



3rd International Conference on SMART MATERIALS & STRUCTURES

March 27-28, 2025

Venue: SRH Berlin | University of Applied Sciences, Germany

Theme: "Fostering Tomorrow's Possibilities: Unveiling Innovations and Applications with Smart Materials"



Smart Materials 2025

<https://smartmaterialsconference.pagicle.com/>

The background of the page is a light gray gradient. In the lower half, there is a complex, abstract geometric pattern composed of various white and light gray shapes, including triangles, rectangles, and polygons, some of which are layered to create a 3D effect. The overall aesthetic is clean, modern, and technical.

Smart Materials 2025

08:30 - 09:00 Introduction & Open Ceremony

Plenary Presentations - 09:00 - 10:00 (1hr)

Honourable Chair-Person: **Klaus - Ulrich Neumann**

09:00 - 09:30 **Title: A Numeric Study of the Implementation of Boundary Conditions in Wavefields in 2 Dimensions**

Klaus - Ulrich Neumann, SRH Berlin University of Applied Sciences, Germany

09:30 - 10:00 **Title: Hybrid Functional Materials by Atomic and Molecular Layer Deposition - From Conductive Oxides to High Performance Polymer Reinforced Composites**

Roie Yerushalmi, The Hebrew University of Jerusalem, Israel

Refreshment & Coffee Break & Networking - 10:00 - 10:20 (20m)

Keynote Presentations - 10:20 - 11:50 (1h 30m)

10:20 - 10:50 **Title: From DNA to Genes and Text to Curricula: T-patterns, T-strings and T-societies**

Magnus S Magnússon, University of Iceland, Iceland

10:50 - 11:20 **Title: First-principles Theoretical Design of Atomic Layered Materials for Nanoelectronics Devices**

Yoshitaka Fujimoto, Kyushu University, Japan

11:20 - 11:50 **Title: Symmetry Breaking Induced by Chiral Nano-Inorganics**

Zhifeng Huang, The Chinese University of Hong Kong, China

Oral Presentations - 11:50 - 13:10 (1h 20m)

Conference Chair: Klaus-Ulrich Neumann

Sessions

Advanced Materials, Advanced Material Processing, Emerging Technologies & Applications, Material Science & Applications

11:50 - 12:10 **Title: Heat recuperation from a low tec pyrolysis & combustion device**
Thomas Pfeiffer, SRH Berlin University of Applied Sciences, Germany

12:10 - 12:30 **Title: Self-assembly of Periodic Nanostructures by Laser Stimulation**
Norbert Hampp, University of Marburg, Germany

- 12:30 - 12:50 **Title: Highly tunable Pickering emulsion/polymer systems: from colloids to functional surfaces**
Guy Mechrez, Volcani Institute, Agricultural Research Organization (ARO), Israel
- 12:50 - 13:10 **Title: Silk fibroin coating for sustained release of electrospun drug delivery systems**
Anna Baranowska-Korczync, Łukasiewicz Research Network – Lodz Institute of Technology, Poland

Memorable Group Photo & Tempting Buffet lunch (ESTRAL HOTEL BERLIN) - 13:10 - 14:00 (50m)

Oral Presentations Cont... - 14:00 - 16:00 (2h)

- 14:00 - 14:20 **Title: Waste-derived Silica-based porous solids for CO2 methanation**
Lidia Castoldi, Polytechnic University of Milan, Italy
- 14:20 - 14:40 **Title: Functional Gradient Design in Hybrid CNT-Graphene AI Composites**
Behzad Sadeghi, Erich Schmid Institute for Materials Science of the Austrian Academy of Sciences, Austria
- 14:40 - 15:00 **Title: Antifouling and drag reduction performances of ceramic-based coatings**
Mariarosa Raimondo, CNR ISSMC, Italy
- 15:00 - 15:20 **Title: New Contacts in HPGe Gamma-Ray Detectors Through Pulsed Laser Melting**
Walter Raniero, INFN-Laboratori Nazionali di Legnaro, Padua-Italy
- 15:20 - 15:40 **Title: Impact of Humidity on Epoxy Adhesive Interface Revealed by Neutron Reflectivity Technique**
Hiroyuki Aoki, Japan Atomic Energy Agency, Japan
- 15:40 - 16:00 **Title: Voltammetric detection of MO in river water at green and chemically synthesized Ag/MWCNT nanocomposite modified electrode**
Seleke J. Mokole, North-West University, South Africa

Refreshment & Coffee break & Networking - 16:00 - 16:20 (20m)

Oral Presentations Cont... - 16:20 - 18:00 (2h)

- 16:20- 16:40 **Title: Triboelectric nanogenerators: from theory to experiment**
Micheline Bejjani, American University in Dubai, UAE
- 16:40 - 17:00 **Title: Polymeric nanoparticles for the stabilization of Pickering emulsions**
Havazelet Bianco Peled, Technion - Israel Institute of Technology, Israel

- 17:00 - 17:20 **Title: Development of structure integrated supercapacitors as functional layer**
Sebastian Geier, German Aerospace Center, Germany
- 17:20 - 17:40 **Title: Engineered virus capture and cellular digestion using low-dimensional materials**
Yin-Ting Yeh, The Pennsylvania State University, USA
- 17:40 - 18:00 **Nanomaterial engineering for X-ray-activated photodynamic therapy**
Xujiang Yu, Shanghai Jiao Tong University, China

Video Presentations

- 18:00 - 18:20 **Title: Prediction of Hereditary Adenoma Polyposis Coli Colorectal Cancer using mRNA APC quantitative gene-expression, and the correlation with non-modifiable-factor**
Robert Tedjasaputra, University of Indonesia, Indonesia
- 18:20 - 18:40 **Title: Tao Calligraphy Field as a Powerful Integrative Medicine Technology**
Dr. Laure Le Corroller, Dr.& Master Sha Tao Academy, Canada

*** End of Day 1 ***

08:30 - 09:00 Introduction & Open Ceremony

Plenary Presentations - 09:00 - 10:00 (1hr)

Conference Chair: Antonia Iazzetti

09:00 - 09:30 **Title: Milestones & Recent Advances in Catalysis by Corrole Metal Complexes**

Zeev Gross, Technion – Israel Institute of Technology, Israel

09:30 - 10:00 **Title: Defossilizing fuels and chemicals**

Jean-Paul Lange, University of Twente, the Netherlands

Refreshment & Coffee Break & Networking - 10:00 - 10:20 (20m)

Keynote Presentations - 10:20 - 11:50 (1h 30m)

10:20 - 10:50 **Title: Model Systems for Heterogeneous Catalysts at the Atomic Scale: Can Surface Science Contribute**

Hans-Joachim Freund, Fritz Haber Institute - Max-Planck-Gesellschaft, Germany

10:50 - 11:20 **Title: Transition Metal Catalyzed Reactions as Valuable Tools in Natural Product Syntheses**

Uli Kazmaier, Saarland University, Germany

11:20 - 11:50 **Title: Transition metal-catalyzed domino reactions in the construction of polycyclic compounds of biological interest**

Antonia Iazzetti, Catholic University of the Sacred Heart, Italy

Oral Presentations - 11:50 - 13:10 (1h 20m)

Sessions

Metal-Based Catalysis, Computational Catalysis, CO₂ Conversion, Photocatalysis, Photocatalysis, Chemicals and Fine Chemistry, Surface Science Approaches, Enzymatic and Bioinspired Catalysis

11:50 - 12:10 **Title: Photocatalytic Water Splitting for the Production of Green Hydrogen as a Key Component for Carbon Neutrality**

Reinhard Schomäcker, Technische Universität Berlin, Germany

12:10 - 12:30 **Title: Propylene production by direct catalytic dehydrogenation of propane: the role of Ga presence in the catalyst formulation**

Antonia Infantes Molina, University of Málaga, Spain

12:30 - 12:50 **Title: Atomic-Scale Strain Effects in Binary Alloys: Unraveling the Role of Atomic Arrangements in Oxygen Reduction Reaction Activity**
Mailde S. Ozório, University of Copenhagen, Denmark

12:50 - 13:10 **Title: Lanthanides as promoter for Ni/Al₂O₃ catalysts for Sabatier reaction**
Elena Spennati, University of Genova, Italy

Memorable Group Photo & Tempting Buffet Lunch (ESTRAL HOTEL BERLIN) - 13:10 - 14:00 (50m)

Oral Presentations Cont... 14:00 - 16:00 (2h)

14:00 - 14:20 **Title: Dynamic effects in CO₂ electrolysis: *in situ* methods to understand changes in catalysts and interfaces**
Matthew T. Mayer, Helmholtz-Zentrum Berlin für Materialien und Energie Berlin, Germany

14:20 - 14:40 **Title: Nanostructured multienzyme cascades in the multicomponent synthesis of bioactive compounds**
Raffaele Saladino, University of Tuscia, Italy

14:40 - 15:00 **Title: Stereoselective Synthesis Mediated by Light and Electricity**
Fabrizio Medici, Università degli Studi di Milano, Italy

15:00 - 15:20 **Title: Sm₂O₃ doped CeO₂ supported Ni catalysts for H₂ production by reforming reactions**
Vicente Cortes Corberan, Institute of Catalysis and Petroleumchemistry (ICP), Spanish Council for Scientific Research (CSIC), Spain

15:20 - 15:40 **Title: Hydrogen Storage Using THF, TBAB, and Nanoparticles in Gas Hydrates**
Saeideh Babae, University of the Witwatersrand, South Africa

15:40 - 16:00 **Title: Two-dimensional Materials: Mechanical Properties of Films and Lattices**
Kin Liao, Khalifa University, UAE

Refreshment & Coffee Break & Networking - 16:00 - 16:20 (20m)

Oral Presentations Cont... - 16:20 - 18:00 (2h)

16:20 - 16:40 **Title: Sulfate radical-based advanced oxidation process for the removal of pyrimethanil from aqueous media**
Triantafyllos Albanis, University of Ioannina, Greece

- 16:40 - 17:00 **Title: Novel ultrasonic solidification technologies for magnesium alloy manufacturing**
Wei ZHAI, Northwestern Polytechnical University, China
- 17:00 - 17:20 **Title: First-principles assisted the design of high entropy thermoelectric materials based on half-Heusler alloys**
Na YAN, Northwestern Polytechnical University, China
- 17:20 - 17:40 **Title: Application of Luminous Marine Bacteria for Monitoring Toxicity of Selinite-Ions and Biosynthesis of Selenium Nanoparticles**
Nadezhda S Kudryasheva, Siberian Federal University, Russia
- 17:40 - 18:00 **Title: Design and analysis of wideband piezoelectric energy harvesters tuned with external electric fields**
Abdolreza Pasharavesh, Sharif University of Technology, Iran

Video Presentations

- 18:00 - 18:30 **Title: Smart fire-proofing and flame retardant materials for textile, wind energy and electric transmission fields**
Fei You, Nanjing Tech University, China
- 18:30 - 18: 50 **Title: RUNX1: a novel therapeutic target for myocardial infarction and ischemic stroke**
Weihong He, Sichuan University, China

*** End of Day 1 ***

08:00 - 08:30 Onsite Registration & Seating Arrangement

Keynote Presentations - 08:30 - 10:00 (1hr:30m)

Conference Chair: Klaus-Ulrich Neumann

08:30 - 09:00 **Title: Catalytic Membrane Reactors for Process Intensification**
Jürgen Caro, Leibniz University Hannover, Germany

09:00 - 09:30 **Title: Single-Atom Catalysts for the Efficient Conversion of Isobutene into Highly Branched Liquid Hydrocarbons**
M. Samy El-Shall, Virginia Commonwealth University, USA

09:30 - 10:00 **Title: Enhancing Dairy Equipment with Zinc Oxide-Doped Silicone: A Novel Approach to Biofilm Prevention and Mastitis Control**
Emily Hunt, West Texas A&M University, USA

Refreshment & Coffee Break & Networking - 10:00 - 10:20 (20m)

Keynote Presentations - 10:20 - 11:50 (1h 30m)

10:20 - 10:50 **Title: Engineering of metal nanoparticles for catalysis**
Karine Philippot, Université de Toulouse, France

10:50 - 11:20 **Title: The Mechanisms of the Fenton and Fenton-Like Reactions**
Dan Meyerstein, Ariel University, Israel

11:20 - 11:50 **Title: Cutting-edge nanostructured Electrocatalysts for CO₂ electrolysis**
Maria Victoria Martínez Huerta, Institute of Catalysis and Petrochemistry (ICP-CSIC), Spain

11:50 - 12:20 **Title: Theoretical design of nanoelectronics device materials using atomically thin layers**
Yoshitaka Fujimoto, Kyushu University, Japan

Oral Presentations - 12:20 - 13:00 (40m)

Sessions

Catalysis for Sustainable Energy, Industrial Catalysis and Process Optimization, Single-Atom Catalysis CO₂ Conversion, Photocatalysis, Chemicals and Fine Chemistry, Surface Science Approaches, Enzymatic and Bioinspired Catalysis, Advanced Materials, Advanced Material Processing, Emerging Technologies & Applications, Material Science & Applications

12:20 - 12:40 **Title: Integrated carbon capture and utilization based on bifunctional ionic liquids**
Jose Palomar, Autonomous University of Madrid, Spain

12:40 -13:00 **Title: Utilization of plasmonic and semiconductor nanomaterials for photocatalytic hydrogen production**
Sourav Rej, Czech Advanced Technology and Research Institute (CATRIN), Palacký University Olomouc, Czech Republic

Memorable Group Photo & Tempting Buffet lunch (ESTRAL HOTEL BERLIN) - 13:00 -13:50 (50m)

Oral Presentations Cont... - 13:50 - 16:10 (2h)

13:50 - 14:10 **Title: Removal of furazolidone from aquatic matrices: insights from hybrid g-C₃N₄/PS photocatalytic system**
Triantafyllos Albanis, University of Ioannina, Greece

14:10 -14:30 **Title: One-Pot Chemoenzymatic Cascade Reactions**
Ryszard Ostaszewski, Institute of Organic Chemistry PAS, Poland

14:30 - 14:50 **Title: A simple and novel siRNA delivery system for solid tumors**
Archibald James Mixson, University of Maryland Baltimore, USA

14:50 -15:10 **Title: Effective Sensing Mechanism for CO in SnO₂: A DFT study**
Felipe Lipsky, Universitat Jaume I, Castellón de la Plana, Spain

15:10 - 15:30 **Title: Harnessing light for a sustainable future: diverse applications of photocatalysis**
Minoo Tasbihi, SRH Berlin University of Applied Sciences, Germany

15:30 - 15:50 **Title: Can the Ce³⁺ and Ce⁴⁺ Cations on Ceria be Distinguished by the FTIR Spectra of Adsorbed CO?**
Konstantin Hadjiivanov, Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences, Bulgaria

15:50 - 16:10 **Title: OLED, a promising future display**
Win-long Chia, Fu Jen Catholic University, Taiwan

Refreshment & Coffee break & Networking - 16:10 - 16:30 (20m)

Poster Presentations - 16:30 - 18:00 (1h 30)

Title: Contactless Resistivity Measurements – A Method for extracting the experimental information

Klaus - Ulrich Neumann, SRH Berlin University of Applied Sciences, Germany

Title: Parameter extraction of PV panels – an experimental investigation

Klaus - Ulrich Neumann, SRH Berlin University of Applied Sciences, Germany

Title: Use of AI for the evaluation of the effects of steel corrosion in mining environments

María Luisa de la Torre, University of Huelva. Spain

Title: Stainless Steel Degradation by Sulphide Mining

Aguasanta Miguel Sarmiento, University of Huelva. Spain

16:30 - 18:00

Title: Alternatives to improve the concrete behavior in highly acidic environments

Jose Miguel Davila, University of Huelva, Spain

Title: Effects of Ni addition on the microstructure and mechanical properties of WC-10(Co, Ni) cemented carbides fabricated by spark plasma sintering

Delgermaa Mangal, Mongolian University of Science and Technology, Mongolia

Title: Mg(H₂O)₆²⁺ as the catalyst in a Fenton-Like Reactions

Anushka Lucas, Ariel University, Israel

Title: Reuse of Recycled Platinum from Spent Automotive Convertors for Synthesis of New CO Oxidation catalysts

Anna Vasileva, Bulgarian Academy of Sciences Bulgaria

Title: Preparation of Catalysts for Environmental Protection Using Recycled Platinum Group Metals from Spent Automotive Catalysts

Kaloyan Ivanov, Bulgarian Academy of Sciences Bulgaria

Title: Dinitrogen as an Efficient IR Probe Molecule for the Investigation of Ceria-containing Materials

Kristina Chakarova, Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences, Bulgaria

Title: Development material of Vehicle Lighting System Simulator

Dashdorj Ganbat, Mongolian University of Technology, Mongolia

Title: Development of new absorbents based on deep eutectic liquids for biogas desulfurization.

Marta Tandecka, Gdansk University of Technology

Poster Evalaution & Best Poster Awards

Conference Closing Ceremony

*****Memorable Group Photo & End of Conference*****

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