



3rd International Conference on

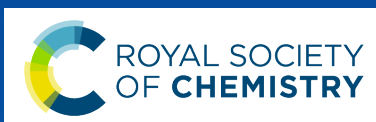
MATERIALS SCIENCE & NANOTECHNOLOGY

October 03-05, 2022 | Rome, Italy

October 06-07, 2022 | Online

Venue: **Crowne Plaza Rome – St. Peter's, Rome, Italy**

PARTNERS



<https://materialsconference.yuktan.com/>

Join Zoom Meeting:<https://us06web.zoom.us/j/88243392958?pwd=V1l4bHo4VTRLVXFqL3NvMEVQRGJaUT09>Meeting ID: **882 4339 2958**Passcode: **689001**

08:00-08:30 On-site Registrations

08:30-08:40 Introduction and Opening Remarks

Moderator: Catalin Nicolae Marin, West University of Timisoara, Romania**Keynote Talks**

(Each Talk 30 Minutes+5 Minutes Q&A)

08:40-09:15 **An Era of Opportunity: The Top 5 Post-pandemic Growth Sectors in Advanced Materials**
Michael Silver, American Elements, USA09:15-09:50 **Smart Soft Materials in Tissue Engineering and Soft Robotics**
Ester Vazquez, University of Castilla-La Mancha, Spain09:50-10:25 **2D Nanostructures at Atomic Scale: from Energy an Environmental Applications to Quantum Devices**
Jordi Arbiol, Catalan Institute of Nanoscience and Nanotechnology, Spain - **Online**10:25-10:45 **COFFEE BREAK**

@ Foyer

Session: Future Materials: Characterization, Theory and Design**Featured Presentations**

(Each Talk 15 Minutes+5 Minutes Q&A)

Chair: Ester Vazquez, University of Castilla-La Mancha, Spain10:45-11:05 **Design of the Microwave Propagation Parameters in Magnetic Fluids**
Catalin Nicolae Marin, West University of Timisoara, Romania11:05-11:25 **Materials Beyond Copper for CO₂ Reduction Reaction**
Samira Siahrostami, University of Calgary, Canada11:25-11:45 **Creation and Mechanical Simulation of Graded Gyroid Structures**
Leonie Wallat, Institute for Digital Materials Research, Germany11:45-12:05 **Density-functional Simulations for Novel Materials**
Wei Wu, University College London, United Kingdom12:05-12:25 **High Entropy Defect Formation for Fast Hydride Conduction**
Albert Iskandarov, Yokohama City University, Japan12:25-12:45 **Influence of the Laser Metal Deposition Process Parameters on the Structural Quality of a Cu-based Coating on Steel - A Preliminary Analysis**
Federico Mazzucato, University of Applied Science and Arts of Southern Switzerland, Switzerland12:45-13:05 **Advantages of Low-voltage Scanning Electron Microscopy in Optimizing the Properties of the Polymer-nanoclay Composites**
Alaa Madhloom Almansoori, Southern Technical University, Iraq13:05-14:00 **LUNCH BREAK**

Session: Materials for Electronics, Optics and Photonics

Chair: Catalin Nicolae Marin, West University of Timisoara, Romania

Featured Presentations

(Each Talk 15 Minutes+5 Minutes Q&A)

- 14:00-14:20 **Role of Defects and Interfaces in the Exciton and Charge Carrier Dynamics of Semiconductor Nanocrystal**
Renato Bozio, University of Padua, Italy
- 14:20-14:40 **Recent Progress of Solution-processed Copper-based p-Channel Thin Film Transistors**
Hala. A. Al-Jawhari, King Abdulaziz University, Saudi Arabia
- 14:40-15:00 **Thin Films Manifesting Localized Surface Plasmon Resonances, for Sensing and Bio-applications**
Joel Borges, University of Minho, Portugal
- 15:00-15:20 **Improved Transparency and Electron Lifetime of Quasi-solid State Iodine-free DSSCs**
Laura Maria Manceri, University of Liege, Belgium
- 15:20-15:40 **Semiconducting Nanonets: A Highly Promising Nanomaterial for Macroscale Functional Devices**
Céline Ternon, LMGP / Grenoble INP - UGA, France
- 15:40-16:00 **An Environmentally Friendly Methodology to Fabricate Light Emitting Germanium Microbridges**
Cicek Boztug, TED University, Turkey
- 16:00-16:20 **Infrared Metasurface with Tailored Differential Emissivity Response**
Evangelos Vassos, University of Birmingham, United Kingdom

16:20-16:40 **COFFEE BREAK**

@ Foyer

Young Researcher Presentations

(Each Talk 10 Minutes+5 Minutes Q&A)

Chairs: Renato Bozio, University of Padua, Italy
Ester Vazquez, University of Castilla-La Mancha, Spain

- 16:40-16:55 **FIB Lamellae Preparation for Atomic-resolution STEM imaging from Ion-beam-sensitive Topological Insulator Crystals**
Abdulkhakim Bake, University of Wollongong, Australia
- 16:55-17:10 **Process-structure-property Relationship of Al-WS₂ Composites Processed by Spark Plasma Sintering and Laser Powder Bed Fusion**
Peifeng Li, University of Nottingham, United Kingdom
- 17:10-17:25 **Reactive Compatibilization of Impact Co-polymer Polypropylene and Organically Modified Mesoporous Silica to Prepare Composites Possessing Enhanced Mechanical Properties**
Aanchal Jaisingh, Indian Institute of Technology Delhi, India
- 17:25-17:40 **Development and Characterization of a Cu₂O Nanonet as a p-type TCO for Optoelectronics Applications**
Mouncef Belmouhoub, Grenoble-INP - UGA, France
- 17:40-17:55 **Refining Phenomena of Basic Oxygen Steel Making Process**
Prasenjit Singha, Indian Institute of Technology Madras, India
- 17:55-18:10 **Optimization of Hybrid Microwave Reduction Roasting of Low Grade Iron Ore Using Cow Dung**
Soumya Ranjan Mohanty, Indian Institute of Technology Madras, India

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Meeting ID: **882 4339 2958**

Passcode: **689001**

08:30-08:40 Introduction and Day 2 Opening Remarks

Session: Future Materials for Energy and Sustainability

Chair: Hala. A. Al-Jawhari, King Abdulaziz University, Saudi Arabia

Featured Presentations

(Each Talk 15 Minutes+5 Minutes Q&A)

08:40-09:00 **Chemical Bonding and Thermoelectric Properties of Materials**
Yuri Grin, Max Planck Institute for Chemical Physics of Solids, Germany

09:00-09:20 **Photodoped ITO Nanocrystals Unlock Multiple Electron Transfer**
Andrea Rubino, Italian Institute of Technology, Italy

09:20-09:40 **Influence of Silicon on the Calendering Behavior and Properties of Anodes for Lithium-Ion Batteries**
Sören Scheffler, Technical University of Braunschweig, Germany

09:40-10:00 **Electrochemical Nitrogen Reduction Reaction for Renewable Ammonia Generation**
Feili Lai, KU Leuven, Belgium

10:00-10:20 **COFFEE BREAK** @ Foyer

10:20-10:55 **Keynote**
Materials on the Crossroads of Sustainability
Rodrigo Martins, European Academy of Sciences, Portugal - **Online**

10:55-11:15 **Enhanced Light-to-hydrogen Conversion Using Plasmon Core-shell Photocatalysts**
Vandung Dao, Korea University, South Korea

11:15-11:35 **Perspectives on Improving the Safety and Sustainability of High Voltage Lithium-Ion Batteries Through the Electrolyte and Separator Region**
Heather Cavers, Technical University of Braunschweig, Germany

Young Researcher Presentations

(Each Talk 10 Minutes+5 Minutes Q&A)

Chairs: Yuri Grin, Max Planck Institute for Chemical Physics of Solids, Germany
Ester Vazquez, University of Castilla-La Mancha, Spain

11:35-11:50 **Effect of Al₂O₃, SiC and TiC Nanoparticles on the Properties and Microstructure of Direct Chill Cast Al MMnC's**
Abdallah Abu Amara, Brunel University London, United Kingdom

11:50-12:05 **Selective Borohydride Oxidation Reaction on Ni Catalyst at the Anode of Direct Borohydride Fuel cells**
Youngdon Ko, Federal Institute of Technology in Lausanne, Switzerland

- 12:05-12:20 **Hollow Urchin-like Nickel Cobaltite as Oxygen Evolution Reaction Catalyst for Anion Exchange Membrane Water Electrolyzers**
Charles Lois Flores, University of the Philippines, Philippines
- 12:20-12:35 **Waste Tire-derived Carbon Obtained from Green Hydrothermal Route as Anode Material for Alkali-ions Batteries**
Loris Berardo, University of Liege, Belgium
- 12:35-12:50 **Boosted Zn²⁺ Storage Performance of Hydrated Vanadium Oxide by Defect and Heterostructure**
Viet Phuong Nguyen, Korea Institute of Machinery & Materials, Republic of Korea
- 12:50-13:05 **Enhanced Electrochemical Performance of V₂O₅ Prepared by Spray Drying Process as Cathode Material for Zinc-ion Batteries**
Edith Roex, University of Liege, Belgium
-
- 13:05-14:05 **LUNCH BREAK**
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- 14:05-14:20 **Cobalt Molybdenum Sulfide as Alternative Cathode for Anion Exchange Membrane Water Electrolyzers**
C.V.M. Inocêncio, University of Poitiers, France
- 14:20-14:35 **The Role of Interface of CuO_x-TiO₂ Hybrid Metal Oxide in Enhancement of Oxygen Reduction Reaction Performance**
Debashis Mahato, Indian Institute of Technology Madras, India
- 14:35-14:50 **Novel Photoswitchable and Hydrophobic Thermoplastic Polyurethane for Potential Energy Applications**
Gunanga Jyoti Gogoi, Queen's University Belfast, United Kingdom
- 14:50-15:05 **High Concentration Electrolytes for Wider Operational Voltage Aqueous Rechargeable Na-ion/S Battery**
Sukhjot Kaur, Indian Institute of Technology Ropar, India
- 15:05-15:20 **The Surface Charge Neutralized TENG Output Depending on Humidity Condition**
Jiwon Jeong, Gyeongsang National University, Republic of Korea
- 15:20-15:35 **Mxene@nitrogen-doped Carbon Films for Supercapacitor and Piezoresistive Sensing Applications**
Wang Lin, GRINM Group Co., Ltd., China - **Online**
- 15:35-15:50 **Study of Piezoelectric Behavior of Semiconducting Nanonets**
Shruti Sharma, Grenoble-INP - UGA, France
- 15:50-16:05 **Electrospun α-Fe₂O₃/PAN Nanofibers Mat: A Multifunctional and Efficient Platform in Wastewater Treatment**
Manish Kumar, Indian Institute of Technology Mandi, India
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- 16:05-16:25 **COFFEE BREAK** @ Foyer
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- 16:25-17:00 **Keynote**
Materials Design and Discovery for Future Batteries
Ying Shirley Meng, The University of Chicago, USA - **Online**
- 17:00-17:15 **Piezocatalytic MB Dye Degradation Using Bi₂VO_{5.5}**
Manish Kumar, Indian Institute of Technology Mandi, India

- 17:15-17:30 **Micro-plasma Reactors for Next-generation Manufacturing**
Ryan Brow, National Renewable Energy Lab, USA - **Online**
- 17:30-17:45 **Influence of Transition Metals Dopants on the Photovoltaic Properties of BaSnO₃: A First-principles Calculations**
Soukaina Chahib, University of the Littoral Opal Coast, France
- 17:45-18:00 **KTiPO₄F: The Negative Electrode Material for Potassium Batteries**
Vahid Ramezankhani, Skolkovo Institute of Science and Technology, Russian Federation - **Online**

18:00-19:00 **Poster Presentations and Drinks**

Judges: **Yuri Grin**, Max Planck Institute for Chemical Physics of Solids, Germany
Ester Vazquez, University of Castilla-La Mancha, Spain

- FMN-01 **3D Printing Technology for Green Construction**
Antonio Pedro Novaes de Oliveira, Federal University of Santa Catarina, Brazil
- FMN-02 **Additive Manufacturing of Recycled Soda-lime Glass Structures**
Antonio Pedro Novaes de Oliveira, Federal University of Santa Catarina, Brazil
- FMN-03 **Nanocrystalline Coatings for Filtration Applications**
Piotr Wicinski, Warsaw University of Technology, Poland
- FMN-04 **Nanostructured Gadolinia Doped Ceria Ceramics for Low-temperature Solid Oxide Fuel Cells Application**
Brigita Abakevičienė, Kaunas University of Technology, Lithuania
- FMN-05 **Using Anionic Surfactants to Study Removal of Alkanes from Dolomite and Graphite Surfaces: A Molecular Dynamics Study**
Hector Dominguez, National Autonomous University of Mexico, Mexico
- FMN-06 **Residual Stress Map for 75Ni13.5Cr2.7B-3.5Si Clad 316 Stainless Steel**
Behrooz Tafazzolmoghammad, The Open University, United Kingdom
- FMN-07 **Synthesis of Er Doped Gold Nanoparticles by Laser Ablation in Water: A Fundamental Study of the Exchange Interaction Between Localized Magnetic Moments and Conduction-electrons**
Fernando Fabris, UNICAMP, Brazil
- FMN-08 **Effects of Morphology, Magnetism and Composition on the Magnetic Fluid Hyperthermia Response of Co_xFe_{3-x}O₄ Nanoparticles for Use as a Drug Carrier**
Adriele Aparecida de Almeida, UNICAMP, Brazil
- FMN-09 **Reversible Mono- and Dual-metal Ion Intercalation into Alkali Transition Metal Sulfates in Different Electrolytes**
Delyana Marinova, Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences, Bulgaria
- FMN-10 **Structural Modeling of Layered Na_{2/3}Ni_{1/2}Mn_{1/2}O₂ Oxide via Selective Substitution for Ni³⁺ with Al³⁺ ions**
Mariya Kalapsazova, Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences, Bulgaria
- FMN-11 **Structural Materials Used for Ecological Restoration of Damaged Ecosystem Based on Biomimicry Concept**
Ju-Kyeong Eo, National Institute of Ecology, South Korea

- FMN-12 **Ag Nanoparticles-Doped Poly(ether ether ketone) for Potential Use in Biomedical Applications**
Jana Pryjmakova, University of Chemistry and Technology, Czech Republic
- FMN-13 **Plasmon-assisted Functionalization of MXene Surface**
Anastasiia Olshtrem, University of Chemistry and Technology, Czech Republic
- FMN-14 **Development of Glioblastoma-homing and H₂O₂-Responsive Therapeutic Prodrug**
YoonKyung Park, Kyung Hee University, Republic of Korea
- FMN-15 **Generation and Characterization of Core-Shell Microparticle Containing Water Core for Biomedical Purposes**
Fariba Malekpour Galogahi, Griffith University, Australia
- FMN-16 **Porous Silicon Surface Functionalization via Microwave-induced Si-S Bond Formation**
Hyeji Um, Kyung Hee University, Republic of Korea
- FMN-17 **Process Optimisation of Carbon-based Nanomaterials Production for Sustainable Energy Storage Devices: The key to Lead the Energy Transition for the 4th Industrial Revolution**
Maria Alexandra Sandoval, Bournemouth University, United Kingdom
- FMN-18 **Single Atom Platinum-implanted 2D MoAl_{1-x}B MBene for High-performance Hydrogen Evolution Reaction**
Seokju Park, Jeonbuk National University, Republic of Korea
- FMN-19 **Hierarchical Three-dimensional Fe Atoms-incorporated MXene/Graphene Hydrogel Networks for Efficient Overall Water-splitting**
Thanh Hai Nguyen, Jeonbuk National University, Republic of Korea
- FMN-20 **Controlling the Structure of Metal and Polymer Foams via Advanced Templating Approaches**
Thomas Moore, University of Leeds, United Kingdom
- FMN-21 **Functional Properties of Transparent Epoxy-based Nanocomposite Coatings**
Bartłomiej Przybyszewski, Warsaw University of Technology, Poland
- FMN-22 **Effect of Chemical Modification of Transparent Silicone-epoxy Coatings on Their Hydrophobic Properties**
Katarzyna Zietkowska, Warsaw University of Technology, Poland
- FMN-23 **Influence of Dry Etching Plasma Treatment Energy on the Tensile Strength and Surface Appearance of Bamboo Fibers**
Sergio Mosquera Gomez, National University of Colombia, Colombia
- FMN-24 **Designing and Testing New Peptide-based Molecules for Biotechnological Applications**
James Hawley, Newcastle University, United Kingdom
- FMN-25 **Optimization of Waste Plastic to Fuel Oil Plants' Deployment Using Mixed Integer Programming (MIP)**
Muyise David, Makerere University, Uganda
- FMN-26 **Dual-atomic Pd and Ru-Implanted MoS₂ Nanosheets for Synergistically Accelerating Solar-assisted Alkaline Water Electrolysis**
Duy Thanh Tran, Jeonbuk National University, Republic of Korea

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08:50-09:00 Introduction and Day 3 Opening Remarks

Chair: Céline TERNON, LMGP / Grenoble INP - UGA, France**Session: Bio and Soft Materials: Biomedical, Medicine and Other Applications****Featured Presentations**

(Each Talk 15 Minutes+5 Minutes Q&A)

- 09:00-09:20 **The Impact of Cooperative Motion in Disordered Systems: Primary Relaxation in (extremely) Viscous “Liquids” and Thermal Treatments in Implanted Semiconductors**
Marco Pieruccini, IMM-National Research Council, Italy
- 09:20-09:40 **The Influence of Process Parameters on the Selected Properties of Ti6Al7Nb Alloy Surface Structured in Fluorine-based Plasma**
Anna Jedrzejczak, Lodz University of Technology, Poland
- 09:40-10:00 **A Simulation Study of Microbial Invasion in Fibrous Structures of Avian Eggshell Membrane**
Seungwoo Sim, National Institute of Ecology, South Korea

10:00-10:20 **COFFEE BREAK**

@ Foyer

**Session: Nanomaterials
Structural and Functional Materials****Featured Presentations**

(Each Talk 15 Minutes+5 Minutes Q&A)

- 10:20-10:40 **3D Visualization Method Based on Metastructure Optical Indicator of Thermoelastic Polarization Microscope for Electromagnetic Fields in Microwave and THz Ranges**
Arsen Babajanyan, Yerevan State University, Armenia
- 10:40-11:00 **Resonant Interaction Between Microwaves and Thin Conducting Microstructure With Finite Length**
Tigran Abrahamyan, Yerevan State University, Armenia
- 11:00-11:20 **Sprayed Nanometer-thick Hard Magnetic Coatings with Strong Perpendicular Anisotropy for Data-storage Applications**
Andrei Chumakov, DESY - Deutsches Elektronen-Synchrotron, Germany
- 11:20-11:40 **Titania Supported Silver-Nickle Visible Light Photocatalyst for Environmental and Health Applications**
Khaled Saoud, Virginia Commonwealth University in Qatar, Qatar
- 11:40-12:00 **Fabrication of Au Nanoparticles Supported on One-dimensional (1D) La_2O_3 Nanorods for Selective Esterification of Methacrolein to Methyl Methacrylate with Molecular Oxygen**
Bappi Paul, National Institute of Technology Nagaland, India - **Online**
- 12:00-12:20 **Defects in an Orthorhombic MoAlB MAB Phase Thin Film**
Rajib Sahu, Max Planck Institute for Iron Research GmbH, Germany

12:20-12:40 **Self-Assembly of Chiroptical DNA-based Nanomaterials for Optoelectronic Technologies**
Osama El-Zubir, Newcastle University, United Kingdom

12:40-13:40 **LUNCH BREAK**

Young Researcher Presentations
(Each Talk 10 Minutes+5 Minutes Q&A)

Chair: Arsen Babajanyan, Yerevan State University, Armenia

- 13:40-13:55 **The Influence of Construction Waste from Concrete on the Alkaline Activation Process of New Fly Ash-based Geopolymer Construction Materials**
Felix Kugler, Nuremberg University of Technology, Germany
- 13:55-14:10 **Magnetic Nanoparticles in Bone Tissue Engineering**
Akshith Dasari, King's College London, United Kingdom
- 14:10-14:25 **Development of Curcumin-loaded Niosomes as a Drug Delivery System**
Monireh Esmaeili Rad, Sabanci University, Turkey
- 14:25-14:40 **Using Polystyrene Beads as Sacrificial Template to Produce Porous Mannitol Particles by a Spray-drying Process for Pharmaceutical Applications**
Morgane Valentin, University of Liege, Belgium
- 14:40-14:55 **Moiré Regulated Friction in Low-angle Twisted Bilayer Graphene**
Sen Wang, Wuhan University, China - **Online**
- 14:55-15:10 **Core-shell Upconversion Nanoparticles Synthesis and Surface Modifications with Polymers Using PET-RAFT Polymerization**
Tina Joshi, Indian Institute of Technology Delhi, India
- 15:10-15:25 **Investigation of Ceramics Matrix Composite Material Suitability for an Aeronautical Application**
Marco Riva, Polytechnic University of Milan, Italy
- 15:25-15:40 **Electrodeposited Nickel-graphene Nanocomposite Coating: Influence of Pulsed Current Density on Microstructure and Wear Resistance for Friction Control Applications**
Erica Menna, University of Rome Tor Vergata, Italy
- 15:40-15:55 **Replacement of Pd with Magnetically Separable Hierarchical NiZn Alloy Nanoparticles for Suzuki-Miyaura Coupling Reaction**
Soniya Agarwal, Dibrugarh University, India
- 15:55-16:10 **Effect of Cold Forging on the Evolution of Microstructure and Texture in Beta-C Titanium Alloy**
Unissa Nichul, Defence Institute of Advanced Technology, India
- 16:10-16:25 **Electrospun Polycaprolactone Scaffolds as a Drug Delivery System for 1,4-naphthoquinone Derivatives**
Nadezhda Danilenko, National Research Tomsk Polytechnic University, Russian Federation

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08:40-08:50 AV Check

08:50-09:00 Introduction and Day 4 Opening Remarks

Chair: Ion Tiginyanu, Technical University of Moldova, Moldova**Keynote Talks**

(Each Talk 30 Minutes+5 Minutes Q&A)

09:00-09:35 **Graphene Coatings: A Disruptive Approach to Remarkable Corrosion Resistance**
Raman Singh, Monash University, Australia09:35-10:10 **Flexible Thermoelectrics**
Lidong Chen, Shanghai Institute of Ceramics, China10:10-10:45 **Heterostructured Material: New Science Produces Superior Properties**
Yuntian Zhu, City University of Hong Kong, Hong Kong**Session: Nanomaterials****Future Materials for Energy and Sustainability****Bio and Soft Materials: Biomedical, Medicine and Other Applications****Featured Presentations**

(Each Talk 15 Minutes+5 Minutes Q&A)

10:45-11:05 **Poly(ionic liquid)-in-salt Electrolytes for Next Generation of Batteries**
Fangfang Chen, Deakin University, Australia11:05-11:25 **Ultrathin Membranes and 3D Nanoarchitectures of Hollow Tetrapodal Structures Based on GaN and β -Ga₂O₃ for Multifunctional Application**
Ion Tiginyanu, Technical University of Moldova, Moldova11:25-11:45 **Enhancing Comprehensive Energy Storage Properties of Tungsten Bronze Sr_{0.53}Ba_{0.47}Nb₂O₆-Based Lead-free Ceramics by B-site Doping and Relaxor Tuning**
Xiaojie Lou, Xi'an Jiaotong University, China11:45-12:05 **Direct Room Temperature Synthesis of α -CsPbI₃ Perovskite Nanocubes - Implications for Photovoltaic and Electronics Applications**
Hei Ming Lai, The Chinese University of Hong Kong, Hong Kong12:05-12:25 **Designing TiAl-based Nanocomposite Through Semi-coherent Nanoprecipitates**
Yusheng Zhang, Xi'an Rare Metal Materials Institute Co. Ltd, China12:25-12:45 **Surface-confined Synthesis of Ultrafine Pt-Rare Earth Nanoalloys on N-Functionalized Supports**
Mingzhen Hu, University of Chinese Academy of Sciences, China12:45-13:05 **Environmental and Performance Assessment of Hydrophobic and Flame-retardant Cotton Fabrics Modified with Functional Integrated Graphene**
Jia Xu, Hebei University of Science and Technology, China

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- 13:05-13:20** **BREAK**
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- 13:20-13:40 **BlueP/Janus MoS₂ van der Waals Heterostructure as an Efficient Anode Material for Lithium-Ion Batteries**
Gayatree Barik, IISER Kolkata, India
- 13:40-14:00 **High-capacity Mixed Cu-Fe Sulfides: Towards Sustainable Batteries with Prussian Blue Derivatives**
Samantha Husmann, INM - Leibniz Institute for New Materials, Germany
- 14:00-14:20 **Octahedral Cluster Compounds: A New Promising Member of the Restricted Family of Ambipolar Materials for Sun Light Energy Conversion**
Adele Renaud, University of Rennes 1, France
- 14:20-14:40 **Towards Controllable Liquid Foams for Photocatalytic Applications**
Luca Bergamasco, Polytechnic University of Turin, Italy
- 14:40-15:00 **Recycling Real-world Waste Plastics via Thermal Catalytic and Plasma Processes for Co-production of Hydrogen and High Value-added Carbon Products**
Guoxing Chen, Fraunhofer IWKS, Germany
- 15:00-15:20 **Silica Nanoparticles as Drug and siRNA Delivery System**
Gözde Ustav, Inonu University, Turkey
- 15:20-15:40 **Doping Engineering of Single-walled Carbon Nanotubes by Nitrogen Compounds Using Basicity and Alignment**
Karolina Z. Milowska, CIC Nanogune, Spain
- 15:40-16:00 **Bioengineering Breast Tumors with Decellularized Porcine Mammary Glands Bioinks**
Barbara Blanco-Fernandez, The Barcelona Institute of Science and Technology, Spain
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- 16:00-16:15** **BREAK**
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- 16:15-16:50 **Keynote**
Hastalex, A Functionalised Graphene Based Nanocomposite for Biomedical and Industrial Application
Alexander Seifalian, NanoRegMed Ltd, Nanoloom Ltd, USA
- 16:50-17:10 **Superficial Nanograins Obtained by Cold Rolling with Rough Rolls and Annealing. Modeling and Experimental Results**
Carlos Camurri Porro, University of Concepcion, Chile
- 17:10-17:30 **Reaction Conditions and Aqueous Washing Process: Implications for Graphene Oxide Production**
Camila Mora Vilches, University of Concepcion, Chile
- 17:30-17:50 **Thermoelectricity In Hybrid 2D Materials**
Taher Ghomian, Marshall University, USA
- 17:50-18:20 **Cold Electron Transport in Two-Dimensional van der Waals Nanoelectronics**
Huamin Li, University at Buffalo, USA
- 18:20-18:40 **Visualizing Atomically-layered Magnetism in CrSBr**
Daniel Rizzo, Columbia University, USA
- 18:40-19:00 **Graphene Oxide from Graphite of Spent Batteries as Support of Nanocatalysts for Fuel Hydrogen Production**
Renata Pereira Lopes, Federal University of Viçosa, Brazil
- 19:00-19:20 **Metal Chalcogenide Thin Films by Chemical Methods for Photoelectrochemical Applications**
Nini Rose Mathews, National Autonomous University of Mexico, Mexico

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08:40-08:50 AV Check

08:50-09:00 Introduction and Day 5 Opening Remarks

Chair: Christian K. Muller, University of Applied Sciences Zwickau, Germany**Keynote Talks**

(Each Talk 30 Minutes+5 Minutes Q&A)

09:00-09:35 **Design, Preparation and Characterization of Functional Nanomaterials Based on Energy-resolved Distribution of Electron Traps**
Bunsho Ohtani, Hokkaido University, Japan

09:35-10:10 **Chemically Modified Graphene for Real-world Applications**
Sang Ouk Kim, Korea Advanced Institute of Science and Technology, South Korea

10:10-10:45 **Engineering at the Nanoscale: A Strategy for Developing High Performance Functional Materials**
Sabu Thomas, Mahatma Gandhi University, India

**Session: Future Materials: Characterization, Theory and Design
Materials for Electronics, Optics and Photonics
Structural and Functional Materials**

Featured Presentations

(Each Talk 15 Minutes+5 Minutes Q&A)

10:45-11:05 **Effect of Thermal Boundary Resistance on Thermal Management of Interconnects in Logic Chips**
Tianzhuo Zhan, Toyo University, Japan

11:05-11:25 **Ultrafast Terahertz Spectroscopy and Floquet Engineering in a 3D Dirac Semimetal Cd_3As_2**
Natsuki Kanda, The University of Tokyo, Japan

11:25-11:45 **Asymmetry at Ferromagnet/Antiferromagnet Interface: Route Toward an Advanced Spin-orbit Torque Device**
Chao-Yao Yang, National Yang Ming Chiao Tung University, Taiwan

11:45-12:05 **Design Transition-metal-encapsulated Boron Nanotubes to Boost Efficient Nitrogen Fixation by First-principle Calculations**
Yanlu Li, Shandong University, China

12:05-12:25 **Large Transverse and Longitudinal Magneto-thermoelectric Effect in Polycrystalline Nodal-line Semimetal Mg_3Bi_2**
Weishu Liu, Southern University of Science and Technology, China

12:25-12:45 **Revisiting Carbon Dioxide Adsorption on Porous Carbon from a Perspective of Explainable Machine Learning**
Chi Zhang, University of Chinese Academy of Sciences, China

- 12:45-13:05 **Quasi-Freestanding Bilayer Borophene on Ag(111)**
Ying Xu, Nanjing University of Aeronautics and Astronautics, China
- 13:05-13:25 **Photocontrol of Structural Colors in Self-organized Helical Superstructures**
Lang Qin, Fudan University, China
- 13:25-13:45 **The Collective Friction and Wear Behavior of Tungsten Alloy Spheres**
Lilong Pang, Chinese Academy of Sciences, China
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- 13:45-14:00 **BREAK**
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- 14:00-14:20 **Effect of K Doping on Structural, Optical and Dielectric Properties of Tin Selenide Prepared by Hydrothermal Method**
Bathulapalli Sobha, National Institute of Technology, Warangal, India
- 14:20-14:40 **Surface Induced Anti-foaming**
Doris Vollmer, Max Planck Institute for Polymer Research, Germany
- 14:40-15:00 **Designing Self-cleaning Amphiphobic Coatings Based on Functional Acrylics**
Girish Mirchandani, Indian Institute of Technology Kharagpur, India
- 15:00-15:20 **Ranking of Factors Influencing the Construction Waste Generation in Construction Companies of a Defined Size**
Marta Bialko, University of Sharjah, United Arab Emirates
- 15:20-15:40 **Near-infrared-based Sensitive Detection of Nucleic Acids with Upconversion Nanoparticles**
Laura Frances-Soriano, University of Valencia, Spain
- 15:40-16:00 **Operando DRIFT for Surface Reactivity Studies on Chemiresistive Gas Sensor**
Fabbri Barbara, University of Ferrara, Italy
- 16:00-16:20 **A Model of the Elastic Energy of a Bifurcated Wafer: A Benchmark of the Analytical Solution vs. the ANSYS Finite Element Analysis**
Vincenzo Vinciguerra, STMicroelectronics, Italy
- 16:20-16:40 **Electrically Switchable Intervalley Excitons with Strong Two-phonon Scattering in Bilayer WSe₂**
Mashaal M. Altairy, University of Jeddah, Saudi Arabia
- 16:40-17:00 **Resistive Switching in Prussian Blue Analog Films**
Christian K. Muller, University of Applied Sciences Zwickau, Germany
- 17:00-17:20 **Sustainable Synthesis of Highly Stable Copper Particles with Low-temperature Sintering Capability**
Jessica Pereira, University of Nottingham, United Kingdom
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- 17:20-17:35 **BREAK**
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- 17:35-17:55 **Use of Polymer Micropillar Arrays as Templates for Bioanalytical Assays**
Matthias Geissler, National Research Council Canada, Canada
- 17:55-18:15 **Understanding Potential-driven Ion Separations at Solvated Electrified Interface**
Venkateshkumar Prabhakaran, Pacific Northwest National Laboratory, USA
- 18:15-18:35 **Stress Avalanches of Polyethylene Terephthalate Fiber Reinforced Concrete Beams During Flexure**
Zhuang Liu, Applied Materials, USA
- 18:35-18:55 **Ab Initio Calculations for Void Swelling Bias in a and d-plutonium**
Babak Sadigh, Lawrence Livermore National Laboratory, USA

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PARALLEL SESSION-II

E-Poster Presentations
(Each Talk 7 Minutes+3 Minutes Q&A)

- 10:00-10:10 **Origin of Particle Defects on Cleaned GaSb Substrate**
Guiying Shen, Chinese Academy of Sciences, China
- 10:10-10:20 **Synthesis and Characteristics of ZnGa₂O₄ Polycrystalline Films by Sol-Gel Method Using Rapid Heating**
Satoshi Ishii, Tokyo Denki University, Japan
- 10:20-10:30 **Effect of Growth Conditions on Luminescence Properties of CVD Nanodiamonds with SiV and GeV Color Centers**
Sergey Grudinkin, ITMO University, Russian Federation
- 10:30-10:40 **The Effect of Silanized Bentonite on Rheological Behavior of Polymer Blends**
Zuzana Mičicová, Alexander Dubcek University of Trencin, Slovak Republic
- 10:40-10:50 **Effect of Different Types of Plasticizers on the Properties of Elastomeric Blends Filled with Biopolymer**
Juliána Vršková, Alexander Dubcek University of Trencin, Slovak Republic
- 10:50-11:00 **Influence of Filler on Structural and Surface Properties of Elastomeric Composites**
Róbert Janík, Alexander Dubcek University of Trencin, Slovak Republic
- 11:00-11:10 **Electroconductive Coatings Based on Poly(L-DOPA)-functionalized Graphene**
Anna Blacha, Silesian University of Technology, Poland
- 11:10-11:20 **Colloidal Synthesis of NaSbS₂ Based Mixed Ionic-electronic Conductor: The Role of Temperature, Ligand and Precursor**
Maria Zubair, University of Limerick, Ireland
- 11:20-11:30 **Formation of Quaternary and Pentanary CuZnGeS₄ (CZGS) Nanorods and 1-D CuZnSnGeS₄ (CZTGS) and Using Colloidal Routes with In-situ Partial Cation-exchange Mechanism**
Mohini Mishra, University of Limerick, Ireland
- 11:30-11:40 **First-principles Study of Structural, Elastic, Mechanical and Electronic Properties of Martensitic Transformation of FeX (X=Pt, Pd)**
Z. Zerrougui, Setif 1 University, Algeria
- 11:40-11:50 **Improving the Superconducting Characteristics of Single-Crystal FeTeSe by Hydration Method**
Valeriy Timofeev, National Academy of Sciences of Ukraine, Ukraine
- 11:50-12:00 **Manufacture and Characterization of Benzoxazine Resin with 5% v/v açai Biomass Composites**
Cirlene Fourquet Bandeira, UniFoa - Volta Redonda University Center, Brazil
- 12:00-12:10 **A Comparative Spectroscopic Study of Polyvinyl Alcohol and Pectin Films Loaded with Silver Nanostructures with Different Sizes and Shapes with Tuneable Plasmonic and Electric Properties**
Lourdes Araceli Granja Alvear, Yachay Tech University, Ecuador

12:10-12:25 BREAK

Young Researcher Presentations

(Each Talk 10 Minutes+5 Minutes Q&A)

- 12:25-12:40 **Multifunctional Starch/Graphene Oxide/Fe₃O₄ Nanocomposites with Multiple Stimuli Responsive Properties**
Hiran Chathuranga, Queensland University of Technology, Australia
- 12:40-12:55 **Dual-mode Surface-enhanced Raman Scattering Sensors Assembled from Graphene Plasmonic Nanoresonator on Photoactive SOI**
Shan Zhang, Ningbo University, China
- 12:55-13:10 **Broccoli-like Silver Phosphate Nanoparticles Supported on Green Nanofiber Membrane for Visible-light Driven Photodegradation Towards Water Pollutants**
Xu Jin, Beijing Institute of Fashion Technology, China
- 13:10-13:25 **Fabrication of Sm-Co Magnets Using Electrodeposition from Aqueous Solution and R-D Process**
Jung Ho Park, Sungkyunkwan University, Republic of Korea
- 13:25-13:40 **Electromagnetic Interference Shielding Performance of Multilayered Metallic Thin Films: Theoretical and Experimental Data**
Hyun Jun Kwon, Sungkyunkwan University, Republic of Korea
- 13:40-13:55 **Fabrication of Organic-Inorganic Hybrid Perovskite Single Crystal Lateral Heterojunction and its Application in Optoelectronic Devices**
Hu Zhang, Anhui University, China
- 13:55-14:10 **Air-stable Photodetector with High Specific Detectivity Based on Single-wall Carbon Nanotube/silicon Heterojunctions**
Zhao Yiming, Chinese Academy of Sciences, China
- 14:10-14:25 **Clean Water Generation by Utilizing the Photothermal Conversion Properties of Magnetite and Carbon Black Found in E-waste**
Md. Nahian Al Subri Ivan, The Hong Kong Polytechnic University, Hong Kong
- 14:25-14:40 **Hierarchical Urchin-like Cu_xCo_{3-x}O₄ Spinels as Oxygen Evolution Reaction Catalysts in Alkaline Anion Exchange Membrane Water Electrolysers**
Rose Anne Acedera, University of the Philippines, Philippines
- 14:40-14:55 **Biodegradable and Injectable Poly (vinyl alcohol) Microspheres in Silk Sericin-based Hydrogel for the Controlled-release of Antimicrobials: Application to Deep Full-thickness Burn Wound Healing**
Bianza Moise Bakadia, Huazhong University of Science and Technology, China
- 14:55-15:10 **Strengthening the Re-free Second-generation Single Crystal Superalloy by Constructing g/g̅ Phase Interface with Low Energy**
Xipeng Tao, Chinese Academy of Sciences, China
- 15:10-15:25 **Comparison of Passivation Ability of CaOH⁺ and OH⁻ on Steel Bar in Concrete: Experiments and DFT Study**
Yumei Nong, Guangxi University, China
- 15:25-15:40 **Fibrillated Bacterial Cellulose Liquid Carbene Bioadhesives for Mimicking and Bonding Oral Cavity Surfaces**
Juhi Singh, Nanyang Technological University, Singapore
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- 15:40-15:55 **BREAK**
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- 15:55-16:10 **Modification of Optical Parameters of Solid Polymer Electrolyte Films for Optoelectronic Device Applications**
Sunil Kumar, Kuvempu University, India

- 16:10-16:25 **Intrinsic Magnetism in van Der Waals Semiconductors in Their 2D Limit**
Ellenor Geraffy, Technion, Israel Institute of Technology, Israel
- 16:25-16:40 **Nanostructured (Sn,Ti,Nb)_xO₂ Solid Solution for Gas Sensing Applications**
Elena Spagnoli, University of Ferrara, Italy
- 16:40-16:55 **Revealing Oxidation Mechanisms of TiAlN Coatings Inside Oxygen-saturated Lead-Bismuth Eutectic**
Essam Serag, University of Namur, Belgium
- 16:55-17:10 **High-Voltage Stabilization of O₃-Type Layered Oxide for Sodium-Ion Batteries by Simultaneous Tin Dual Modification**
Tengfei Song, University of Birmingham, United Kingdom
- 17:10-17:25 **Development of Flexible, Self-powered Gas Sensor Based on Poly(vinylidene fluoride)/MoS₂-BaTiO₃ Nanocomposites**
E. C. Elhadrami, Qatar University, Qatar
- 17:25-17:40 **Modeling of More Stable and Higher Yield Organic and Hybrid Perovskite Solar Cells Based on Carbon Nanotubes (CNTs)**
Guy Maurel Dzifack Kenfack, University of Maroua, Cameroon
- 17:40-17:55 **Coal Polymer Composites Prepared by Fused Deposition Modeling (FDM) 3D Printing**
Shuyang Zhang, University of Tennessee, Knoxville, USA
- 17:55-18:10 **Characterization of Deposited Conductive Ink Layers for Fitness and Use as Rapid Prototyped RF Components**
Christopher Bolton, New Jersey Institute of Technology, USA

We wish to see you @ **FUTURE MATERIALS-2023**

Organising Partner

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