

# 9<sup>th</sup>

INTERNATIONAL CONFERENCE ON

# MATERIALS SCIENCE & NANOTECHNOLOGY



Jun 22 - 23, 2026



Barcelona, Spain

Venue: Alexandre Hotel  
Frontair Congress



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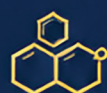
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# 9<sup>th</sup> International Conference on **MATERIALS SCIENCE & NANOTECHNOLOGY** Jun 22 - 23, 2026 at Barcelona, Spain

Meeting Hall - Sitges

Scientific Program

Day -1: June 22, 2026

Registrations Open (08:00 - 08:30)

Welcome Ceremony (08:30 - 09:00)

**Moderator:**

Jennifer LH Johnson, *NuvOx Pharma, USA*

Keynote Talks

**Lia Krusin-Elbaum,**

*The City College of New  
York - CUNY, USA*

**09:00-09:30**

Electrical route to chiral magnon-charge interconversion in Weyl magnets

**Malcolm Xing,**

*University of Manitoba,  
Canada*

**09:30-10:00**

Bio-inspired and Sensing-Enabled Sutures for Precision Medicine

**Nguyen Quang Chinh,**

*Eötvös Loránd University,  
Hungary*

**10:00-10:30**

Universal Description of the Indentation Size Effect from crystalline to amorphous structures

Group Photo & Refreshment Break (10:30 - 10:50)

## Scientific Session I

### Session Chairs:

Tilo Söhnel, *New Zealand* & Cristina Satriano, *Italy*

#### **Jan Novotný,**

*Jan Evangelista Purkyne  
University in Usti nad  
Labem, Czech Republic*

**10:50-11:15**

#### **Plenary Speaker:**

Analysis of Magnetron Deposition  
of Sandwich Multilayer Coating on  
Chrome-Nickel Steel

#### **Patrik Dobron,**

*Charles University,  
Czech Republic*

**11:15-11:40**

#### **Plenary Speaker:**

Application of advanced in-situ  
techniques for investigation of  
deformation behavior in Mg alloys

#### **Kamal Choudhary,**

*Johns Hopkins University,  
USA*

**11:40-12:00**

Agentic AI for Materials Design with  
AtomGPT.org

#### **Stuart R. Miller,**

*UL Research Institutes,  
USA*

**12:00-12:20**

High throughput computational  
and experimental methods for  
accelerated electrochemical  
materials discovery

#### **Jintu Fan,**

*The Hong Kong  
Polytechnic University,  
Hong Kong*

**12:20-12:40**

Robust Mix-charged Polyzwitterionic  
Hydrogels for Ultra-efficient  
Atmospheric Water Harvesting and  
Evaporative Cooling

#### **Daria Drozdenko,**

*Charles University,  
Czech Republic*

**12:40-13:00**

Low-alloyed Mg alloys with high  
strength and moderate ductility

**Lunch Break @ Restaurant 13:00 - 14:00**

## Scientific Session II

### Session Chairs:

Lia Krusin-Elbaum, USA, Malcolm Xing, Canada & Roman Sobolewski, USA

**Roman Sobolewski,**  
*University of Rochester,  
USA*

**14:00-14:25**

**Plenary Speaker:**

Terahertz Inverse Spin Hall and Rashba-Edelstein Effects in Studied Spintronic Nanostructures

**Cristina Satriano,**  
*University of Catania, Italy*

**14:25-14:50**

**Plenary Speaker:**

Biological and Catalytical Properties of Core-Shell Au@Pd Nanorods for Theranostic Applications

**Beatriz Eleutério Goi,**  
*Universidade Estadual Paulista Júlio de Mesquita Filho UNESP, Brazil*

**14:50-15:10**

Design of Mn(II) e Ni(II)-NHC complexes as photocatalysts for radical polymerization under visible light and 3D printing

**Luis Roso,**  
*Universidad de Salamanca, Spain*

**15:10-15:30**

Structured Light for Material Processing

**Tilo Söhnle,**  
*University of Auckland, New Zealand*

**15:30-15:50**

Temperature-dependent structural studies on the Skyrmion Hosting Material,  $\text{Cu}_2\text{OSeO}_3$

**Lhoussain Mllaoui,**  
*Universite de Toulon, France*

**15:50-16:10**

Synthesis, microstructure and photocatalytic properties of  $\{(1-x)\text{BiOBr}/(x)\text{Bi}_2\text{O}_3\}$  composite for Ciprofloxacin photodegradation

**Kazuteru Shinozaki,**  
*Yokohama City University, Japan*

**16:10-16:30**

Visualization of trap distribution in  $\text{SrAl}_2\text{O}_4:\text{Eu}_{2+}, \text{Dy}_{3+}$  revealed by simulations of persistent luminescence based on a random walk model

**Refreshment Break @ 16:30-16:45**

<b>Ashish L Sarode,</b> <i>Sanofi, USA</i>	<b>16:45-17:05</b>	Potent liver-tropic mRNA lipid nanoparticles: ApoE-mediated delivery through an LDLR-independent uptake mechanism
<b>Jennifer LH Johnson,</b> <i>NuvOx Pharma, USA</i>	<b>17:05-17:25</b>	Fluorocarbons and treatment of hypoxic tissue
<b>Shrirang S Karve,</b> <i>Sanofi, USA</i>	<b>17:25-17:45</b>	PEGylated lipid screening, composition optimization, and structure–activity relationship for mRNA lipid nanoparticles
<b>Eliane Trovatti,</b> <i>University of Araraquara - UNIARA, Brazil</i>	<b>17:45-18:05</b>	Lysine grafted poly(lactic acid): An intrinsically antimicrobial polymer
<b>Jorge Gonzalez,</b> <i>UL Research Institutes, USA</i>	<b>18:05-18:25</b>	Accelerating OER Catalyst Discovery with High-Throughput Spark Ablation
<b>Yuemin Liu,</b> <i>Prairie View A&amp;M University, USA</i>	<b>18:25-18:45</b>	A Quantum Mechanical MP2 Study of the Electronic Effect of Nonplanarity on the Carbon Pyramidalization of Fullerene C60

## Panel Discussion & Closing the Day 1

## Day-2: June 23, 2026

### Moderator:

**Karolina Bronczyk**, *Adam Mickiewicz University, Poland*

### Keynote Talks

**Wen Zhong**,  
*University of Manitoba,  
Canada*

**09:00-09:30**

Engineering Living Interfaces: Multi-Functional Hydrogel Platforms for Real-Time Wound Monitoring and Therapy

**Gregory A Hudalla**,  
*University of Florida, USA*

**09:30-10:00**

Engineering an indoleamine 2,3-dioxygenase immunotherapy

### Scientific Session-III

#### Session Chairs:

**Wen Zhong**, *Canada* & **Roger Bresoli Obach**, *Spain*

**Roger Bresoli Obach**,  
*Institut Quimic de Sarrià  
CETS Fundacio Privada,  
Spain*

**10:00-10:25**

**Plenary Speaker:**  
Direct Visualization and Modeling of AC Dielectrophoretic Nanoparticle Dynamics

### Refreshment Break @ 10:25-10:45

**Giuseppe Nenna**,  
*ENEA, Italy*

**10:45-11:10**

**Plenary Speaker:**  
Photomobile materials, innovative approaches: from soft robotics to energy harvesting through 4D process printing

**Dongling Ma**,  
*Institut national de la  
recherche scientifique,  
Canada*

**11:10-11:35**

**Plenary Speaker:**  
Strategies for Enhancing Visible-Light-Driven Photocatalysis

**Jianyi (Jay) Zhang**,  
*University of Alabama at  
Birmingham, USA*

**11:35-11:55**

Heart Regeneration and Graft Associated Arrhythmia in Large Mammals

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**Kenshi Matsumoto,**  
*Kyoto University, Japan*

**11:55-12:15**

Inter-element miscibility and well-designed nanoparticles guide the formation of unprecedented ordered alloy phase

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**Zhiyu Tian,**  
*The Hong Kong Polytechnic University, China*

**12:15-12:35**

DIW-printed self-powered intelligent wearable electronics based on TENG for sports injury rehabilitation

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**Jingcheng Hao,**  
*Shandong University, China*

**12:35-12:55**

DIW-printed self-powered intelligent wearable electronics based on TENG for sports injury rehabilitation

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**12:55-13:50 Lunch Break @ Restaurant**

**Posters Session 13:50-14:50**

**Poster Judge:**

**Chalet Tan, University of Tennessee Health Science Center, USA**

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**Bohdan Chumak,**  
*Lithuanian Energy Institute, Lithuania*

**ICMSN 1**

Properties of wormwood and its potential use as a biocatalyst

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**Wenhong Ding,**  
*Wuhan University of Science and Technology, China*

**ICMSN 2**

Active Control of Residual Stress in Steel via Alloy-Driven Spatiotemporal Phase Transformation Kinetics under Non-Uniform Thermal-Mechanical Fields

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**Leng Huachao,**  
*The Hong Kong Polytechnic University, China*

**ICMSN 3**

Solvent-Driven Electrospinning of Porous Fibrous Scaffolds: From Far-Field to Near-Field

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**Carolina Caicedo Cano,**  
*Unidad Central del Valle del Cauca -UCEVA, Colombia*

**ICMSN 4**

Development of PLA-curcumin biopolymeric films for pH monitoring in chronic wounds

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**Xiangyu Zhang,**  
*National University of  
Singapore, Singapore*

**ICMSN 5**

A Humidity-Insensitive System for  
Edible Oil Spoilage Detection with  
Molecularly Imprinted Polymers

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**Lukasz Poloczek,**  
*Łukasiewicz Research  
Network - Upper Silesian  
Institute of Technology,  
Poland*

**ICMSN 6**

Development of a Predictive  
Model for Oxide Growth and  
Decarburization during Heat  
Treatment of 30CrMoNiV5-11 Steel

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**Adam Zieliński & Hanna  
Purzynska,**  
*Łukasiewicz Research  
Network - Upper Silesian  
Institute of Technology,  
Poland*

**ICMSN 7**

Degradation Mechanisms and Creep  
Performance of 30CrMoNiV5-11  
Steel during Long-Term High-  
Temperature Exposure

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**Krzysztof Radwanski,**  
*Łukasiewicz Research  
Network - Upper Silesian  
Institute of Technology,  
Poland*

**ICMSN 8**

Formation and Characteristics of  
Fe–O Oxides in Steel Processing

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**Skander Ktifa,**  
*Centre de Recherches  
et des Technologies de  
l'Energie Technopôle de  
Borj-Cédria, Tunisia*

**ICMSN 9**

High performance of Ag/AlN/  
Si Schottky diode: Study of the  
DC sputtering power effect on its  
electrical properties

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## Scientific Session IV

### Session Chairs:

Gregory A Hudalla, USA & Jianyi (Jay) Zhang, USA

**Maria João Camacho,**  
*INIAV - Instituto nacional  
de Investigação Agrária e  
Veterinária, IP, Portugal*

**14:50-15:10**

Smart Sensor Technologies for  
Sustainable Agriculture: New Frontiers  
in Nematode Detection

**Luca Piantanida,**  
*The University of British  
Columbia Okanagan,  
Canada*

**15:10-15:30**

DNA-PAINT as a precise analytical  
platform for nanoscale metrology

**Chalet Tan,**  
*University of Tennessee  
Health Science Center, USA*

**15:30-15:50**

Long-circulating nanobody confers  
durable prophylaxis against SARS-  
CoV-2 Omicron infection

**Fereshteh Sourani,**  
*Erich Schmid Institute of  
Materials Science, Austrian  
Academy of Sciences,  
Austria*

**15:50-16:10**

Process-Structure-Bioresponse  
Relationships in LPBF-Fabricated Zr-  
based Bulk Metallic Glass

**Sara Manuela Duque  
Londoño,**  
*Unidad Central del Valle del  
Cauca (UCEVA), Colombia*

**16:10-16:30**

Polymeric Biocomposites with  
Nanostructured Hydroxyapatite:  
Additive Processing and Evaluation for  
Biomedical Applications

### Refreshment Break @ 16:30-16:45

**Karolina Bronczyk,**  
*Adam Mickiewicz University,  
Poland*

**16:45-17:05**

Safety of new food contact materials:  
Migration and sorption studies

**RASHAD AL-GAASHANI,**  
*Hamad Bin Khalifa  
University (HBKU)/Qatar  
Environment and Energy  
Research Institute (QEERI),  
Qatar*

**17:05-17:25**

One-Step Synthesis of Cellulose-  
Based Biochar Functionalized  
with Fe<sub>2</sub>O<sub>3</sub>/Fe<sub>3</sub>O<sub>4</sub> and ZnO  
Nanocomposites for Advanced Water  
Treatment

Panel Discussion & Closing day 2

VIRTUAL SESSION

9<sup>th</sup> International Conference on

# MATERIALS SCIENCE & NANOTECHNOLOGY

June 22 - 23, 2026 at Barcelona, Spain

**CENTRAL EUROPEAN TIME ZONE (CET)**



Join Zoom Meeting

Meeting ID: 824 7277 6475

Pass code: F428CZ



## Scientific Program - Virtual Session

Day 1 - June 22, 2026

<b>Amra Ali Abutalib Alhassni,</b> <i>AL Baha University, Saudi Arabia</i>	<b>13:30-13:45</b>	<b>E-Poster:</b> Study of the Influence of Gamma Radiation on the Optical Properties of Self-Assembled In <sub>0.52</sub> GaAs <sub>0.48</sub> Quantum Dots Grown on (100) GaAs Substrates by Molecular Beam Epitaxy using Bismuth as a surfactant
<b>Alon Grinberg Dana,</b> <i>Technion - IIT, Israel</i>	<b>13:45-14:15</b>	<b>Keynote Talk:</b> The agentic age of predictive chemical kinetics
<b>Agata Lange,</b> <i>Warsaw University of Life Sciences, Poland</i>	<b>14:15-14:35</b>	When Graphene Oxide Meets Silver Nanoparticles: Unlocking a New Era of Antibacterial Textile Coatings
<b>Dominika Zabiegaj,</b> <i>Northumbria University, UK</i>	<b>14:35-14:55</b>	Investigating the Impact of Air Pollutants on Lung Surfactant through Interactions of Carbon Nanotube–TiO <sub>2</sub> Nanoparticle Mixtures with DPPC Monolayers
<b>Monica Mir,</b> <i>Institute for Bioengineering of Catalonia (IBEC), Spain</i>	<b>14:55-15:15</b>	Implantable sensors for early diagnosis
<b>Fernando Ávila,</b> <i>Polytechnic University of Valencia - Univeristy of Granada, Spain</i>	<b>15:15-15:35</b>	Effect of clay content on the fracture performance of unstabilized rammed earth
<b>David Huitink,</b> <i>University of Arkansas, USA</i>	<b>15:35-15:55</b>	Encapsulated phase-change materials as a pathway to enhance thermal capacitance functionality in electronics temperature management
<b>Federica Carnamucio,</b> <i>Virginia Commonwealth University, USA</i>	<b>15:55-16:15</b>	Inhalable Metal-Complexed Liposomal Gemcitabine for Osteosarcoma Lung Metastases
<b>Su Ryon Shin,</b> <i>Harvard Medical School, Brigham and Women's Hospital, USA</i>	<b>16:15-16:45</b>	<b>Keynote Talk:</b> Nano- and Micro-engineered Biomaterials Directing Stem Cell Behavior for Regenerative Medicine and Biohybrid Soft Robots
<b>Abbas S. Milani,</b> <i>University of British Columbia, Canada</i>	<b>16:45-17:05</b>	Digital twinning of advanced manufacturing in the Industry 5.0 era: a thermoforming study

<b>Khaled Shaban,</b> <i>German Jordanian University, Jordan</i>	<b>17:05-17:25</b>	Development of eco-friendly epoxy coatings reinforced with nano-silica for corrosion protection of mild steel
<b>Closing the Day 1</b>		
<b>Day 2 - June 23, 2026</b>		
<b>Central European Time Zone (CET)</b>		
<b>Kenichi Kawano,</b> <i>Hiroshima University, Japan</i>	<b>09:00-09:20</b>	Curvature-sensing peptide functions as a membrane interfactant that glues small extracellular vesicles to cell membranes and enhances vesicle cellular uptake
<b>Takuma Kishimoto,</b> <i>Nagoya Institute of Technology, Japan</i>	<b>09:20-09:40</b>	Experimental and crystal plasticity finite element analysis of surface roughening in hollow sinking of microtubes
<b>Sam Hsien-Yi HSU,</b> <i>School of Energy and Environment, City University of Hong Kong, Hong Kong</i>	<b>09:40-10:10</b>	<b>Keynote Talk:</b> Harnessing Interfaces: Hybrid Materials for Energy Transformation and Waste Valorization
<b>Daoud Walid,</b> <i>City University of Hong Kong, China</i>	<b>10:10-10:35</b>	<b>Plenary Speaker:</b> Mechanical Energy Harvesting for Wearable Electronics and Power Systems
<b>Ni Ao,</b> <i>Southwest Jiaotong University, China</i>	<b>10:35-10:55</b>	<i>In situ</i> tomography of corrosion fatigue crack initiation in high-strength aluminum alloys
<b>Ibrahim Zawra,</b> <i>Rostock University, Germany</i>	<b>10:55-11:15</b>	Nauticast: Toward a Reduced-Order, Materials-Aware Digital Twin for Real-Time Fuel Prediction and Autonomous Propulsion Optimization
<b>Peter Kuznetsov,</b> <i>Siberian Branch of the Russian Academy of Sciences, Russia</i>	<b>11:15-11:35</b>	Anisotropic needle coke based on coal dissolved products
<b>Aleksei Dagman,</b> <i>Novolipetsk Steel (NLMK), Russia</i>	<b>11:35-11:55</b>	Investigation of effect of microalloying elements and hot rolling parameters on the strength of low-carbon steels
<b>Hayk Minassian,</b> <i>A. Alikhanian National Science Laboratory, Armenia</i>	<b>11:55-12:15</b>	Two photon absorption in $Ti_3C_2T_x$ MXene: interpretation of experiments

<b>Hatice Evlen,</b> <i>Karabük University, Turkey</i>	<b>12:15-12:35</b>	Advanced Functional Nanomaterials: From Design to Biomedical and Engineering Applications
<b>Meital Zilberman,</b> <i>Tel Aviv University, Israel</i>	<b>12:35-13:05</b>	<b>Keynote Talk:</b> Soy Protein as a Biomaterial
<b>Shani Shoham,</b> <i>Kinneret Limnological Institute, IOLR, Israel</i>	<b>13:05-13:25</b>	Microbe-mediated molybdenum hyperaccumulation in the marine sponge <i>Theonella conica</i>
<b>Medeina Mačiukėnaitė,</b> <i>Lithuanian Energy Institute, Lithuania</i>	<b>13:25-13:40</b>	<b>E-Poster:</b> Sustainable catalytic potential of mugwort biochar
<b>Dovilė Petrauskaitė,</b> <i>Lithuanian Energy Institute, Lithuania</i>	<b>13:40-13:55</b>	<b>E-Poster:</b> Strategy development for valorising by-products generated during burning landfill waste to produce eco-friendly building materials
<b>Regina Kalpokaitė-Dičkuvienė,</b> <i>Lithuanian Energy Institute, Lithuania</i>	<b>13:55-14:15</b>	Potential of oil shale ash in acid-based geopolymer production
<b>Jarosław Dziadek,</b> <i>Institute of Medical Biology PAS, Poland</i>	<b>14:15-14:35</b>	Advancing Antitubercular Drug Discovery: From Phenotypic Screening to Target Validation and Preclinical Evaluation
<b>Georg Amthauer,</b> <i>University of Salzburg, Austria</i>	<b>14:35-15:05</b>	<b>Keynote Talk:</b> Crystal chemistry of $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ (LLZO) garnet doped with Al, Ga, and Fe.
<b>Lefteris Danos,</b> <i>Lancaster Univeristy, UK</i>	<b>15:05-15:25</b>	Development of light harvesting structures for photovoltaic applications
<b>Lucía Bravo-Baranda,</b> <i>University of Valencia, Spain</i>	<b>15:25-15:45</b>	Self-organization of lung tumor spheroids in a type I collagen scaffold: a morphological study of epithelial-stromal interactions
<b>Mobbassar Hassan Sk,</b> <i>University of Cambridge, UK</i>	<b>15:45-16:05</b>	In-situ approaches to study process dynamics of material corrosion/ degradation
<b>Felice Alberto Sfregola,</b> <i>Università degli studi di Bari, Italy</i>	<b>16:05-16:25</b>	Predictive Finite-Element Modeling with Experimental Validation for Acoustophoretic Particle Sorting in SSAW Microfluidic Systems

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<b>Igor Fedin,</b> <i>The University of Alabama, USA</i>	<b>16:25-16:45</b>	II-V Semiconductor Quantum Dots as Short-Wave Infrared Emitters
<b>Hendrik Heinz,</b> <i>University of Colorado- Boulder, USA</i>	<b>16:45-17:15</b>	<b>Keynote Talk:</b> Advancing energy and environmental technologies through high-accuracy simulations
<b>Rodney Herring,</b> <i>University of Victoria, Canada</i>	<b>17:15-17:35</b>	Effectively and Efficiently Disinfecting and Cleaning Pollutants from Surfaces, Water and Air Using Fe doped TiO <sub>2</sub> Crystals

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Closing the Day 2

*We wish to see you again at*

10<sup>th</sup> International Conference on  
**MATERIALS SCIENCE &  
NANOTECHNOLOGY**

**June 21-22, 2027 in Paris, France (Hybrid Event)**

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