Walid Tawfik

Cairo University, Egypt

Quantitative analysis of phosphorus in phosphogypsum-waste using CF-LIBS

Using calibration-free laser-induced breakdown spectroscopy, this study proposes a unique approach for determining phosphorus (P) content in phosphogypsum (PG) waste samples (CF-LIBS). The PG-LIBS spectrum was created using a 50 ml Q-switched Nd: YAG laser. The emission intensity and sharp broadening for PI characteristic lines 213.61, 214.91, and 215.40 nm under non-purged (air) and purged (helium) conditions were used to describe plasma development using electron density Ne and electron temperature Te. Te and Ne concentrations were shown to alter linearly with P concentrations of 4195, 5288, 6293, and 6905 ppm.

For the non-purged PG, plasma Te and Ne levels rose from around 6900 to 10000 K and 1.1×1017 to 3.4×1017 cm-3, respectively. The Te and Ne of the PG purged with helium, on the other hand, varied from 8200 to 11000 K 1.4×1017 to 3.5×1017 cm-3, respectively. Te and Ne values, it is concluded, offer a fingerprint plasma characterization for a particular P content in PG samples, which may be utilized to detect P concentration without a comprehensive study of the PG. These findings represent a significant breakthrough in the field of environmental spectrochemical analysis.

Biography

Walid Tawfik is the Chairman of the Department of Laser Applications at Cairo University, Egypt. He is a senior member of different international professional societies like IEEE, OSA, APS, and SPIE. He has collaborated with Georgia Tech USA, University of Electro-Communications Japan, POSTECH University of South Korea, King Saud University of Saudi Arabia, Max-Planck Institute of Germany and Lodz University of Tech, Poland.

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Quantitative analysis of Phosphorus in Phosphogypsum-Waste Using CF-LIBS

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Abstract

Using calibration-free laser-induced breakdown spectroscopy, this study proposes a unique approach for determining phosphorus (P) content in phosphogypsum (PG) waste samples (CF-LIBS). The PG LIBS spectrum was created using a 50 mJ Q-switched Nd: YAG laser. The emission intensity and sharp broadening for P I characteristic lines 213.61, 214.91, and 215.40 nm under non-purged (air) and purged (helium) conditions were used to describe plasma development using electron density Ne and electron temperature Te. Te and Ne concentrations were shown to alter linearly with P concentrations of 4195, 5288, 6293, and 6905 ppm. For the non-purged PG, plasma Te and Ne levels rose from around 6900 to 10000 K and 1.1×10^{17} to 3.4×10^{17} cm^{-3}, respectively. The Te and Ne of the PG purged with helium, on the other hand, varied from 8200 to 11000 K 1.4×10^{17} to 3.5×10^{17} cm^{-3}, respectively. Te and Ne values, it is concluded, offer a fingerprint plasma characterization for a particular P content in PG samples, which may be utilized to detect P concentration without a comprehensive study of the PG. These findings represent a significant breakthrough in the field of spectrochemical environmental analysis.

Keywords: Phosphorus, Phosphogypsum-waste, CF-LIBS, Electron Temperature, Electron Density.

Acknowledgments

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Walid Tawfik
Professor
National Institute of Laser Enhanced Sciences (NILES), Cairo University
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Biography

Walid Tawfik, Professor, National Institute of Laser Enhanced Sciences (NILES), Cairo University, Cairo, Egypt

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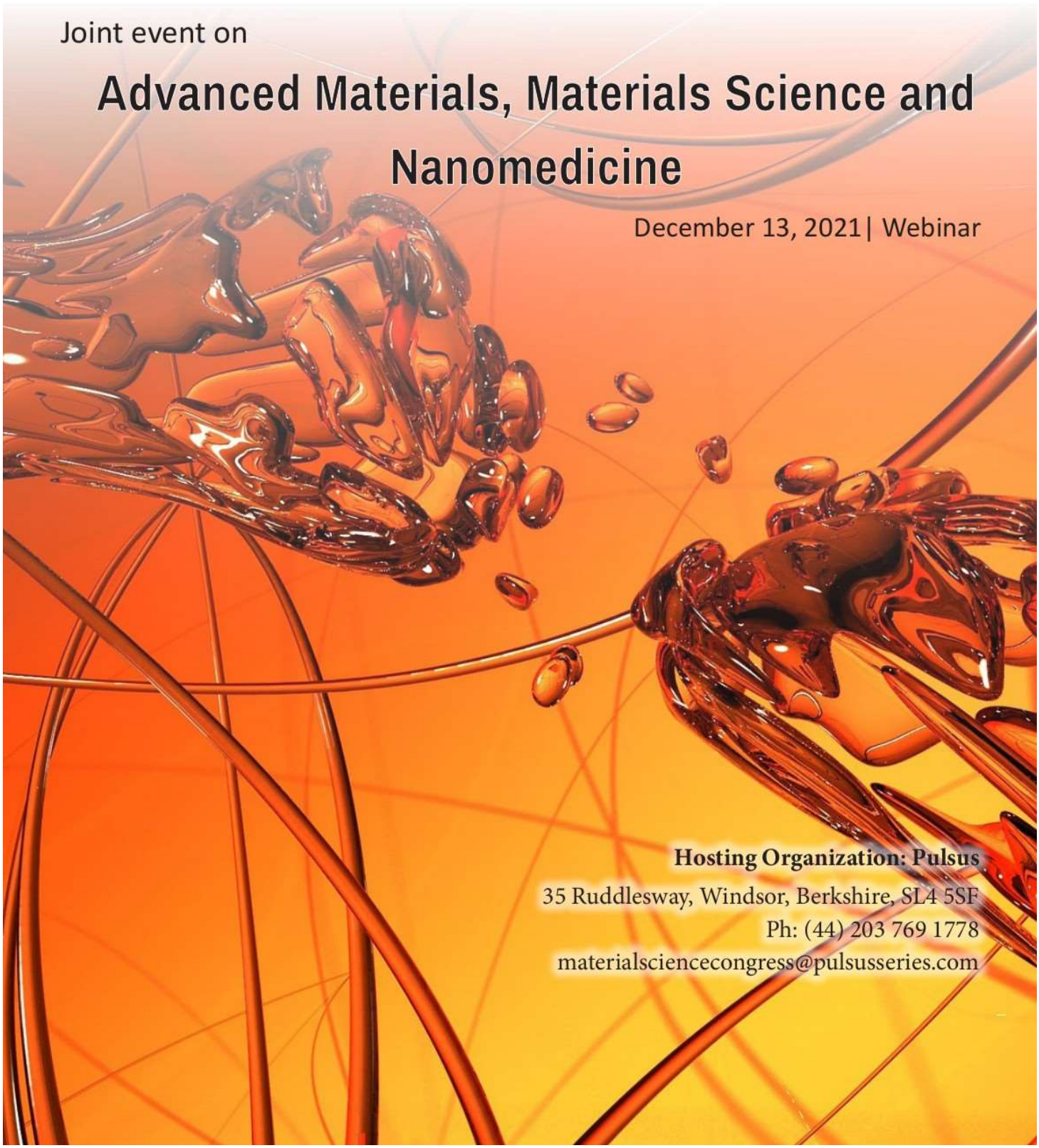

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Nanomaterials 2021 Webinar

December 13, 2021 (Monday)

Introduction 09:00-09:15

Keynote Forum

09:15-10:00

Title: Thermomechanical and Thermoresponsive Reactions Governing Reversibility in Shape Memory Alloys

Osman Adiguzel, Firat University, Turkey

10:00 -10:45

Title: Quantitative analysis of phosphorus in phosphogypsum-waste using CF-LIBS

Walid Tawfik, Cairo University, Egypt

10:45 -11:30

Title: Design & Development of Graphene-based Materials for Electrocatalytic Application

Shrikant Maktedar, National Institute of Technology, India

11:30 -12:15

Title: Geothermal Energy for Refrigeration and Air Conditioning, Sustainable Development, and the Environment

Abdeen Mustafa Omer, Energy Research Institute (ERI), United Kingdom

Networking & Refreshments 12:15-12:30

Session Introduction: Materials Chemistry | Biomaterials | Nanomedicine | Materials Science and Engineering

Session Chair: Osman Adiguzel | Firat University | Turkey
Session Co-Chair: Walid Tawfik | Cairo University | Egypt

12:30 -13:00

Title: Method for manufacture photocurable hydroxyapatite slurry that can be applied into stereolithography and physical evaluation according to scaffolds structure

Jin-Ho Kang | Chonnam National University | South korea

13:00-13:30

Title: Optimization of the electrical conductivity of copper phthalocyanine for the formulation of a conductive ink applicable by screen printing on textile materials

Mohamed Tahiri, University of Hassan II Casablanca, Morocco

Lunch Break 13:30-14:00

Session Introduction: Smart Materials | Nanomaterials | Nanochemistry | Nanotechnology for Energy and Environmental Applications

14:00-14:30

Title: Overview of the Advantages and Disadvantages of Different Mucosal Sites for the Delivery of Nanoparticles

Nashwa Osman, Liverpool John Moores University, United Kingdom

14:30-15:00

Title: Education and their relationship to contemporary trends in the field of international recruiting

Albu Adina-victoria, University of Oradea, Romania

15:00-15:30

Title: Synthesis of Nanomaterials by Laser Ablation for Water Applications

Hisham M Imam, Cairo University, Egypt

15:30-16:00

Title: The effect of the growth condition on the structure and the physical properties of Gd- doped Ti Co ferrite thin films via Pulsed Laser Deposition (PLD)

Mohamed A Hafez, Cairo University, Egypt

16:00-16:30

Title: Properties of torsion rod in "SULZER" projectile Loom

Dmitry Pirogov, Ivanovo State Polytechnic University, Russia

Networking & Refreshments 16:30:-16:45

16:45-17:15

Title: New nanotechnologies for Energy saving and Resiliency of the Built Environment

Umberto Berardi, Ryerson University, Canada

17:15-17:45

Title: Sustainable textiles industries in brand technology between technologies of brands

Elsayed Ahmed, Kaferelsheikh University, Egypt

17:45-18:15

Title: Microfluidics-Prepared Uniform Conjugated Polymer Nanoparticles for Photo-Triggered Immune Microenvironment Modulation and Cancer Therapy

Eshu Middha, National University of Singapore, Singapore

Poster Presentation

18:15:-18:30

Title: Modulation of Conductivity of Alginate Hydrogels Containing Reduced Graphene Oxide through the Addition of Proteins

Ahmed Raslan, University of the Basque Country, Germany

18:30-18:45

Title: Environmental protection by recovery of lead from waste lead-acid batteries in the form of nanosized lead-oxide powders

Mariela Dimitrova, Bulgarian Academy of Sciences, Bulgaria

Award Presentations & Closing Ceremony

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Osman Adiguzel

Firat University, Turkey

Thermomechanical and Thermoresponsive Reactions Governing Reversibility in Shape Memory Alloys

A series of materials take place in a class of advanced smart materials with adaptive properties and stimulus response to the external changes. Shape memory alloys take place in this group, with the shape reversibility characters and capacity of responding to changes in the environment. These alloys exhibit a peculiar property called shape memory effect, which is characterized by the recoverability of two certain shapes of material at different temperatures. These alloys have dual characteristics called thermoelasticity and superelasticity, from the viewpoint of memory behavior. These phenomena are governed by thermomechanical and thermoresponsive reactions at the atomic level. These transformations are stress induced martensitic transformations. Thermal induced martensite occurs along with crystal twinning in self-accommodating manner on cooling and ordered parent phase structures turn into twinned martensite structures. Stress induced martensitic transformations occur along with crystal or lattice detwinning reactions by stressing material in low temperature conditions. Superelasticity is performed by stressing and releasing material at a constant temperature in the parent phase region, and shape recovery is performed simultaneously upon releasing the applied stress. Superelasticity exhibits the normal elastic materials, but it is performed in a non-linear way; stressing and releasing paths are different in the stress-strain diagram, and hysteresis loop refers to energy dissipation. These alloys are used in the building industry, against the seismic events, due to this property. Thermal induced martensitic transformation occurs with the cooperative movement of atoms in <110>- type directions on {110}-type planes of the austenite matrix, by means of shear-like mechanism.

Copper based alloys exhibit this property in the metastable β-phase region. Lattice invariant shear is not uniform in copper-based shape memory alloys, and causes the formation of long-period layered martensitic structures with lattice twinning on cooling. The long-period layered structures can be described by different unit cells as 3R, 9R or 18R depending on the stacking sequences on the close-packed planes of the ordered lattice. The unit cell and periodicity is completed through 18 layers in direction z, in case of 18R martensite, and unit cells are not periodic in short range in direction z. In the present contribution, electron diffraction and x-ray diffraction studies were performed on two copper based CuZnAl and CuAlMn alloys. Electron diffraction patterns and x-ray diffraction profiles show that these alloys exhibit superlattice reflections in martensitic conditions. Specimens of these alloys aged at room temperature in martensitic condition, and a series of x-ray diffractions were taken during aging at room temperature. Reached results show that diffraction angles and peak intensities change with aging time at room temperature. Specially, some of the successive peak pairs providing a special relation between Miller indices come close to each other, and this result refers to the rearrangement of atoms in a diffusive manner.

Biography

Osman Adiguzel graduated from the Department of Physics, Ankara University, Turkey in 1974 and received PhD- degree from Dicle University, Diyarbakir-Turkey. He studied at Surrey University, Guildford, UK, as a post-doctoral research scientist in 1986-1987, and studied on shape memory alloys. He worked as research assistant, 1975-80, at Dicle University and shifted to Firat University, Elazig, Turkey in 1980. He became professor in 1996, and he has already been working as professor. He published over 80 papers in international and national journals; He joined over 100 conferences and symposia in international and national level as participant, invited speaker or keynote speaker with contributions of oral or poster. He served as the program chair or conference chair/co-chair in some of these activities. In particular, he joined in the last seven years (2014 - 2020) over 70 conferences as Keynote Speaker and Conference Co-Chair organized by different companies. He supervised 5 PhD- theses and 3 M.Sc.- theses. He served in the Directorate of Graduate School of Natural and Applied Sciences, Firat University, in 1999-2004. He received a certificate awarded to him and his experimental group in recognition of the significant contribution of 2 patterns to the Powder Diffraction File – Release 2000. The ICDD (International Centre for Diffraction Data) also appreciates the cooperation of his group and interest in the Powder Diffraction File.

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Walid Tawfik

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Shrikant S Maktedar

National Institute of Technology, India

Design & Development of Graphene-based Materials for Electrocatalytic Application

Benchmark materials like Pt/C were used as references in the electrocatalytic applications of materials. However, it is an expensive and precious metal with less abundance. Therefore, to provide cost and efficient alternative design & development of electrocatalytic materials is the need of an hour. Owing to this fact & due to astonishing properties, 2D materials like graphene have emerged as scaffolds with numerous active sites. These hybrid graphene-based materials can truly act as an electrocatalyst for hydrogen evolution reaction (HER), oxygen evolution reaction (OER) and oxygen reduction reaction (ORR). As prepared catalyst has been widely characterized by using sophisticated analytical techniques such as near-edge X-ray adsorption spectroscopy (NEXAS), 13C solid-state NMR, HR-XPS, HR-TEM, SAED, XRD, SEM, AFM, Raman, TG-DTA, FTIR, UV-Vis etc. Furthermore, structural features have revealed the potential of these materials as an advanced functional material towards metal-free supercapacitor application. Apart from all these things, and environmental impact of newly prepared catalysts need to be explored for the confirmation of their biocompatibility. Biological studies have ascertained the same. Hence, in present studies, the emphasis is given to the design & development of benign materials for electrocatalytic applications for energy conservation and storage.

Biography

Shrikant S Maktedar is an Assistant Professor at the Department of Chemistry, National Institute of Technology, Srinagar, J&K, India. He received B.Sc. Degree in Chemistry from Ramkrishna Paramhansa Mahavidyalaya, Osmanabad (Babasaheb Ambedkar Marathwada University, Aurangabad) in 2008 and M.Sc. Degree in Physical Chemistry from Dept. of Chemistry, Babasaheb Ambedkar Marathwada University, Aurangabad in 2010. He has completed his PhD from Central University of Gujarat, Gandhinagar, India. In the last 10 years, he has been working in the field of carbonaceous materials with emphasis on their multifunctional applications. Shrikant has published more than 10 research publications in peer-reviewed international journals of repute, one book chapter and two full-length conference papers. He has served as a reviewer for a few international journals of repute. After his joining NIT Srinagar he is serving as PhD supervisor and has established the Materials Research Laboratory at Dept. of Chemistry.

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Abdeen Mustafa Omer
Energy Research Institute (ERI), United Kingdom

Geothermal Energy for Refrigeration and Air Conditioning, Sustainable Development and the Environment

Geothermal heat pumps (GSHPs), or direct expansion (DX) ground source heat pumps, are a highly efficient renewable energy technology, which uses the earth, groundwater or surface water as a heat source when operating in heating mode or as a heat sink when operating in a cooling mode. It is receiving increasing interest because of its potential to decrease primary energy consumption and thus reduce emissions of greenhouse gases (GHGs). The main concept of this technology is that it uses the lower temperature of the ground (approximately <32°C), which remains relatively stable throughout the year, to provide space heating, cooling and domestic hot water inside the building area. The main goal of this study was to stimulate the uptake of the GSHPs.

Recent attempts to stimulate alternative energy sources for heating and cooling of buildings have emphasised the utilisation of ambient energy from the ground sources and other renewable energy sources. The purpose of this study, however, was to examine the means of reducing of energy consumption in buildings, identifying GSHPs as an environmental friendly technology able to provide efficient utilisation of energy in the buildings sector, promoting the use of GSHPs applications as an optimum means of heating and cooling, and presenting typical applications and recent advances of the DX GSHPs. The study highlighted the potential energy saving that could be achieved through the use of ground energy sources. It also focused on the optimisation and improvement of the operation conditions of the heat cycle and the performance of the DX GSHP. It is concluded that the direct expansion of the GSHP, combined with the ground heat exchanger in foundation piles and the seasonal thermal energy storage from solar thermal collectors, is extendable to more comprehensive applications.

Biography

Abdeen Mustafa Omer is an Associate Researcher at Occupational Health Administration, Ministry of Health and Social Welfare, Khartoum, Sudan. He obtained both his PhD degree in the Built Environment and Master of Philosophy degree in Renewable Energy Technologies from the University of Nottingham. He is a qualified Mechanical Engineer with a proven track record within the water industry and renewable energy technologies. He graduated from the University of El Menoufia, Egypt, BSc in Mechanical Engineering. His previous experience involved being a member of the research team at the National Council for Research/Energy Research Institute in Sudan and working as director of research and development for National Water Equipment Manufacturing Co. Ltd., Sudan. He has been listed in the book WHOâ€™S WHO in the World 2005, 2006, 2007 and 2010. He has published over 300 papers in peer-reviewed journals, 200 review articles, 7 books and 150 chapters in books.

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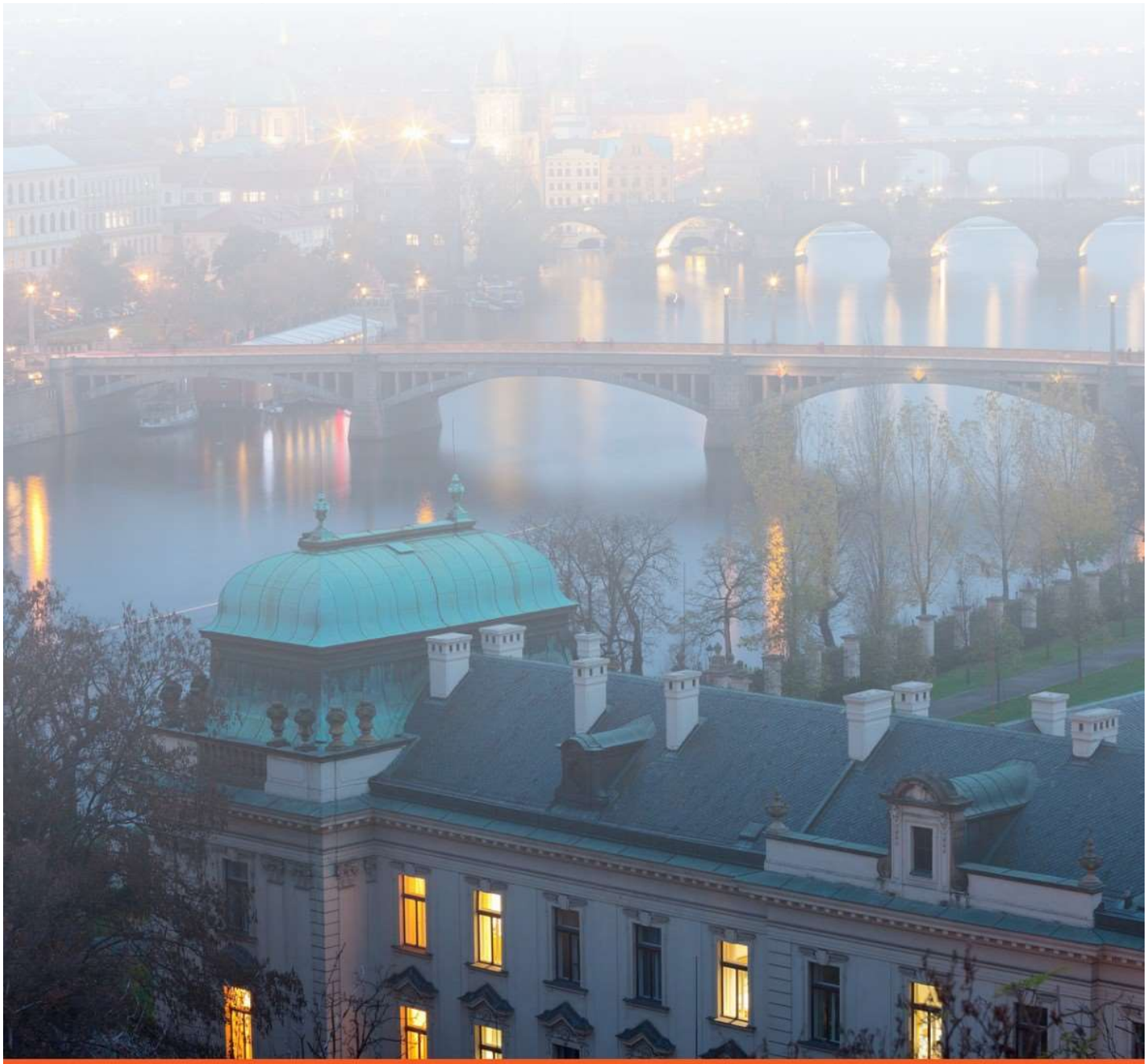

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Materials Chemistry | Biomaterials | Nanomedicine | Materials Science and Engineering

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Firat University
Turkey

Session Co-Chair
Walid Tawfik
Cairo University
Egypt

Session Introduction

Title: Method for manufacture photocurable hydroxyapatite slurry that can be applied into

stereolithography and physical evaluation according to scaffolds structure

Jin-Ho Kang, Chonnam National University, Republic of Korea

Title: Optimization of the electrical conductivity of copper phthalocyanine for the formulation of a conductive ink applicable by screen printing on textile materials

Mohamed Tahiri, Hassan II University, Morocco

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Method for manufacture photocurable hydroxyapatite slurry that can be applied into stereolithography and physical evaluation according to scaffolds structure

Jin-Ho Kang, Kumaresan Sakthiabirami, Kyoung-Jun Jang and **Sang-Won Park**
Chonnam National University, Republic of Korea

Chonnam National University, Republic of Korea

In this study, hydroxyapatite (HA) slurry was prepared and optimized to construct an auxetic three-dimensional (3D) scaffold for bone tissue reconstruction. The HA suspensions were divided into five groups according to their HA content. The HA 35 vol% slurry was selected with optimal flowability through rheological evaluation. This study demonstrated the applicability of an optimized HA suspension using commercially available stereolithography (SLA). Disc samples made with HA 35 vol% slurry exhibited the highest flexural strength and relative density.

Final sintered HA discs showed no cytotoxicity through cell adhesion evaluation. In addition, three supports (auxetic, circle, frame) were prepared using the optimized HA slurry. The prepared auxetic scaffold showed a 245% improvement in breaking strength compared to the circle scaffold and showed a significant difference from other types of scaffolds in osteocytes proliferation and differentiation experiments. The HA slurries proposed here are generally applicable to commercialized SLAs. This study will be helpful for future research on scaffolds including various biomaterials and designs manufactured using additive manufacturing techniques.

Biography

Jin-Ho Kang has completed B.S and M.S from the department of biomedical engineering, Inje University, Republic of Korea. He has completed his PhD at the age of 31 years from the department of prosthodontics, School of Dentistry, Chonnam National University, Republic Korea. He is a post-doctoral student of Chonnam National University, Republic Korea. Jinho Kang has researched ceramic 3D printing for many years and is focusing on medical device manufacturing research through a biomedical engineering approach.

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Optimization of the electrical conductivity of copper phthalocyanine for the formulation of a conductive ink applicable by screen printing on textile materials

Mohamed Tahiri
Hassan II University, Morocco

We report results on the conductivity of conductive ink based on copper phthalocyanine, which contain different organic solvents, i.e., dimethyl sulfoxide (DMSO) or THF, and with different percentage of copper phthalocyanine. Conductive inks were prepared from the copper phtaloyanine by dispersion of the conductive pigment in a screen printing paste. A Variety of patterns have been developed with different percentages of CuPc on a cotton substrate using the screen printing technique. Simultaneously, the presence of solvent residue in the printed pattern also resulted in poor control of the morphology and conductivity of the pattern. The solvent effect on copper phtalocyanine dispersion's was studied by UV visible spectroscopy and the minimum sheet resistance of printed circuit board was reached at about 3% of CuPc in THF and DMSO with 1 Mcm and 1.8 Mcm respectively.

Biography

Mohamed Tahiri is currently a full professor of Chemistry, water, Bio-energy and environment engineering, Chemical Risks, Climate changes and Air Pollution, at Sciences Faculty of Hassan II University of Casablanca. Since January 2010, he's Chair holder of University Chair on Innovation. As part of his supported role, Mohamed Tahiri has received extensive training in Europe on Innovation, technology Transfer, Intellectual Property Rights and innovation Management.

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December 13, 2021

Sessions

Smart Materials | Nanomaterials | Nanochemistry | Nanotechnology for Energy and Environmental Applications

Session Introduction

Title: Overview of the Advantages and Disadvantages of Different Mucosal Sites for the Delivery of Nanoparticles

Nashwa Osman, Liverpool John Moores University, UK

Title: Education and their relationship to contemporary trends in the field of international recruiting

Albu Adina Victoria, University of Oradea, Romania

Title: Synthesis of Nanomaterials by Laser Ablation for Water Applications

Hisham M Imam, Cairo University, Egypt

Title: The effect of the growth condition on the structure and the physical properties of Gd- doped Ti Co ferrite thin films via Pulsed Laser Deposition (PLD)

Mohamed A Hafez | Cairo University | Egypt

Title: Properties of torsion rod in "SULZER" projectile Loom

Dmitry Pirogov | Ivanovo State Polytechnic University | Russia

Title: New nanotechnologies for Energy saving and Resiliency of the Built Environment

Umberto Berardi | Ryerson University | Canada

Title: Sustainable textiles industries in brand technology between technologies of brands

Elsayed Ahmed | Kaferelsheikh University | Egypt

Title: Microfluidics-Prepared Uniform Conjugated Polymer Nanoparticles for Photo-Triggered Immune Microenvironment Modulation and Cancer Therapy

Eshu Middha | National University of Singapore | Singapore

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Overview of the Advantages and Disadvantages of Different Mucosal Sites for the Delivery of Nanoparticles

Nashwa Osman
Liverpool John Moores University, UK

Nanoparticles (NPs) often improve the efficacy of therapeutic actives, and their delivery to mucosal sites allows for unique and localized effects compared to parenteral delivery. Sites of mucosal surfaces include the eyes, nasal cavity

lungs, and the entire gastrointestinal tract from mouth to anus, and offers extensive areas for the delivery of therapeutics. However, each mucosal site has unique physiological properties that affect aspects such as stability during the transit to the mucosal surface, release of the active molecules, and absorption of NPs into the body. The required NPS properties also differ based on if the goal is for absorption of intact NPs or release of the active molecules at the mucosal site. Therefore, the interaction of the NPS, with the medium that is in contact with the mucosal surface, the mucus layer, and the epithelial cells, must be considered during the formulation process. This chapter focuses on the advantages and disadvantages of delivering NPS through each major mucosal site and offers indications on NPS properties that may be ideal for each site.

Keywords: Nanoparticles, Collagen, delivery.

Biography

Nashwa Osman obtained my Doctor of Philosophy (PhD) in nanotoxicology where the evaluation of polymeric nanocarriers for pulmonary drug delivery was carried out using in vitro cell lines, from Liverpool John Moores University, and entitled 'Toxicology and Cellular Interactions of Polymer-based Nanocarriers for Pulmonary Drug Delivery '. Upon completion of my PhD, I have joined the FDD group as a Postdoctoral Research Fellow at Liverpool John Moores University, developing vaccines for inhalation delivery using nanocarriers.

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Education and their relationship to contemporary trends in the field of international recruiting

Albu Adina Victoria
University of Oradea, Romania

This study aims to generate a conceptual framework for relationship to contemporary trends in the field of international recruiting and the needs' for the labor market of teacher of excellence through higher education, specialized science, and technology needs an explicitly stated goal and specific strategies for achieving that goal as the needs' for the labor

market of teacher of excellence through higher education.

The current perception for these institutes can be described as unique environments including advanced curriculum, expert teachers, and opportunities for internships and immersion. Researchers have categorized these schools with three types.

Messaging and marketing campaign that changes school culture and raises the prominence of standards of courses must be in place. Parents and community members should see that science, technology, engineering, and mathematics matter for the students, and adjust curricular expectations accordingly. Science and technology can no longer be perceived as mere enrichment, second in value to language arts and mathematics. Content reading and writing skills, as well as evaluating evidence from non-fiction texts, now appear in the common core state standards for English language arts. Standards of course education gives students access to disciplinary skills that are essential to a productive life in contemporary trends in the field of international recruiting. We created a conceptual framework of effective learning environments for standards of courses that included students, teachers, community leaders, and role models, as well as contextual factors.

Biography

Albu Adina-Victoria, Head of industrial management in the textiles and leather work department. Teacher, lecturer in leather works and shoe technology, raw materials, automotive materials. She was a faculty of energetic engineering during the year 2011-2014 at University of Oradea.

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Synthesis of Nanomaterials by Laser Ablation for Water Applications

Hisham M Imam
Cairo University, Egypt

Bi-metallic core-shell nanoparticles were prepared using an environmentally friendly and economic way. AuCoreAgShell and AgCoreAuShell nanoparticles were developed using Laser ablation in liquid technique with Nd-YAG laser at 1064nm wavelength, laser fluence 55 J/cm2 in (DDW). The prepared bimetallic nanoparticles' morphological and structural properties were characterized using TEM, DLS, and UV–Vis spectrophotometry. Furthermore, the core-shell mechanism of formation has also been represented. The prepared Ag NPs and Au NPs have a spherical shape with an average particle

size in the range of 8 to 10nm and 10 to 15nm respectively.. Moreover, the AuCoreAgShell and AgCoreAuShell forms were spherical and oval shaped. The plasmon band of core–shell NPs has been red shifted with increasing the thickness of the deposited gold shell while, it turned blue shifted with increasing the deposited thickness of sliver shell. To get a better understanding of the coating conditions, and to confirm the core-shell configuration, high-resolution electron microscopy HRTEM images were used. All the prepared nanoparticles in this study showed Bragg's characteristic reflection plane of fcc structure. AgCoreAuShel more stable than AuCoreAgShell because the gold has higher negativity than silver.

Metal and bimetal nanoparticles are used to remove Methylene Blue as a toxic dye from an aqueous solution under sunlight irradiation. A comparative study was performed on the photocatalytic degradation performance of silver and Agcore Aushell. The degradation efficiency of Ag NPs and Agcore Aushell's in 70 min were 88.8% and 95.4% respectively. There is an improvement in the photocatalytic degradation performance of Agcore Aushell of silver nanoparticles. Consequently, the present study opens a new era for metal and bimetal nanostructures preparation. Furthermore, the high removal efficiency of core-shell samples prepared with a few milligrams as a photocatalyst has opened a promising application for removing toxic dyes such as Methylene Blue removal from industrial effluents. As far as the authors are aware, such photocatalysts have been rarely studied in the past.

Biography

Hisham M imam has obtained his Doctor of Philosophy (PhD) in nanotoxicology Currently working on exosomes derived from human induced Pluripotent Stem Cells for drug delivery in epilepsy..

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The effect of the growth condition on the structure and the physical properties of Gd-doped Ti Co ferrite thin films via Pulsed Laser Deposition (PLD)

Mohamed A Hafez
Cairo University, Egypt

Pulsed Laser Deposition (PLD) allows the growth of thin films with complex chemical compounds and the structural properties can be controlled by the laser parameters. Gd doped Co-Ti ferrite ($Co_{1.1}Ti_{0.1}Gd_{0.04}Fe_{1.76}O_4$) thin films have been deposited on cleaned Si(100) substrates at room temperature by the PLD with a Nd:YAG laser (1064 nm) and 10 Hz repetition rate. Deposition of the thin films was prepared in a high vacuum of pressure ~2´10-6 Torr. Ex-situ thermal

annealing of the thin films for 2 hours was performed at different temperatures. The thin-film structural properties, elemental analysis, and surface morphology were investigated by X-ray diffraction, Energy-dispersive X-ray spectroscopy, Raman spectroscopy, and scanning electron microscope. The film stoichiometry was found to match the target. The structural analysis results of the annealed Gd doped Co-Ti ferrite thin films indicated a preferential growth orientation and a single spinel structure. The surface morphology was improved after the annealing of the thin films.

Biography

Mohamed A. Hafez, teaching assistant in the faculty of computers and information, Cairo University from 2007 until 2016. During this period, he experienced working in the private sector as well especially with applying data mining techniques in the oil & gas industry. He did B.Sc. (2006) & M.Sc. (2014) from the faculty of computers and information, Cairo University in Egypt. M.Sc. thesis was in the area of Databases, resolving data conflicts/duplicates using Statistical methods. He is currently a PhD graduate student in the computer science department at Rice University. He is working in applying machine learning as surrogate models in weather forecasting.

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Properties of torsion rod in "SULZER" projectile Loom

Dmitry Pirogov
Ivanovo State Polytechnic University, Russia

The torsion rod characteristics of the "SULZER" loom can be adjusted in the zero position by means of the adjusting lever and the adjusting actuator of the torsion rod of the loom. In the sulzer projectile loom, the movement of the intermediate member results in the axial movement of the adjusting lever to change the position of the zero according to the material and characteristics of the rod. The intermediate member transmits a force exerted by the adjusting lever to a fixed sliding surface. However, the described device in some countries has a serious drawback, because the tuning drive acts on the torsion rod adjusting lever so that when the projectile is fired into the sulzer loom, the picking mechanism reacts through the sudden, harmful pressure of the tuning drive. A solid wedge-shaped idler that can be moved by the adjusting

motor is placed between the sliding surface of the adjusting lever and a fixed sliding surface. In the Sulzer projectile loom, known torsion rod control enables projectile loom operation with improved energy consumption and reduced wear.

Biography

Dmitry Pirogov, he has designed books published in Germany and Ukraine. Has published over 50 scientific Articles. Editorial board member & Reviewer for more than 20 journals, organizer for more than 32 conferences and workshops all over the world.

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New nanotechnologies for Energy saving and Resiliency of the Built Environment

Umberto Berardi
Ryerson University, Canada

The focus of this paper deals with innovative material and construction systems that incorporate nanotechnologies for improving their energy-saving performance. Recent developments in the world of phase change materials, specifically on organic PCMs, such as paraffin and bio-PCM aerogel, are presented; laboratory works are presented together with pilot projects in Toronto, where PCM-based systems have been incorporated in high-performing buildings. Then, the paper shows recent advancements in super-insulating materials, specifically focusing on aerogel-enhanced blankets and panels, which have been developed at the BeTOP laboratory of the Ryerson University in Toronto, Ontario. Finally, the paper explores the potentialities of including innovative thermochromic coatings at the urban scale and shows the mutual benefits between buildings and communities that could be obtained through the adoption of previously mentioned

nanotechnologies. The goal is to describe a pathway towards more sustainable and resilient communities. Using Toronto as a test case, the paper aims to comprehensively show that nanotechnologies offer a paradigm shift at the different scales of the built environment.

Biography

Umberto Berardi is a Professor and the Director of the BeTOP lab and group at Ryerson University in Toronto (Ontario, Canada), and has been Nominated as a Canada Research Chair in Building Science for the period 2020-2025. His main research interests are related to the study of innovative solutions and new materials for improving the performance within the built environment. In the first years of his career, Berardi often worked on natural materials for acoustic applications and on sustainable design through natural materials. Recently, he has been focusing on integrating nanotechnologies into building systems. He has mainly focused on organic PCMs, such as paraffin and bio-PCM, and on granular and monolithic aerogel.

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Sustainable textiles industries in brand technology between technologies of brands

Elsayed A Elnashar
Kafrelsheikh University, Egypt

Sustainable Textiles industries in Brand Technology between Technology of production Brands, The technology industry thrives on change, requiring constant experimentation and innovation. Rather than deterring new entries, highly saturated markets beckon for potentially Technology products and ideas. other hand; To stimulate customer loyalty and differentiate from competitors, tech brands strive to continually deliver Technology software updates of textiles, communicate novel use cases or launch new systems of textiles Technology and brand if textiles; to know how strategic tech company branding and marketing can help your company generate a competitive advantage in this fast-moving space.

Biography

Elsayed Ahmed Elnashar, Full-Professor of textiles apparel, Kaferelsheikh University, Egypt. Born on 19/8/1965, Ph.D. 2000, Msc-1995

ElsayedAhmed Elhashal, Full Professor of textiles apparel, Kafrelsheikh University, Egypt. Born on 1978/1965. Ph.D. 2000, MSc-1995, Bsc-1989, Helwan University. Diploma 1985 Advanced industrial textiles institute. He holds several academic administrative positions: Dean, Vice Dean, Head of Department, He has many textiles patents, and Member of international scientific committees. Development of Faculties of Education, commissioned by the Supreme Council of Egyptian Universities. Has design books published in Germany and Ukraine. Has published over 190 scientific Articles. Editorial board member & Reviewer for more than 95 journals, organizer for more than 70 conferences and workshops all over the world, Founder, and editor of two scientific journals and Smartex Conference, Egypt.

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Microfluidics-Prepared Uniform Conjugated Polymer Nanoparticles for Photo-Triggered Immune Microenvironment Modulation and Cancer Therapy

Eshu Middha
National University of Singapore, Singapore

Photothermal therapy (PTT) has shown great promise to spatiotemporally ablate cancer cells and further understanding of the immune system response to PTT treatment would contributes to improvement in therapeutic outcomes. Herein, we utilize microfluidic technology to prepare biocompatible conjugated polymer nanoparticles (CP NPs) as PTT agents and assess the immune response triggered by CP-based PTT treatment in vitro and in vivo. Through careful control of the anti-solvent, CP NPs with uniform diameter of 52 nm were obtained. The c-RGD functionalized CP NPs exhibit high photothermal conversion efficiency, inducing effective cancer cell death under 808 nm laser illumination. Using macrophage cells as the model, CP NPs demonstrate effective activation of pro-inflammatory immune response. Furthermore, in tumor-bearing mice model, a single round of CP NPs assisted PTT could efficiently induce anti-tumor

immunity activation and ultimately inhibit tumor growth. The study provides detailed understanding of both microfluidic technology for CP NPs fabrication and photothermal-triggered anti-tumor immune responses.

Biography

Eshu Middha expertise in the fabrication of microfluidics devices and nanocarriers for biological applications. Specialized in the production of high-quality polymeric nanocarriers through microfluidics mixers. Keen interest in technology development & commercialization of innovations from the lab. Published 11 research journal papers and hold 2 patents (1 commercialized). Research experience of around 5 years in the formulation of polymer-encapsulated nanoparticles. Industrial experience of over 2 years as a Technologist at Reliance Oil Refinery, India.

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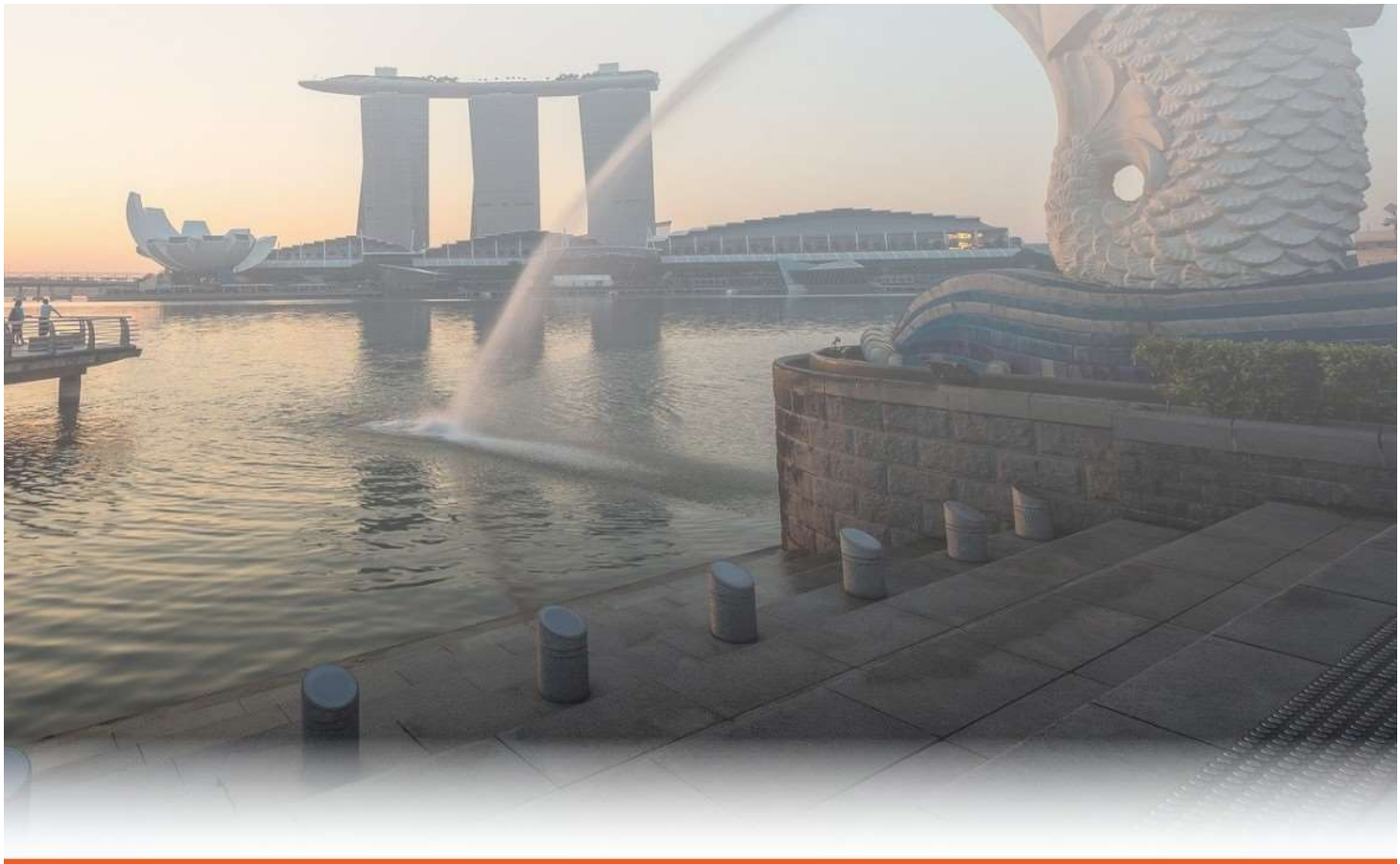

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Modulation of Conductivity of Alginate Hydrogels Containing Reduced Graphene Oxide through the Addition of Proteins

Ahmed Raslan and **Jesús Ciriza et.al,**
University of the Basque Country, Spain

Modifying hydrogels in order to enhance their conductivity is an exciting field with applications in cardio and neuro-regenerative medicine. Therefore, we have designed hybrid alginate hydrogels containing uncoated and protein-coated reduced graphene oxide (rGO). We specifically studied the adsorption of three different proteins, BSA, elastin, and collagen, and the outcomes when these protein-coated rGO nanocomposites are embedded within the hydrogels. Our results demonstrate that BSA, elastin, and collagen are adsorbed onto the rGO surface, through a non-spontaneous phenomenon that fits Langmuir and pseudo-second-order adsorption models. Protein-coated rGOs are able to preclude further adsorption of erythropoietin, but not insulin. Collagen showed better adsorption capacity than BSA and elastin due to its hydrophobic nature, although requiring more energy. Moreover, collagen-coated rGO hybrid alginate hydrogels showed an enhancement in conductivity, showing that it could be a promising conductive scaffold for regenerative medicine.

Biography

Ahmed Raslan is an associate professor of neurological surgery; he manages patients with a spectrum of neurosurgical disorders, his focused practice is epilepsy surgery, brain mapping for tumours and epilepsy which often involves an awake craniotomy, surgery for chronic and cancer pain (Trigeminal neuralgia, spinal pain and much other chronic pain syndromes), and movement disorders.

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Environmental protection by recovery of lead from waste lead-acid batteries in the form of nanosized lead-oxide powders

Mariela Dimitrova and **Sasho Vassilev**
Institute of Electrochemistry and Energy Systems, Bulgaria

In the present work, we have investigated the processes with potentially reduced impact on the environment, in the recovery of lead from positive (PAM) and negative (NAM) active masses of used advanced "carbon" lead-acid batteries manufactured in Bulgaria. Desulfurization was performed in an aqueous solution of Na2CO3 (Sodium Carbonate) with a concentration of 10 or 15% at room temperature. Leaching was performed at varying temperatures (25-80o C) by adding an aqueous solution of citric acid (10 or 15%) to the desulfurized sample to obtain a lead citrate precursor.

After calcination of the precursor at low temperature (300oC) for 1 hour, nanosized lead oxide powder was formed. The chemical composition of the used active masses was determined by titration, and the negative active masses were further tested for the presence of carbon in order to utilize it. X-ray diffraction analysis (XRD) was performed at each stage of the study to monitor the changes in phase composition and crystallite size of the synthesized powders. The measured crystallite sizes of the two main phases of obtained finely dispersed lead oxide powders were 30–40 nm for beta lead oxide (β-PbO)(111) and 40–80 nm for lead (Pb).

Biography

Mariela Dimitrova completed her PhD 3 years ago at the University of Chemical Technology and Metallurgy, Bulgaria. She worked as a chemist up to 2018 in the same University. At present, she is the assistant professor of the Institute of Electrochemistry and Energy Systems, Bulgaria. She has 6 publications that have been cited 10 times, and her publication h-index is 2.

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