

7th World Congress on

Materials Science & Engineering

5th World Congress on

Lasers, Optics and Photonics

DAY
1

Wednesday

June 21, 2023

Hall Name: MESTRAL

Day - 1 June 21, 2023

09:30 - 09:55 Registrations and Badge Pickup

09:55 - 10:00 Moderator Introduction

Keynote Session

10:00 - 10:30 Title: Creating of Individual Nanodevices Based on Coupled Field Emission From Individual Carbon Nanotubes Using Nanomanipulation
Svetlana von Gratowski, Electronics Russian Academy Of Sciences, Russia

Coffee Break: 10:30 - 10:45

Sessions: Chemical Engineering | Catalysis in Green Chemistry | Catalysis and Pyrolysis | Photocatalysis | Catalysis in Nanotechnology | Biochemical Engineering | Catalysis for Biorefineries | Electrochemistry and Electrochemical Engineering | Organic and Inorganic Chemistry | Nano - Imaging for Diagnosis, Therapy and Delivery | Nanotechnology Applications | Nanofabrication, Nanoprocessing & Nanomanufacturing

Session Chair

Palash Kumar Mollick, University of the Basque Country, Spain

10:45 - 11:05 Title: Silver Nanoparticles as Effective and Recyclable Catalyst for the Selective Oxidation of Alcohols

Agnieszka Krogul - Sobczak, University of Warsaw, Poland

11:05 - 11:25 Title: Comparative Study of Conventional and Plasma Catalysed Steam Reforming Process for Green Hydrogen Production from Plastic

Palash Kumar Mollick, University of the Basque Country, Spain

11:25 - 11:45 Title: Influence of Sulfiding Agent on the Chemical - Physical Properties and Catalytic Pathway of CoMoSx Catalysts in the HDT Process of o - Xylene

Alessandra Palella, CNR - ITAE, Italy

11:45 - 12:05 Title: Photo Catalytic Synthesis of Chiral Molecules in Flow

Maurizio Benaglia, The University of Milan, Italy

12:05 - 12:25 Title: 3D Radar Sensor Fusion For High - Precision Human Lesion Identification

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12:25 - 12:45 Title: High - Speed Scanning Ion Conductance Microscopy (HS - SICM) Revealing Nanoscale Physical Features Of Irradiation - Treated Breast Cancer Cells

Masahiro Yamazaki, Division of Cancer Cell Biology, Cancer Research Institute of Kanazawa University, Japan

Group Photo: 12:45 - 13:00

Lunch Break: 13:00 - 14:00

Virtual Presentations

Electro - Chemistry and Electro - Analytical Chemistry | Catalysis for Energy | Chemical Engineering | Photocatalysis | Biochemical Engineering | Electrochemistry and Electrochemical Engineering | Material Chemistry and Polymer Chemistry | Nano - Imaging for Diagnosis | Therapy and Delivery | Nanobiotechnology | Nanomaterials and Nanotechnology

Session Chair

Abhispa Sahu American Nano, LLC, USA

14:00 - 14:15 Title: Plastic Trash to Monomers and Intermediates – PTMI
Anne M. Gaffney, University of South Carolina, USA

14:15 - 14:30 Title: Persistent luminescence From Eu²⁺ Doped And Co - Doped Inorganic Aluminate Host Materials
Leelakrishna Reddy, University of Johannesburg, South Africa

14:30 - 14:45 Title: Fluorographite Nanoplatelets Based Resin Membranes for Water Purification
Abhispa Sahu, American Nano, LLC, United States of America

14:45 - 15:00 Title: Calculation of Geometric Structure, Electronic Characteristics, Vibration Frequencies and Thermodynamic Properties of C 11 H 18 -C 14 H 24 Alkyladamantanes According to DFT
Saginayev A, Utebaev Atyrau of Oil and Gas University, Kazakhstan

15:00 - 15:15 Title: Vanillin: Bioconversion of the World's Most Popular Flavor
Wa Ode Cakra Nirwana, University of Brawijaya, Indonesia

15:15 - 15:30 Title: Deciphering ORR in HTPMFEC
Panagiotis I. Giotakos, Foundation for Research and Technology Hellas, Greece

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Coffee Break: 15:45 - 16:00

16:00 - 16:15 Title: Development of Metal Sulfide - Based CO₂ Reduction Electro Catalysts using Machine Learning Technique
Akira Yamaguchi, Tokyo Institute of Technology, Japan

16:15 - 16:30 Title: Towards an Innovative Combined Process Coupling Biodegradation and Photo - Oxidation for The Removal of Pharmaceutical Residues
Gael Plantard, PROMES, UPR 8521 CNRS, France

16:30 - 16:45 Title: Continuous Flow Photoreactor Undergoing Variable Simulated Irradiation Conditions: Experimentations and Modeling
Gael Plantard, PROMES, UPR 8521 CNRS, France

16:45 - 17:00 Title: Electrochemical Biosensing Of Uric Acid
Minakshi Sharma , Maharshi Dayanand University , India

17:00 - 17:15 Title: Results On Viral Bio - Signature's Derivation, It's Evolution And Far To Evanescent Field Frequencies Convergence
KF Kaspareck, Energy & Engineering Consulting, GR, Italy

17:15 - 17:30 Title: Biological Activities Of Centaurea Urvillei Subsp. Urvillei And Its Green Synthesized Silver Nanoparticles
Burcu Sümer Tüzün, Ege University, Turkey

Networking/Panel Discussions: 17:30 Onwards

Day 1 Concludes



**DAY
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7th World Congress on

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Thursday

June 22, 2023

Hall Name: MESTRAL

Day 2 - June 22, 2023

Plenary Session

10:00 - 10:30 Title: Integrated Wavemeter for Atomic Clocks Stabilization
Philippe Velha, DISI, University of Trento, Italy

Keynote Session

10:30 - 11:00 Title: Non - Destructive Testing of GFRP Composites Using Terahertz Radiation
Waldemar Swiderski, Military Institute of Armament Technology, Poland

Coffee Break: 11:00 - 11:15

Sessions: Materials for Energy Applications | Advanced Energy Materials | Graphene Technology and 2D Materials | Materials Science and Engineering | Advanced Nanomaterials - production, Synthesis and Processing | Ceramics and Composite Materials | Nonlinear Lasers and Nonlinear Optics | Optical properties of Nano structures | Physics and Chemistry of Materials | Nanomaterials and Nanotechnology | Materials Science and Engineering | Future Drifts in Lasers, Optics and Photonics | Nonlinear Lasers and Nonlinear Optics | Optical Properties of Nanostructures | Fiber Optics and Fiber Laser Technologies | Ultrafast and Ultra - Intense Lasers, Laser Diagnostics | Optical Engineering and Optical Networking | Novel Optical Materials and Applications Semiconductors and Superconductors | 3D Printing technologies

Session Chair

Georges Boudebs, LPhiA / Univ Angers, France

11:15 - 11:35 Title: Lead Free ($\text{BaZr}_{0.2}\text{Ti}_{0.8}\text{O}_3$) and Lead Based ($\text{PbZr}_{0.52}\text{Ti}_{0.48}$) Flexible Thick Films: Structural Properties and Potential Use as Energy Storage and Energy Harvesting Systems
Jelena Bobic, University of Belgrade, Serbia

11:35 - 11:55 Title: Energy Harvesting Potential Of Polymer Composites
Mirjana Vijatovic Petrovic, University of Belgrade, Serbia

11:55 - 12:15 Title: Effect Of Heat Treatment Parameters On The Carbide Spheroidization OF 0.48% Carbon Steels
Nandita Gupta, The DEptt of Foundry and Forge Technology, India

12:15 - 12:35 Title: Design Of New 2D Materials Using Computational Intelligence

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Materials Science & Engineering

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Thursday

June 22, 2023

12:35 - 12:55 Title: Educational and Research Experience in Clean Energy Hydrogen Fuel Cells for Electricity Generation

Alla Bailey, Rochester Institute of Technology, USA

Group Photo: 12:55 - 13:05

Lunch Break: 13:05 - 14:05

14:05 - 14:25 Title: Nanopatterns Fabricated by Fluid FM as Potential Surfaces for Platelet Storage

Gurunath Apte, Institute for Bioprocessing and Analytical Measurement Techniques, Germany

14:25 - 14:45 Title: Tailoring Of $\text{BaCe}_{0.9}\text{Y}_{0.1}\text{O}_{3-\delta}$ Electrolyte Properties by Co - Doping
Aleksandar Radojković, University of Belgrade, Serbia

14:45 - 15:05 Title: Photo - Thermal Efficiency of Gold Nano - Particle Suspensions Using cw Z - scan Technique in The Visible Range

Georges Boudebs, LPhiA / Univ Angers, France

15:05 - 15:25 Title: UV Micro LED Chip Performance, Superiority, and the Future
Yoshihiko Muramoto, Nitride Semiconductors Co., Ltd, Japan

15:25 - 15:45 Title: Influence of Magnetic Field on Plasma Parameters & Surface Modification of Cu-Alloy after Fs Laser Irradiation

Asadullah Dawood, National Excellence Institute, Pakistan

15:45 - 16:05 Title: Investigation of Cladding Interfacial Microstructure of Titanium Alloy on Structural Carbon Steel Prepared by Friction Stir Processing

Abdulrahman Aljabri, Islamic University of Madinah, Saudi Arabia

16:05 - 16:25 Title: CuFeOx-Based Nano-Rose Electro Catalysts for Oxygen Evolution Reaction (OER) Prepared by Phytochemical Assisted Green Synthesis Process

Hamad Almohamadi, Islamic University of Madinah, Saudi Arabia

Coffee break & Poster Session - 16:25 Onwards

SPEC-P-01 Title: Controlling The Emission Of CsPbBr_3 Nano - Crystals. Post - Synthesis Treatment Via Ion Exchange.

Egle Ezerskyte, Vilnius University, Lithuania

SPEC-P-02 Title: Recyclable Environmentally Friendly Ionic Liquid Supported Organotelluride Oxidation Catalyst

Shinichi Koguchi, Tokai University, Japan

SPEC-P-03 Title: Adsorptive Desulfurization of Pentane Plus with High Aromatics Content by An Industrial Molecular Sieve

- SPEC-P-04 Title: Growth and Characterization of BSCCO High TC Superconductor Thin Films for Possible Terahertz Device Applications
Kensuke Nakajima, Yamagata University Japan
- SPEC-P-05 Title: The Study On The Sintering Conditions To Fabricate Copper Foam Metal
Yong- Sil Ahn, Pukyong National University, Korea (south)
- SPEC-P-06 Title: Nanostructured Silicon And Aluminum Thin Films For All - Silicon Optoelectronics
A. Smirnov, Belarusian State University Of Informatics And Radioelectronics
- SPEC-P-07 Title: Tailoring The Optical Properties Of CsPbBr_3 Quantum Dots Via Post - Synthesis Modification Using ZnX_2 Complex Solutions
Vaidas Klimkevicius, Vilnius University, Lithuania
- SPEC-P-08 Title: Ultrasound - Induced Hot - Injection Synthesis of All - Inorganic Perovskite Quantum Dots
Arturas Katelnikovas, Vilnius University, Lithuania
- SPEC-P-09 Title: On Diversity of Localized Modes in Presence of Defects and Nonlinearity in SSH Waveguide Array
Kolja Bugariski, University of Belgrade, Serbia
- SPEC-P-10 Title: Playing With the Artificial Flux in Diamond Plaquettes in Different Photonic Lattices
Mirjana Stojanović, University of Belgrade, Serbia
- SPEC-P-11 Title: Probing the Efficiency of Lasing Zero - Mode by Changing the Vortex Distortion Phase
Milica Nedić, University of Belgrade, Serbia
- SPEC-P-12 Title: Dual - Wavelength Distributed Feedback Fiber Laser in Yb - Er Co - Doped Fiber
Xijia Gu, Toronto Metropolitan University, Canada
- SPEC-P-13 Title: Photophysical Properties of Alq_3 and DCM Derivatives and Their Application in Amplified Spontaneous Emission
Patricija Paulsone, University of Latvia, Latvia
- SPEC-P-14 Title: Fast Measurement of Water Content in Petroleum by Means of Terahertz Time - Domain Spectroscopy
Ihor Krapivin, Center for Physical Sciences and Technology, Lithuania
- SPEC-P-15 Title: Novel Computer - Vision Based Methods for Micro - Device Reliability
Hua Lu, Toronto Metropolitan University, Canada
- SPEC-P-16 Title: Thermodynamic Assessment of The Sorption Enhanced Steam Reforming of Biomass Fast Pyrolysis Volatiles
Pablo Comendador Morales, University of the Basque Country, Spain

Energy harvesting potential of polymer composites

M. Vijatovic Petrovic¹, F. Cordero², E. Mercadelli³, E. Brunengo⁴, N. Ilic¹, C. Galassi³, Z. Despotovic⁵, J. Bobic¹,
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⁶ CNR-ICMATE, Istituto di Chimica della Materia Condensata e di Tecnologie per l'Energia, Genoa, Italy

Abstract:

Energy is available all around us in different forms and shapes such as from sun, wind, waves, vibrations etc. The enormous amount of mechanical energy released in everyday life by human walking, transportation movement, sound waves and other, represent renewable and safe energy source. Piezoelectric generators exhibit a great potential for powering up low-power portable devices and self-powered electronic systems by extraction of mechanical energy. Employment of lead-free piezoelectric materials will be a breakthrough of a completely new type of safe and harmless production of energy for daily life. Recent challenge in electronics is also utilization of flexible electronics with the ability to bend into diverse shapes which expands the applications of modern electronic devices in different areas.

Polymer PVDF/piezoelectric ceramics, flexible composite films were prepared by hot pressing method. The influence of hot pressing method on the formation of electroactive PVDF phases in the polymer was proven by FTIR analysis. DSC analysis have shown the change of PVDF crystallinity degree in the flexible films with addition of ceramics filler particles. The dielectric permittivity value increased with the addition of filler in the polymer matrix while the relaxation processes were governed mostly by the PVDF matrix. Polarization of flexible films enhanced the formation of PVDF electroactive β - phase in the samples. Energy harvesting potential was studied by measuring of voltage output under the impulse hammer load.

Biography of presenting author

Dr. Mirjana Vijatovic Petrovic studied at the Faculty of Technology and Metallurgy, Belgrade University, Serbia and she completed her BSc in Inorganic Chemical Technology in 2006. She received her PhD degree in Material Science in 2010 from the University of Belgrade, Serbia and from 2021 she is Full Research Professor at the Institute for Multidisciplinary Research, Belgrade University. She has published more than 50 research articles in SCI journals.

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