field study with his human-scale approach. Characteristics of *sidewalks, street design, land use mix, route connectivity, side planning considerations in human scale, retrofitting older communities, building form, streetscape design, parking, traffic* and *sidewalk* criteria of the American Planning Association [APA] will be discussed to investigate the quantitative aspects of walkability. Commission for Architecture and the Built Environment [CABE]'s concepts of *comfort and safety, domination by functions, visual simplicity, utilities subordinate, fitting to character and activity* and *ordered for access* will be evaluated according to the attractiveness of the streets. In addition, based on the concept of complexity that triggers the action of walking, with reference to Rapaport, *alternate routes, location, mixed-use, activity variations and diversity, ambiguity, open-ended design, allowing for change during time* and the *system of the street as gridal or irrational pattern* will be examined in the field study. Kolordu, Peştemalcı, Muratlı, Çandarlızade İbrahim Paşa ve Hüseyin Pehlivan + Rakoczi streets in Tekirdağ Süleymanpaşa constitute the field study of the research. This research, which is based on the compilation of different sources and applied in practice with field study, is important in terms of both the human dimension and the qualitative and quantitative values of the physical properties of the street space. According to the research base obtained in this context, the walkability of each street to be investigated will be determined and human and place-oriented suggestions for increasing walkability will be discussed in the conclusion part.

Keywords: walkability criteria,street,human scale

Developing Landscape Design Decisions In The Framework Of Neighborhood Fiction: The Example Of Tekirdağ/Çorlu/topçualayı Neighborhood

_O3694

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Social, economic, environmental and spatial changes and transformations have been experienced along with the urbanization process. This situation has led to multidimensional problems, especially in the relationship between rural-urban, society-space, environment-living life. In parallel with the solution of related problems, protection-oriented planning and design-oriented strategies and targets have been developed in upper scale plan and policy approaches. Over time, different planning models such as garden city, compact city, and sustainable city have been developed and attention has been drawn to the necessity of taking plan and design decisions starting from the neighborhood scale, which constitutes the main fiction of the city. In addition to this, concepts such as quality of life, identity, image, ecology, sustainability, locality and originality have also been concepts and themes frequently mentioned in planning and design approaches. In this direction, it is envisaged to develop landscape design decisions in the example of Topçualayı District, which is expected to be opened for a new settlement in Tekirdağ / Çorlu District, within the framework of the hypothesis that "it is an important requirement to create a sustainable living environment that can preserve its original and local values in planning and design approaches". For this purpose, it is aimed to design an area that has not yet been opened for construction in a district that has come to the forefront with its industrial city image with an approach that goes down to parcel, open space, street and building scale in an environmentally sustainable, socially livable and culturally original way. The study method includes examining the literature data, field observations, analysis and evaluations, and landscape design projects. Maps regarding slope, aspect, elevation, urban reinforcement areas, green areas and transportation status were created at the neighborhood scale within the method process. Strategies were developed at the scale of parcels, open-green areas, roads and buildings, and design decisions were developed including many 3D project examples using AutoCAD, Photoshop and Lumion programs for strategies by utilizing the relevant maps. The results of the study will set a micro-scale example for the development of sustainable cities, in particular the neighborhood setting within the framework of the concept of "Transformation from Gray to Green".

Keywords: landscape design ,neighborhood scale,open-green area,sustainability,tekirdağ/Çorlu/topçualayı neighborhood

More Liveable Street Arrangement For Children: Woonerf Concept

_O3729

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The development of the child depends not only on the characteristics of the physical environment, but also on the quality of the social environment. The presence of active open spaces for children significantly supports their physical, mental and social development in a healthy way. However, the fact that children can play freely and comfortably in these places as they wish, that is, the child's free movement ability also positively affects the development of the child.

Today, especially in big cities, due to the dangers arising from traffic, children are deprived of the opportunities offered by the physical environment in the urban space. At the beginning of these places is the street space, which is of great importance in the development of the child.

One of the applications implemented to make the street more livable for children and to play games safely is the Woonerf concept. Woonerf is a Dutch town planning concept meaning "living street". This concept was first developed by scientists such as Niek de Boer and Joost Váhl in Delft, Netherlands, in the 1960s. Seeing that the excessive traffic density on the street left the city users, especially children, in a difficult situation, the municipal administrators and citizens decided to implement De Boer's idea.

The main purpose of Woonerf is to change the way streets are used, to make them better, to increase the quality of life in that place, by designing streets not only for traffic, but also for people, especially children.

The aim of this study is to analyze the design principles of the Woonerf concept, to examine how it developed in the historical process, how it became legal, and to reveal its benefits to all users of the city, especially children. The method of the study is based on the examination of the literature studies on this subject. At the end of the study, it is aimed to examine the advantages and disadvantages of the Woonerf concept.

Keywords: game,street,woonerf,speed limit

An Approach For Sustainable Development In Tekirdag Ganos Region Rural Settlements.

_O3802

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In spatial plans, basic decisions are taken regarding the future development of rural areas as well as urban cities. Since the 1930s, rural development models with different approaches have been produced by disciplines such as urban planning, architecture and landscape architecture.

At the UN Conference on the Human Environment held in Stockholm in 1972, attention was drawn to the protection of environment, and especially the coasts. After this conference, environmental protection and coastal protection legislation came into force in many countries, especially within the European Union. For the projects that open up environmentally protected areas for construction or use, the concept of sustainability has become one of the main expected goals. Especially in the upper-scale planning decisions, many targets and strategies have been put forward for the sustainable development of settlements,

The rural settlements of Tekirdağ Province positioned on Ganos Mountains overlooking the Marmara Sea have continued to be a living space until today, despite the earthquakes that took place in the Ancient Greek, Roman, Byzantine and Ottoman periods. This characteristic rural environment, where the traces of the Lausanne Exchange are evident, has been the scene of out-migration due to the decrease in income from agricultural activities (olive growing, viticulture, tobacco growing, cherry growing, etc.) in the last 30 years. Related to the migration of young people from the villages, the retired population over the age of 60, became the dominant group that continued the agricultural activities.

On the other hand, the rural landscape of the Ganos Region carries promising tourism and fishing potentials besides the agricultural potential. These potentials were examined with the spatial analyzes made on Uçmakdere, Gaziköy, Güzelköy and Hoşköy settlements of Ganos, and in the light of the obtained findings, solutions to regional problems on the basis of sustainability were put forward on the grounds of rural landscape planning.

Keywords: tekirdağ,ganos region,sustainability,rural landscape planning,tourism

Architecture and Planning

Examining A Primary School Facility And Its Impact Area Through TekirdaĞ SÜleymanpaŞa City Plan Decisions.

_O3803

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The disciplines of city planning, architecture and landscape architecture are the professions that play primary roles in the shaping of urban areas. During the planning phase, basic decisions are made regarding the shape of cities in the future. In the light of these plan decisions, reinforcement areas such as roads, green areas, and health areas of the city, as well as trade centres, industrial areas, tourism areas and other land uses are concretized.

Another urban facility area, where site selection decisions are made during the city planning, is education facilities. Especially, the fact that elementary education has become compulsory in developing countries starting from the 19th century and the increase in the income of individuals due to the rising education level in the industrial society have brought the approach for increasing of the number of educational facilities and locating them within walking distance of the residence into the question. A similar process was experienced in developing countries in the 20th century as well.

Since the 1910s, the increasing use of motor vehicles on city roads has brought children face to face with accidents. Child deaths, which increased because of being hit by cars and trucks on the way to school and park, led scientists working on cities to new research on city plans, which were considered the icons of that period. Clarence Perry developed the “Neighbourhood Unit” approach for the New York Plan in 1929. This approach, which is based on re-planning the city as "neighbourhood units", shows some similarities with the Ottoman idea of “Mahalle”.

Neighbourhood unit approach was defined as “Elementary School Settlement Unit” in Turkish urban planning practice after 1960 and it was widely used. In this paper, a public school located in Tekirdağ Province Süleymanpaşa District Hurriyet Neighbourhood was chosen as a case. This school and the plan unit constituting its neighbourhood, were examined with the urban design analysis method, and in the light of the findings obtained, improved and feasible alternative solutions were put forward for the problems of planning and design of the region.

Keywords: city planning,educational facilities,neighbourhood unit,urban design,architecture

Mentally Disabled Children's Opinions About Playgrounds

_O3827

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Play is the right of every child. Play is both a fun and learning tool for the child. Playing and spending time in playgrounds is important for the child's physical, mental, language, motor and social-emotional development. It gives the child the opportunity to research, observe, explore, develop new skills and experiment as much as they want without worrying about failure while playing. In addition, children play games with friends; learn to share, help, cooperate, wait in line, take responsibility, obey the rules and respect the rights of and protect their rights.

Play and playgrounds are very important for the development of disabled children, like all children. The disabled child learns the practices in daily life through play. Apart from the education they receive, it is important for disabled children to spend time with non-disabled children in terms of their physical, mental and especially social development.

However, studies reveal that children with disabilities generally face some restrictions in accessing playgrounds, using playgrounds and interacting with their peers.

Types of disabilities are hearing, vision, mental disability, etc. are listed as. This study focused on mentally retarded children. The research aims to determine the opinions and wishes of mentally retarded children about play and playgrounds. For this purpose, 10 disabled children were interviewed at the Çorlu Special Education Primary and Secondary School Vocational School affiliated with the Ministry of National Education in the Çorlu district of Tekirdağ province, and then the teachers at the school were interviewed. In this study, a qualitative research method was used to determine children's views on playgrounds more comprehensively, and the case study design, one of the qualitative research designs, was used as the research design. The in-depth interview method was chosen as the data collection tool in the research and the obtained data were analyzed by the descriptive analysis method.

According to the data obtained as a result of the research, it has been determined that the interviewed children's access to playgrounds is generally limited and that these children do not want equipment such as swings and slides, which are usually seen in traditional children's playgrounds.

Keywords: play,playgrounds,barrier-free design,inclusive design

An Interdisciplinary Approach To Urban Quality Of Life And Cittaslow: GÖkÇeada

_O3879

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The Cittaslow movement started in 1999 in Orvieto, Italy. Today, 282 cities from 32 countries around the world and 21 cities in Turkey have joined this network. The aim of the movement is to protect the identities of the cities and to prevent the cities that have emerged because of globalization from being like each other. In the process of cities becoming slow cities, protecting and supporting the cultural structure, traditions, architecture, local food, crafts, and tradesperson are important in terms of the criteria set by the union for the member cities. The Cittaslow movement is a union of cities that aims to prevent the standardization of lifestyles by preserving the local characteristics and patterns of cities.

Determining the population as a maximum of 50,000 is one of the basic conditions of being a Cittaslow; while ensuring the preservation of local culture, economy and interpersonal relations, and ecological concerns, including the physical growth of the city and the destruction of the surrounding natural areas, were also taken into account. These principles, on which the Cittaslow movement is based, positively affect the improvement and protection of the quality of life of the individuals living in that settlement. Quality of life is an influential concept that is often used to describe the level of satisfaction of people in different settlements. Urban quality of life also comprises components related to the physical environment, social environment, and economic environment quality. Therefore, there is a strong relationship between the Cittaslow movement and the quality of urban life. When the criteria for being a Cittaslow are examined, it is seen that they have similar goals in terms of urban life quality and sustainability. The aim of this study is to examine the relationship between the Cittaslow movement and the quality of life in Gökçeada, which was selected as a slow city in 2011 in Turkey. Gökçeada, the world's first and only Cittaslow island is important.

In this study, how the criteria of the Cittaslow movement affect the quality of life of Gökçeada, the concept of the quality of urban life, and its indicators are presented with both the literature study and the information obtained from local institutions. This interdiscipinary approach discusses the roles of disciplines between individuals living in the city and actors such as local administrators, non-governmental organizations.

Keywords: urban quality of life,gökçeada,slow city,conversation,sustainability

The Biophilic Design Approach In Work/office Spaces: Tekirdağ Namık Kemal University Rectorate Building

_O3937

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Nature is important in terms of its effects on human emotional, cognitive, aesthetic, and psychological development. Humans depend on nature for their basic needs, such as nutrition, shelter, and a healthy life in order to survive as a part of nature. The physical, mental, and spiritual health of a person depends on the quality and continuity of his interaction with nature. This interaction increases the potential for a safe and fulfilling life.
The concept of biophilia, which focuses on the harmony of nature and human interaction, is also a research area of ecological and sustainable design concerning biologist Edward O. Wilson's biophilia hypothesis in the 1980s. Biophilia is defined as an "innately emotional affiliation of human beings to other living organism". Biophilic design, put forward by Stephen Kellert, states that people's personal and cognitive saturation, most of their abilities such as problem-solving and critical thinking, and their mental and physical health depend on their relationship with nature. Today, biophilic design is applied on many scales, from open spaces to cities, from buildings to interiors. Biophilic design criteria have 3 main titles: nature in the space, natural analogies, and the naturalness of the space, and there are 14 criteria under these titles.

One of the places where the biophilic design approach is applied is in the workplace. Especially those working in cities and metropolises spend most of their time in the office environment. For this reason, it is important to protect and maintain the physical, mental, and spiritual health of people in an integrated manner with nature. One of the main problems that usually appear in high-rise office buildings is the physical and psychological alienation of employees from nature. One of the most important factors in office buildings is to balance indoor and outdoor spaces, to integrate nature and interior space, to make employees feel comfortable in the working environment, and for human health.

In this context, the study focuses on Tekirdağ Namık Kemal University Rectorate Building as a high-rise office building in terms of biophilia and biophilic design principles. In the study, the biophilic design approach and the transformation and principles of existing structures in terms of biophilic design, criteria are presented with a theoretical perspective through literature research. In this context, Tekirdağ Namık Kemal University Rectorate Building is analyzed in terms of biophilic design principles because of on-site observations and examinations, and spatial suggestions for transformation are presented.

Keywords: biophilia,biophilic design,office design,biophilia in high-rise building design

The Challenges And Opportunities Of Biophilic Design In Macedonia

_O4043

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Biophilic design is a concept used in architecture and building industry to increase the connection between people and nature and to bring the natural environment closer to the users, through different patterns such visual and non-visual connection with direct and indirect nature. Used at both the building and city-scale, it is argued that this idea has health, environmental, and economic benefits for building occupants and urban environments. In addition, biophilic design in buildings can reduce stress, enhance creativity and clarity of thought, improve well-being and expedite healing of the users. As the world population continues to urbanize, these qualities are even more important.

The consistency of natural themes in historic structures and places suggests that biophilic design is not a new phenomenon. As a field of applied science, it is the codification of history and human intuition. Neural sciences show that connections with nature are vital to maintaining a healthful and vibrant existence as an urban species. There are several examples of old structures in Macedonia that show some patterns of this concept. Unfortunately, in the last decades Macedonian architecture is mostly oriented towards quantity and financial benefits without much regard for quality.

In this paper, several examples of biophilic design in Macedonia, mainly from the past, will be presented. Moreover, the opportunity to learn the benefits of this concept, as well as the ways of greater involvement of it in the architecture in our country will be proposed.

Keywords: biophilic design,architecture,macedonia

Contemporary Tendencies Of Designing Building Photovoltaics With Integration To The Architectural Design

_O4049

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Solar energy was recognized as one of the most important renewable energy technologies in many countries in the recent years. The renewable technologies achieved an important awareness among architectural engineers, who see the concept of integration of photovoltaic system as a new opportunity for integration in the architectural design. Analysis of urban disposition of the solar radiation in the cities is becoming an important factor in conceptualizing the intersecting systems as a basis for architectural study in the organization and orientation of buildings for optimizing the solar potential.

In the beginning of the development of the photovoltaic systems, as a solar power generating renewable technologies, they were analyzed only by electrical energy engineers, which created only standard products with limited design possibilities in terms of patterns, dimensions, texture and colors, so integrated approach with architectural engineers is important sustainable factor for the optimization and sustainability of the architectural design.

The recent development of the solar renewable technologies and the PV systems, created a new possibilities for them to be reviewed as architectural elements in the architectural design process by many important international architectural studios. Architects must think of new concepts of integration of the photovotaic systems as architectural elements by creating pixeled photovoltaic module, patterns in monocrystalline cells, as well as using different visible materials, patters, textures and color in the film modules of the photovoltaic cells in the composition of the architectural design.

This scientific paper will explore the architectural possibilities in the architectural design of building integrated photovoltaics in terms of the functional, constructive and aesthetics formal aspects of using building integrated photovoltaics in architectural design. Building Integrated photovoltaics modules should respond to the technical aspects of the energy production, as well as, be integrated as architectural elements according to the function and the building envelope: adaptive fasade, double fasade, PV shading cladding systems in the architectural buildings.

Keywords: architectural design,building integrated photovoltaics,solar renewable technology

Examination Of The Kars Valley Project In Terms Of Landscape Design Criteria

_O4113

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Kars province is located in the east of Turkey and in a position that can be described as the gateway to Anatolia. Due to its geopolitical importance, it has hosted many cities throughout history and has constantly seen wars. Because of these wars, the leaders who ruled the city needed important defense structures. One of the most important of these structures is the 'Kars Castle', which has survived to the present day.

The city of Kars, whose national and international recognition is increasing day by day, has started to become the center of attention of domestic and foreign tourists. The increasing number of tourists has brought with it the issues of renewal and highlighting of historical buildings, restoration, and landscaping in the city. In line with these needs, the 'Kars Valley Project', which covers the ‘Kars Castle’ and its surroundings, which is at the focal point of the city, has been started. This project includes the landscaping studies of ‘Kars Castle’ and the historical buildings around it.

Today, the increase in the recreational needs of domestic and foreign tourists has brought with it the need to create different activity venues. Urban open-green areas created to meet the needs of visitors can be counted among the most important areas. Urban open-green areas built in many cities may be insufficient in terms of quality and quantity and cannot exhibit the quality that will meet the expectations of the visitors. This study aims to analyze the current situation of the "Kars Valley Project", which includes the landscaping works of Kars Castle, which is the focal point of Kars City, within the scope of landscape design criteria, and to develop solution proposals for its competence and functional qualities based on the data obtained.

Keywords: kars,kars castle,kars valley project,landscape,landscape design criteria

Using Stormwater In Irrigation System: The Case Of İstanbul BaltalİmaniPolice House Facilities Hotel Buildings

_O4177

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Due to reasons such as the decrease in water availability with global warming, environmental pollution, unconscious water consumption and unequal distribution of water resources according to population densities, the problem of water shortage, which has been frequently encountered in recent years, has emerged. Management of water resources; It emphasizes the importance of issues such as reducing and purifying water consumption, using alternative water resources, and protecting natural water resources. Today, only 30% of the stormwater is added to the groundwater and the remaining 70% is evaluated as gray water and mixes into the sewerage.

In this study; A study was conducted to store and use the stormwater accumulated on the roofs of the Istanbul Baltalimanı Police House Facilities hotel buildings in the automatic irrigation system. As a result of the study, approximately 30 tons of stormwater volume was formed annually. 6 tons of this collected water were kept in the polyester tank and directed to the drip irrigation line and sprinks apparatus in the automatic irrigation system, and the remaining amount of water was directed to the stormwater collection channels created by the municipalities since there was not enough place to store it. Although stormwater harvesting techniques related to the protection and management of stormwater have been applied for a long time in many countries of the world today, it has started to become widespread with green building certifications such as BREEAM and LEED in our country, which is in the category of countries with water shortage. It is expected that this study will set an example for the increase of stormwater harvesting practices in the cities of our country, reduce the water consumption outside the building, and contribute to the protection of natural water resources by using alternative water resources.

Keywords: stormwater,automatic irrigation system,stormwater harvesting,evaluation of stormwater,water shortage

Nature-based Solutions For Water: Sustainable Stormwater Management Practices In The Case Of TekİrdaĞ Namik Kemal University Campus

_O4213

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In today's cities, where the effects of climate change have been felt more recently, the decrease in permeable areas and the increase in the amount of water passing into the surface flow with the widening of the structural areas have drawn more attention to the importance of studies on the management of the presence of stormwater in urban areas. In this context, the necessity of feeding the ground water and ensuring the natural water cycle of the stormwater without mixing with the surface flow and the sewerage has been emphasized by recent studies. By creating a low-cost solution with stormwater applications to be created especially in urban areas, the ground water will be fed and the city will be more resistant to natural disasters and climate change.

In this study, the situation for stormwater applications in Tekirdağ Namık Kemal University campus, which has a large landscape area and can be considered as a small city model, has been determined and application suggestions that can be made in the urban area within the scope of sustainable stormwater management in order to benefit more from stormwater. These suggested practices contribute to the adaptation to climate change by helping to protect and manage water resources. In addition, it can help to develop the urban landscape by creating greener, healthier and aesthetic environments with the recreational opportunities offered by the applications. These suggested practices, which take into account natural processes, set an example for the creation of sustainable stormwater practices for other cities.

Keywords: nature-based solutions ,sustainable urban stormwater management ,urban landscape ,campus,tekirdağ

Quantitative Assessment Of Spatial Factors Affecting Environmental Stress Around Hospital Buildings: The Case Of Istanbul

_O4317

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Stress-reducing influences of nature are essential for creating urban environments. However, physical environments have potential environmental stressors, such as noise, pollution, and crowding. People tend to be exposed to multiple stressors, such as environmental and social. Prior research has suggested that contact with green areas can positively contribute to human health. Green areas or natural environments are one of the stress-reducing land use types through positive associations between human health and green spaces. These environments, therefore, are substantial to mitigate the impact of environmental stress around hospital buildings. The land use decisions around hospital buildings psychologically positively affect patients, visitors, and hospital staff.

This study aims to quantitatively analyse the spatial characteristics of the environmental stress factors around hospital buildings. Istanbul is selected as the study area, which is a metropolitan area and has dense neighbourhoods. In this study, it is used the data that are satellite images of Sentinel-2, land use, and the number of hospital beds, which refers to the capacity of the hospital. The scope of this study is limited to the surrounding areas of hospital buildings, including public, foundation, and private hospitals. In the analysis method, ArcGIS software was utilised for spatial data and SPSS software was used for quantitative assessment. As the results of the spatial and quantitative analysis, first, is obtained statistical relationship between hospital capacity and green areas. Second, the environmental stress factors within the impact areas of the hospital area are examined. In the scope of these two analyses, the stress-reducing effect of the green areas in hospital areas is evaluated according to the degree of environmental stress. Improving the physical environment around hospitals and reporting the findings may assist decision-makers in making informed decisions on land use.

Keywords: environmental stress,green area,hospital,istanbul

Evaluation Of Urban Accessory Elements Of Çanakkale City Center Coastal Promenade In Terms Of Ergonomics Criteria

_O4331

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In this study, it is aimed to reveal the suitability of the urban accessory elements in the recreational areas of the coastline of Çanakkale city center with the ergonomics criteria by making measurements and examinations. The urban accessory elements used in two different recreational coastlines called ‘Old coastal promenade’ and ‘New coastal promenade’ in Çanakkale city center were examined and the ergonomic criteria of urban accessory elements were mentioned. Urban accessory elements in the coastal promenades of Çanakkale city center were determined and divided into various categories such as seating elements, floor coverings, trash cans, lighting elements, children's playgrounds, sports groups. Scoring between 1 and 5 was made for each category of urban accessory elements that were measured and examined according to ergonomic criteria. The scoring system was determined according to on-site measurements and examinations. According to the scoring results obtained, the percentage success of the urban accessory elements used in two different coastline of Çanakkale city center in terms of ergonomics has been revealed. Solution suggestions are given for the ergonomics of urban accessory elements with low ergonomic properties and explained with examples. At the same time, for the coastal promenade, which has a lower score than the other, sustainable innovative approach suggestions are included in terms of ergonomics.

With this study, the coastal promenades will be redesigned so that the citizens can spend more and more pleasant time in the coastal promenades of Çanakkale city center by providing more ergonomic use of areas. Thus, the coastal promenades of Çanakkale city center will become more authentic and active.

Keywords: Çanakkale coastal promenade,ergonomic criteria,recreational areas,urban accessory elements

Ergonomic Guide Proposal In Urban Design Scale

_O4376

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Cities are perceived as a whole with their users living in them. Comfort emerges as an important concept in cities that respond to the expectations of the users and offer them quality spaces. The equivalent of comfort in cities intersects with the concept of ergonomics. Ergonomics is a common research and experience topic in disciplines dealing with the city and its inhabitants. The environments in which research and experimentation will be carried out are the city and its components. In the Landscape Architecture profession, the laboratory environment is the city itself. It is important to research and define the meaning of the concept of ergonomics in the perspective of design studies carried out in different scales of the city. On a sample area, it is a correct approach to consider "urban complaints" as "guiding warnings" in order to evaluate urban ergonomics and identify deficiencies. From this point of view, within the scope of the study, it is planned to prepare a guide proposal for the evaluation and improvement of the design-oriented ergonomic situation in urban open spaces and the criteria to be used. The content of the guide consists of values that must be followed in terms of movement, use and space for urban spaces and furnishings. The fact that the guide can be used in future studies constitutes the practical benefit dimension of the study.

Keywords: urban design,landscape design,ergonomics,design guide

“do It Yourself” Approach In Urban Areas

_O4395

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Urban designs vary according to the region they serve. Different regions have different needs and these needs shape the design. Every design that goes through the design process and is applied to the area is presented to the citizens. He evaluates the urban area as he uses it; uses or does not use it as it evaluates. Ensuring the continuity of the design in the area has an impact on the preference of the citizens in that area. In this context, urban design is tried to be completed by the citizens in cases where the design solution is insufficient, due to unconscious use, vandalism and inadequate infrastructure systems. The elements, which are completed with the self-interpretation of the citizen, are realized with the “Do It Yourself (DIY)” approach. Scope of work; It has been evaluated how this approach is handled at the scale of urban design and in which inadequacies it arises in urban design by scanning examples from the literature, internet database and social media. In the light of the evaluation, the necessary step was taken to investigate the DIY approach in urban design studies in depth; Creating the theoretical infrastructure of the DIY approach in the future through the elements that serve the design dimension of the urban environment opens a new perspective in terms of the extent to which user participation should be taken into account.

Keywords: urban design,landscape design,do it yourself,urban user

Bim SÜrecİ İle Yapi Tasarimi

_O4458

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Yapı tasarımında, inşa edilebilirliğin ve sürdürülebilirliğin yanı sıra güvenlik ve maliyet de önemli kriterlerdir. Mevcut yapı tasarım süreçlerinde, inşasına karar verilen bir yapının projeleri, ilgili uzmanların mevcut deneyimlerine göre birbirleri ile kısmi bağımsız olarak oluşturulur. Hazırlanan projeler, saha uygulama ekiplerine gönderilerek, yapının inşa süreci başlatılır. Birbirinden kısmi bağımsız bir şekilde oluşturulan bu projeler ile gerçekleştirilen yapım çalışmalarında, projelerin kendi içlerinde yaşadıkları uyumsuzluklar büyük problemlere neden olmaktadır. Bu problem çoğu zaman uygulayıcılar tarafından şantiye ortamında anlık müdahaleler ile çözülmekte kimi zaman da ofis ortamında tasarım kararlarına geri dönüş yapılarak sürecin yeniden değerlendirilmesi ile giderilmektedir. Söz konusu tasarım yaklaşımından ötürü, proje aşamasında fark edilmeyen sorunların yapım aşamasında ortaya çıkması önemli zaman ve maliyet kayıplarına neden olmaktadır. BIM süreci ile yapı tasarımında ise mevcut uygulanan yapı tasarım sürecinden çok farklı olarak işleyen bir sistem mevcuttur. Henüz tasarım aşamasında yapının bir dijital ikiz modeli oluşturulmakta ve yapı sanal ortamda inşa edilmektedir. Bu sanal ortam sayesinde, bir yapının tasarım evresinde yapılacak analizler ile yapım sürecinde yaşanabilecek problemlerin tespiti ve problemin giderilmesi için gerekli müdahaleler kolay bir şekilde gerçekleşmektedir. Bu çalışmada inşa edilmesi düşünülen tek katlı bir evin klasik yöntemler ile tasarlanmasının dışında BIM süreci ile projelendirilmesi bir örnek vaka olarak gerçekleştirilmiş olup yapının oluşturulan bu dijital ikizi üzerinden tasarım aşamasında BIM süreci ile tasarımsal değerlendirilmesi LOD300 seviyesinde gerçekleştirilip bu süreç ile yapılan bir yapı tasarımının faydaları bu örnek vaka üzerinden değerlendirilmiş ve yorumlanmıştır. Yapının dijital ikizini oluşturmak için REVİT yazılımı kullanılmıştır.

Keywords: bim,yapı tasarımı,dijital İkiz,lod,revit

Determination Of Appropriate Routes For E-scooter Use In Transportation With Gis Approach: Van Yyu Campus Example

_O4572

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In our social life, applications that are compatible with nature, energy-saving and traffic-relieving are increasing day by day. One of the highlights of such applications in recent years is the use of e-scooters. Especially in metropolitan and mega cities where the traffic problem is very high, this application has been rapidly adopted and its use continues actively. In order to increase these uses, studies are carried out to determine e-scooter sharing points and to provide the user with a more comfortable service procurement process. The correct determination of the locations of these stations allows the system to be used more actively. Especially with its potential in the number of young population and the possibility of providing services in a more comfortable way as a usage area, university campuses have been considered as study areas.

Within the scope of this study, Geographical Information Systems (GIS) supported Multi-Criteria Decision Making (MCDM) method was used in order to determine the e-scooter sharing points and routes in the most appropriate way at the central campus of Van Yüzüncü Yıl University. In the content of the study, primarily e-scooter routes were determined. Then, using the MCDM method and Analytical Hierarchy Process (AHP) together, the most suitable e-scooter sharing points for campus staff and students were determined. With these suitable usage points and routes offered as suggestions, it is aimed to make accessibility more dynamic and effective in the campus environment, to provide a nature-friendly campus transportation opportunity and to contribute to the efficiency of the campus socially.

Keywords: gis,mcdm,ahp,e-scooter,van yyu

The Place Of Women In Urban Life: The Case Of Tekzen Region Of Çanakkale

_O4581

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In recent years, there has been a rapid migration phenomenon from rural areas to urban areas. As a result of this uncontrolled migration, the urban population increased rapidly. However, an increase has been observed in the physical infrastructure requirements of the increasing population. Urbanization practices carried out to meet these needs have developed in an unplanned manner. After all; a complex, monotonous and concrete mass dominated urban environment was formed. Cities are living spaces formed by socially diverse individuals coming together. These areas are densely populated and permanent settlements. In urban areas that are socially, culturally and economically diverse, inequalities based on gender emerge. Ensuring continuity and sustainability in cities and eliminating inequalities is possible by increasing the quality of urban life. Urban spaces and services designed to increase the quality of life and ensure gender equality should be in the perspective of equality. Therefore, planning should be done by considering all the rights of women who are disadvantaged in urban life. In this context, women-friendly cities projects carried out at national and international level tend to eliminate the difficulties faced by women in all areas and to offer safe living spaces. This study was carried out in Tekzen Region, which is located within the borders of Çanakkale city center and has been developing rapidly in recent years. In the study, the difficulties and needs faced by women living in this region in urban life were evaluated in line with the criteria determined within the scope of a woman-friendly city.As a result of the investigations made in this direction, some deficiencies in this respect in Tekzen Region were determined and design suggestions were made.

Keywords: city,women friendly cities,gender

Animal Friendly City Equipment

_O4691

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There are basic needs of every living being such as nutrition and housing. Animals living on the streets are not always able to meet these needs on their own. With the proliferation of urbanization, the habitats of animals are becoming a little more restricted every day. Along with the restricted living spaces, the opportunities for nutrition are decreasing every day. Based on this problem, an urban reinforcement product has been created. This product was created in order to meet the food and water needs of living beings living on the street. The design of the created equipment can be used at any point of the city. The design ensures that the food and water needs are constantly met by filling December at certain intervals. The material of the design is preferred to be stainless galvanized. The reason why this material is preferred is that it is durable. An opening is designed in the water container at a point that will not exceed the container part. As the water level in the container decreases, air flow will be provided to the tank part and water will be filled. A gasket has been placed between the tank and the container in the water container Dec prevent air flow. In order to ensure the continuity of the flow in the food container, the slope has been given to the inner part. In order not to get wet with weather conditions, a curtain was made on the upper part. At the same time, draping prevents food from seeing the sun and ensures a healthier, longer life. Containers can be fixed according to the floor where they are located. In the current situation, there are quite a lot of food and water containers. There may be malfunctions in vending machines, and containers placed on the streets create visual pollution from an aesthetic point of view. Problems have been identified. The design made as a solution proposal allows it to meet the needs of living beings living on the streets both aesthetically and aesthetically.

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Keywords: landscape architecture,urban reinforcement,food container,water container,reinforcement design

Design Criteria Of Gallipoli Martyrdoms Of Memorial Spaces

_O4695

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Thousands of Turkish soldiers died to defend their homeland on the Gallipoli Peninsula, where the Gallipoli War took place. Soldiers who lost their lives during the war were buried in the regions where they were found or in areas close to the regions. During the process that continued between 1915 and 1916, doubter graves were formed at various points on the Gallipoli Peninsula.

After the Gallipoli War, Şevki Pasha; He made investigations on the battlefields and mapped the area. In the maps produced by Şevki Pasha; The areas that had an important place in the war were included. On the map; martyrs' graves, foreign cemeteries, trenches, military roads, ditches, lookouts, cannons, infirmaries, etc. fields are marked.

After the maps prepared by Şevki Pasha; real martyrdom areas were determined by georadar and excavation works. These areas, which were identified as martyrdoms, were primarily preserved, and some of them were restored and built in later processes.

These areas, whose restoration and construction have been completed, have been opened to visitors and turned into memorial places. Every year, millions of local and foreign tourists take part in a commemoration and honor the soldiers who fought in the Gallipoli Wars. The current conditions of the places that function as commemoration places in the Historical Site of Gallipoli have been examined and the design criteria have been researched.

In the study; Landscape planning and design criteria of the memorial spaces, which are described as Turkish martyrdoms, were investigated. Some martyrdoms left from the Wars of Gallipoli are waiting to be revived. In the light of the results; Design criteria have been proposed that will enable the Turkish martyrdoms to be reconstructed and built into memorial places.

Keywords: gallipoli,gallipoli war,turkish martyrs,memorial spaces,design

Flexible Housign In The 20th Century / 20.yüzyılda Esnek Konut

_O4705

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People change their environment for their own needs and create suitable living spaces for themselves. At the same time, people want to make choices in accordance with their own identity, personality and tastes in the supply and demand situations that they encounter at every stage of their lives. It is a desire and necessity for the dwellings, which are perhaps one of the most important places in people's lives, to have the individual characteristics of their users. This is an issue that architects should consider in any housing design, from a single-family house with an unknown user to an apartment block with an unknown user, to social housing. At the same time, in addition to this situation, especially in the last century, the long-term use of buildings and their reuse, due to wars, disasters, rapidly increasing population and limited resources, are extremely important factors in terms of nature and sustainability. Architect Adrian Forty said: “Flexibility in architectural design is a concept that enables long-term thinking. Flexibility will be part of a broad regime control if users are faced with the dire situation of end-of-use upon settling in. Adding flexibility to design will allow architects to gain insight into the future transformation of their projects.” explained with. (Forty,2000) Flexible housing is not just a past or present problem and issue; It is an issue to be considered in the future. In this study, in order to grasp the concept of flexible housing; the meaning of flexible housing, its past, the reasons for its emergence, it's handling by different architects in the 20th century and examples are evaluated. Classification of flexible housing is investigated and its potentials are discussed.

Keywords: architectural design,flexibility,adaptability,housing,modernism

Architecture and Planning

Culture Of Participation In Integrated Urban Development; "the Example Of Germany"

_O4850

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People living in cities or settlements of different sizes can experience and help shape democratic decision-making processes more effectively and directly than other official decision-making bodies. Participation through public participation is a constitutive element of a vibrant representative democracy and an essential prerequisite for sustainable, integrated urban development. This situation legitimizes the decisions taken by majority vote in the city council as an expression of public interest and increases the quality and acceptance of the planning. However, public participation also increases the complexity of planning and decision-making processes and the need for resources and skills. This poses special challenges for management and politics. Public participation in planning has recently become the focus of public debate in Germany. However, it is not a representation of the "angry citizen" that is widely featured in the media. On the contrary, it has been found that the majority of the public, even if they are critical of some big projects, participate in transparent and open dialogues in search of "better solutions".
Various forms of citizen participation in urban development in Germany have long been regarded as a phase of the natural process in municipal practice. This applies to both informal concepts and plans and legally regulated procedures; For example, the effect of participation can be seen in land use and zoning plans.
A wide range of positive experiences have been gained through the activation of participatory processes and innovative methods, particularly in the context of urban renewal and urban regeneration, and in the development of regional development concepts. According to the conclusion, the shortcoming is not in appropriate methods of participation but in most cases in agreement on an inclusive culture of participation.
Titled "The Culture of Participation in Integrated Urban Development", this study does not primarily deal with the various methods and tools of public participation separately. Numerous studies have been published in the literature for this situation. Rather, this study mainly focuses on the framework conditions and opportunities for the further development of a inclusive culture of participation in each of the exemplary projects individually.
The following can be determined as guiding principles;

Participation as a central element of urban development in which local democracy is integrated
Further development of a culture of participation to legitimize its planning and decisions and ensure its wide acceptance

Activation of all social groups and equal opportunity in participation

Quality standards for participation processes
Keywords: culture of participation,urban planning,participation,city and regional planning,local democracy

Ekosistem Hizmetlerinin Planlamadaki Rolünün İrdelenmesi

_O4924

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Tüketim ihtiyacının arttığı, taleplerin değiştiği günümüzde çevre ve doğal kaynaklar üzerindeki baskı da her geçen gün artmaktadır. Bu nedenle çevre ve doğal kaynak yönetimi gittikçe daha önemli bir konu haline gelmektedir. Ekosistemlerde meydana gelen bozulma bir bütün olan çevrenin yapı ve işleyişini olumsuz etkilemektedir. Tamamen doğal alanlardan kırsal alanlara ve insan etkisinin fazla olduğu kentsel alanlara, karışık desenlere sahip peyzajlara ve alan kullanım değişiklikleri sonucunda etkilenen ekosistemlere kadar geniş aralıkta ekosistemler insanlara yarar sağlamaktadır. Ekosistemlerden sağlanan hizmetler insan etkileri sonucunda etkilendiği gibi birbirinden de etkilenmektedir. Bu etkilerin ekosistemler üzerinde yarattığı baskı, ekosistemlerin hizmet sunma kapasitesini etkilemekte, ekosistem hizmetlerinden sürdürülebilir fayda sağlamayı engellemektedir. Ekosistem hizmetlerinden sürdürülebilir fayda sağlayabilmek için koruma ve kullanma çerçevesinde geliştirilen yöntemlerle peyzaj planlamaları yapılmalıdır. Kentlerin çevresi ile birlikte alan kullanımları açısından değerlendirilmesi, ekosistem hizmetlerinin nicel olarak belirlenmesi ve peyzaj planlama sürecine dâhil edilmesi hem ekolojik hem sosyo-ekonomik açıdan fonksiyonel ve sürdürülebilir hizmetler sağlayacaktır. Bu bildiride, ekosistem hizmetlerinin planlamadaki yeri ve önemi örneklerle irdelenecektir.

Keywords: ekosistem ,ekosistem hizmetleri,planlama,peyzaj planlama,sürdürülebilirlik

Improving The Streets For Children “the Example Of Hamburg Altona-altstadt”

_O4929

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Restrictions on living space, of course, have a negative impact on the development of children, as they are tantamount to reduced opportunities and opportunities to cope with the environment, which is a prerequisite for achieving certain socially desirable developmental goals. On the one hand, the understanding that children's play opportunities are generally insufficient, in other words that play opportunities should be seen as development opportunities, has led to social policy demands for children since the mid-1970s. The election of 1979 as the "Year of the Child" certainly helped strengthen these demands and was a pioneer. According to LÜSCHER (1979), one of the goals of a social policy for children is to improve the general living conditions of children and to prevent measures that worsen the quality of children's living conditions. Another task that belongs here is to reject all facilities that unilaterally encourage motor vehicle traffic in residential areas, to improve playground opportunities for children in residential streets and residential areas (Lüscher, 1979).

This paper is a research project on "Improving children's playing opportunities on public development roads in residential areas" prepared by the German Ministry of Urban Planning, Spatial Arrangement and Construction Affairs. Within the scope of improving the streets for children, an example of an application made in Altona-Altstadt in Hamburg, Germany is discussed (Müller, 1987).

Keywords: woonerf,homezone,childrens spaces,safe streets,urban design

Agriculture

Importance Of Mardin Mazıdağı Indigenous Phosphate Reserves Of Türkiye: A Review

_O3824

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Importance of Mardin Mazıdağı Indigenous Phosphate Reserves of Türkiye: A Review

Abstract: Phosphorus is essential and indispensable for all animate beings. It is very important for energy metabolism (ATP-ADP cycle), storage of genetic information (DNA, RNA) and bone structure. Most of the global phosphate production (approximately 95%) is used in agricultural applications, mainly in the fertilizer industry, but also for the production of phosphorus-based pesticides and animal feed supplements. It is estimated that phosphate reserves in the world are approximately 68 billion tons and 180-190 million tons of phosphate are extracted annually.

Indegenous phosphate reserves of Türkiye generally take place in Southeastern of Anatolia with a total of 493 milyon tons. The Mardin Mazıdağı region, on the other hand, constitutes the most important phosphate field in Turkey with 6.06% - 24.6% P_2O_5 grade, 75 million tons of exploitable and 260 million tons of potential phosphate reserves. Mazıdağı Phosphate Facilities was established in 1974 with an investment of 125 million US dollars and was put into operation in 1988 and was closed in 1993 due to social instability and cost increases. Eti Bakır Mazıdağı Enterprise, which was established with an investment of 1.1 billion $ dollars after the privatization of Mazıdağı phosphate facility in 2011, consists of Open Mining, Sulfuric Acid, Phosphoric Acid, Ammonia, Production and Fertilizer Production Facilities. Eti Bakır Mazıdağı Integrated Fertilizer Facility is the only facility in Turkey and one of the few facilities in the world, as its raw materials are produced in the same place.

In a statistical study conducted in the region, it was stated that the participants had a positive approach regarding the facilities that were reopened and that it could contribute to the development of the region as well as the unemployment problem in Mazıdağı. In addition to the ever-increasing world population, the unexpected war between Ukraine and Russia following the pandemic has increased the importance of the countries' basic food and precious metal assets, leading to protectionism and resource nationalism. In essence, the use of domestic phosphate rock in Mazıdağı Integrated Fertilizer Facilities has reduced the foreign exchange loss in fertilizer imports of Türkiye and in addition, very valuable socio-economic benefits have been achieved with the investment made in the region.

Keywords: Indigenous, Rock Phosphate Rezerves, Türkiye

Agriculture

Use Of Arthrobotrys Spp. In Biocontrol Of The Root-knot Nematode Meloidogyne Incognita

_O4006

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Plant parasitic nematodes have been known as serious pathogens of many crops worldwide. Among the plant parasitic nematodes, root-knot nematodes (*Meloidogyne* spp.) are the economically important limiting factors in agricultural productivity and the quality of crops. One of the most destructive species of root-knot nematodes is *Meloidogyne incognita* among the most important plant pests which cause severe problems in economically important crops such as vegetables, fruits, and ornamental plants. *Meloidogyne* spp. can be managed by resistant cultivars, crop rotation, cultural practices, or chemical nematicides and biocontrol agents. The use of nematicides can cause significant problems including environmental pollution and long-term residue issues. Therefore, fungal biological control is agriculturally useful an exciting and rapidly developing research area and there is growing attention to the exploitation of fungi for the control of nematodes. Nematophagous fungi are an important group of soil microorganisms that can suppress the populations of plant-and animal-parasitic nematodes. These fungi can be divided into four categories: endoparasitic fungi, nematode-trapping fungi which parasitize eggs and females, and toxin-producing fungi. Among the nematophagous fungi, nematode-trapping fungi are the most studied. Nematode-trapping fungi are natural enemies of nematodes. The nematode-trapping fungi develop hyphal structures, such as adhesive networks, adhesive knobs, and constricting rings to capture nematodes. *Arthrobotrys* spp. are a well-known nematode-trapping fungus with biocontrol potential against root-knot nematodes, including *Meloidogyne incognita*. The objective of this paper is to summarize the data on the potential for use of *Arthrobotrys* spp. in biocontrol of the root-knot nematode *Meloidogyne incognita*. This study was supported by a grant from the Scientific and Technological Research Council of Turkey (TUBITAK-TOVAG 221O399).

Keywords: arthrobotrys,biocontrol,meloidogyne incognita,nematode-trapping fungi

Organik Tarım Ve Türkiye'deki Son 18 Yıllık Durumu

_O4243

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Artan dünya nüfusunun gereksinimlerini karşılamak amacıyla yoğun kimyasal girdisi kullanılarak üretimde artış sağlanmaya çalışılmıştır. Ancak gereğinden fazla kullanılan kimyasal maddeler ekolojik dengenin bozulmasına ve insan sağlığının olumsuz etkilenmesine neden olmuştur. Sürdürülebilir bir çevre ve insan sağlığına dost bir yetiştiricilik yöntemi aramak kaçınılmaz olmuştur. İşte tüm bu nedenlerden dolayı organik tarım sistemi hayata geçirilmiştir. Organik tarım, biyolojik çeşitlilik, biyolojik çevrimler ve toprak biyolojik aktivitesi dahil olmak üzere ekosistem sağlığını destekleyen ve geliştiren bir üretim yönetim sistemidir. Organik tarım, tüm sentetik tarım dışı girdilerin hariç tutulması için tarımsal işletmelerde agronomik, biyolojik ve mekanik yöntemler kullanılarak gerçekleştirilmektedir. Türkiye'de 1980'li yıllarda sadece Ege Bölgesi'nde uygulanan bu yöntem yıllar geçtikçe diğer illere yayılmış ve günümüzde neredeyse bütün ülkede kullanılmaya başlamıştır. Araştırmada Türkiye'nin son 18 yılda organik tarımda kat ettiği yol araştırılmıştır. Sonuçlar 2002 yılı ile kıyaslandığında, günümüzde organik yetiştiricilik için kullanılan tarım arazilerinde %198, üretilen ürün miktarında da %262 oranında artış olduğu saptanmıştır. Dünya ölçeğinde organik tarımdaki gelişmelerin Türkiye'deki tarım politikaları ile ülkemizdeki gelişimi sürdürülebilir çevre yönetimi açısından uyumlu olduğu belirlenmiştir.

Keywords: organik tarım,konvansiyonel tarım,ekolojik denge,sürdürülebilir çevre

Agriculture

Research The Use Of Unmanned Aerial Vehicles (uavs) In Agricultural Production

_O4280

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The increase in the world population increases the pressure on the solution of food supply and food security issues. Therefore, using unmanned aerial vehicles (UAVs) is the key to proper management of agricultural production and optimum management of scarce resources to increase efficiency. For agricultural production to continue in a sustainable way, the orientation toward UAVs technologies is growing rapidly. This study aimed to evaluate the advantages and usage possibilities of UAVs technology in agricultural production by using existing studies. Considering the advantages provided by UAVs technology, it shows that the usage areas and investments in this technology will increase more thanks to the flexibility it provides in data collection and data with high spatial accuracy (RMSE<0.30 m) compared to other remote sensing platforms in many subjects. Having a high rate of domesticity in the production of military UAVs in our country, its success in products produced by Baykar Technology and other defense industry companies is a concrete example of the successful use of domestic UAVs equipped with appropriate technologies in agricultural applications in the future. This study revealed the suitability of UAVs technologies to the agricultural production perspective in the world and Turkey.

Keywords: unmanned aerial vehicles,digital farming,sustainable farming,agricultural drone,sensor

Agriculture

Sequence Analysis Of Chloroplast Rbcl Region In Pyrus Communis L (rosaceae) Genotypes From The Ardahan/turkey

_O4282

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The aim of the study was to analyze the sequence of some *Pyrus communis* genotypes found in the Ardahan/Turkey based on the *rbcL* cpDNA region. Genomic DNA was isolated from healthy and green leaves. Total genomic DNA was extracted using the GeneMark DNA isolation Plant Kit. The *rbcL* region of chloroplast DNA was amplified using primers *rbcLa*F and *rbcLa*R. DNA sequences were edited using the Bioedit and FincTV and sequencing data were analyzed using the MEGA 6.0 software. The maximum likelihood (ML) tree was created to determine the relationships between *Pyrus communis* genotypes. Amplified cpDNA *rbcL* sequences ranged between 546 and 551 nucleotides. The average nucleotide ratio was determined as 26.8% thymine, 23.1% cytosine, 30% adenine and 20.1% guanine. The maximum likelihood phylogenetic tree was composed of two clades. The divergence values differed between 0.000 and 0.004. In addition, the sequences of some species belonging to the Rosaceae family were obtained from NCBI and a maximum likelihood tree was constructed. The phylogenetic relationship between the sequence data of some species belonging to the Rosaceae family taken from NCBI and *Pyrus communis* genotypes was revealed

Keywords: pyrus communis,sequence analysis,rbcl,turkey

Agriculture

Investigation Of Organic Fertilizers That Can Replace Chemical Fertilizers Intensively Used In Tekirdağ Province

_O4321

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Intensive use of chemical fertilizers is a serious problem all over the world. Disruption of soil chemical balance in both short and long term, negative effect on underground waters, energy consumption and costs in chemical fertilizer production are only some of the disadvantages of chemical fertilizers. Tekirdağ province in Thrace Region of Turkey is among the most intensively chemical fertilizer used cities. Wheat, sunflower and canola are the most grown cereals in Tekirdağ and mainly used fertilizers are primarily N,P,K then Ca,Mg, S and then Zn, Mn, B, Fe, Cu, Mn, Mo included fertilizers. In more than 4 million decares of arable lands in Tekirdağ, pure N fertilizer needed for wheat (650 kg/da yield) and sunflower(350 kg/da yield) is approximately 20 kg/da and 13 kg/da respectively. The most reliable fertilizer amounts can be calculated according to soil analysis however, although there are many soil analysis laboratory in the province, tendency for soil analysis is not adequate yet.

Starting with Covid-19 pandemic, farmers met with difficulties to have access to fertilizers due to mainly increasing production and transportation costs of chemical fertilizers. This lead the farmers revise their heavy use of chemical fertilizer habits and face to organic fertilizers with the effect of governmental supports, zero waste project and relatively decreasing costs of compost and vermicompost fertilizers produced by agricultural wastes. Organic fertilizer production has increased as a result of the increase in chemical fertilizer prices with the effect of the pandemic. Organic fertilization is actually an environmentally friendly, sustainable and soil protective application. Organic fertilizers also decompose slowly in the right time that plant need inspite of chemical fertilizers and promote sustainable agriculture and soil conservation. There are companies produce organic fertilizers in the province and vermicompost producers are increasing in recent years.

In this study, the opportunity, pros and cons of organic fertilizers to be used instead of or together with chemical fertilizers targeting the reduction of intense use of chemical fertilizers in Tekirdağ is investigated. The most important finding is that the farmers should recycle almost all kinds of agricultural wastes as compost or vermicompost and organic fertilizers should be included more into the fertilization programs. Thus, farmers will be able to reduce the input costs via using less chemical fertilizers and leave less chemical fertilizer residues in the soil.

Keywords: chemical fertilizer,organic fertilizer,organic agriculture,tekirdağ

Agriculture

An Agricultural Unmanned Ground Vehicle Development For Local Spraying

_O4410

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By choosing artificial intelligence-assisted unmanned ground vehicle in agriculture, excessive chemical use and environmental pollution can be significantly reduced. Local interventions can be carried out with agricultural unmanned ground vehicle instead of spraying the entire area. Unwanted harmful plants can be removed by local spraying. This operation minimizes the effects of harmful chemicals on agricultural land. In this study, an autonomous agricultural land vehicle has been developed to locally medicate harmful plants in the farmland. The vehicle is designed with a nature-inspired design and has aluminum profiles in its manufacture. An innovative suspension system has been developed to allow the vehicle to move easily in agricultural terrain. With this system, the effect of broken ground is minimized. The data taken from the depth camera placed on the vehicle is generated simultaneously via the robot operating system. This makes it possible to drive autonomous. Damaged plants in the farmland are by using the YOLO algorithm. It is sprayed when harmful plants are detected. During the spraying process, the vehicle's position, battery consumption and medication status are monitored simultaneously from an external station. With the developed land vehicle, 90% accuracy from 40 cm high can be detected and sprayed on harmful plants in the agricultural landscape. On a flat terrain, the task can be carried out for 1.5–2 hours. It is also intended to extend its service life with solar cells placed on the vehicle.

Keywords: augv,agriculture unmanned ground vehicle,local spraying,image processing,biomimicry

Agriculture

Diteray Fibers And Their Functional Properties

_O4567

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Dietary fiber is one of the food components resistant to digestive enzymes and is mainly found in grains, fruits and vegetables. Dietary fiber, which is not digested in the human small intestine, but fully or partially fermented in the large intestine, is considered under two groups as water-soluble and water-insoluble. The low calorie content of dietary fibers and the benefits they provide on intestinal functions have led to a better understanding of these fibers by industry executives and consumers. Thus, the existing dietary fiber content of foods has been increased and foods with high fiber content have been produced. Considering this increase, the importance of dietary fibers in daily nutrition has gradually increased. Fiber contents in various foods are used as food additives. Wheat bran, wheat, dried beans, lentils, peas, carrots, cellulose, chickpeas, oats and barley are good examples for dietary fiber sources. Pea, carrot, cellulose and wheat fibers are among the most used fibers in the food industry. Pea fiber is generally used in the production of bakery products and meat products. Carrot, cellulose and wheat fibers are used in the production of meat products. Fibers are widely used in meat products production due to their ability to increase water holding capacity, improve texture, improve storage, reduce cooking loss and have a neutral taste in low-fat meat products. Thus, the consumption quality and preferability of the product increase. In this study, the functional properties of dietary fibers and their use as food additives were investigated.

Keywords: dietary fiber ,functional property ,health ,food

Biogenic Amines In Fermented Foods And Their Effects On Human Health

_O4577

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Biogenic amines are low molecular weight organic bases that play a role in the normal metabolism of animals, plants and microorganisms. Biogenic amines (histamine, cadaverine, putrescine, tyramine, tryptamine, beta-phenylethylamine, spermine and spermidine), which are formed as a result of decarboxylation of amino acids, are closely related to food spoilage and food safety. Therefore, it adversely affects human health. In humans, typical symptoms of biogenic amine poisoning include diarrhea, nausea, headache, hyper- or hypotension, and increased or decreased blood pressure. These amines are formed as a result of raw material-specific decarboxylase activity and by the enzyme activity performed by decarboxylase-positive microorganisms under appropriate conditions. Biogenic amines can be chemically aliphatic (putrescin, cadaverine, spermine, spermidine), aromatic (tyramine, phenylethylamine) and heterocyclic (histamine, tryptamine). Among these, histamines are biogenic amines that cause the most adverse effects on human health. Biogenic amines can exist in various foods (fish and fish products, meat products, eggs, etc.), especially fermented products. The most important sources of biogenic amines in the fermented products are wine, turnip, pastrami and sausage. The determination of biogenic amines in fermented foods is performed by various analyzes. Among these, the most common and sensitive analyzes are HPLC (high pressure liquid chromatography) and gas chromatography methods. Fluorometric and enzymatic methods are also used for the determination of biogenic amines in fermented foods. In this study, the negative effects of biogenic amines in fermented products on human health and the determination methods of these compounds have been emphasized.

Keywords: biogenic amine ,fermented products ,hplc,histamine

Sarı Kantaron (hypericum Perforatum) Bitkisinin Sürgün Ve Hücre Süspansiyon Kültüründe Uçucu Yağ Miktarına Çeşitli Elisitörlerin Etkisi

_O4633

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Sarı Kantaron (Hypericum perforatum L.), yüksek fitokimyasal içeriği ile farmasötük alanda kullanılan önemli tıbbi aromatik bir bitkidir. Gerçekleştirilen bu çalışma kapsamında; araziden toplanan sarı kantaron bitkisinin yaprak ve nod kısımları kullanılarak; *in vitro* koşullarda öncelikli olarak uygun sterilizasyon yöntemi belirlenmiştir. Daha sonra steril eksplantlardan sürgün ve kallus rejenerasyonlarının gerçekleştirilmesi, devamında ise *in vitro* koşullarda elde edilen bitkisel materyaller ile dış koşullarda yetişen bitkilerin fitokimyasal içeriğinin karşılaştırılması çalışılmıştır. Araştırmada her iki eksplant türü içinde içinde iki farklı sterilizasyon yöntemi denenmiştir. En yüksek sterilizasyon başarısı, ön yıkama yapıldıktan sonra %70'lik (v/v) etil alkolde 1 dk, ardından %35'lik (v/v) çamaşır suyu çözeltisinde 3 dk bekletilmesi ile elde edilmiştir. Her iki eksplant türü içinde %100 sterilizasyon başarısı elde edilmiştir. *In vitro* sürgün kültürlerinin kurulmasında ise farklı konsantrasyonlarda BAP ve NAA içeren 6 farklı ortam kullanılmıştır. En iyi sürgün gelişim yüzdesi ve ortalama sürgün sayısı 0,5 mg/L BAP ve 2,5 mg/L NAA ile desteklenmiş olan 0 MS besin ortamından elde edilmiştir. Yaprak eksplantı için %100 sürgün gelişimi ve ortalama sürgün sayısı 5,53 olarak bulunmuştur. Nod eksplantı için ise %80 sürgün gelişimi görülerken ortalama sürgün sayısı 4,33'tür. Kallus kültürlerinin kurulması için dört farklı ortam kullanılmıştır. En yüksek yaş ve kuru ağırlık 1,0 mg/L NAA ile desteklenmiş 0 MS besin ortamından elde edilmiştir. Köklendirme çalışmasının verilerine göre en iyi besin ortamı 0,2 mg/L IBA ile desteklenmiş ortamdır. Çalışmanın devamında dış koşul bitkileri ile eilisitör uygulanan ortamlarda gelişen kalluslar ve sürgünler uçucu bileşenler açısından karşılaştırılmıştır. Uçucu bileşenler açısından en değerli grup olan terpen türevi bileşikler dış koşul bitkilerinde %40,84, *in vitro* sürgünler için %35,36 ve kalluslarda %22,75 değerleri elde edilmiştir. Elisitör uygulanan ortamlarda en iyi sonuç 50 µM metil jasmonat içeren ortamlardan elde edilmiştir ve gelişen sürgünlerde %15.45 değerleri elde edilmiştir.Yapılan çalışmada Başarlı bir şekilde mikroçoğaltım yöntemi oluşturulmuştur. Oluşturulan sağlıklı bitkicikler sera ve son aşamada bahçeye aktarılmıştır. *İn vitro* süspansyon kültür çalışmasında canlı ve sağlıklı kalluslar elde edilmiştir.Sürgün eksplantının uçucu bileşen açısından daha verimli olduğu gözlemlenmiştir. Metil jasmonat ile yapılan çalışmalar uçucu bileşenaçısından daha başarılı olmuştur. Spermidin elisitörünün sarı kantaron bitkisinin uçucu bileşen ürtiminde çok etkili olmadığı görülmüştür. Bu çalışma ile bugüne kadar gerçekleştirilmiş çalışmalara katkı sağlanmış, ileriki dönemlerde gerçekleşecek olan diğer çalışmalara ışık tutması hedeflenmiştir. Sonuç olarak tıbbi aromatik açıdan önemli sarı kantaron bitkisinin dışarıdan toplanmasına ve mevsime bağlı kalınmadan ekonomik bir çoğaltma protokolü sağlanmış olup, geliştirilen bu yöntem ile dış koşul ve *in vitro* şartlarda gelişen bitki materyalının uçucu bileşen miktarında olan fark elde edilmiştir.

Keywords: sarı kantaron,elisitör ,in vitro , uçucu bileşen ,terpen

Agriculture

Polycyclic Aromatic Hydrocarbons (pahs) In Food Products

_O4719

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Polycyclic aromatic hydrocarbons (PAHs) are a large group of organic compounds consisting of two or more fused benzene rings arranged in various configurations. PAHs are common environmental pollutants that result from the incomplete combustion of organic materials such as fossil fuels. The formation of PAHs in ambient air is a growing concern because of their carcinogenicity and mutagenicity. Dietary intake of PAHs is also one of the main routes of exposure. Therefore, comprehensive monitoring of the PAH content in foods is necessary. Plants can take up PAHs from the soil through their root systems, so some plant-based foods can be a source of PAHs. One of the most important issues affecting the amount of PAHs in foods is the different processing methods applied to foods. Food processing (drying, smoking) and cooking food at high temperatures (barbecuing, grilling, frying, roasting, baking) are widely recognized as the major sources of food contamination with PAHs. As a result, these compounds can reach the food chain in different ways, so it is of great importance to know the concentrations of PAHs in foods, and the reduction strategies for PAHs in food processing. Hence, the aim of this study is to give information about the major sources of PAHs in foods.

Keywords: polycyclic aromatic hydrocarbons,foods,carcinogenic, ,health,cooking processes

Çilek Anter Kültüründe Bazı Uygulamaların Etkinliğinin Belirlenmesi

_O4913

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Çilek (*Fragaria* x *ananassa* Duch.), dünyada yaygın olarak yetiştiriciliği yapılan, ekonomik ve ticari öneme sahip üzümsü meyve türlerinden birisidir. Ticari çilek çeşitlerinde, verim ve kalitenin arttırılması, biotik ve abiotik stres faktörlerine karşı direnç eksikliği en önemli sorunların başında gelmektedir ve geleneksel bitki ıslahı yöntemleri ile çilekte bu etmenlere karşı dayanıklılık kazandırmakta çok önemli bir ilerleme sağlanamamaktadır. Zengin antioksidan kapasitesine sahip olan ve nutrasötik özellikleri sebebiyle üretim ve tüketim değerleri tüm dünyada hızla artan çilek yetiştiriciliğinde ve ıslahında kullanılabilecek biyoteknolojik yöntemlerle ilgili çalışmalar her geçen gün artmaktadır. Bu biyoteknolojik yöntemler arasında yer alan haploid teknolojisi hızlı, verimli, kaliteli ve dayanıklı çeşitlerin geliştirilmesine olanak sağlamaktadır. Çilekte haploid bitki eldesinde kullanılan tekniklerinden birisi olan anter kültüründe başarı, birçok faktöre bağlıdır. Bu çalışmada Festival çilek çeşidinin anter kültüründe bazı ön uygulamaların ve farklı dozlardaki gümüş nitrat ($AgNO_3$) uygulamalarının kallus indüksiyonu üzerine olan etkilerinin belirlenmesi amaçlanmıştır. Çalışmanın ilk aşamasında çilek anter kültüründe uygulanabilecek bazı ön uygulamaların etkinliği belirlenmiştir. Bu kapsamada farklı yüzey sterilizasyon yöntemleri arasında (%1, %2, %3 sodyum hipoklorit; 10, 15, 20 dak), en etkili olanının (%99) %1 sodyum hipoklorit; 10 dak olduğu, farklı ön soğuk uygulamaları arasında ise (+4 ^oC'de 24, 36, 48, 72 saat) en yüksek kallus indüksiyon oranının (%96) +4 ^oC'de 36 s uygulamasından elde edildiği belirlenmiştir. Çalışmada ayrıca farklı dozlarda (10, 20, 30, 40 mg l^{-1}) $AgNO_3$ uygulamasının kallus indüksiyon oranına olan etkisini araştırılmış ve 20 mg l^{-1} $AgNO_3$ uygulamasının kallus indüksiyonunu en fazla arttıran (%82) uygulama olduğu belirlenmiştir.

Keywords: çilek,fragaria,haploid,anter kültürü

Use Of Vegetable Proteins As An Alternative Meat Source

_O4953

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With a rapid increase of population in recent years, various problems arise in meeting the food need. Protein sources, which are especially necessary for growth, development and healthy life, are decreasing day by day, and this causes an increase in the demand for new and alternative protein sources. Until today, protein needs were mostly met from animal proteins. However, in recent years, the increase in obesity, animal-borne diseases and antibiotic-fed animals has led to an increase in the need for vegetable proteins. In addition, the increase in meat prices and the reduction in purchasing power also limited consumption. Oilseeds, cereals, legumes, green plants and leaves are used as alternatives to animal proteins. Food groups that consume these proteins appear as vegetarianism and veganism. Today, many enterprises produce foods specific to these nutrition types. These products, which are produced in different ways, have become a big market in the food industry. Although these products are advantageous in terms of nutrition types, they have concerns about reliability and adequacy. In addition to plant-based products, the widespread use of synthetic meats in the sector has caused meat consumers to prefer alternative protein source. Initiatives, including a local company, continue to produce meat substitute products, which they produce in different ways, for both human and animal nutrition. In this study, different plant protein sources, plant protein-based nutrition types, advantages, concerns and production of alternative protein products were examined.

Keywords: animal protein ,meat substitutes ,vegetable protein

Image Processing In Agricultural Production

_O4954

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With the rapid spread of computer use in the world in recent years, computer systems are applied in almost all branches of science. In this way, the desired results can be achieved more quickly, reliably, less expensively and automatically. With the development of technology, manpower is reduced to a minimum and the robotic age comes to the fore. This situation is more evident in developed countries, but studies on this subject are continuing in other underdeveloped countries. During the past 15 years, significant progress has been made in the development and application of new sensing technologies in agricultural production. These new sensing technologies have made it possible to carry out difficult and laborious work with human power in order to measure, examine, classify and grade these measurements in an effective and efficient way in agricultural production. Image processing technology facilitates the life of the user in many areas such as plant diseases in agricultural production, planting distance, soil analysis, number of products, determining the surface area of the product. The importance of imaging technologies, which provide very successful and high accuracy results in various studies such as classification of agricultural products, determination of quality characteristics and detection of defects, has increased considerably in recent years. Image processing technologies used to increase agricultural production are a less costly, fast and successful option that does not harm the product compared to other methods. In image processing technique, MATLAB, Python 12, JAVA etc. applications are used. In this study, the place and importance of image processing techniques in agricultural production has been examined.

Keywords: computer,image processing,python,artificial intelligence