



European Materials Research Society

# 2025 Spring Meeting

May 26 – 30 | Strasbourg Convention Centre

[View symposium details](#)

## SYMPOSIUM U

Sustainable nanomaterials healthcare technologies

Oral sessions : BRUXELLES – GROUND FLOOR

Poster sessions : ETOILE – FIRST FLOOR

*Symposium Organizers:*

Ángel SERRANO- AROCA, Universidad Catolica de Valencia, Biomaterials & Bioengineering Lab, Spain

Ashutosh Kumar DUBEY, Department of Ceramic Engineering, Indian Institute of Technology (BHU) Varanasi, India

Hajar MALEKI, Department of Chemistry, University of Köln, Germany

Sachchida Nand TRIPATHI, Kotak School of Sustainability, Indian Institute of Technology Kanpur, India

Yogendra Kumar MISHRA (Main organizer), Mads Clausen Institute, University of Southern Denmark, Denmark

[www.european-mrs.com](http://www.european-mrs.com)

Monday May 26

U01 Plasmonic Nanobiosensing

View session abstracts

08:30	3	Atomically Flat Gold Microplates as a Novel Platform for Biosensors <b>NERETINA Svetlana (Invited)</b>
09:00	2996	Specific, Label-Free and Real-Time Sensing of Organophosphates using a Novel Field-Effect Biosensor <b>POOJA</b>
09:15	2849	PVP-capped gold and silver nanozymes for advanced wound care <b>PETRALIA Salvatore</b>
09:30	2801	Gold capped silver nanorods as SERS substrates for multiplex detection of gram positive and negative bacteria and determination of minimum inhibitory concentration of antibiotics <b>SENAPATI Sneha</b>
09:45	1292	Plasmonic sensing patch based on nanoparticle assemblies for mapping biomarkers <b>CHEN Jennifer</b>

Monday May 26

U02 Fibrous Nanomaterials for Healthcare

View session abstracts

10:30	1190	Engineering regenerated silk fibroin for its release from gelatin films with neuroprotective properties and 4D printing of self-deploying scaffolds for endoluminal tissue egeneration <b>VALENTINI Luca (Invited)</b>
11:00	2977	Stimulus-sensitive textile fibres for on-demand therapy <b>TRONCI Giuseppe</b>
11:15	2361	Bio-based Polyester Fibres for Sustainable Textile Manufacture <b>BROOKER Charles</b>
11:30	2228	Creep and Hardness of Dental Composites: A Nanoindentation Comparison of Short Fiber Reinforced and Particle Reinforced Materials <b>TARJÁNYI Tamás</b>
11:45	948	A nano-delivery platform based on lactate oxidase-functionalized cell membrane and MnO2 for immunomodulation of osteosarcoma <b>Zhao Yifan</b>

Monday May 26

U03 Nanocomposites for Healthcare 1

View session abstracts

13:45	3065	4D-Printed Nanocomposites for Soft and Hard Tissue Engineering <b>CHATTERJEE Kaushik (Invited)</b>
14:15	3095	Development of Hydrogene Releasing Hybrid Microaerogels through Combination of Black Bioactive Glass Nanoparticles and Bisphosphonate Modified Silk Fibroin for Managing Osteosarcoma <b>MALEKI Hajar</b>
14:30	2986	Selective and Responsive Antimicrobial Biomaterials for Combating Drug-resistant Bacterial Infections <b>LI Peng</b>
14:45	2839	Optimizing Bone Regeneration: Mechanoregulation-Driven Healing with SLMProduced Ti64 Implants <b>MISHRA Yogendra Kumar</b>
15:00	2791	Advances in Sustainable Stimuli-Responsive Nanoscale Platforms for Biomedical Applications <b>CEDRUN MORALES Manuela</b>
15:15	2905	Green synthesis of nanoparticles by plasmas and their biological applications <b>KAUSHIK Nagendra Kumar</b>
15:30	2703	In Silico Approaches for Designing Sustainable Materials: Advancing Green Healthcare and Beyond <b>SINGH Ajay Vikram</b>
15:45	2205	3D-Printed Pyrolytic Carbon Microlattices for Bone Tissue Engineering <b>ISLAM Monsur</b>

Monday May 26

U04 Piezomaterials for Healthcare

View session abstracts

16:30	2675	Piezoelectricity and dynamic electrical stimulation towards improving osteogenic and antibacterial response <b>DUBEY Ashutosh Kumar (Invited)</b>
17:00	2838	A new source of energy in the human body: Solid-liquid triboelectric nanogenerators for battery-free, smart vascular grafts <b>MIDDLETON Herbert</b>
17:15	3038	Exploring the feasibility of fabricating functionally graded metal-ceramic components by spark plasma sintering for dental implants <b>Jayasree Rentala</b>

17:30	2725	Architecture and Material Optimization of nano-structure Metamaterials for Biomolecule Detection in Terahertz <b>KHAND Heena</b>
17:45	2724	Detection and Analysis of Biological Particles using Terahertz Impedance Spectroscopy <b>SENGUPTA Rudrarup</b>
18:00	152	Energy harvesting and removal of drug pollutants using calcium copper titanate particles <b>KAJA Kushal Ruthvik</b>
18:15	150	Dual-Function PDMS-ZnS:Cu Composite for Self-Powered Triboelectric Energy Harvesting and Mechanoluminescent Safety Monitoring <b>HAJRA Sugato</b>

Tuesday May 27

U05 Nanomaterials for Drug Delivery 1

[View session abstracts](#)

08:30	2558	Methylene Blue Functionalize MWNTs for an efficient targeted drug delivery systems <b>GUPTA Vinay (Invited)</b>
09:00	188	Biodegradable Iontophoretic Patch for Sustainable Drug Delivery <b>KANG Seung-Kyun</b>
09:15	2129	Lipid Nanocapsules Mimic the Effects of GLP-1 Receptor Agonists on Glucose-Induced Insulin Secretion and Glucose Tolerance <b>BEHZADIFAR Shakila</b>
09:30	1807	Effect of salt concentration and electric field on the internal droplet dynamics and crack formation in bio-colloidal solutions <b>NATH Kalpita</b>
09:45	1042	Photochemical preparation of emissive and photothermal gold-nanoclusters and investigation of electron-rich ligand effect on their optical properties. <b>Butera Ester</b>

Tuesday May 27

U06 Nanocomposites for Healthcare 2

[View session abstracts](#)

10:30	824	Antimicrobial Material Technologies for Biomedical Applications <b>SERRANO-AROCA Ángel (Invited)</b>
-------	-----	---

11:00	2684	Bioengineered Chitosan-Fish Collagen Composites: A Sustainable Approach for Skin Healing <b>ASSIS Marcelo</b>
11:15	72	Cervicare: Advancing Point-of-Care Diagnostics for Cervical Cancer <b>RAWAT Reema</b>
11:30	153	Detection of biogenic amine histamine using triboelectric nanogenerator integrated biodegradable sensor <b>PANDA Swati</b>
11:45	2952	Investigation on the role of Hha-tomB toxin-antitoxin system in the antibacterial activity of ZnO tetrapod with Salmonella Typhimurium <b>VERMA Suresh K.</b>

Tuesday May 27

U07 Magnetic Nanoparticles for Healthcare

[View session abstracts](#)

13:45	2179	Investigation of cytotoxic properties of Ni/NiO Nanoparticles synthesized under magnetic field <b>DAS Gobind (Invited)</b>
14:15	190	Correlation of Magnetic Nanoparticles Assemblies on Heat Performance for Magnetic Hyperthermia <b>SADEGHI Ehsan</b>
14:30	1315	Diffusion-Controlled Synthesis of Bone-Mimetic Biomaterials <b>YANG Sung Ho</b>
14:45	241	Development and Characterization of Sustainable Bovine Serum Albumin-Based Sponges for Perfluorooctane Sulfonate Removal <b>KHOURY Luai</b>
15:00	375	Nano-dimensional Liquid Metals in Bio Applications <b>KALANTAR-ZADEH Kourosh</b>
15:15	342	Near-infrared light triggered CO-release by photoCORM functionalized diamond nanoparticles <b>Mayerhoefer Elisabeth</b>
15:30	658	Early Diagnosis of Alzheimer's Disease using Semiconductor-Metal Nanoheterostructure-Enhanced SERS Detection of Aβ Oligomers <b>CHIU Yen Ling</b>

Tuesday May 27

U08 Hybrid Materials for Nanosensing

[View session abstracts](#)

16:30	93	Highly Stable Resistive Switching Performance of ZnO-PMMA Hybrid Nanocomposite ReRAM <b>Sharma Sanjeev Kumar (Invited)</b>
17:00	2847	Advancing Sustainable Production of Critical Metals: Innovations and Applications in Technology and Healthcare <b>SARSWAT Prashant</b>
17:15	208	Fabrication and characterization of CD-Fe MOF for the detection and destruction of cancer cell <b>MAITI Sayani</b>
17:30	485	Label-Free Gold Nanocluster Sensors for Ultrasensitive Detection of Biological Analytes in Complex Matrices <b>CHIECHIO Regina Maria</b>
17:45	888	Nanoparticle-Based Medical Nanodevices for Cancer Nanomedicine <b>KOMATSU Naoki</b>
18:00	1319	Microplasma-Engineered Silver/Nanodiamond-Based Nanocomposites for Surface-Enhanced Raman Scattering Detection of Folic Acid <b>Angela Stefanny</b>
18:15	1525	Graphene Field-effect Transistor Biosensors for Ultrasensitive Glutamate Detection in Brain Disorders <b>ABRANTES Mafalda</b>

Wednesday May 28

U09 2D Materials for Healthcare

[View session abstracts](#)

08:30	377	Nano-dimensional Liquid Metals in Bio Applications <b>KALANTAR-ZADEH Kourosh (Invited)</b>
09:00	2630	Protein-Enabled Size-Selective Defect-Sealing of Atomically Thin 2D Membranes for Dialysis and Nanoscale Separations <b>KIDAMBI Piran</b>
09:15	1742	2D-Pnictogens for nanomedicine: Harnessing Their Chemical Evolution <b>CONGOST-ESCOIN Pau</b>
09:30	2354	Characterization of nitrogen doped MOCVD graphene for electronic device applications <b>RAJAURA Rajveer Singh</b>

09:45	1302	Osteoblastic Differentiation of Human Adipose-Derived Mesenchymal Stem Cells on P3HT Thin Polymer Film <b>CAMPIONE Paola</b>
-------	------	---

Wednesday May 28

U10 Carbon Nanomaterials for Healthcare

[View session abstracts](#)

10:30	33	Bioinspired Core-shell Carbon Nanodots and their Supramolecular Systems: One-pot Synthesis, Optical Properties and Biomedical Applications. <b>PETRALIA Salvatore (Invited)</b>
11:00	434	Unraveling the Nano-Veil Effect: Graphene Oxide's Role in Marine Bacterial Lysis <b>REDKAR Neha</b>
11:15	2438	Carbon nanodots- $\beta$ -cyclodextrin-aurine: synthesis, characterization and supramolecular system. <b>PETRALIA Salvatore</b>
11:30	908	CO2 activation and conversion on pristine and functionalized TiVC MXene: DFT Insights <b>KUMAR Kamal</b>
11:45	1778	Nickel-Modified Laser-Induced Graphene based Wearable Microsupercapacitors for Temperature Monitoring <b>Panghal Abhishek</b>

Wednesday May 28

UP03 Poster session 1

[View session abstracts](#)

13:45	01_1022	GSH-Responsive Degradation of NIR Dye-Anticancer Agent Conjugates for Enhanced Bioimaging and Targeted Therapy <b>Park Suyoung</b>
13:45	02_1120	Investigation of the interaction between carbon based nanostructured materials and human cells through $\gamma$ -potential measurements <b>Maugeri Ludovica</b>
13:45	03_1314	Creation of Multiple Types of Superparamagnetic Nanoclusters for Simultaneous Multi-Antigen Immunoassays Using Magnetic Particle Spectroscopy <b>TAKAHASHI Mari</b>
13:45	04_1355	LD-1 and L-3: Dual-Functional Fluorescent Probes for Lipid Droplet Imaging and Membrane-Targeted Photodynamic Therapy <b>Lee Yerim</b>

13:45	05_1356	A Novel Probe for Selective Photodynamic Antimicrobial Therapy Against Gram-Positive Bacteria <b>Cho Chaewoon</b>
13:45	06_1357	Proinflammatory detection of nano-, micro plastic models using a genetically-modified THP-1 cell <b>Kimura Tsuyoshi</b>
13:45	07_1514	Surface Modified TiO <sub>2</sub> Nanotubes with Ti <sub>3</sub> C <sub>2</sub> T <sub>x</sub> MXene for Biomedical Application <b>GARLAPALLY Raghavendra</b>
13:45	08_1561	Development of a Novel Nanobody Targeting Staphylococcus Aureus Extracellular Adherence Protein for Enhanced Detection and Treatment <b>Zhao Yifan</b>
13:45	09_1632	Colloids of Hydroxyapatite and Fluorapatite with Antibacterial Doping for multifunctional coatings <b>MOUKHTAR HABIB GERGIS FANOUS Kirolos</b>
13:45	10_1704	Multifunctional hybrid biomaterials based on hydroxyapatite loaded with antibiotic <b>BUSTIUCEL Sergiu</b>
13:45	11_1705	Composite hydrogels based on calcium phosphates with applications in medicine <b>GHEORGHIT Daniela-Florentina</b>
13:45	12_1796	Hyaluronic acid-based click-Hydrogels: Electro-stimulated wound healing assessment and Molecular Dynamics assembly studies <b>ARNAU ROCA Marc</b>
13:45	13_1928	Decellularized ECM-Based Hybrid Nanofibers for Superior Mechanical Properties and Cell Growth <b>KIM Chae Hwa</b>
13:45	14_2113	A Novel Core-Shell Structures for Cell Encapsulation with Enhanced Cell Viability and Controlled Therapeutic Release <b>LEE Dahae</b>
13:45	15_219	Electron Transfer Mediator Modulates Type II Porphyrin-Based Metal-Organic Framework Photosensitizers for Type I Photodynamic Therapy <b>ZHUANG Jiahao</b>
13:45	16_221	Development and Evaluation of Ultrasound-Assisted Solvent Extraction of Polycyclic Aromatic Hydrocarbons from Membrane-Packed Biota Samples Followed by GC–MS/MS Analysis <b>NAZAL Mazen</b>
13:45	17_2275	Multifunctional Cationic Gemini Surfactants: Advancing Gene Delivery and Biomedical Coating Applications <b>DAHAL Homen</b>
13:45	19_2378	Exploiting Optical Asymmetry in N-Doped Chiral Carbon Dots and Their Application in Fluorescence OFF-ON Sensing of Hg <sup>2+</sup> and L-Cysteine <b>BHATTACHARYA Angana</b>

13:45	20_2499	Eco-Friendly ZnO Nanoparticles Integrated into Electrospun Mats: Pioneering Advances in Biomedical Applications <b>MISHRA Mitali</b>
13:45	21_2570	Tetrapods-Chitosan Composites for Food and Healthcare Technologies <b>ABDULLAH Hira</b>
13:45	22_2632	Advanced Artificial Vascular Grafts with Heparin-Dopamine Functionalized Surfaces for Enhanced Blood Compatibility and Antithrombotic Properties <b>KIM Chae Hwa</b>
13:45	23_2878	Water Dispersible Nanohybrid Pentacene-loaded Carbon-Nanodots: Preparation, Optical and Photothermal Properties. <b>Maugeri Ludovica</b>
13:45	24_2926	Post-Synthetic Functionalization of a Bismuth-Based MOF for embedding the slow H <sub>2</sub> S-releasing donor GSGa <b>CAMBRIA Maria Teresa</b>
13:45	25_2957	Non-Enzymatic Electrochemical Biosensing of Dopamine by Glucose-derived Carbon Nanodots <b>Consoli Antonino</b>
13:45	26_2959	Emissive and photothermal Carbon-Nanodots based on L-proline: optical properties and pH-sensing investigation. <b>Caruso Ivana Maria</b>
13:45	27_3027	The uptake and toxicity of an Eu/Bi-Based MOF on human brain endothelial cells <b>PARATORE Vincenzo</b>
13:45	28_3100	Biological transistor (bioFET) for the specific and label-free sensing of CRP in unprocessed blood <b>Babbar Shubham</b>
13:45	29_530	A Metabolism-Oriented Strategy to Directly Generate Photosensitizer-Engineered Extracellular Vesicles from Cancer Cells <b>Wang Dandan</b>
13:45	30_57	Effect of Aging on Hardness and Corrosion Resistance of WE43 Magnesium Alloy <b>Duygulu Özgür</b>

Thursday May 29

## U12 Advanced Nanomaterials for Healthcare

[View session abstracts](#)

08:30	1409	Nanozymes as ROS-regulators counteracting neurodegenerative loops <b>BOSELLI Luca (Invited)</b>
09:00	2587	Eggshell-derived Nano-Bioactive Glass: An Eco-friendly Alternative for Dental Applications <b>Salama Rania</b>

09:15	2305	Laser-synthesized Si nanoparticles for biomedical and tissue engineering applications <b>AL-KATTAN Ahmed</b>
09:30	1768	Microstructure and mechanical properties of hot forged ZX10 alloy during rolling: Effect of texture in biological properties <b>SHUKLA Aman Jyoti</b>
09:45	1998	Toward new bioactive dressings for the emergency treatment of traumatic wounds with a high risk of infection <b>Scarabelli Romain</b>

**Thursday May 29**  
**U13 Nanostructures for Drug Delivery 2**

[View session abstracts](#)

10:30	1410	Reaching the brain with complementary targeted biomimetic approaches to overcome the BBB <b>CASTAGNOLA Valentina (Invited)</b>
11:00	1918	Design and Implementation of Thermoresponsive Chitosan-Alginate Micelles as Drug Delivery Systems <b>WIECEK-CHMIELARZ Justyna</b>
11:30	248	Polyphenol Self-Assembled Systems for Enhanced Tissue Regeneration <b>MA Baojin</b>
11:45	1126	Curcumin-loaded carbon nanodots- $\beta$ -cyclodextrin: synthesis, characterization and anti-inflammatory activity. <b>Maugeri Ludovica</b>

**Thursday May 29**  
**U14 Smart Materials for Biomedical**

[View session abstracts](#)

13:45	1622	A Targetless Approach for Precise Solid Tumor Theranostics Using Smart Magnetic Nanocomposites <b>Bañobre-López Manuel (Invited)</b>
14:15	1311	Magnetic separation of lysosomes from wild-type and NPC1 knockout A549 cells using superparamagnetic-plasmonic hybrid nanoparticles <b>TAKAHASHI Mari</b>
14:30	1051	Quantitative Evaluation of Protein Corona Forming and Tumor Cell Targeting Capabilities of RGD Motif Conjugated on Poly(glycerol) Grafted Fluorescence Nanodiamond <b>Yu Jie</b>
14:45	1803	Tetrapods based Smart Materials for Advanced Technologies <b>MISHRA Yogendra Kumar</b>

**Thursday May 29**  
**U15 Nanomaterials based Sensing and Imaging**

[View session abstracts](#)

16:30	2516	Enhancing Magnetic Resonance Imaging with Superparamagnetic Nanoparticles <b>RANDHAWA Jaspreet Kaur (Invited)</b>
17:00	115	Enhanced Contrast Functionality Via Gold Nanoparticle-loaded Capsules: Investigating In-vivo Cell Tracking Potential Via Multimodal Imaging <b>SINGH Sneha</b>
17:30	2560	Novel gating mechanism employed on nano bio-FET towards real-time, point-of-care diagnostics in human whole blood <b>GARIKA Vijay Kumar</b>
17:45	2567	Overcoming the Challenges Associated with Solution Gating in Field-Effect Transistor-Based Biosensors <b>GARIKA Vijay Kumar</b>
18:00	2005	Design and Development of Stable Near-IR Organic Photodetectors with Enhanced Interface Engineering for Long-term Cardiac Signal Monitoring <b>KIM Byung Gi</b>
18:15	1843	Towards Light-Induced Wireless Modulation of Bioelectrical Signals for Cancer Treatment <b>MITROI Manuela</b>