

2ND INTERNATIONAL CONGRESS ON

MATERIALS SCIENCE AND ENGINEERING

JULY 09–11, 2025

**THE UNIVERSITY CARLOS III OF MADRID
PUERTA DE TOLEDO CAMPUS MADRID
SPAIN**

HOSTING UNIVERSITY



INSTRUCTIONS FOR SPEAKERS

1. **Keynote Talks:** Keynote speakers will be allotted 25 minutes to present their results, followed by a 5 minutes discussion period.
2. **Invited Talks:** Invited speakers will be allotted 17 minutes to present their results, followed by a 3-minute discussion period.
3. **Oral Talks:** Oral speakers will be allotted 12 minutes to present their results, followed by a 3-minute discussion period.
4. Please do not exceed the allotted time slot.
5. Speakers should have their presentations saved on a USB memory stick.
6. It is suggested to email a copy of the presentations to us as back up.
7. Please prepare the presentation in PPT files, PDF is not recommended.
8. Basic AV setup will be provided: laser pointer, cordless mike, desktop mike, sound system.
9. Laptops equipped with Windows 10, Office 2010 Pro English (Word, Powerpoint, Excel) and Adobe Reader are provided.
10. If your presentation files contain movies, please make sure that they are well formatted and connected to the main files. You may check your slides during the breaks.
11. Projectors are equipped with standard VGA connection ports. Mac users should bring their own adapter cord.
12. Please re-check this program prior to the conference to confirm if any changes have been made to your session.
13. Conference volunteers will move the mic during Q&A. Audience with questions may raise hand to receive the mic.

INSTRUCTIONS FOR POSTER

1. Maximum poster size is A0.
2. Push pins for attaching the poster to the board will be provided.
3. Poster presenters will be directed to the designated board at the start of the poster session.
4. Author must be present to provide details and answer questions during the selected poster session times.

MATERIALS EUROPE 2025

JULY 09–11, 2025 | UNIVERSIDAD CARLOS III DE MADRID, SPAIN

DAY-1 JULY 09, 2025

09:00–09:40 Registrations

09:40–10:00 Opening: Welcome and Announcements by [Prof. Rosa Maria De La Cruz](#)

Session: Materials Science and Engineering

Session Chair: [Rosa Maria De La Cruz](#), Universidad Carlos III de Madrid, Spain
[Yves Huttel](#), ICM-SCIC, Spain

10:00–10:30 **Keynote Talk:** *In-situ* Investigation of Nanomaterials with Advanced Electron Probes
[Maria Varela Del Arco](#), Universidad Complutense de Madrid, Spain

10:30–10:50 **Invited Talk:** Thermoplastic Coatings on Basalt Fibers: A Strategy to Achieve Interfacial Self-Healing in Composites
[Alessandro Pegoretti](#), University of Trento, Italy

10:50–11:10 **Invited Talk:** Spark Plasma Sintering of High-Tc Sodium–Bismuth Titanate Ferroelectric Ceramics That Exhibits Superior Piezoelectric Performance
[Chun-Ming Wang](#), Shandong University, China

11:10–11:40 COFFEE BREAK

11:40–12:10 **Keynote Talk:** Advances in Curvilinear Magnetism: Cylindrical Magnetic Nanowires
[Manuel Vazquez Villalabeitia](#), ICM-SCIC, Spain

12:10–12:40 **Keynote Talk:** Features of Hydrogels and Composites for Selective Adsorption (Online)
[Alain Ponton](#), Paris Cite University and National Center for Scientific Research, France

12:40–13:00 **Invited Talk:** The Influence of Oxide Layer Formation on Multimetallic Materials on their Catalytical Performance
[Piotr Zabinski](#), AGH University of Krakow, Poland

13:00–14:00 LUNCH BREAK

Session: Materials Science and Engineering

Session Chair: [Rosa Maria De La Cruz](#), Universidad Carlos III de Madrid, Spain
[Clement Kanyinda Malu](#), University Rey Juan Carlos, Spain

14:00–14:30 **Keynote Talk:** Functional Materials for Energy Storage Applications: Extending Lifetime and Electrochemical Performance
[Fatima Montemor](#), Instituto Superior Tecnico, Universidade de Lisboa, Portugal

14:30–14:50 **Invited Talk:** Cellulose Nanocrystals Functionalized with Waste Vegetable Oils for Sustainable Applications in Advanced Materials
[Loredana Maiuolo](#), The University of Calabria, Italy

14:50–15:10 **Invited Talk:** Computer Simulation Aspects of Nanoparticle and Nanodevice Design
[Panagiotis Grammatikopoulos](#), Universidad de Castilla-La Mancha, Spain

15:10–15:40	COFFEE BREAK
15:40–16:00	Invited Talk: Unusual Properties of Interlocked Metal Organic Nanocages Antonino Famulari , Politecnico di Milano, Italy
16:00–16:20	Invited Talk: Anisotropy and Distribution of Exchange Interactions in $\text{Fe}_{80}\text{B}_{20}$ Thin Films: The Role of PLD Ar Pressure Jimena Soler , ICMM-CSIC, Spain
16:20–16:40	Invited Talk: Metallic Nitride Multilayers for Bipolar Plates of Proton Exchange Membrane Water Electrolyzers Carlos Prieto , ICMM-CSIC, Spain
17:00 ONWARDS	NETWORKING COCKTAILS

DAY-2 JULY 10, 2025-ROOM A

Session: Advanced Functional Materials and Characterization

Session Chair: Elisa García Tabarés, Universidad Carlos III de Madrid, Spain
Vanessa de Castro, Universidad Carlos III de Madrid, Spain

- 09:30-09:50** **Invited Talk:** Bilayer Magnetic Composite Systems Made of Few-layer Graphene and Amorphous Magnetic Microwires for Stealth Technology
Maria Pilar Marin Palacios, Universidad Complutense de Madrid, Spain
- 09:50-10:10** **Invited Talk:** Design, Screening and Characterization of Microfluidic-synthesized Lipid Nanocarriers: a Synchrotron Study
Ilaria Clemente, University of Siena, Italy
- 10:10-10:30** **Invited Talk:** Excellent Piezoelectric Properties and Electrical Resistivity of Bismuth Titanate-Ferrite
Qian Wang, Shandong University, China
- 10:30-10:50** **Invited Talk:** Expanding Horizons of Metal-phenolic Networks by Tailoring Electrochemical Strategies (Online)
Maddalena Corsini, University of Siena, Italy
- 10:50-11:20** **COFFEE BREAK**
- 11:20-11:40** **Invited Talk:** Unlocking High-strength Aluminum for LPBF: The Role of Nanoparticles in Integrated Microstructure and Process Optimization
Sophia A.Tsipas, Universidad Carlos III de Madrid, Spain
- 11:40-12:00** **Invited Talk:** Bioactive Metal Complexes with Thiourea Derivatives
Aleksandra Drzewiecka-Antonik, Institute of Physics, Polish Academy of Sciences, Poland
- 12:00-12:20** **Invited Talk:** Methods of High Entropy Alloys Oxidation
Katarzyna Skibinska, AGH University of Krakow, Poland
- 12:20-12:35** **Oral Talk:** Characterization of Lipidic Nanoformulations Encapsulating the Antifungal Drug Natamycin
Luigi Talarico, University of Siena, Italy
- 12:35-12:50** **Oral Talk:** Tuning Magnetism in Graphene Nanoribbons *via* Strain and Adatoms
Pablo Moles, Universidad Complutense de Madrid, Spain
- 12:50-14:00** **LUNCH BREAK**

Session: Advanced Functional Materials and Characterization

Session Chair: Rosa María De La Cruz, Universidad Carlos III de Madrid, Spain
Sophia A.Tsipas, Universidad Carlos III de Madrid, Spain

- 14:00-14:20** **Invited Talk:** STEM Characterization of III-V Nanowires using 4D-STEM
Elisa García Tabares, Universidad Carlos III de Madrid, Spain
- 14:20-14:40** **Invited Talk:** Microstructure and Mechanical Behavior of Zr-based Ferritic Ods Steels Processed By Different Powder Metallurgical Routes
Vanessa de Castro, Universidad Carlos III de Madrid, Spain
- 14:40-14:55** **Oral Talk:** Mechanical Strain-induced Degradation of Magnetic Properties in FeCo-2V Alloy
Sirapob Toyting, University of Cambridge, UK

14:55–15:30 **COFFEE BREAK**

15:30–15:45 **Oral Talk:** Extremely Low Resistivity Size Effect Enabled by Epitaxial Growth of Nickel-Cobalt Alloy Thin Films for Next-generation Interconnects
Ju Young Sung, Ajou University, South Korea

15:45–16:00 **Oral Talk:** Achievement of Single-phase Body-centered Cubic CoMo Alloy Thin Films with Reduced Resistivity Size Effect
Ye Bin Lim, Ajou University, South Korea

16:00–16:15 **Oral Talk:** Porous Silicon Structural, Morphological and Optical Properties Enhancement After Doping with Nd_2O_3
Ismail Selmi, University of Tunis El Manar & LPV-CRTEn, Tunisia

16:15–16:30 **Oral Talk:** Innovative Bio-composites for Noise Reduction
Dehenedet Tassaw, Lodz University of Technology, Poland

16:45–17:15 **POSTER PRESENTATIONS**

DAY–2 JULY 10, 2025–ROOM B

Session: Biomaterials and Biomedical Applications

Session Chair: **Mario Italo Trioni**, National Research Center of Italy, Italy
Alex Fok, University of Minnesota, USA

09:30–09:50 **Invited Talk:** Infrared Nanosecond Pulse Laser Polishing Improves the Corrosion Behaviour in Simulated Body Fluid (SBF) of Ti6Al4V Fabricated by Electron Beam Powder Bed Fusion (EB-PBF) and Laser Beam Powder Bed Fusion (LB-PBF)
Juan Ignacio Ahuir-Torres, Liverpool John Moores University, UK

09:50–10:10 **Invited Talk:** Characterization of Pharmaceutical Tablets under Diametral Compression using DIC and SEM
Alex Fok, University of Minnesota, USA

10:10–10:30 **Invited Talk:** Nano-topographic Cues: The Role in T Cell Stimulation and Immunotherapeutic Applications
Mark Schwartzman, Ben-Gurion University of the Negev, Israel

10:30–10:50 **Invited Talk:** Surface Modification of Cellulose with Amino Groups for Antibacterial Functionality
Paola Costanzo, University of Calabria, Italy

10:50–11:20 **COFFEE BREAK**

11:20–11:35 **Oral Talk:** Electrospinning Multi-Polymer Nanofibers Based on Gelatin, Sodium Alginate, PVA, and Pectin for Biomedical Applications
Huynh-Ngoc-Truc Nguyen, National Yang Ming Chiao Tung University, Taiwan

11:35–11:50 **Oral Talk:** Cell/derived ECM Loaded PCL/Chitosan Nanofibers for Improved Periodontal Tissue Regeneration Strategies (Online)
Mafalda Santos, Universidade de Lisbon, Portugal

Session: Novel Materials for Energy and Environment Applications

- 11:50–12:10** **Invited Talk:** H₂O and CO₂ Interaction with Perovskitic (110) Surface: The Case of SrFeO₃
Mario Italo Trioni, National Research Center of Italy, Italy
- 12:10–12:30** **Invited Talk:** Composition, Structure and Phonon Softening in High Entropy Alloys Based on PbTe Thermoelectrics
Norbert Marcel Nemes, Universidad Complutense de Madrid, Spain
- 12:30–12:50** **Invited Talk:** Enhancing Supercapacitor Performance Through Mn-doped ZnO: A Defect Engineering Approach
Ameen Uddin Ammar, National Institute for Research and Developmet of Isotopic and Molecular Technologies, Romania

12:50–14:00 LUNCH BREAK

Session Chair: Paola Costanzo, University of Calabria, Italy
Norbert Marcel Nemes, Universidad Complutense de Madrid, Spain

- 14:00–14:20** **Invited Talk:** Stoichiometry Engineering of Sputtered Molybdenum Oxide Thin Films as Hole-selective Contact for Silicon Solar Cells
Maria Miritello, CNR-IMM, Italy
- 14:20–14:40** **Invited Talk:** 4-Nitrophenol Reduction and Antibacterial Activity using Green-synthesized Ag–Cu Bimetallic Nanocatalysts Immobilized on Modified Kaolin
Stavros Pouloupoulos, Nazarbayev University, Kazakhstan

Session: Advanced Functional Materials and Characterization

- 14:40–15:00** **Invited Talk:** The Optical Properties of Mn Based Halide Compound Semiconductors
Bingsuo Zou, The Guangxi University, China
- 15:00–15:30** **COFFEE BREAK**
- 15:30–15:50** **Invited Talk:** Cobalt Ferrite Nanochessboard
Abdellah Lisfi, Morgan State University, USA
- 15:50–16:10** **Invited Talk:** Synergistic Strengthening-toughening Design and Multiscale Construction Mechanisms of Carbon Aerogels
Fuhua Xue, Harbin Institute of Technology, China
- 16:10–16:25** **Oral Talk:** Atomic Layer Deposition of MoO₂ Thin Films for Next-generation DRAM Capacitor Electrodes
Kyung Joon Lee, Ajou University, South Korea

16:45–17:15 POSTER PRESENTATIONS

- ME001** **Title:** Hierarchical, Flower-like, Nanostructured Layers of Biophenols as Green Corrosion Inhibitors
Regina Fuchs-Godec, The University of Maribor, Slovenia
- ME002** **Title:** Acoustic and Optical Responses of Hollow Au Nanoparticles to Femtosecond Laser Irradiation
Behnoush Khammar, The Polytechnic University of Valencia, Spain
- ME003** **Title:** Study of Bio-based Fillers and Additives for the Production of Biodegradable Biopolymers
Gioele Foltran, University Ca' Foscari of Venice, Italy

- ME004** **Title:** Structure and Morphology of Hydrothermally Synthesized Sm-doped Ceria
Kolyo Kolev, Institute of Electrochemistry and Energy Systems "Academician Evgeni Budevski",
 Bulgarian Academy of Sciences, Bulgaria
- ME005** **Title:** Graphene Oxide as a Support for the Active Components of the Catalyst
Darja Pecar, University of Maribor, Slovenia
- ME006** **Title:** Surface Engineering of Metal Powders: Scalable Modification *via* Fluidized Bed Processing
Neyder Aleixer Sandoval Vargas, Universidad Carlos III de Madrid, Spain
- ME007** **Title:** Photo-degradation of Organic Dye Mixtures and Ciprofloxacin Antibiotic Utilizing Spray
 Deposited Li-Nb co-doped SnO₂ Thin Films
Gouranga Maharana, National Institute of Technology, India
- ME008** **Title:** A Transformer-based Discontinuity Detection Method for Numerical Simulation of Porous
 Materials
Jiaqian Dan, The Harbin Institute of Technology, China
- ME009** **Title:** Phosphorous Doped Si Nanowires for High-capacity Battery Anodes and High-power
 Supercapacitors
Sumana Kumar, IIT Bombay, India
- ME010** **Title:** Development of a Power Generator Based on a Snap-action Bistable Structure and Shape
 Memory Alloy Springs
Chi Hsiang Pan, National Chin-Yi University of Technology, Taiwan
- ME011** **Title:** An Artemisia Sphaerocephala Krasch-based Food-grade Superabsorbent Polymer for Food
 Industrial Applications
Lai Chun Him Nathanael, The Hong Kong Polytechnic University, Hong Kong

DAY-3 JULY 11, 2025-ROOM A

Session: Polymer Science and Engineering

Session Chair: Luis Saucedo Mora, The Polytechnic University of Madrid, Spain
Ming-Wei Wu, National Taipei University of Technology, Taiwan

- 09:30-09:50** **Invited Talk:** Numerical Strategies to Enhance the use of Topologically Optimized Designs with Real Load and Material Conditions, and a Stiffness-Volume Space to Perform AI Accelerated Designs
Luis Saucedo Mora, The Polytechnic University of Madrid, Spain
- 09:50-10:10** **Invited Talk:** Obtaining Polypyrrole from Biomass Catalytic Pyrolysis and their Application in Epoxy Resin Composites
Pamela Hidalgo, Universidad Catolica de Temuco, Chile
- 10:10-10:25** **Oral Talk:** Magnetic NiFe_2O_4 -PVDF Composites: Combining Flexibility, Stability, and Superior Magnetic Properties for Functional Applications
Sarah Baayyad, Mohammed VI Polytechnic University, Morocco
- 10:25-10:40** **Oral Talk:** Biocompatible BCZT Core@ CuFe_2O_4 Shell Structure Embedded in PVDF Matrix: A Sustainable Approach for High-efficiency Magnetoelectric Energy Harvesting
Chaymae Bahloul, Mohammed VI Polytechnic University, Morocco
- 10:40-10:55** **Oral Talk:** Advanced Reaction Pathways in the Atomic Layer Deposition of TiN Thin Films for Reduced Resistivity
Kyeong Hyeon Choi, Ajou University, South Korea

10:55-11:30 **COFFEE BREAK**

Session: Advanced Materials Synthesis and Characterization

- 11:30-11:50** **Invited Talk:** The Effects of Pore Channel Features on the Fatigue Performances of Selective Laser Melted Dievar Mold Steel
Ming-Wei Wu, National Taipei University of Technology, Taiwan
- 11:50-12:05** **Oral Talk:** Construction of Perovskite Heterostructures for Next-Generation DRAM Capacitor Fabrication *via* Atomic Layer Deposition
Se Eun Kim, Ajou University, South Korea
- 12:05-12:20** **Oral Talk:** Physical and Mechanical Properties of Pumice and Clay Reinforced Aluminum Syntactic Foams Produced By Pressure Infiltration Technique
Ibrahim Abdusselam Tantoglu, Istanbul Technical University, Turkey

12:20-12:30 **Closing**

DAY-3 JULY 11, 2025-ROOM B

Session: Nanostructured Materials

Session Chair: Patricia Marcela De La Presa, Universidad Complutense de Madrid, Spain
Rosa María De La Cruz, Universidad Carlos III de Madrid, Spain

- 09:30-09:50** **Invited Talk:** Ball Milling and Annealing Effect in Structural and Magnetic Properties of Copper Ferrite by Ceramic Synthesis
Patricia Marcela De La Presa, Universidad Complutense de Madrid, Spain
- 09:50-10:10** **Invited Talk:** Enhanced Superballistic Transport in Antidot Graphene Superlattices
Jorge Estrada Alvarez, Universidad Complutense de Madrid, Spain
- 10:10-10:25** **Oral Talk:** Highly Uniform Resistive Switching Performance in Conductive-Bridge Random Access Memory via Two-dimensional Electron Gas at Oxide Interfaces
Chae Hyun Lee, Ajou University, South Korea
- 10:25-10:40** **Oral Talk:** Iron-based MOFs and MOF Composites for Sustainable Wastewater Treatment in the Circular Economy
Victor Ramos, Universidad Carlos III de Madrid, Spain
- 10:40-10:55** **Oral Talk:** Ultrafast Hydrogen Sensing Technology Based on Nanoscale Metal Filaments
In Su Oh, Ajou University, South Korea

10:55-11:30 **COFFEE BREAK**

Session: Nanostructured Materials

- 11:30-11:45** **Oral Talk:** High-performance Thin-film Transistors Enabled by Two-dimensional Electron Gas at Oxide Heterostructures
Sang Hyeok Lee, Ajou University, South Korea
- 11:45-12:00** **Oral Talk:** Exploration of Alternative ALD Reactions to Reduce the Resistivity of TiN Thin Films for DRAM Capacitor Electrodes
Byeong Jun Jeon, Ajou University, South Korea
- 12:00-12:15** **Oral Talk:** Automotive Textile Thermal Resistance Enhancement for High Temperature Functionalization
Jose Abreu, The University of Minho, Portugal

12:20-12:30 **Closing**

NOTES

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PROFESSIONAL CONFERENCE ORGANIZERS

Prism Scientific Services Pty Ltd., a premier conference organizer, envisions a sustainable future for the Science and Engineering . Our goal is to unite experts and stakeholders through conferences, fostering collaboration and advancing sustainable practices. Committed to curating conferences on materials science, renewable energy and eco-friendly technologies, we catalyze the industry's development. Emphasizing interdisciplinary collaboration, our events address complex challenges. Dedicated to sustainability, we minimize footprints and promote eco-friendly venues, inspiring environmental responsibility. As catalysts for positive change, guiding the energy industry toward an innovative, environmentally responsible future in conferences that prioritize sustainable development.

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WE WISH TO SEE YOU AT MATERIALS EUROPE-2026



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