ICCESEN-2021

8th International Conference on Computational and Experimental Science and ENgineering

ONLINE-TURKEY

27-31 October 2021

ABSTRACT BOOK

EDITORS

Prof.Dr. İskender AKKURT

Dr. Kadir GÜNOĞLU

Dr. Hakan AKYILDIRIM

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FOREWORD

Dear Colleagues,

I am pleased to host you all in **"8th International Conference on Computational and Experimental Science and Engineering (ICCESEN-2021)"**. Due to Covid-19 ICCESEN-2021 has been held in the period of 27-31 October, 2021 as ONLINE using ZOOM platform. The ICCESEN-2021 will provide excellent international forumand covers highlights about new results in the wide spectrum of categories from science and engineering in theory, methods and applications and also socal sicence in this year. The participants will have the opportunity to take part in the presentation of plenary lectures, contributed papers of both oral and poster session types, and of their scientific discussions. There are 10 different theme in ICCESEN-2021 which are;

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Theme 2. Mathematical Science and Applications
Theme 3. Energy and Applications
Theme 4. Earth Science and Applications
Theme 5. Engineering Science and Applications
Theme 6. Material Science and Applications
Theme 7. Biological and Medical Science and Applications
Theme 8. Education Technologies and Applications
Theme 9. Agricultural Science and Technology
Theme 10. Forestry and Environmental Science and Engineering

Prof. Dr. İskender AKKURT
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INVITED SPEAKERS

Challenges in Social Network Data Analytics

Dr. Soumi DUTTA✉

Institute of Engineering & Management (IEM)-INDIA

ABSTRACT

Fundamental analytics applications include social network analysis, sentiment analysis, trend analysis, and collaborative advice. However, both their recent emergence and the fact that science is still at the limits of processing human-generated data provoke the need for updating relevant research and for a comprehensible classification. In response to this emerging chaotic social data science, this article presents a complex classification of cutting-edge frameworks, considering the diversity of applications, methods, and techniques. To our knowledge, this is the first attempt to demonstrate the full spectrum of social data network analytics and their associated frameworks. The survey highlights challenges and future directions, with a focus on text mining and the promising field of computational intelligence.

A beneficiary for advance in Knowledg graph for cyber technology

Madjid FATHI✉

University of Siegen, GERMANY

ABSTRACT

We will going after understanding the role of AI infrastructur: Knowledge based Technology, Knowledge Management (KM), mashine learning, Knowledge discovery from Text, Cmputational Inteligent however one of the most important part is Knowledge-based Technology and Knowledge management.There are another additional mission describing AI infrastructur, indicating the funtionalties and learning process, without an strategy on learning it gone be helpful to applied knowledg graph.

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Genetic variants and mutations of SARS-CoV-2, vaccines and non specific immunity

Dr. Samira FETNI[1,2]✉

[1] *Department of Pharmacy, Faculty of Medical Sciences, University of Batna2, ALGERIA*
[2] *Laboratory of natural substances, biomolecules and biotechnological applications, University of Oum El Bouaghi, ALGERIA*

ABSTRACT

The world is facing the biggest problem in history, namely the deadly Corona virus, which has infected millions of people worldwide and caused a health crisis despite all preventive measures, because it has proven its strength with its widespread and new transformations from time to time. In time, this has led to the emergence of many mutations, in the context of 'variants of concern', that impact virus characteristics, including transmissibility and antigenicity, probably in response to the changing immune profile of the human population, that are difficult to control because it affects all age groups and is transmitted through close contact with infected people, especially those with chronic diseases and with other risk factors such as: socioeconomic level, lifestyle, diet, obesity and physical activity, it is an opportunistic disease that alters all immune responses. Despite all the international scientific studies, this virus is still mysterious, which has led to the inability to produce a drug that reduces its risk and cures it, but the discovery of some vaccines has given hope of defeating it; nonetheless, it is crucial that surveillance of genetic and antigenic changes in the global virus population is done alongside experiments to elucidate the phenotypic impacts of mutations.

Keywords: COVID-19, pandemic, mutations, vaccine, immunity, risk factors.

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Stress and Music from a Neuroscience Perspective: A Model of Wellbeing

Dr. Gökçe ŞIRVANLI✉
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ABSTRACT

Well-being is multidimensional. While medications, surgeries and other medical interventions maintain health, stress management and similar interventions maintain another aspect of health. In the state of well-being and its maintenance, the mind plays an equally important role as the body. At this point, the mind-body approach gains importance. Stress is a word that we use frequently in our daily lives, and it often reaches a level that can negatively affect our body and mind. It triggers diseases and affects our behavior, social and business life as well. Everything must be in a system of balance. Since the absence of stress can also lead to negative things, learning to control it will be the best way to achieve balance. This path, which brings different exercises and music with it, aims to reach a state of well-being by calming the body and the mind. Doing all of these on a regular basis causes structural changes in the brain as well as in the body and mind. Well-being is thus supported and sustained.

Keywords: Neuroscience, stress, music, well-being

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Sustainable Aggregate Production Planning with Overtime, Outsourcing and Human Factors under Uncertain Seasonal Demand

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ABSTRACT

Aggregate production planning (APP) is a medium-range production and employment planning that deals with the main challenges of manufacturing industries, such as production and outsourcing quantities, hiring and lay-off rates and inventory levels. On the other hand, sustainable development plays a key role in the problem based on global issues, particularly in environmental aspects. This study develops a novel multi-objective mixed-integer linear programming (MILP) model to formulate the sustainable APP problem with overtime and outsourcing options under interval-valued or fuzzy seasonal demand. The objectives are to concurrently minimize total cost of the production system, minimize total environmental pollution and maximize customers' satisfaction level. To deal with the multi-objectiveness of the model, the augmented epsilon-constraint technique is implemented. A numerical example is then investigated to test the performance and validity of the proposed mathematical model. Finally, the behavior of the objective functions is evaluated against the fluctuations of key parameters based on unstable real-world situation and managerial insights and decision aids are suggested. The particular novelty of our study is the rich involvement into our APP of Human Factors and additional goals of Workforce Satisfaction.

Keywords: *Production and Inventory Systems, Human Resources Management, Robust Optimization*

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Big Data Application in Science

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ABSTRACT

Big data has recently been very important for many different fields and it can help companies to make better business decisions. It is done by analyzing large volumes of data and discovering hidden patterns. In this work its application in scientific research wil be detailed.

Keywords: Big data, Science, application

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ORAL PRESENTATIONS

O_14

Demand Side Management and Dynamic Economic Dispatch using Genetic Algorithms

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ABSTRACT

The purpose of this work is to find the optimal energy management mix in order to maximize the benefit for the client by minimizing the bill, together with reducing losses by optimizing the energy distribution in the network. The Smart Grid management problems are subdivided into two large scales : demand side management (DSM) and dynamic economic dispatch (DED). DSM consists of modifying features of electricity consumption with reference to the overall consumption picture, consumption time profile, contractual supply parameters in order to achieve saving in electricity charges. While DED aims to provide the ideal dispatch of energy produced depending on the total load demand of consumers and the amount of power generated. Different research studies were carried out to determine the most favorable design that can serve either DSM or DED issues independently. In this work, we will be using Genetic Algorithms to solve DSM and DED problems by considering them as two complementary stages in the optimization process.

Keywords: Smart grids, energy management systems, optimization, genetic algorithms

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O_15

An investigation into Pricing Policies in a Smart Grid

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ABSTRACT

Nowadays, the full interest of the researchers and electrical engineers is on the non-conventional ones, this is because it had one of the most important natural resources. Focus is also focusing on implementing a new network strategy, which could solve the blackouts, insufficiency and waste of energy problems that the traditional networks used to encounter. One achievement is the construction of Smart cities. In this kind of cities, the houses are equipped with smart meters. These can record the electric energy hourly, frequently, and report daily and can also send and receive information about electricity usage and electricity costs and give consumer more information about their own usage. Additionally, new methods; known as real time pricing, of electricity pricing have been introduced where the electricity rates vary hour-to-hour and are based on the electricity demands. Due to the production of electricity by the PV panels, the smart grid will share the surplus of the energy provided by the panels to the entire city, which leads to decreasing the production of power from the plants. These pricing policies will force and encourage the consumers to track their power consumption and use renewable energy.

There exist different policies that could be used in pricing for the electrical industry. Those policies help the consumer and the central electric in many ways. In this work, pricing policy's impacts on the smart grid as well as the different methods to help reduce the consumer's power consumption are investigated. A small scale prototype of a smart city is presented and some policies will be applied on it. Also, an implementation through simulation of some houses equipped with renewable energy sources is done to study their effect on the grid performance.

Keywords: Smart grids, smart meters, smart cities, pricing policies

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O_16

A teaching method for the natural sciences

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ABSTRACT

In this contribution we will introduce a new method of teaching and learning for the natural sciences (Biology, Physics, Chemistry) and for Mathematics. The inventor and practical implementer in several countries of the world (Indonesia, Tanzania, Kosovo, Kyrgyzstan, Kazakhstan, Bosnia & Herzegovina and some schools in Germany) was Jürgen Schőnherr. The philosophy of this method is based on the idea that the first lesson of each chapter begins with an experiment, which should be clear, simple (built with ordinary tools from students' lives, kitchens, toys, tools, etc.) and have a surprising effect. Based on this approach, the method is also called Starter experiment approach. The role of the teacher during this lesson will be more of a guide and helper, while most of the time belongs to the students. Thus, students will be aroused curiosity and love for natural sciences. In countries where this method has been applied, positive effects have been observed in increasing the number of researchers in the natural sciences and their success.

Keywords: Experiment, Starter, Approach, Natural Sciences, Mathematic.

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O_22

On the wave dispersion in large-scale Hopkinson pressure bars

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ABSTRACT

The paper presents a numerical method to take into account the effect of wave dispersions in large-scale Hopkinson pressure bars. The method consists of adjusting (correcting) the phase angle referring to the geometrical dispersion of the compressive waves propagating along the elastic bars. In the first step, the correction involves the development of an algorithm to solve the frequency equation. In the second step, the method tries to equalize the non-uniformity displacements of the particles over the bar radius. Therefore, the mean dynamic elastic modulus of the bar should be re-calculated. The method could either be used in compressive and tensile configuration. An application of the developed method to process data coming from a dynamic test at a high strain rate has been discussed. The results show the importance of the correction of the dispersion to assess the actual stress and the strain of samples. In spalling, the underestimation of the stress and the strain rate could reach 14.6%. The paper also highlights the importance of the pulse delimitation to construct valid stress- strain diagrams.

Keywords: Hopkinson Pressure Bar, Wave dispersion, High strain rate

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O_25

Determination of dimensions and some properties of metals and metal alloys by ultrasound

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ABSTRACT

Recently, ultrasound has found extensive applications in various areas of industry, medicine, agriculture, etc. This paper introduces a method of determining the thickness, speed of sound, and the Young modulus for selected metals and metal alloys by ultrasound. The determination of these properties was done with the NDT USM25 ultrasonic flaw detector by Krautkramer. Straight beam contact transducer and angle beam transducers (45o and 60o) were used for this purpose. When a straight beam contact transducer was used, the equipment was calibrated with the K1 calibrator, while for the angle beam transducers, the K2 was used. The presented method offers a practical and reliable way of measuring thickness and other properties of metal and metal alloys.

Keywords: *ultrasound, metals, alloys, properties,*

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Phenomenological Aspects of the Minimal Noncommutative Standard Model

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ABSTRACT

The extension of the standard model of elementary particle physics to Non Commutative (NC) space–time opens a window on a rich variety of new physical phenomena. The main purpose of this work is to study some processes which are sensitive to the non commutative effect in the framework of the minimal noncommutative standard model, and utilizing the Seiberg– Witten maps to the first order of the NC parameter $\Theta\mu\nu$. In this work we assume an ansatz for the NC parameter $\Theta\mu\nu$ and we find new limit on the NC scale.

Keywords: *Noncommutative space–time, Noncommutative standard model, Scattering cross-section*

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O_34

The impact of Al_2O_3 doping in vinyl ester resin on gamma radiation attenuation coefficient

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ABSTRACT

With the discovering atomic nucleus, nuclear science started to be used in different fields and researcher focused on radiation protection as it is dangerous for human cell. Thus radiation physics and materials development becomes one of the important subject in science for this purposes. The developed material should be used for radiation shielding. In this study, aluminum oxide particle reinforced vinyl ester composite materials were produced. The radiation shielding performance of the composite materials produced was experimentally measured at 835 keV gamma energy emitted from 54Mn radioactive source.

Keywords: Vinyl ester resin, aluminum oxide, radiation attenuation coefficient

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A novel elongation shape descriptor for planar objects classification

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ABSTRACT

Object comparison is a core process in many computer vision related tasks such as object identification, recognition, classification and tracking. It is computationally less expensive to compare some object characteristics than to compare the complete digital data representing the objects. The shape of an object has a great discriminating power and allows different numerical characterizations. These numerically quantified shape-based characteristics are named shape descriptors. There is a strong ongoing interest not only for newly defined shape descriptors, but also for new methods for quantifying already introduced ones. Elongation is one of the commonly used and extensively studied shape descriptors. There exists a plethora of methods for computing elongation in the literature, but none of them is proved to be universally superior and each one has its own drawbacks.

In this paper, we propose a novel elongation measure, based on the distances between two extremal points and all the other shape points. The extremal points are detected in the direction of maximal Feret's diameter, and distances are assumed to belong to the family of Minkowski Lp distances. The proposed measure satisfies desired properties: it is bounded; it is invariant under the reflection, rotation and translation. Furthermore, it is normalized, thus not affected by the size of an object. Beside the theoretical results, we conduct a series of experiments, where the appropriate behaviour of the introduced elongation measure is shown. The novel measure is primarily developed for the purpose of planar objects comparison. However, it can be easily generalized to n-dimensional case.

Keywords: Shape descriptors, Elongation, Distance measures, Object classification

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O_46

IBFFM low-lying states and their spin- dependent level densities for even-A nuclei associated with SU(6) approximation and it's O(6) dynamical symmetry of IBM

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ABSTRACT

In the interacting Boson-Fermion-Fermion Model(IBFFM) for odd-odd nuclei 196Au the low-lying states and their densities are calculated for $\pi_{d_{\frac{3}{2}}}, \pi_{d_{\frac{5}{2}}}, \pi_{s_{\frac{1}{2}}}, \pi_{h_{\frac{11}{2}}}$ proton quasiparticles and $v_{p_{\frac{1}{2}}}, v_{f_{\frac{5}{2}}}, v_{p_{\frac{3}{2}}}, v_{f_{\frac{7}{2}}}, v_{i_{\frac{13}{2}}}$ neutron quasiparticles states, coupled to the IBM core in SU(6) approximation and it's O(6) dynamical symetry of Interacting Boson Model (IBM). In this paper spin dependent level density dependence from dynamical, exchange particle-quasiparticle interactions and residual proton-neutron interactions are investigated. We also applied cutting bosons and fermions space and investigated their impacts on total and spin dependent level density. The results are shown graphically and compared to the previous combinatorial, thermodynamic and spectral distribution approaches for 132Pr, 244 Am and 114 Cd. The IBFFM spin–dependent level densities can be well accounted by Bethe and modified spin distribution formula. For small changes of dynamical, exchange and residual interactions we have a small changes in the spin-dependent level density of states. The complex collective features and interplay between collective and quasiparticle degrees of freedom do not influence sizeable the IBFFM spin-dependent level density distribution.

Keywords: *IBFFM, even-A nuclei, spin- dependent level densities, SU(6) approximation, O(6) dynamical symetry*

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O_52

Comparison of volumetric modulated arc therapy and 3D conformal for head and neck region

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ABSTRACT

Rapid technological development has a great impact in all fields, especially in medicine. The subject of this study is to compare the different techniques for the treatment of patients in radiotherapy. Advantages and disadvantages of three Dimensional Conformal (3D) and Volumetric Modulated Arc Therapy (VMAT) techniques for Head and Neck treatment planning in Radiotherapy will be discussed, for this reasons, the treatment plans were prepared for twenty patients, in both techniques, based on same CT and contouring data. For comparing, were used linear accelerators Elekta Infinity and Siemens Primus, with software Monaco and XiO, respectively. Some parameters will be taken into account, like as, health benefits, time consumption, cost, knowledge of staff. VMAT has many advantages like as spearing organ at risk; reduce treatment time and more homogeneous dose distribution. On the other hand is more expensive, needs higher staff knowledge and more strictly quality assurance program.

Keywords: VMAT, 3D, radiotherapy, treatment plan

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O_54

Regression of social welfare due to decrease of space requirements for educational facilities in dense urban areas – case study of Belgrade, Serbia

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ABSTRACT

Introduction

The raise of private investements after the property transition in post-socialism and stagnation of public investments caused severe consequences on implementation of the planned network of public educational facilities. An incomplete data basis of demographic trends and spaces for educational facilites, along with the conversion of land ownership resulted in reduction of areas intended for communal educational institutions with the consequence of two-shift working models even in elementary schools and a deficiency of open spaces and sport-facilities which implies an impact on sustainable urban development and social welfare.

Methods

The following comparative analytics will be used:

- Gathering space data directly from educational facilities,
- Comparison of communal educational spaces relative to demographic data from 1970s until 2021 on the territory of the city of Belgrade, number of enrolled pupils to spatial areas including two-shift working schools,
- Analysis of legal basis for urban planning concerning required areas for educational facilities from 1970s until 2021.

Results

Delayed implementation and construction of educational facilities due to reasons mentioned in introduction resulted with a continouos pressure on educational facilities, continouos reduction of building-codes and a vast reduction of urban health and social welfare. The areas required by health authorities due the pandemic of COVID-19 caused an extreme aggravation of the situation.

Discussion

The private investment oriented urban-planning is underlined as an important source of income for communities, but public investments and education facilities should be priority in urban planning codes, otherwise, the consequences of irresponsible urbanization are extensive and irreversible.

Keywords: *social welfare, space requirements, public education, urban planning, demographic trends, transition of property*

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Application of additive manufacturing on Radiotherapy

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ABSTRACT

The purpose of this study was to use additive manufacturing methods to create different tools for radiotherapy department. Usually, those tools are very expensive; instead of buying for some of them can be used 3D printing.

For some parts that perform only mechanical work, such as bolts, clamps, holders, etc. only mechanical functionality have to be check. Whereas, created parts, which are used for quality controls and dosimetry purposes, such as test geometries characterization, plates for build-up region, immobilization devices, bolus, etc. professional experts have to test and approve them before starting using on professional activities.

Different type of materials were used, like as acrylonitrile butadiene (ABS), polyactic acid (PLA) and polymethyl methacrylate (PMMA).

For dosimetry purpose, the physical density and electron density is the most important parameters to be taken into account. So, percent depth- dose measurements and tissue maximum ratios were used to determine the characteristics of the printing materials.

Keywords: *additive manifacturing, 3D printing, ABS, PLA*

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O_57

Efficiency of hybrid historical simulation in emerging markets risk modelling

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ABSTRACT

Value-at-Risk (VaR) methodology enables risk prediction, which is of special importance in the volatile market conditions of financially developing countries. VaR models show the maximum possible loss from investment activity in the observed time horizon. The importance of the VaR methodology is reflected by the existence of a wide range of parametric and nonparametric models. The success of risk prediction depends on the chosen VaR model, the level of confidence, as well as the size of rolling windows.

In this research, we compare the efficiency of three different VaR methods for modelling financial risk in the presence of volatile conditions characteristic for dynamic, emerging markets. It is well documented in the literature that under these circumstances, Extreme Value Theory (EVT) method provides better tail estimation than non-parametric methods such as Historical Simulation (HS). EVT, particularly its Peak-Over-Treshold variant, is based on the Generalized Pareto Distribution of daily returns, whose modelling is computationally quite chalenging.

The goal of the research is thus (1) to apply a computationally easier VaR method, namely hybrid historical simulation (HHS), which is usually more precise than traditional non-parametric HS since it combines it with exponentially distributed weights over time period; and (2) to perform a multiple comparison of the obtained modelling results by analizing distances between observed and estimated return values, and by analizing numbers of succesfull estimations validated by backtesting results. The database comprises of daily stock returns of the stock exchange indices from two emerging countries: BELEX15 (Serbia) and CROBEX (Croatia), during period 2017-2019.

Keywords: *Risk modelling, Value-at-Risk, Hybrid Historical Simulation, Extreme Value Theory, Emerging markets*

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O_58

Meta-Learning Approach for the Effect of Artificial Intelligence on STEM Education

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ABSTRACT

Especially during the Covid-19 process, the demands for online trainings have increased gradually, and the interest in sites such as Coursera, Udemy, etc., which provides mass training services called MOOC, has intensified. This, in turn, does not guide the participant about how effective a course is in learning and does not provide support for how to adapt the topics in these trainings for the participants' future career.

For this reason, instead of specializing in a single subject and receiving training, Science, Technology, Engineering, Math (STEM) trainings are increasingly important for the development of a multidisciplinary understanding worldwide, especially in engineering issues. STEM education is beneficial in terms of developing students' analytical thinking, supporting their problem solving and encouraging their creativity from preschool to university graduation. However, these trainings will not be completed at the same level and time for every student with the determination of repetitive learning and different perception levels by analyzing the missing areas of the students, the necessity of personalized education programs has emerged in subjects such as spread over time.

These programs are only realized by allowing students to personalize their reinforcement learning within the scope of their own ability and perception levels as a way of fostering more interaction between educations in computing with artificial intelligence.

In this study, due to the fact that artificial intelligence, meta learning model used for the best predictions from machine learning algorithms to make better predictions for dynamic personalized education plan for the students.

Keywords: Artificial Intelligence, Meta-Learning, STEM Education

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O_60

Surface roughness evaluation of additive manufacturing specimen printed from non-metallic materials

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ABSTRACT

The most important measures of surface quality during the printing process are the average roughness of a surface (Ra) and roughness depth of a surface (Rz), and it is mostly caused by many printing parameters, such as layer height, raster angle, printing speed, and percent in the fill layer height, printing temperature, etc.

For this paper are selected three-parameter: Infill (%), layer thickness (mm), and printing speed (mm/s), and three different thermos plastic material: Acrylonitrile butadiene styrene (ABS), Polylactic Acid (PLA) and Polyethylene Terephthalate Glycol Modified (PETG) with the same Fused Deposition Modeling FDM technology and 3D printer.

The experiment has been designed and carried out on the basis of a three-level factorial design. With digital surface roughness meter were analyzed the level surface profiles of each specimens and mathematical modeling is prepared based on regression method.

Experimental results and theoretical calculation shows that none of materials under the study did not shows any evidence to link inputs parameters of printing to Average Roughness of a surface (Ra) and Roughness Depth of a surface (Rz) of printed surface specimens.

Keywords: additive manifacturing, 3D printing, FDM, ABS, PLA, PETG, surface roughness, regression method

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O_61

Patient Education Before Coloscopy

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ABSTRACT

An article is focused on the issue of patient education before the examination, specifically before the colonoscopic examination. The research presents a quantitative research survey. The goal was to obtain data on the colon readiness of patients coming for colonoscopy. The evaluation was performed using the Boston scale, patients were educated in GP clinics and in a gastroenterological outpatient clinic. In this part, the effectiveness of educational processes and their influence on the patient's own home preparation before the examination was verified. Educational processes have a fundamental influence on the quality of patient colon preparation and the yield of subsequent colonoscopies.

Keywords: Colonoscopy, educational process, nurse, patient, Boston scale

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O_62

Performance of Blast Loaded Thermoplastic Composite Ultra-light Sandwich Panels

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ABSTRACT

In this study, the behavior of sandwich materials with continuous fiber-reinforced thermoplastic composite layer composite top and bottom plates under blast load was experimentally investigated. Continuous fiber-reinforced thermoplastic composites are fully recyclable and environmentally friendly composites. Experiments were carried out in the laboratory environment using the shock tube test set-up in AMAMRG Lab. Shock pressure profiles formed after the explosion and on the front surface of the sandwich plate were obtained. The displacement variations during the impact of the shock load were measured from the sandwich plate's back surface. Moreover, permanent displacements of sandwich panels after the explosion were measured. Three different core structures were applied and comparatively examined in the sandwich materials used.

Keywords: Blast loading, Sandwich panels, Thermoplastic composites

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O_63

Functionally Graded Syntactic Foam Core Sandwich Materials Under Blast and Impact Loading

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ABSTRACT

In the presented study, epoxy resin-based syntactic foams were obtained by reinforcing with glass bubbles and solid glass spheres. Sandwich materials were produced by combining the syntactic foams with different properties obtained in a functionally graded structure to improve absorption properties under shock and impact load. The performance of the sandwich materials produced under shock load and medium-speed impact load was experimentally investigated and examined. Experiments were carried out in the laboratory using the shock tube test set-up and gas accelerated horizontal impact test set-up in AMAMRG Lab. Impact load profiles and damage shapes were obtained in impact experiments. In shock tube experiments, shock pressure profiles and displacement variations obtained during the impact of the shock load were measured from the back surface of the sandwich plate. Moreover, the permanent displacements formed after the explosion were measured. Three different core structures were also developed and comparatively examined.

Keywords: Blast loading, Impact Loading, Syntactic Foams, Functionally graded materials, Sandwich panels,

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O_69

Dose reduction in adult chest CT using abdominal lead shielding

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ABSTRACT

OBJECTIVE: The purpose of this study was to measure and evaluate the radiation doses of medical exposures of patients who have undergone examinations with CT devices, as well as to determine the role of the use of protective lead shielding in patients, outside the region of interest, during computed tomography (CT) examinations.

MATERIALS AND METHODS: A chest CT scan was performed at 17 adult patients, and a Thermoluminiscent dosimeters (TLDs) were used to measure the radiation dose at points outside the region of interest. A lead apron was placed arround the patient body, 5 cm from the bottom of the CT scan range, and two TLDs (placed on and under protective lead shielding) were used ofr each patient. The weighted average dose was calculated for each TLD position.

RESULTS: The weighted-average dose within and outside the region of interest was 0.042 and 0.630 mGy, respectively. The mean (percentage) dose reduction outside the region of interest resulting from use of the lead apron was 0.295 mGy (81.7%), when the TLDs was placed under lead apron at distances 5 cm from the bottom of the scan range, respectively.

CONCLUSION: The results obtained and presented in this study, have clearly identified the need and the important role of the use of protective lead shielding in patients in order to reduce radiation doses in organs outside the area of interest.

Keywords: Computed Tomography (CT), radiation dose reduction, lead shielding

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O_70

Genetic Bases of VitaminB12 Deficiency: Impact of MTHFR, TCN-II and GIF Polymorphisms on Vitamin B12 Level

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ABSTRACT

Vitamin B12 deficiency is associated with serious health problems such as neurological disorders. In Jordan, few studies have evaluated the level of vitamin B21 in the Jordanian population with different prevalence. Genetic predisposition, lifestyle, environment, socioeconomic status, and geographic have been linked to vitamin B12 deficiency. Polymorphisms in the GIF, MTHFR, and Transcobalamins, have been proposed to be associated with the level of vitamin B12. The aim of the current study was to evaluate the impact of certain polymorphisms in MTHFR, TCN-II and GIF genes on the level of vitamin B12 in the Jordanian population. Polymorphic sites of the MTHFR (c.677 C>T, rs1801133 and c.1286A>C, rs1801131), TCN2-776C>G (Arg259Pro) (rs1801198) and GIF-68 A>G (Q5R) genes were analyzed by RFLP and DNA sequencing in a group of vitamin B12 deficient individuals (n = 100). The control group included 100 matching individuals with a normal level of vitamin B12 (>200 ng/mL). Our results showed a significant association between the homologous variant of the TCN2 gene (G776G) and MTHFR c.677C>T genes and vitamin B12 deficiency. On the other hand, The MTHFR c.1286A>C variant and GIF variants did not show significant association with vitamin B12 deficiency. This study expounds the association of TCN2 and MTHFR polymorphisms with cobalamin levels in a Jordanian population and highlights the necessity of further studies to elucidate the molecular basis and impact of TCN2, GIF, and MTHFR gene polymorphisms on vitamin B12 deficiency and associated disorders.

Keywords: MTHFR, TCN-2, GIF, Polymorphisms, Vitamin B12 Deficiency

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O_71

Synthesis and Characterization of 89Zr Radiolabeled Fluorescent Nanoparticles For Cancer Diagnosis

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ABSTRACT

Recently, T cell immunotherapy has been prominent in cancer treatment studies. T cells, one of the most important components of the immune system, stand out in the treatment of cancer because specific T cells actively fight against cancer cells.

Accurate identification of imaging and disease staging is vital in terms of clinical outcomes. The dual modality that combines two different imaging techniques; enables image-oriented real-time therapy and instant adjustment due to the combination that leads increasingly more sensitive and high resolution portable optical imaging devices due to the combination.

In this study, mesoporous silica nanoparticles (MSN) as a multifunctional biocompatible probe were used. Characterization of MSN performed by TEM and DLS analyzes. It was found that MSN was synthesized homogeneous size, the average size of 60-70 nm.

IRDye 800CW fluorescent dyes, which have a wavelength of 789 nm are encapsulated into MSN in order to provide optical imaging.

Radiolabelling efficiency of MSN with 89Zr as a radionuclide was found to be %95.48±1.55 (n=5).

Finally, radiolabelled MSN in vitro cell culture studies were performed on SKOV3 and SKOV- CEA cells.

It is thought that dual-modality PET/Optical imaging of the antigen-specific T cells in vivo with the synthesized multifunctional agent will be provided and will contribute to the development of systems transferred to T cells for the diagnosis of cancer.

Keywords: T cell, Fluorescent Nanoparticles, Cancer Diagnosis

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O_72

Investigation of Liquid Nanofluid-Aided Fracturing Fluid on Enhanced Oil Recovery in Oil-Wet Formations Using the Lab-on-a-Chip Method

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ABSTRACT

Using the injected fracturing fluid to alter the rock wettability is an effective method to enhance oil recovery from oil-wet formations after hydraulic fracturing. Among different types of fracturing fluid additives, liquid nanofluid (LNF) has less adsorption loss in the formations and can efficiently alter the rock wettability; both make it a good chemical for enhancing oil recovery in oil-wet reservoirs. In this study, microfluidic experiments are designed to clarify the effects of wettability alteration rate on enhanced oil recovery from oil-wet porous media. Firstly, the performance of one LNF is tested in 2.5D fractured micromodels with different wettability to clarify the effect of wettability on the oil recovery after LNF invasion. And results confirm that the degree of water-wet determines the ultimate oil recovery. Then, LNF with different electrical properties and droplet sizes are tested in the single pore micromodel to quantify their wettability-alteration rates. Results show that cationic LNF with small droplet sizes has higher wettability-alteration rate than other LNF. These LNF are also tested in the 2.5D fractured micromodels, and different oil recovery are observed due to their different wettability-alteration rate. Results further reveal the good correlation between the oil recovery and wettability- alteration rate and suggest that the cationic LNF with small droplet sizes should be used for fracturing fluid additives.

Keywords: *Liquid nanofluid, enhanced Oil Recovery, lab-on-a-chip, hydraulic fracturing, wettability alteration*

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O_74

Characterization of Cobalt Sulfide Thin Films deposed by Chemical Bath Deposition Technique

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ABSTRACT

In this paper, cobalt sulfide thin film was deposed on glass and silicon substrate using a chemical bath deposition method .

Cobalt sulfure was used as a source of cobalt and and thiourea as a source of sulfur, ethylene diamine tetra acetate (EDTA) as a complexing agent and ammonia .

The deposition time and temperature were 120 minutes and 60 °C, respectively.

Tightly adhered, Dark green sea coloured uniform deposits are obtained using this method.
The surface morphology, chemical composition, optical properties of the cobalt sulfide thin films were studied by scanning electron microscope,EPMA, UV-Visible spectrophotometer and FTIR respectively.

Keywords: Cobalt sulfide, thin film, CBD, characterization

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O_75

Methods for recycling photovoltaic modules: A review.

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ABSTRACT

To reduce the impact of global warming, several countries around the world have developed and used renewable energy resources to reduce greenhouse gas emissions. Photovoltaic technology is a renewable clean energy but unfortunately the amount of waste PV panel is estimated to reach 9.57 million tons in 2050, so the recycling of waste PV panels will represent a challenge for waste treatment plants in the future.

For this purpose, in this work, several recycling methods will be presented and evaluated, and their impact will be assessed from the environmental point of view.

We will describe three used methods of recycling photovoltaic panels : thermal, chemical and mechanical method.

Keywords: *methods, recycling, photovoltaic, end of life panels, waste.*

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O_78

Vibration effects on drying process

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ABSTRACT

Drying is one of the most energy-intensive industrial processes. One of the techniques aiming to reduce energy consumption is the vibration technique which is generally employed to intensify the heat and mass transfer process. In this respect, this paper presents a three-dimensional numerical model to study the external vibration effects on drying process of porous medium. The model is based on a comparison of heat and mass transfer phenomena that arise during vibrating drying of unsaturated porous medium for two cases: triangular and sinusoidal external vibrations. The three-dimensional unstructured Control Volume Finite Element Method (CVFEM) is employed to simulate the vibrating drying. Numerical results of time evolution of temperature, liquid saturation, pressure and water content are compared and analyzed for the two cases.

Keywords: External vibration; Vibrating drying; Unsaturated porous medium; CVFEM

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O_81

Nonlinear Analysis Of Reinforced Concrete Beams

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ABSTRACT

Reinforced Concrete Beams (RCBs) are among the main structural components for carrying loads in constructions. The assessment of their strength regarding solicitation efforts is crucial for predicting the response of the structures they are part of. This work deals with the evaluation of the flexural behavior of RCBs under four-point flexural test. A non-linear finite element analysis was performed using ANSYS software and based on discrete model of reinforcement. The model has been set up and validated with benchmark data available in the literature. Further, the failure modes could be captured through the crack and crush plot in ANSYS. It was found that the proposed simulation was efficient to predict the real behavior of the RCB tested experimentally in terms of load-deflection response, ultimate load, and failure modes.

Keywords: Reinforced Concrete Beam (RCB); flexural; Non-linear analysis; ANSYS; failure.

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O_83

Investigation of the Properties of Autoclaved Foam Concrete

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ABSTRACT

Concrete is a building material with high compressive strength and heat resistance. Concrete is examined in four main groups. When the unit volume, which is one of these groups, is examined according to weight, it is divided into three groups as light, normal and heavy concrete. The change in the unit weight of the concrete provides some advantages as well as changing its physical and mechanical properties. Many different methods are used to produce lightweight concrete. Today, studies on lightweight concrete continue rapidly. Lightweight concretes are classified according to their density as low-density concrete, medium-strength concrete and structural concrete. In addition, ultra-light concretes with lower densities are produced. These are low unit weight concretes such as aerated concrete, foam concrete and other cellular concretes. The curing process in foam concrete production has a positive effect on the increase in strength. There are great differences between the samples obtained by subjecting the foam concrete with fixed density to 95% relative humidity under normal conditions and curing conditions for 28 days and curing for a certain period of time under high temperature and pressure in the autoclave device. In this study, the effects of 2 different curing on the same samples were investigated. It was observed that 30% more strength was obtained as a result of curing with autoclaving in foam concrete.

Keywords: Concret, Foam, Autoclaved

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O_84

Reinforcement of Glulam Beams with Carbon-FRP

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ABSTRACT

Sustainability is a concept that has been used for a long time in the management of forest resources. This concept, which is considered as managing the resources used without losing their qualities, was inspired by the forestry sector and adapted to other sectors. Wood is an organic building material that buildings need a lot and whose raw material source is forests. It is not possible to use no wooden materials (roof, concrete formwork, coating, stairs, furniture, doors, windows, etc.) even in a structure where the entire carrier system is concrete or steel. Waste material generated during the production of wooden structures is very low and can be used in different applications. In addition to being an environmentally friendly material that causes low energy consumption and low air and water pollution in its production, wood continues to maintain the same feature after its useful life. Glued laminated timber (Glulam) optimizes the structural characteristics of wood, being itself a versatile material with many possibilities. In this study, the reinforcement of glulam wood composite, which is widely used in the construction of wooden structures, with carbon-based FRP polymer was investigated. 120x120x3000 mm glulam beams are reinforced with carbon-based fiber reinforced polymer composite. It was determined that the load carrying capacities, displacement amounts and bending strength values of glulam beams increased with the effect of reinforcement with fiber reinforced polymer composites.

Keywords: Glulam, wood composites, FRP, reinforcement

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O_85

Investigation of Radiation Shielding Properties of Wood Material

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ABSTRACT

Radiation is a phenomenon that always exists in nature and we live together. With the development of technology, radiation has started to be used frequently in fields such as medicine, energy and industry, and therefore studies on radiation are increasing. Radiation protection methods have gained importance, especially since radiation is harmful to living things. These methods are distance, time and shielding. Shielding, the most important of these methods, is based on placing an obstacle between the system to be protected from radiation and the radiation source. For this reason, the researchers produced different materials for shielding radiation and examined the radiation absorption properties of these materials. Wood material is preferred because it is a renewable resource, the amount of energy used in the production of wooden building elements and structures is low, and the amount of carbon dioxide produced in the production process is close to zero. It is seen that the wooden material, which we have seen in the past especially in housing construction, is widely used in the production of multi-storey buildings with new production technologies. Studies have been carried out on the radiation shielding properties of wood building materials, which are frequently used in building construction in recent years. In this study, 662 keV at radiation shielding properties of radial and tangential sawn timbers obtained from Black Pine (Pinus nigra Arnold) tree species were investigated. It was determined that the radiation shielding properties of radial and tangential sawn timbers gave similar results.

Keywords: Radiation Shielding, wood, tangential, radial

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O_89

Experimental study of Influences of cation types on tight sandstone minerals dissolution in low salinity brine

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ABSTRACT

More and more attentions have been paid to impacts of injected water ion composition (ion type, ion concentration) on reservoir surface characteristics and oil &gas field development in the petroleum filed. The dissolution of minerals into salinity water can illustrate the effect of ion type and concentration on reservoir surface properties to some extent, including some microscopic properties, such as surface charge and surface electric double layer, and so on. Furthermore, it can affect surface wettability, clay swelling and some other macroscopic characterizations. In this paper, the solid-fluid reaction between the minerals and salinity solutions is carried out. The solid phase consists of powders such as quartz, feldspar, and clay minerals based on the compositions of tight sandstones. The anions of salinity water are all Cl^- while the cations are respectively Ca^{2+}, Mg^{2+} and Na^+ and so on. The dissolution of silica is selected as an index to judge the amount of mineral powder dissolved in the salinity solution. Experimental results show that the amount of mineral powder dissolved in salinity solution gradually increases with the time. Impacts of ion type on the dissolution of different minerals varies a lot. For example, Ca^{2+} is more conducive to the dissolution of quartz than other divalent ions such as Mg^{2+} and Mn^{2+}, while K^+ contributes more than Na^+ to the dissolution of quartz. The dissolution of clay minerals into the salinity solution obeys the same law, the dissolving amount in solutions of clay minerals are listed in descending order as below: $NaCl>KCl>MgCl_2>MnCl_2>CaCl_2>AlCl_3$. The reasons can be attributed to the negative charge on the surface of three clay minerals. Clay and skeleton minerals (quartz, feldspar) jointly determine the amount of sandstone powder dissolved in solutions. The dissolving ability of sandstone powder are listed in descending order: $AlCl_3>CaCl_2>NaCl>KCl>MnCl_2>MgCl_2$. The changes of pH value also shows the law of comparison with the solubility of minerals.

Keywords: Low salinity,cation, silica, dissolution

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O_93

Clinical Management of Dacryo Scintigraphy

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ABSTRACT

Medical applications are the most common causes of artificial radiation. They differ from natural radiation with the possibility to control their duration, exposure time and radiation level. The artificial radiation use is not frequent in ophthalmologycal practice but complicated because of the neighbouring effects of the radiation. Cristalline lens and optic nerve are the most affecting parts of the eye from radiation. Applied radiation, both for diagnostic and therapeutic purposes, has to be controlled for its adverse effects on these tissues. In this study, the radiation dose levels emitted by patients who underwent dacryo scintigraphy were determined. The results were compared with similar studies.

Keywords: Tc99m, Scintigraphy, Eye, Hospital Management

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Level of Radiation in Bone Scintigraphy

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ABSTRACT

In this study, the radiation dose rate emitted to the environment after radiopharmaceutical injection was determined by patients undergoing bone scintigraphy imaging. Radiation dose rate measurements were made at different distances from the patient and at different levels of the patient. Measurements were made at different times to determine the relationship between radiation dose rate and time. The radiation dose rate emitted by the patient was measured after an average of 10.21 minutes, 42.36 minutes, and 76.28 minutes after injection. In order to determine the relationship between radiation dose rate and distance, measurements were made at 25 cm distance, 50 cm distance, 100 cm distance and 200 cm distance from the patient. The average radiation dose rate measured at 1m distance from the patients' chest level and 10.21 minute after radiopharmaceutical injection was 16.27 µSvh−1. Then, the average radiation dose rate decayed down to 13.65 µSv h−1 after 42.36 minute, while the measured average radiation dose rate after 76.28 min was lower as 12.41 µSv h−1 at 100 cm from patient's chest level.

Keywords: Tc99m, Scintigraphy, Bone, Hospital Management

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O_95

Problems and Concerns of Technicians Working with Radiation in the Health Sector

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ABSTRACT

Technicians have an important place among health employees in hospital services. Health technicians who work hard due to Covid-19 also stated that they have some concerns when working with radiation (radiology technicians, radiotherapy technicians, nuclear medicine technicians).

In this study, the problems and concerns of imaging technicians working with radiation in private hospitals and private imaging centers were evaluated. The research method applied in the study is a qualitative research method.

The literature on the subject was scanned and 10 open-ended questions were prepared for the employees. Face-to-face interviews were conducted and recorded. The following main themes emerged from the data obtained as a result of the interviews:

* Administrative problems,
* Health ethics issues,
* Institutional measures in radiation protection,
* Institutional problems,
* Clinically based problems,
* Problems with lack of motivation,
* Administrative concerns,
* Unethical behavior.

In the light of these results, solution suggestions were presented to radiation employees and the institutions they work with.

Keywords: Radiation technicians, Radiation concerns, Ethic problems

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First principles investigation of NV defect concentration in diamond during heat treatment

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ABSTRACT

The NV center in diamond is one of the prominent candidates for quantum computing and advanced optoelectronic sensor applications [1]. Therefore, increasing the NV concentration in nitrogen-doped diamond is a processing frontier of diamond synthesis and heat treatment methods [2]. Recent Experimental studies by Zaitsev et al. [3] show the concentration of NV is exponentially dependent on heat treatment temperature, with a peak value at approximately 1000 to 1500 Celsius. Considering the wide range of possible process parameters during heat treatments, we have applied spin polarized density functional theory for modelling the concentration of NV center as a function of temperature and nitrogen content in diamond. By considering NV as an adiabatic defect-reaction product of Ns + V defects, and evaluating the thermodynamic activities of the individual constituents with respect to temperature, we have successfully reproduced the experimental results of Zaitsev et al., using an ab-initio approach. The results have made it clear that the temperature, at which peak concentration of NV occurs, depends on the total nitrogen content in diamond. By increasing the nitrogen dopant concentration from 1 ppb to 1000 ppm, the temperature for peak NV concentration increases by approximately 200 Celsius. We demonstrate an ab-initio strategy based on prior methods [4, 5], which can facilitate calculation of Kröger-Vink diagrams for defects under any heat treatment conditions.

Keywords: Defects, Diamond, Ab-initio, NV center

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O_98

Theoretical analysis of oxygen vacancies as a cause of gray shade in sintered Al₂O₃

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ABSTRACT

Transparent ceramics are at the forefront of advanced materials for high-energy lasers, abrasion and corrosion resistant optical components, and ballistic applications [1]. Therefore, it is crucial to produce as-sintered ceramics that do not show unwanted absorption or emission spectra. However, it is commonly reported that a gray coloration appears in as-sintered Al₂O₃, which is only removed through subsequent heat treatments [2]. Transparent polycrystalline alumina is often sintered in carbon-rich hot zones and under conditions of low oxygen partial pressure, which promotes formation of oxygen vacancies. Considering the sintering environment, there are three main theories regarding the cause of this elusive grayish coloration in as-sintered transparent oxide ceramics: oxygen vacancies, precipitates due to impurities, and carbon contamination [3]. This makes it necessary to study the optical properties of oxygen vacancy related point defects in Al₂O₃. Although prior theoretical investigations [4 - 6] on the thermodynamic and optical transitions of VO make it an unlikely cause of the gray shade, the absorption spectra due to oxygen vacancy related defects in alumina are yet to be calculated. Therefore, we have applied time dependent density functional theory (TDDFT) to investigate the dielectric function and absorption spectra of oxygen vacancy and di-vacancy defects in alumina. Our calculations do not show an absorption continuum due to oxygen vacancies. We demonstrate that VO and VO-VO defects are an unlikely cause for the gray shade in alumina.

Keywords: Defect, DFT, Alumina, Transparent ceramic

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O_101

The Importance Value of Neutrophyle to Lymphocyte ratio pre and after Radiation in Breast and Cervico-Endometrial Cancer Patients

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ABSTRACT

Radiotherapy (RT) is the standard of care following breast cancer and cervico-endometrial cancer patients. The neutrophil-to-lymphocyte ratio (NLR) reflects the systemic change caused as a result of the radiotherapy. We aimed to evaluate the association between RT and the change in NLR after treatment of RT, and to investigate the prognostic impact. We retrospectively reviewed NLR values of breast cancer and cervico-endometrial cancer patients taken before the administration of the first and the last session of RT. Lymphocytes are highly radiosensitive, and exposure to low doses of radiation could lead to a decrease in the number of peripheral blood lymphocytes. We demonstrated that an increase in NLR over the course of RT has a negative impact on survival, putting these patients with RT-susceptible host immunity at a higher risk of tumor recurrence.

Keywords: *breast cancer, cervico-endometrial cancer, neutrophil-to-lymphocyte ratio, radiation therapy.*

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O_102

Behavior of some ceramic materials against gamma ray with 662 keV energy

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ABSTRACT

With the advancement in science and technology, nuclear technology is being employed in many field such as energy, food, agriculture, medicine and industry. The importance of radiation shielding and protection is more and more increasing in parallel with the enlargement of the application areas of nuclear technology. Therefore, studies on the shielding properties of different materials have already been performed. Regarding alternatives to conventional radiation prevention methods such as lead, heavy concrete amongst others, focus on other functional materials are necessary. Some ceramic materials are used to study gamma-ray shielding properties. The transmitted fluxes of gamma-ray that was emitted from 137Cs source was detected by a NaI(Tl) detector and analyzed by a MCA analyzer. Then, linear attenuation coefficients were experimentally investigated.

Keywords: ceramic material, gamma ray, NaI(Tl) detector, linear attenuation coefficient

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O_103

Investigation of gamma-ray shielding properties of waste medical glass at 511 keV

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ABSTRACT

The use of radiation in so many areas has increased the importance of radiation protection. The three basic principles of radiation protection are time, distance and shield. Shield, which is one of these three principles, is a general of different types of materials placed between a human or a system and radiation. Researchers examine the radiation shielding properties of the composite materials they produce by combining different materials.

In this study, the gamma ray shielding properties of the waste medical glass were experimentally measured for 511 keV gamma energy. Measurements were made using a low level gamma counting spectrometer that includes a NaI (TI) detector connected to a multi-channel pulse height analyzer.

Keywords: waste medical glass, gamma ray shielding, NaI (TI) detector

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FLUKA: A tool for radiation Shielding Simulation

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ABSTRACT

Radiation is dangerous for human health and thus it is vital to keep human cell in safe from these dangerous effect. Radiation shielding then developed and various Monte Carlo code developed to determine radiation shielding properties. In this study FLUKA will be detailed fort his purposes.

Keywords: FLUKA, radiation shielding, gamma rays, neutrons

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O_105

The ^{40}K natural radionuclide concentration in some medicinal aromatic plants

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ABSTRACT

In addition to singly occurring radionuclides such as 40K, natural radioactive decay such as the 238U and 232Th series is found at various levels in the atmosphere and on the earth. Radioactivity in farmland and soil can pass to surrounding plants. The radionuclide in the environment is transferred to the plants indirectly from the soil through the roots. When food plants thrive in a polluted soil, the activity moves from the soil to the roots and then to the stem or leaves of the plant. It eventually makes its way into the human diet. This radionuclide can enter plants during mineral uptake with nutrients and accumulate in different areas and even reach edible parts. The aim of this study is to measure the 40K activity concentration in some aromatic plants used by humans both as tea and as a spice. The measurement was performed using a NaI(Tl) detector at spectrometry laboratory of Süleyman Demirel University. The results of the activity concentrations obtained from the measurements were compared with the mean values.

Keywords: 40K natural radionuclide, medicinal aromatic plants, NaI(Tl) detector

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O_106

Measurement of gamma ray protection properties for some biomaterials

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ABSTRACT

Gamma radiation is uncharged and thus its shielding more difficult than others. In this study some biomaterials used as shielding materials and their linear attenuation coefficients are measured. The measurement was performed using a NaI(Tl) detector at spectrometry laboratory of Süleyman Demirel University.

Keywords: gamma ray, shielding, biomaterials

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O_107

Behçet's Disease and Arterial Vasculitis

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ABSTRACT

Gamma radiation is uncharged and thus its shieldIn Behçet's disease, neurological, ocular, gastrointestinal and vascular damages can be seen together with oral and genital aphthae. Most of the clinical manifestations of Behçet's disease are believed to be due to vasculitis. Behçet's disease among systemic vasculitis is a vasculitis that mostly prefers the venous system. However, it can involve small, medium and large vascular structures in both arterial and venous systems.

A 45-year-old male patient, who was admitted to the cardiovascular surgery clinic with pain in his left leg, had Behçet's disease previously diagnosed. Patient had a coronary bypass operation after myocardial infarction three years ago and amputation on the right knee two years ago. Patient was a smoker but ceased for 5 years and was also treated for hypertension and hyperlipidemia. Contrast-enhanced MR angiography was performed on the patient after Doppler USG reported that arterial flows in the left leg were impaired. MR angiography revealed that the right renal artery and the right common iliac artery were occluded from the aorta exit, and there were widespread stenoses in the left leg (Figures 1 and 2).

The vascular involvement seen in Behçet's disease is vasculitis and has different pathogenesis than atherosclerosis. Although vascular involvements seen in Behçet's disease are mostly seen as venous thrombosis, arterial involvements can also be seen. As in this case, clinical conditions leading to extremity loss can be observed in cases with severe arterial involvement. Therefore, we believe that it is important to always consider vascular involvement in patients diagnosed with Behçet's disease in terms of the course of the disease

Keywords: Behçet, Vasculitis, Thrombus

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