CONFERENCE PROGRAMME

15th - 18th September

E-MRS 2025 Fall Meeting

Conference and exhibition held at the Main Campus of the
Warsaw University of Technology
Plac Politechniki 1 - Warsaw, Poland

European Materials Research Society

Warsaw University of Technology

Polish Materials Science Society

Institute of Physics
Polish Academy of Sciences

CONFERENCE

PROGRAMME

15 - 18 September

E-MRS

2025 Fall Meeting

Conference Chairpersons

Andrzej MYCIELSKI

Institute of Physics
Polish Academy of Sciences
Poland

Joerg K.N. LINDNER

University of Paderborn
Germany

Rosaria PUGLISI

CNR - IMM
Italy

Sang Ouk KIM

KAIST
South Korea

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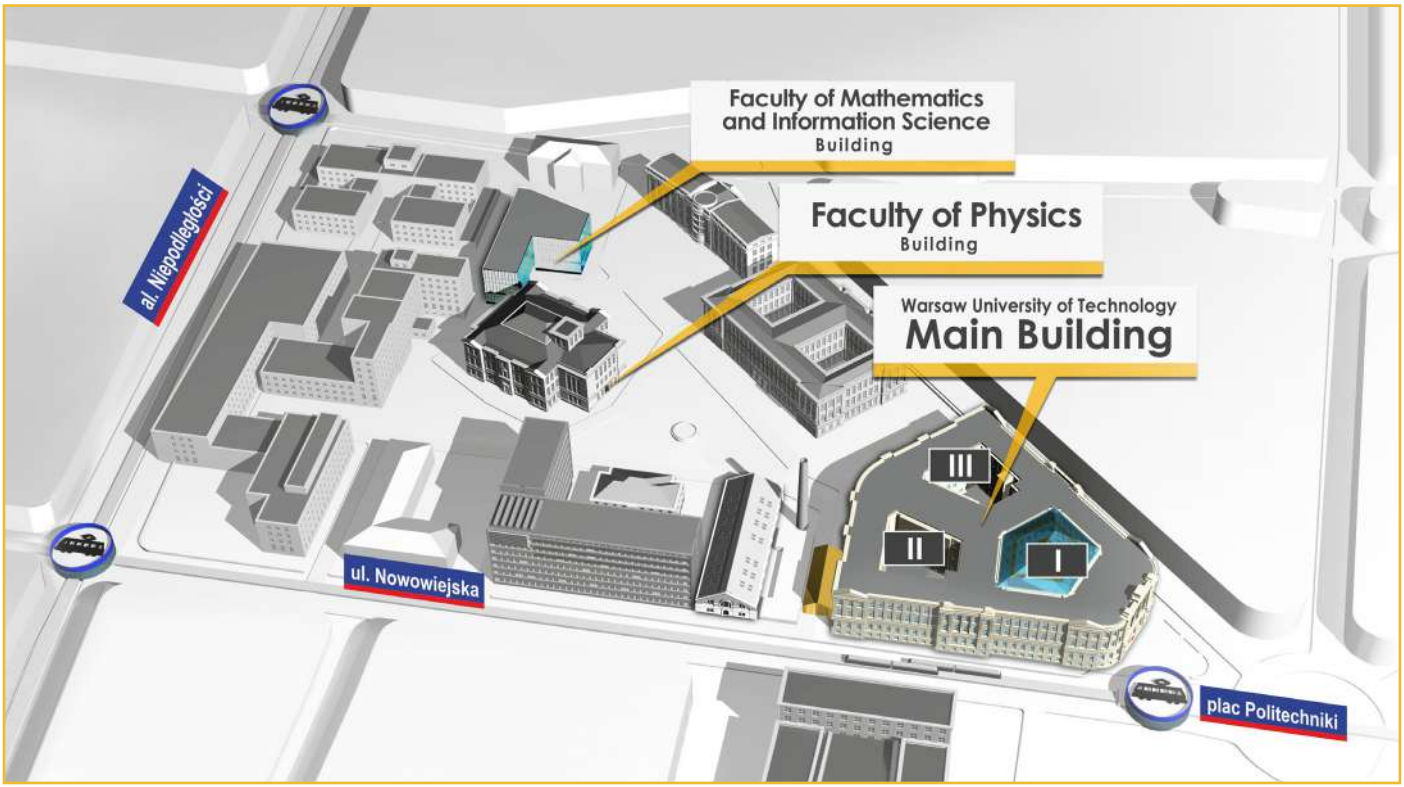
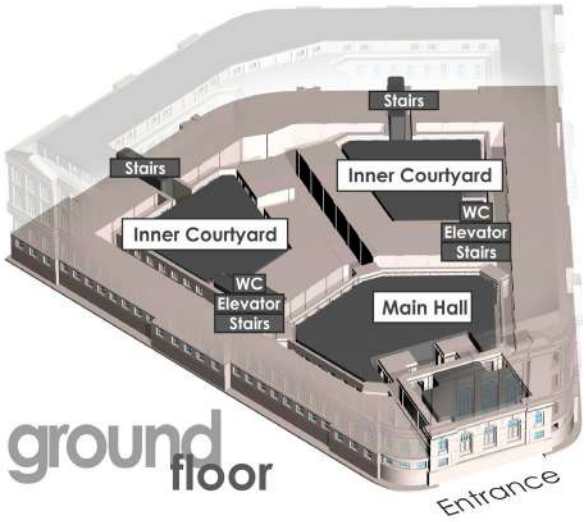
Patrick BRESSLER
General Secretary

Fraunhofer Microelectronics Group
Germany

Conference Programme online

Conference Venue

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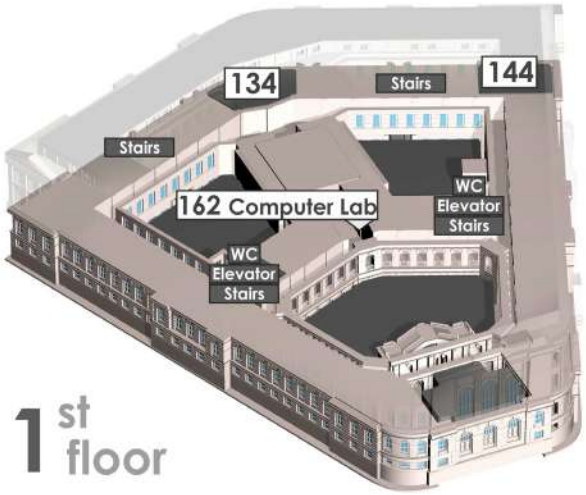
Entrance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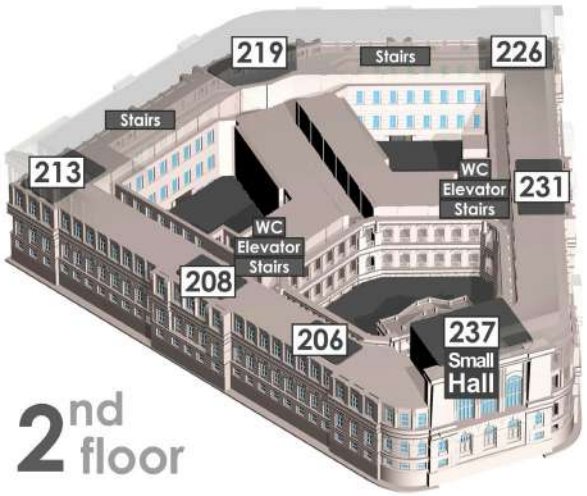
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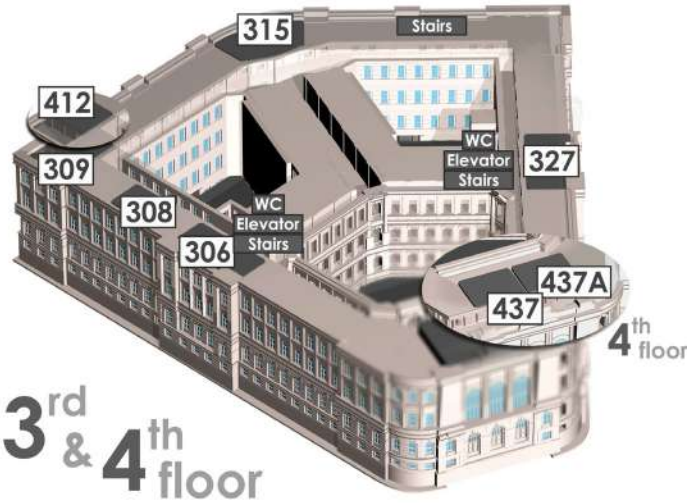
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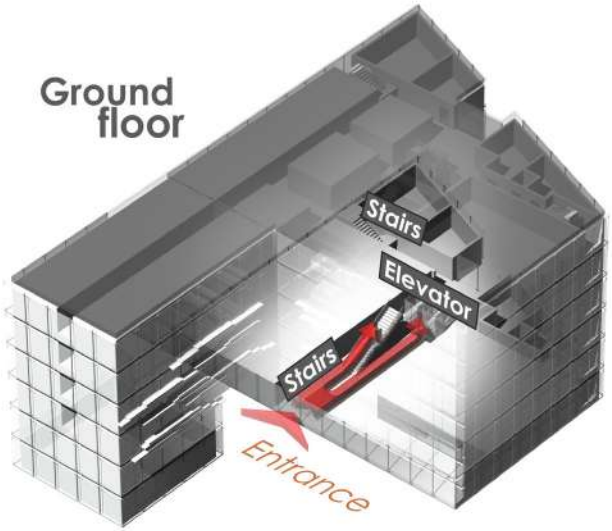
437A
437
4th floor
3rd & 4th floor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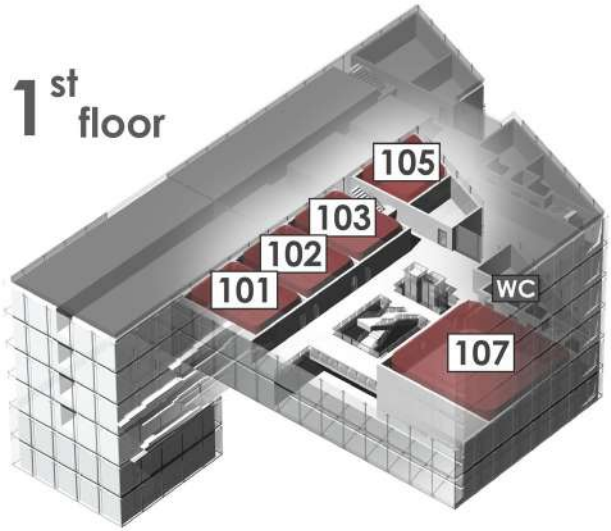
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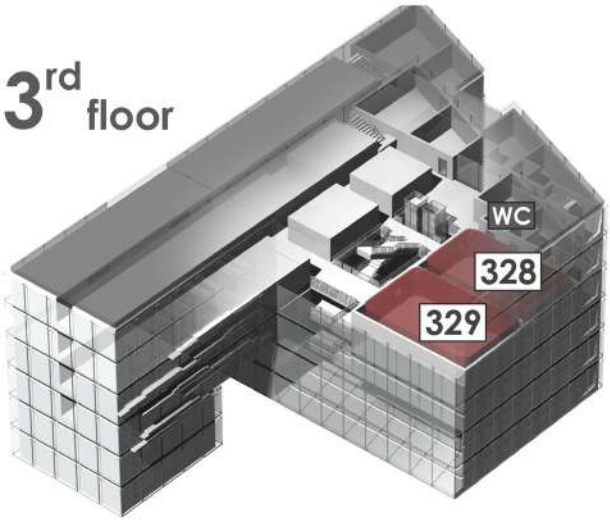
3rd floor
WC
328
329

Wednesday, 17 September 2025 - Main Hall

9:00 Introduction - Conference Organizers

9:10 Welcome address by the Rector of the Warsaw University of Technology

9:30 Welcome Address by E-MRS President A.J. Kenyon

9:35 Laudation and Presentation of the Jan Czochralski Award to Prof. Claudia Felser

9:50 **Czochralski Award laureate - Prof. Claudia Felser**,
Max Planck Institute for Chemical Physics of Solids, Germany

Topology and chirality

10:35 **Prof. Salvo Coffa,**
Robert Bosch GmbH, Reutlingen - Mobility Electronics Department, Power Semiconductors and Modules

The role of material science in power electronics

11:20 **Prof. David A. Muller**
School of Applied Physics, Cornell University, USA

Imaging the Properties of Atoms and Fields down to the Picometer Scale inside Materials and Devices

Symposia

Materials for Energy, Sustainability and Extreme Conditions

- **A** Sustainable energy conversion: from emerging materials to devices
- **B** Synergies and challenges for materials in extreme environments
- **C** Exploring emerging photo and electrochemical systems for CO2 conversion to fuels and chemicals (II)
- **D** Frontiers in carbon science and technology II

Characterization, Simulation and Artificial Intelligence

- **E** Materials discovery, modeling, and characterization for sustainable energy applications
- **F** Advanced interoperability in atomistic simulations of materials
- **G** Artificial Intelligence to accelerate the development of new advanced materials for energy
- **H** Reliable characterisation of functional nanomaterials and of materials for energy storage or conversion
- **I** Frontiers of imaging and spectroscopy in transmission electron microscopy

Thin Film, Flexible and Composite Materials and their Formation Techniques

- **J** Unconventional materials and flexible electronics for sustainable technologies
- **K** 3D and additive manufacturing of organic materials and nanocomposites for advanced applications
- **L** Progress in understanding fundamental, functional material and health aspects of melanins, polydopamine and related polyindole quinone materials
- **M** Next-generation thin films: innovations in PVD and CVD techniques
- **N** Synthesis and characterization of functional nanocomposite materials

Electronic, Photonic, Nano, Low-dimensional and Quantum Materials

- **O** Topological textures in antiferroic and ferroic materials
- **P** 2D materials for magnetism and spintronics: from fundamentals to integrated technology
- **Q** Group-IV semiconductor materials for nanoelectronics and cryogenic electronics
- **R** Ultra-doped semiconductors made by non-equilibrium processing for electronic,photonic and spintronic applications IV
- **S** Nanomaterials of the future: advancements in energy and sensing
- **T** Smart materials for nanoelectronics - nanophotonics & European Doctorate Network: PCAM (Physics and Chemistry of Advanced Materials) Summer School 2025
- **U** Metal oxide nanomaterials for advanced optoelectronics and environmental applications
- **V** Integration of advanced materials on silicon: from classical to neuromorphic and quantum applications
- **W** Defect-induced effects in low-dimensional and novel materials

General Timetable

Symposium symbol	Symposium location		Monday September 15th	Tuesday September 16th	Wednesday September 17th	Thursday September 18st
Symposium A	MINI Building	107	08:50-17:30 (2)	09:00-17:30 (2)	14:00-17:30	09:00-17:30
Symposium B	MINI Building	102	09:00-17:30 (2)	09:00-17:15		
Symposium C	MINI Building	328	14:00-17:30	09:00-17:30 (2)	14:00-17:30	
Symposium D	MINI Building	101		09:00-17:15 (2)	14:00-15:30	
Symposium E	Main Building	208	09:00-17:15 (2)	09:00-17:30 (2)	14:00-17:30	09:00-17:30
Symposium F	Main Building	226	09:00-17:15	09:00-17:15 (2)		
Symposium G	Main Building	206		09:00-17:15 (2)	14:00-17:30	09:00-11:30
Symposium H	Main Building	231	09:00-17:15 (2)	09:00-17:30 (2)	14:00-17:30	
Symposium I	Main Building	213		09:00-18:00 (2)	14:00-18:00	09:00-15:30
Symposium J	Main building	144	08:00-18:00	08:15-17:30 (1)	16400-18:00	08:00-17:15
Symposium K	MINI Building	103		08:30-18:00 (1)	14:00-17:45	
Symposium L	MINI Building	105	09:00-17:15 (1)			
Symposium M	MINI Building	329	11:00-17:30	11:00-17:30 (1)	14:00-17:15	
Symposium N	Main Building	134	09:00-17:30 (1)	09:30-17:30 (1)	14:00-17:30	09:00-17:10
Symposium O	Main Building	308		09:00-17:30	14:00-17:45	09:00-15:30
Symposium P	Main Building	412	11:00-17:30	09:00-17:15 (1)	14:00-17:30	09:00-15:30
Symposium Q	Main Building	327	09:00-17:30 (1)	09:00-17:30	14:00-15:30	09:00-12:30
Symposium R	Main Building	437	11:00-17:30 (1)	09:00-17:15	14:00-16:45	
Symposium S	Main Building	306	08:30-17:30 (1)	08:45-17:30 (1)	14:00-17:30	08:45-16:00
Symposium T	Main Building	219	09:00-17:45 (1)	09:00-18:15 (1)	14:00-18:00	09:30-15:30
Symposium U	Main Building	315	09:00-17:30 (1)	09:00-17:30 (1)	14:00-17:30	09:00-17:30
Symposium V	Main Building	309	09:00-17:30 (1)	09:00-17:30	14:00-17:40	09:00-12:30
Symposium W	Main Building	437a	09:00-17:30 (1)	09:00-17:30	14:00-17:30	09:00-10:15
Poster Session Poster Session 17:30-19:00 but may vary depending on symposium timing	Main Building - 237 (Small Hall) (1) Physics Building - Aula (2)		(1) 17:30-19:00 (2) 17:30-19:00	(1) 17:30-19:00 (2) 17:30-19:00		
Plenary Session	Main Building - Main Hall				09:00-12:30	
Thesis Competition	Main Building	213	17:00-19:00			
Conference reception, Young Researcher & Thesis Competition Awards	Main Building Main Hall				18:00-21:00	
Computer Lab - Main Building 162						
LUNCH - Main Building ground floor - I and area II, III						

Exhibition

15-17 September 2025, 09:00-17:15

Location: Main Hall | Main Building

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KORVUS TECHNOLOGY'S HEX series are highly modular, cost effective, compact thin-film coating systems. The unique open-frame concept is the bedrock upon which the flexibility of the HEX series is built. This design allows panels, sample tables, sources and in-situ measurement instruments to be interchanged at ease, and extends the product range to cluster systems, providing an unrivalled level of freedom and choice to those in the thin-film R&D sector.

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- *Energies;*
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Company website:

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THE NANOIC pilot line is a pioneering European initiative, hosted by imec, set to provide a leading-edge beyond 2nm System-on-Chip (SoC) pilot line for advanced logic, memory, and interconnect technologies. The project aims to drive European technology leadership across critical markets such as computing, communication, mobility, energy, and health.

The pilot line is a collaboration between imec, CEA-Leti, Fraunhofer-Gesellschaft, VTT, CSSNT-UPB, and Tyndall Institute and is supported by the Chips Joint Undertaking, through the European Union's Digital Europe (101183266) and Horizon Europe programs (101183277), as well as by the participating states Belgium (Flanders), France, Germany, Finland, Ireland, and Romania. For more details, please visit www.nanoic-project.eu .

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MICRO PROBE SYSTEM

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Partner of Analog Devices Inc.

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- The widest selection of optical and non-optical cryostats
- Sensors, monitors, and controllers for precise cryogenic temperature control – including the new Model 346 controller
- Helium-saving solutions: from compact liquefiers to the Infinite Helium – an upgrade for flow cryostats
- Magnetic characterization systems such as VSM
- Hall-effect and electric measurement systems and components
- FusionScope – the only AFM that offers SEM, EDS, and Nanoprobing within one platform
- Quantum microscopes based on Nitrogen-Vacancy (NV) technology

Free Resources will be available at the booth!

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E-MRS 2025 Fall Meeting

Symposium A

Sessions: Room 231 | MINI Building

Poster Sessions: Aula | Faculty of Physics

Materials for Energy, Sustainability and Extreme Conditions

Sustainable Energy Conversion: from Emerging Materials to Devices

Symposium organizers:

Arndt **REMHOF**	– EMPA
Erika Michela **DEMATTEIS (Main Organizer)**	– University of Turin
Michael **HEERE**	– TU Braunschweig
Paul **JERABEK**	– Helmholtz-Zentrum hereon GmbH

Monday, 15 September 2025

SOLID-STATE IONIC CONDUCTORS – ADVANCED METHODS A01

08:50	Opening and Welcome **ORGANISERS**	INT1
09:00	Ultrafast Li-Ion Dynamics in Solid Electrolytes as Resolved by NMR Reaching Cryogenic Temperatures **H. Martin R. WILKENING**	1882
09:15	Impact and Stability of a Reference Electrode for Lithium-ion Battery Using Synchrotron Operando Technique **Xavier MOYNE**	1588
09:45	Constructing High-Ionic-Conductivity Composite Electrolytes with Improved Interface Stability by Rapid Laser Processing for All-Solid-State Batteries **Yuqing LIU**	23
10:00	New in situ / operando Magnetometry cell for the study of redox reactions by magnetic properties in M-ion battery material **Maria JAUREGUI**	20
10:15	Antiperovskite Protective Coatings for All-Solid-State Batteries **Philip HENKEL**	48
10:30	Coffee break	

INTERFACIAL REACTIONS AT ANODES A02

11:00	MAX phase oxidation as a new approach for the design of anode materials for lithium and sodium ion batteries: unveiling the origin of high performance **Chiara FERRARA**	650
11:30	Investigating the interface evolution between halide solid electrolyte and lithium **Pierre LANNELONGUE**	97
11:45	High-Entropy Engineering of NASICON Na3V2(PO4)3 Cathodes for Enhanced High-Voltage Sodium-Ion Battery Performance. **Manish Kumar SINGH**	884
12:00	Industrial application of sustainable zinc-ion batteries for sensors **Fabio Luca BARGARDI**	20_298

12:30 Lunch

SOLID-STATE BATTERIES A03

14:00 Magnesium and calcium electrolytes based on hydroborates for solid state batteries 184
Torben R. JENSEN

14:30 Pilot Line Characterization and Process Optimization for Magnesium-Based Battery Prototypes 885
Irshad MOHAMMAD

14:45 Effect of DMEIm (C7H13N2+) species as an organic ionic plastic crystal on ionic conductivity and thermal stability of PEO polymer electrolyte 1031
Gyungmin HWANG

15:15 “Room-Temperature Hydroborate Solid-State Batteries with High Areal Capacity Under Moderate Stack Pressure Enabled by a Silicon Nanocomposite Electrode 499
Hugo BRAUN

15:30 Coffee break

CATHODS IN LI AND POST-LI BATTERIES A03

16:00 Addressing the complexities of elevated mass loading in single-crystal high-voltage spinel cathodes 408
Sandipan MAITI

16:15 Cellular carbon networks from polymers for boosting the NVP cathodes performance in Sodium-ion batteries 1333
Vinita AHUJA

16:30 Redefining Electrode Design: Conductive Polymers as PVDF/Carbon black Alternatives at the Positive Electrode of Li-Ion Batteries 247
Ivone Marselina NUGRAHA

16:45 On the Feasibility of Pyrochlore-type Iron(III) Hydroxy Fluorides as Cathode Materials in Li_PS_Cl All-Solid-State Batteries 1548
Jaka ŠIVAVEC

17:15 High-Temperature Thermal Cleaning of Ultrafast-Sintered Li7La3Zr2O12 Solid-State Electrolytes 1715
Kostiantyn KRAVCHYK

17:30 Hybrid TMD–OMIEC Materials for Flexible, Self-Powered Biosensing Platforms 1318
Matteo MASSETTI

POSTER SESSION 1 AP01

17:30 High Throughput Evaluation of Thickness-Dependent Performance of Organic Photovoltaics Under Dim Indoor Illumination 01_100
Muhammad Ahsan SAEED

17:30 Formation of a stable LiF-rich SEI layer on molybdenum-based MXene electrodes for enhanced lithium metal batteries 02_113
Shakir ZAMAN

17:30 Manipulating Multimetallic Effects: Programming Size-Tailored Metal Aerogels as Self-Standing Electrocatalysts 03_134
Qian CUI

17:30 Biomass waste for the preparation of rGO-like carbon /TiO2 composites derived from cassava residue for counter electrodes in dye-sensitized solar cells 04_137
Wasan MAIAUGREE

17:30 An in-depth analysis of charge recombination and photodegradation mechanisms in tert-butyl-modified carbazole self-assembled monolayers for improved organic solar cell performance 05_15
Rahmatia Fitri Binti NASRUN

17:30 Transparent Contacts and Anti-Soiling Coatings Based on SiO_/ITO for Enhancing the Performance of Semi-Transparent Perovskite Solar Cells in Harsh Environments 06_162
Mohammad Istiaque HOSSAIN

17:30 Engineering the Electron Transport and Interconnection Layers for Enhanced Performance in Perovskite/CIGS Tandem Solar Cells 07_165
Dae-Kue HWANG

17:30 Facet-Controlled NaO2 Crystal Growth via Microporosity Modulation in Commercial Carbon Air Cathodes for Sodium_Oxygen Batteries 08_166
Jhony Xavier FLORES-LASLUISA

17:30 SDS-Capped ZnO Nanotubes: Synthesis and Effects on Aloe Barbadensis Miller 09_168
Anwar SAIYAD

17:30 Heavily Doped Silicon Thin Film for Lattice Boundary Modulation Toward Thermoelectric Devices 10_18
Fu-Hsiang KO

17:30 Design of Transition Metal Doped Ceria Carbon Composite as Cathode Material for Rechargeable Zinc Air Battery Application 11_188
Ajay MOHAN

17:30 Silica Stabilized Fe–N_ Active Sites in Biomass-Derived Electrocatalysts for High-Performance Zinc–Air Batteries 13_214
Edwin Osebe NYANGAU

17:30 Ultrafast Hot Carrier Transfer and Bond Activation in Nitrate Photoreduction on CdSe Quantum Dots: Insights from Ab Initio Quantum Dynamics 14_217
Ankita KUMARI

17:30 Boosting Performance of Organic Photodetectors and Perovskite Solar Cells through Interfacial Passivation 15_22
Chih-Ping CHEN

17:30 Optimization of Charge Transfer on Fluorinated Polymers towards Efficient Sustainable Energy Harvesters: Triboelectric Nanogenerators 16_224
Franziska DREHER

17:30 Green Synthesis of Aloe Vera-Assisted Co3O4 Nanostructures: Structural, Electronic, Optical, and Electrochemical Insights for Supercapattery Applications 17_235
Mohit BHATT

17:30 Operando Insights into Cu-Substituted P2-Type Layered Oxides for Sustainable High-Voltage Sodium-Ion Batteries 19_288
Jon SERRANO-SEVILLANO

17:30 Upcycling of waste glass into porous ceramics for the degradation of organic pollutants from wastewater 21_3
Maria WAQAR

17:30 Upcycling of waste glass into porous ceramics for the degradation of organic pollutants from wastewater 21_4
Maria WAQAR

17:30 Dielectric Characterization of Charge Transport Limitations in Lithium-ion Battery Electrodes 22_300
Julius AKINRIBIDO

17:30 Surpassing the high-voltage limits of NMC materials via advanced manufacturing 23_302
Eleni FIAMEGKOU

17:30 Binder-Free SrCoO3-_ Electrode Films for Asymmetric Supercapacitors Optimized via Electrophoretic Deposition 24_307
Aayush MITTAL

17:30 Comparative Analysis of Calcination Strategies for NMC811 Synthesized via Oxalic Coprecipitation 25_311
Antonino GIARRIZZO

17:30 Hierarchically Structured Electrocatalyst with Fe Single Atoms and Ultrafine Mo_N for Enhanced Activity and Durability in Flexible Zinc–Air Batteries 26_336
Jinsoo KIM

17:30 Ballistic Graphene Rectifiers for Efficient Energy Harvesting and Charge Storage 27_339
Minwook KIM

17:30 Bridgman Growth, Scintillation and Luminescence Properties of _-Ga2O3 and Zn1-xBexSe Single Crystals 28_345
Abdellah BACHIRI

17:30 Development of a Sustainable All-in-One Flexible Zinc-Ion Battery 29_360
Alazne OJANGUREN GUMUCIO

17:30 Optimisation of the molten-salts synthesis of monolithic NMC811 30_415
Benjamin BORGNE

17:30 High-Throughput Synthesis of Air-Sensitive Halide Solid Electrolytes for Next-Generation Batteries 31_439
Parisa VAHDATKHAH

17:30 A Highly Robust and Conducting Ultramicroporous 3D Fe(II)-based Metal-Organic Framework for Efficient Overall Energy Storage 32_445
Soumen KHAN

17:30 Biodegradable TEMPO-functionalized Polycaprolactone for Sustainable Electrochemical Energy Storage Applications 33_46
Sangho CHO

17:30 Sustainable Synthesis of Na+ and Bi3+- doped Cs_AgInCl_ Double Perovskites for Efficient White-Light Emission 34_467
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17:30 Ruthenium(II) Benzoquinonediimine Complexes as Additives for Enhanced Stability and Light Harvesting in Organic Photovoltaics 35_49
Jan Alexander RETHMEIER

17:30 Engineering Next-Gen VOH Cathodes for Zinc-Ion Batteries: A Synergistic Synchrotron and DFT Exploration 36_498
Sanna GULL

17:30 Synergistic Engineering of Se Vacancy and Heterojunction in NiSe_@FeSe Electrode for Enhanced Ion Transport in High-Performance Flexible Hybrid Supercapacitor and Overall Water Splitting 37_50
Daya RANI

17:30	Rational Electrode Design for Balanced and Enhanced Ionic and Electronic Conduction in High-Loading All-Solid-State Batteries **Yunho LEE**	38_538
17:30	Influence of Internal Temperature Stabilisation on EIS-based SOH diagnostics of EV Battery Modules for their Second-Life Use **Martin KEMENY**	39_570
17:30	In-situ Presodiation of Sodium-deficient Prussian Blue Analogue for Practical Applications in Na-ion Batteries **Leonardo SBRASCINI**	40_577
17:30	Multipurpose thermal composite for thermal energy storage, photothermal conversion and barocaloric thermal management **Carmen DE CABO-RODRÍGUEZ**	41_584
17:30	Impedance analysis of lithium-ion batteries by using electrochemical impedance spectroscopy **Hae Kyung JEONG**	42_603
17:30	A Study on Vehicle Anomaly Detection Techniques Based on Detailed Features and SOC Segmentation Using Real-World Electric Vehicle Monitoring Data **Woojoong KIM**	43_622
17:30	Optimizing MoS_-based composite electrodes for high-performance supercapacitors via substrate surface engineering and hydrothermal synthesis **Peter ONDREJKA**	44_628
17:30	Synthesis, Crystal Structure and Optoelectronic properties of n-butyldimethylsulfonium lead triiodide **John KOUTSOUBOGERAS**	45_637
17:30	Growth and properties of RuddlesdenPopper perovskite thin films for hot polaron photovoltaics **Christopher HAUSMANN**	46_645
17:30	Illumination dependent hot polaron photovoltaics in strongly correlated perovskite manganites **Annika DEHNING**	47_660
17:30	Stability of tricyanomonofluoroborate IL electrolytes at porous carbon electrodes **David MÜLLER**	48_667
17:30	High-Performance Biocompatible Moisture-Enabled Nanogenerators using Gelatin-SnS_ Composite for Sustainable Energy Harvesting **Subhamay PRAMANIK**	49_76
17:30	Thermally Evaporated All-Inorganic Perovskites for Pure-Red Light Emitting Diodes **Shaoni KAR**	50_82

17:30	Designing P- and N-Type Polymeric Ionic Gels via Side-Chain Engineering for Sustainable Nonaqueous Thermoelectrics **Hyunjung LEE**	51_142

Tuesday, 16 September 2025

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09:30	Reinforcement Learning Framework for Optimizing Leaching Recovery from End-of-Life LIBs **Irem TOPSAKAL**	1168
08:45	Stabilizing Thin Li Metal Anodes via Salt-Coated Separators: An Operando–Computational Approach to Interface Engineering **Eunbin JANG**	1041
10:00	Computational design of triboelectric materials for energy harvesting, sensing, and safety **Giulio FATTI**	765
10:15	Machine Learning-Based Prediction of Cathode Catalyst Layer Degradation using EIS and CV **Ines Edima ATANGANA MEYANGA**	1380
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11:30	Toward Sustainable Hydrogen Generation: Photoreforming of Plastic Waste over Pt Single-Atom Anchored g-C_N_ **Yin-Hsuan CHANG**	545
11:45	Scaling-up photoelectrochemical hydrogen production: integrating materials and devices **George H. CREASEY**	490

12:00 Investigation of the effects of cations on Polymer Electrolyte Membrane (PEM) water electrolysis for hydrogen production 376
Ren HIGUCHI

12:15 Novel Manufacturing of Fe-Free Freestanding SWCNT Networks As Ultra-Low Platinum Catalyst Supports For Hydrogen Production 787
Polina KALACHIKOVA

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14:30 First experimental characterization of Ammonia alane for solid-state hydrogen storage 462
Maxence VINCENT

14:45 Engineered 2D Graphene and MXene-Based Nanostructures for High-Performance Hydrogen Storage 1066
Shankar GHOTIA

15:00 Metal Hydride-Based Hydrogen Storage Alloy for Marine buoy Applications 1149
Ankita BISHNOI

15:15 Metal hydride hydrogen storage for automotive application - A new approach to overcome the challenge of the cold start scenario 1385
Maximilian PASSING

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16:00 Unveiling the Synergistic Effect of Co(OH)2-CdIn2S4 Nanoheterostructures for Enhanced Electrochemical Water Oxidation 573
Maria METAXA

16:15 Corona-Boosted Piezocatalysis: Transforming Ferroelectric Materials for Enhanced water splitting 1204
Abinaya KRISHNAMURTHY

16:30 Probing the Electrochemical Activity of the 114 Cobaltite Structures for the Oxygen Evolution Reaction 902
Abhishek BHARTI

16:45 RIE-Treated Cu2O/SnO2 Heterojunction Photocathode for Efficient Hydrogen Evolution 926
Muhammad WAQAS

17:00 Harnessing the Synergistic Effect of Mo-Doping in NiSe for Enhanced HER Performance in Alkaline Media 995
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Deepak DEEPAK

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Jiwon KIM

17:30 Fractal arrays of silicon nanowires for photonics 02_1014
Maria Jos_ LO FARO

17:30 Design of a fluorinated polyzwitterion network for enhancing Li+ mobility and interface of electrode-electrolyte in lithium metal batteries 03_1034
Changseop KIM

17:30 Sustainable Recovery of Black Powder from Spent LIBs through Optimized Green Solvent Methods 04_1064
Hyunseok LEE

17:30 Optimization for Enhanced Cycle Life of Lithium Secondary Battery Modules 05_1069
Hyung-Geun LIM

17:30 Water-in-salt hydrogel electrolyte for dendrite-free Zn deposition 06_1081
Varsha Joseph ARIYAMPARAMBIL

17:30 Enhancement of Li-Ion Conductivity in Oxide Solid Electrolytes via LiClO_ Addition and Pressure-Assisted Sintering 07_1096
Jeong Woo JANG

17:30 Multiphysics Framework for Evaluating Plasmonic Schottky Solar Cells with Integrated Thermal Dynamics 08_1130
Brahim AISSA

17:30 nterface engineering for minimizing trapped charge density in _-Ga_O_ Schottky barrier diodes for high-performance power devices 09_1285
Shivani SHIVANI

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17:30 Aluminium as efficient hole-collecting electrode for active layers in inverted architecture photovoltaic devices 12_1403
Aleksandra TOMASZOWSKA

17:30 Flexible Piezo-/Pyroelectric Polycrystalline Lysozyme Assemblies 14_1488
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Paulo Filipe LUÍS

17:30 Aqueous Biphasic Redox Flow Batteries on Microscale 18_1560
Vikram SINGH

17:30 Understanding the Activity–Durability Trade-Off in Iridium Oxide Catalysts through Controlled Phase Evolution Control 19_1565
Byung Guk KANG

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Hyeok MUN

17:30 (Photo)Electrochemical Deposition of Silicon from Ionic Liquids 21_1579
Maximilian DIECKE

17:30 Synergistic Effect of Precursor, Cation and Interface Engineering unlocks the pathway for high efficiencies in FAPbI3 Perovskite Solar Cells 22_1584
Sylvester Sahayaraj MASILAMANI LEO

17:30 Co-Ni Tungstate/Graphene Nanoplatelets Composite Electrodes for High-Performance Supercapacitor 23_1605
Shuang LIU

17:30 Synergistic Effects of Au Nanoparticles on the Phase Transformation and Pyroelectric Performance of PVDF Nanofibers 24_1685
Sudip NASKAR

17:30 Long-Life Ni-Rich Layered Cathode for Lithium-Ion Batteries by Microstructural Refinement and Surface Modification 25_1693
Hoon-Hee RYU

17:30 Electrosynthesis of molecular memory elements 26_1734
Pradeep SACHAN

17:30 Fabrication of flexible nanogenerator using hollow sphered bismuth ferrite nanoparticles for efficient energy harvesting 27_1743
Shashank Bhushan DAS

17:30 Laser-Processed Porous Carbon Zn Anode Surface Modification Layer for Aqueous Zn-Ion Batteries 28_1785
Recep YUKSEL

17:30 Optimizing NiTiO_ Powders for Supercapacitors: Coprecipitation vs. Solid-State Synthesis in Sustainable Energy Conversion 29_1800
Pegah BAVAFA

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Vedikuyilazhagan MUNIRAJ

17:30 Stabilizing Multi-Electron Redox in NASICON Cathodes: Fe and Mo Doping for High-Energy and Long-Life Sodium-Ion Batteries 31_1873
Sheetal GUPTA

17:30 Mechanically Robust and Chemically Stable Halloysite-Integrated Core–Shell Composite Separator via Coaxial Electrospinning for High-Performance Sodium-Ion Batteries 32_1884
Akash KANKANE

17:30 Betaine: Glycerol based hybrid deep eutectic electrolyte coupled with Brewery waste derived carbon for eco-friendly Zinc ion capacitors 33_680
Kiran Kumar Reddy REDDYGUNTA

17:30 Chemical and structural characterisation of Ni- and Cu substituted TiVCrMn-based alloys for high temperature hydrogen compression 34_708
Erika Michela DEMATTEIS

17:30 Toward Sustainable and Intelligent SAW Gas Sensors: Simulation-Guided Design and Machine Learning-Assisted Butterworth–Van Dyke Modeling 35_711
Suman ACHARYA

17:30 Modulating buried interface through fluorinated ligands in p-i-n semi-transparent perovskite solar cells 36_736
Bhavna SHARMA

17:30 Optimized Charging Profile and Diagnostic Method for Faulty Cell Detection in Lithium-Ion Batteries 37_746
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17:30 Revisiting the electrochemical activity of alpha-V2O5 electrode for aqueous ammonium ion batteries 38_766
Jesus SANTOS PENA

17:30 Design and Modelling of CsSnBr3/Ga2O3 hybrid photodetectors by SCAPS-1D: optimized parameters for high UV selectivity and bifacial usage 39_806
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17:30 Composite polymer electrolyte harnessing Li2CO3 with Ethylene vinyl acetate (EVA) polymer based on Garnet-type Li7La3Zr2O12 for semi-solid-state batteries 40_813
Youngmin MOON

17:30 Synergistic effects of Li7La3Zr2O12 solid electrolyte and Aligned Electrospun Polyacrylonitrile Nanofibers for Mechanically Robust and thermally stable Membranes 41_816
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17:30 Electrodeposited MnNiZnOx as a Bi-Functional Catalyst for Metal-Air Battery Applications 42_826
Iklime KAYHAN

17:30 Dual-anion ionic liquid electrolytes: a strategy for achieving high stability and conductivity in lithium metal batteries 43_828
Jemin LEE

17:30 Fluorine-Segment-Incorporated Copolymer Electrolyte for Enhanced Electrochemical Stability in High-Voltage Lithium Metal Batteries 44_830
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17:30 Monolithic Integration of Novel Quasi Solid State LIBs and solar driven systems enhanced Low Temperature and High C rate Performance applied in Electrical Vehicles . 45_831
Hsuan-Kai TSENG

17:30 Unlocking Controlled-Leakage Current Conduction in BiFeO_ Thin Films via Mn-Induced Structural, Optical and Electronic Modulation 46_853
Nilofar NAAZ

17:30 Exploring the Maximum Barium Substitution at the Perovskite B-Site: Structural and Photovoltaic Implications in Hybrid Halide Perovskite Solar Cells 48_938
Yin-Hsuan CHANG

17:30 UV-Polymerized Composite Solid Electrolyte Incorporating 3D LLZO Nanofiber Network for Solid-State Batteries 49_950
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17:30 Advanced Ionovoltaic Energy Generation via Flow – Regulating Interlayer 50_969
Seungyeon YU

17:30 Pd-Loaded Layered Double Hydroxides as Efficient Catalysts for CO2 Hydrogenation to Formic Acid: A Focus on Surface Hydroxyls 51_978
Pooja NEHRA

17:30 Surface Morphology Enhancement of Nanomembranes Fabricated via Deep Reactive Ion Etching for Silicon-Based _-SOFCs 52_981
Byeong-Jin JANG

17:30 End-of-Life Crystalline Silicon Solar Cell Recycling Strategy to Mitigate Carbon Footprints 53_996
Krishan Kumar PATEL

17:30 1 nm LiF Island-Type Thin Film Enables Dendrite-Free Li Nanorod Formation in Anode-Free Lithium Batteries 54_814
Jiwoo KIM

Wednesday, 17 September 2025

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12:30 Lunch

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14:00 Tuning the composition of (TiVNb)-Cr/Mo high entropy alloys for optimum hydrogen sorption 192
Claudia ZLOTEA

14:30 Improving the Hydrogen Sorption Kinetics of Amide-Hydrides System with the Incorporation of Mesoporous Carbon (CMK3) 808
Mohsin ABBAS

14:45 Geometric optimization by FEM simulations of a coupled high temperature hydride-based hydrogen storage and a thermochemical energy storage system 1302
André MARTINS NEVES

15:00 Large-scale coating methods to improve the performance of metal alloys for hydrogen storage 839
Jan WARFSMANN

15:15 Carbon Nitride/NiO/Zn3N2 Nanocomposites for Electrochemical Applications in Supercapacitors and Water Splitting 493
Tanuja SINGH

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HYDROGEN USE: TOWARDS APPLICATIONS A10

16:00 Perspectives on the design of multicomponent alloys for hydrogen storage 1145
Sabrina SARTORI

16:30 Numerical Investigation of Coolant Channel Geometry Effects on PEM Fuel Cell Performance 1449
Abdelhakim MERDJANI

16:45 The restoration of PEM cell performance by trivalent weak acid 377
Taiga GOTO

17:00 Intrinsic proton relay in poly-phosphamide to bolster proton-exchange membrane fabrication and electrocatalytic proton reduction 758
Anup MAHATA

17:15 N2 Photocatalytic fixation through Bi_O_- based materials 1434
Loredana LATTERINI

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

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09:00 Spontaneous reactions of titanium alloys with hydrogen at room temperature 1883
Marek POLANSKI

09:30 Sustainable Synthesis of TiFe-Based Alloys for Hydrogen Storage: Influence of Synthesis Method and Manganese Substitution 297
Nicol Daniela JARAMILLO RODRIGUEZ

09:45 Mechanochemical reduction of New Zealand resources to TiFe for hydrogen storage 769
Nigel LUCAS

10:00 Investigation of Hydrogen Diffusion in TiFe and the Effects of Mn and V Doping: A Combined Theoretical and Experimental Approach 254
Samia RACHIDI

10:15 Optimising MgH_-based Slurries for Efficient Hydrogen Storage and Generation 646
Magdalena SAAGER

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11:00 From Hazard to Harvest: Making AB_ Metal Hydrides Recyclable through Controlled Deactivation 441
Mateusz BALCERZAK

11:30 Structural and electrochemical characterisation of Sm/Gd co-doped ceria electrolytes for IT-SOFCs 896
Mantas SRIUBAS

11:45 Pore Structure Engineering via Hard-Template Synthesis: Unlocking High Oxygen Reduction Reaction Activity and Stability of Fe-N@C Electrocatalysts 364
Giulia GIANOLA

12:00 Data-Driven Impedance Analysis Framework for Embedded Real-Time Fault Detection in PEMFCs 1295
Sunil KUMAR

12:15 Thermogalvanice Cells Towards Large-scale Heat-to-Electricity conversion 250
Dan ZHAO

12:30 Lunch

MATERIALS FOR SOLAR CELLS A13

14:00 Additive and interface engineering to passivate bulk and surface defects in triple cation perovskite solar cells 181
Parameswar IYER

14:15 Advancing Tin Halide Perovskite Solar Cells via Dual-Coordination Additive and Buried Interface Modification Strategies 1630
Ziqi LIANG

14:30 Rational Design and Visualization of Multifunctional Phenothiazine-Based Self-Assembled Monolayers for Better Interface Contact in High-Efficiency and Stable Perovskite Solar Cells 16
Qurrotun Ayuni Khoirun NISA

15:00 Lithium photo-extraction at solid/solid interface for solar energy conversion and storage 982
Masataka YOSHIMOTO

15:15 Enhancing charge extraction in organic solar cells using controlled doping 1163
Mathias NYMAN

15:30 Coffee break

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16:00 Transparent Photovoltaics, Photodetectors and Artificial Synapses 974
Kim JOONDONG

16:15 Porous-Material-Enhanced Triboelectric Nanogenerator (TENG) Integrated with IoT for Advanced Energy Harvesting 554
Shahzad IQBAL

16:30 Linking Electron Cloud Potential Wells to Achieve Ultrahigh Output Current in a Triboelectric Nanogenerator 797
Hai-Dong YU

16:45	Facile synthesis of CuO nanoparticles-PEDOT:PSS-based inks for low-cost, flexible thermoelectric energy harvesting **Ajay KUMAR**	21
17:00	PDMS Nanocomposites With Sio2@Ag For Tuneable Optical, Thermal, Wetting Properties for triboelectric nanogenerator. **Ashish KUMAR**	323
17:15	Advancing Multifunctional Energy Harvesting with One-Dimensional Tellurium Nanocomposites: A New Paradigm in Flexible Electronics **Utsa SARKAR**	835

E-MRS 2025 Fall Meeting

Symposium B

Sessions: Room 102 | MINI Building
Poster Sessions: Aula | Physics Building

MATERIALS FOR ENERGY, SUSTAINABILITY AND EXTREME CONDITIONS

SYNERGIES AND CHALLENGES FOR MATERIALS IN EXTREME ENVIRONMENTS

Symposium organizers:

Fabien **ONIMUS**	– CEA, Université Paris-Saclay
Fredric **GRANBERG**	– University of Helsinki
Luca **REALI** **(Main Organizer)**	– UK Atomic Energy Authority

Monday, 15 September 2025

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09:20 Development of a Highly Corrosion-Resistant Coating Utilizing the Synergistic Effect of Ni/Zn-Ni Multilayer Structures in a Single Zn-Ni Electrolyte Bath 949
Sohee YUN

09:40 Advancing Corrosion Protection in LFRs: Characterization of HiPIMS-Deposited Metallic Coatings 1074
Laura SANNA

10:00 Towards stronger high-entropy alloy by heterogeneous structure of nanoprecipitation-hardened ultrafine-grains at cryogenic temperature 121
Mengmeng ZHAO

10:30 Coffee break

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11:00 Short range order analysis for a comprehensive description of complex processes in medium and high entropy alloys: NiCoCr and CoCuFeNiPd 358
Axel POISVERT

11:20 Self-Healing in Photovoltaic Materials: Chemical Insights from Antimony Chalcogenides and Chalcohalides 1278
Eran EDRI

11:40 The influence of photoelectron spectroscopy in ultrahigh vacuum on the photoluminescence lifetime of thin-film solar cell absorber materials 1243
Philine STÖTZNER

12:00 Investigation of Degradation Pathways in CZTSSe Solar Cells under Harsh Environmental Conditions 164
Mohammad Istiaque HOSSAIN

12:30 Lunch

SESSION 3 B03

14:00 Radiation effects in REBCO in the fusion environment 128
Daniele TORSELLO

14:30	Ultrafine Transparent MgAl_O_ Spinel Ceramics for ITER Fusion Reactor Windows **Ameni HAWEL**	309
14:50	Radiation response of Ceramic Composites for Advanced Nuclear Applications **Rishvana PARVEEN**	1347
15:10	Defects induced by high-temperature neutron irradiation in 250 _m thick 4H-SiC p-n junction detector **Annamaria MUOIO**	1726
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SESSION 4 B04

16:00	Sampling Complex Energy Landscapes in Material Science Using Data-Driven Force Fields **Mihai-Cosmin MARINICA**	1093
16:30	Modelling of Radiation Defects in Fe-Cr-He Alloys Using Machine-Learning Interatomic Potentials **Jan WRÓBEL**	859
16:50	Defects and Impurity Properties of VN precipitates in ARAFM Steels: Modelling using a Universal Machine Learning Potential and Experimental Validation **Ryan STROUD**	285
17:10	Comparison of simulated and experimental defect distributions of irradiated materials using computer vision. **James HEATH**	1613

POSTER SESSION 1 BP01

17:30	Dual-Zwitterionic Locking Strategy for High-Performance Nanofiltration: Boosting Salt and Heavy Metal Removal **Arshyn ZHENGIS**	01_1143
17:30	Research Progress and Development Trend of Laser Hybrid Surface Modification **Jianhua YAO**	03_1183
17:30	Microstructure Regulation Research of Hardened Layer via Laser Hybrid Solid-State Phase Transformation **Qunli ZHANG**	04_1203

17:30 Solute-Dislocation Interactions in Zr Alloys Modeled with Universal Machine Learning Interatomic Potentials 05_1220
Colleen REYNOLDS

17:30 Modelling the Interaction Between Creep and Irradiation in Steels 06_1287
Abdus SHAIK

17:30 Towards enhanced environmental compatibility: chemical profile of functionalized Ti6Al7Nb alloy 07_1524
Lucyna GRZADZIEL

17:30 Flexible Photonic Cooler Based on Multi-Stacked Thin Film IR Filters with Anti-Dust Properties for Photovoltaic Applications in Desert Environments 08_163
Mohammad Istiaque HOSSAIN

17:30 Investigating the properties of PEEK carbon fibre composites made via the HiPerDiF method 09_1722
Ragnar BIRGISSON

17:30 Nonlinear theory of impurity diffusion in porous talc after ultrasonic treatment: prospects for the development of lithium batteries 10_351
Olesya DAN'KIV

17:30 Modeling Phase Behavior in Chromium based Medium Entropy Alloys via DFT-CALPHAD and Experiments for high temperature applications 11_471
Abdulaziz ALHAZAA

17:30 Characterization of Fusion and Filler-Assisted Laser Beam Welding of 6061-T6 Aluminum Alloy 13_547
Dong Jun PARK

17:30 Application of boron containing flame retardant dye for different surfaces 14_551
Elif ÖZTOK

17:30 Study on removal mechanism of TC4 oxide film by nanosecond pulsed laser cleaning in air environment 15_559
Liang WANG

17:30 Development of a High-Performance Al–8Si–0.22Mg–0.7Cu Alloy for Structural Die Castings 16_614
Youngok YOON

17:30 In Situ Raman Insights into the Durability of NiFe_O_ under Intermittent Power Operation in Alkaline Water Electrolysis 17_960
Chang-Hee KIM

Tuesday, 16 September 2025

SESSION 5 B05

09:00	Atomic-scale simulations to understand corrosion and solute-defect behaviour in Zr alloys **Mark WENMAN**	1401
09:30	In Situ Temperature Gradient Ion Irradiation of Novel Nuclear Steel: A Single-Sample Approach to Studying Temperature-Dependent Damage Mechanisms **Jim JOHNSON**	1742
09:50	Point Defect Origins of Dislocations in Zr2Cu Under Irradiation from First Principles **Colleen REYNOLDS**	1223
10:10	Cluster dynamics simulations of solute precipitation and defect formation in alloys under irradiation using log-time stochastic algorithms **Rohit VASAV**	103
10:30	Coffee break	

SESSION 6 B06

11:00	Defect stabilisation in tungsten during simultaneous deuterium loading and displacement damage creation **Sabina MARKELJ**	1441
11:30	Radiation-Induced Ion Tracks and Electronic Structure Changes in Zr-Doped Ceria (Ce0.8Zr0.2O2) under 100 MeV SHI Exposure **Vivek KUMAR**	1782
11:50	Effect of temperature on track creation in GaN under Swift Heavy Ion irradiation **Louise GOODWIN**	1445
12:10	Neutron Irradiation Experiments and Characterization of New Boron Carbide Control Rod Absorber Materials **X K LIU**	851
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SESSION 7 B07

14:00	Understanding irradiation induced IPyC cracking and IPyC-SiC debonding in TRISO using peridynamics **Keyi PEI**	1651
14:20	Dosimetric platform and a genuine Raman protocol for passive estimation of fast-neutron fluence in irradiated SiC and SiC topped with epitaxial graphene **Jakub JAGIELLO**	1048
14:40	Zr-based Bulk Metallic Glass for Extreme Conditions: Thermophysical Properties and Processing Pathways **Damien TEREBENEC**	459
15:00	Development of SiC-Based CMUTs for Harsh Environments: A Material Challenge **Quentin DAVID**	1367
15:30	Coffee break	

SESSION 8 B08

16:00	From Miscibility to Unexpected Separation: In-Situ TEM Insights into Au–Pd Alloy Behaviour at High Temperatures **Abhijit ROY**	1199
16:20	Sintering-Driven Optimization of Sm/Ta-Doped Bi_Ti_O__ Ceramics for High-Temperature Piezoelectric Devices **Dr. Srishti PALIWAL**	126
16:40	Phase dynamics and magnetic properties of Mg incorporated Ex-Situ MgB2 superconductor modified with B4C and Dy2O3 **Soo Kien CHEN**	483
17:00	Behavior of Refractory Materials Under Hydrogen Atmospheres for the Direct Reduction of Iron Ore. **Mouna HELLO**	135

Wednesday, 17 September 2025

9:00	**PLENARY SESSION**	
12:30	Lunch	

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

E-MRS 2025 Fall Meeting

Symposium Sponsors

Symposium C

Sessions: Room 328 | MINI Building
Poster Sessions: Aula | Faculty of Physics

Materials for Energy, Sustainability and Extreme Conditions

Exploring Emerging Photo and Electrochemical Systems for CO_2 Conversion to Fuels and Chemicals (II)

Symposium organizers:

Konstantinos **GKAGKAS**	– Toyota Motor Europe NV/SA
Adriano **SACCO (Main Organizer)**	– Italian Institute of Technology - Center for Sustainable Future Technologies
Chrystelle **SALAMEH**	– University of Montpellier
Talat **RAHMAN**	– University of Central Florida

Monday, 15 September 2025

NOVEL ELECTROCATALYSTS AND STRUCTURES FOR CO_2 CONVERSION (I) C03

14:00 Colloidal nanocrystals for structure-activity relationships, reconstruction and stability in the CO2 reduction reaction 229
Jari LEEMANS

14:30 Cu-based bimetallic catalysts for Enhanced CO2 Electroreduction toward C2+ products 531
Lan HUANG

14:45 Hybrid N-Containing Polymer Coated Cu2O Nanoparticles Tune the Selectivity of the Carbon Dioxide Reduction Reaction towards C2+ Products 1226
Tobias SCHWARZ

15:00 TiO2/Cu heterojunction catalysts for CO2 electrocatalytic reduction 845
Laura VIGNI

15:30 Molecularly tailored nanohybrids for efficient electrocatalytic CO2 reduction 1711
Federico FRANCO

15:45 Coffee break

COMPUTER-AIDED SIMULATIONS FOR CO_2 ELECTROREDUCTION C04

16:00 Toward a Realistic Modeling of CO_ Electroreduction: From Grand Canonical Barriers to Machine-Learned Interface Behavior 405
Giancarlo CICERO

16:30 Identifying Optimal Cu Alloys for CO Dimerization during CO_ Reduction: Insights from Constant Potential DFT 272
Wei WANG

16:45 Single Atom Catalysts on Boron doped Graphene for CO2 reduction to CH4: Impact of Varied Boron Concentration 1147
Sudatta GIRI

17:00 From Surface Configurations to Binding: Determining the Effective Cutoff Radius for CO Adsorption on CuAl Alloys 847
Alejandro CANETE ARCHÉ

17:15 Simulations of electrochemical reactions in the presence of aqueous electrolyte using a hybrid approach combining DFT and polarizable potential function 844
Magnus CHRISTIANSEN

17:30 Understanding ion-specific interactions in anion-exchange membranes via atomistic modeling 1179
Paige BRIMLEY

Tuesday, 16 September 2025

TECHNOLOGIES FOR CO_2 CAPTURE AND CONVERSION C05

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Maryam ABDINEJAD

09:30 Electrochemical Capture of CO2 through Active Redox Carriers in pH-swing Electrolyzer 663
Daniele SASSONE

09:45 Impact of carbonaceous materials on metal-based composites for CO_ capture and electroconversion 1334
Mirtha A. O. LOURENCO

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SINGLE-ATOM AND MOLECULAR ELECTROCTALYSTS C06

11:00 Molecular (photo)electrochemical catalytic reduction of CO2. From all C1 products to complex molecules 475
Marc ROBERT

11:30 Enhancing CO_ Electroreduction to Methanol: Addressing Gas Diffusion Electrode Hydrophobicity and CO2 Mass Transfer 575
Medhanie Gebremedhin GEBRU

11:45 Single-atom doped copper electrocatalysts for electrochemical CO2 reduction to C2+ products 735
Lifeng LIU

12:00 Molecular catalysts embedded in semiconductors engineering for efficient catalytic CO2 reduction 1036
Laura CALVILLO

12:30 Lunch

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14:30	Cu–Sn Alloy Catalysts for Efficient and Selective Electrochemical CO2-to-Formate Conversion **Chrysanthi GKILI**	613
14:45	Atomic Layer Deposition Strategies for the Fabrication of Electrodes for CO2 Reduction **Lovelle Rhoy MANPATILAN**	1255
15:00	Online/Operando Insights Into Cu-Al Bimetallic Catalysts For Efficient CO2 Electroreduction Toward Liquid Products **Huali WU**	1314
15:30	Electrochemical reduction of CO_ and CO to oxygenates at high reaction rates **Omran MORADLOU**	1456
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16:00	Exploring Mesoscopic Mass Transport Effects on Electrocatalytic Selectivity **Hemanth S. PILLAI**	479
16:30	Tracking Catalyst Evolution in CO_RR: A Combined Operando Raman and TEM Study **Abdul WAHAB**	906
16:45	Exploring the role of the local environment in electrode-membrane assemblies for the electroconversion of CO2 **Ma_lle PAYA**	1155
17:00	Operando X-ray Absorption Spectroscopy of Cu-based Catalysts in a Custom MEA Cell for CO_ Electroreduction **Alessia BARDAZZI**	1259
17:15	Operando characterizations of catalysts for CO2 reduction **Angelica CHIODONI**	1756

17:30	High-throughput computational evaluation of MOFs for CO_ capture from flue gas and ambient air **Brahim AISSA**	01_1124
17:30	Leveraging Machine Learning to predict CO_ uptake in Metal-Organic Frameworks: A Data-Driven Approach **Brahim AISSA**	02_1129
17:30	Cu-based catalysts with enhanced selectivity for CO2 electroreduction by morphological engineering **Lan HUANG**	03_1327
17:30	Electrochemical CO2 Reduction on BiSn Eutectic Mixture: Shifting from Formate to Formic Acid Production **Avni Nandkishor GURUJI**	04_1370
17:30	Understanding the role of the catalyst in electrochemical CO2 reduction to solid carbon on liquid metals **Miriam ÜBELE**	05_1556
17:30	Bridging Physics and Artificial Intelligence: Force Fields for Carbon Dioxide from Classical to Machine Learning **Ignazio VACANTE**	06_1787
17:30	Production of Novel DAPP-Based Membranes for CO2 Electrolysis **Carmelo PARATA**	07_223
17:30	Elaboration of MxCu100-x NPs / p-Si photocathodes and modelling of their photocarrier collection properties for the photoelectrochemical CO2 reduction **Sylvain LE GALL**	08_304
17:30	Preparation of Au–Zn alloy thin films using electrochemical methods **Eidai MORI**	09_386
17:30	Electronic Structure Modulation of Nickel Single-Atom Catalysts for Enhanced Electrochemical CO_ Reduction in Acidic Environment **Mengstu Etay ASHEBIR**	10_44
17:30	Enhanced Ethanol Production via Photo-Thermal CO_ Hydrogenation over Fe-Modified Co Catalysts **Sameera SHAFI**	11_494

17:30 Designing High Efficiency CO2 Reduction Photocatalysts—Insights from a Photo-Assisted Kelvin Probe Force Microscopy Study 12_542
Ming-Chung WU

17:30 Cu Oxides based catalysts for CO2 electrochemical reduction 13_641
Laura VIGNI

17:30 A Deeper Understanding of Flooding Dynamics in GDEs for CO2 electrolyzer: the Role of Interfacial Pressure Control for the Gas-Liquid Interface stability 14_665
Daniele SASSONE

17:30 Laser-Ablated BiOCl/CoFe Prussian Blue Heterojunction for Photocatalytic Water Oxidation and Scavenger-Free CO_ Conversion to CO and CH_ 15_684
Sara SAMUEI

17:30 Ligand Field Engineering Enables Low-Overpotential and High-Rate CO_ Electroreduction on Ni-N-C SACs 16_903
Osama NASR

Wednesday, 17 September 2025

09:00 **PLENARY SESSION**

12:30 Lunch

SCALABILITY AND ENGINEERING CHALLENGES TOWARD INDUSTRIAL DEPLOYMENT C09

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Esther SANTOS

14:30 Electrochemical CO_ Reduction to Formate Using GDEs and Its Integration with Fermentation for the Production of Fatty Acids 268
Adriana RIOJA CABANILLAS

14:45 Influence of antimony doping on tin oxide nanoparticles for high current density electrochemical reduction of CO2 to formate 373
Digvijay GHOGARE

15:00 Design and testing of a Three-Compartment Electrolyzer for CO2 Electroreduction to Formic Acid 881
Camilo PERALTA

15:15 Advancing Bismuth-Based Gas Diffusion Electrodes for CO_ Reduction to Formate: Towards Self-Repairing Gas Diffusion Electrodes 1275
Eran EDRI

15:30 Coffee break

SCALABILITY AND ENGINEERING CHALLENGES TOWARD INDUSTRIAL DEPLOYMENT C10

16:00 Unraveling Complex Reaction Networks via accelerated Kinetic Monte Carlo: Dry Reforming on Pt/HfC Catalysts 118
Hector PRATS

16:30 Computational investigation of the FexRhy alloy structures and the mechanism and selectivity of CO2 hydrogenation 715
Shijia SUN

16:45 Stabilizing Metal Coated Silicon Photocathodes for Light Assisted CO2 Conversion by Area Selective-Atomic Layer Deposition 719
Encarnacion TORRALBA

17:00 Inverse design of bifunctional active sites for catalytic CO_ reduction 1335
Shubhajit DAS

17:15 Advancing urea quantification at trace levels: overcoming analytical challenges through method optimization and IC-MS 1358
Viktoria GOLOVANOVA

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

E-MRS 2025 Fall Meeting

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Nano-Micro Letters

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Symposium D

Sessions: Room 101 | MINI Building
Poster Sessions: Aula | Faculty of Physics

Materials for Energy, Sustainability and Extreme Conditions

Frontiers in Carbon Science and Technology II

Symposium organizers:

Hyacinthe **RANDRIAMAHAZAKA**	–	Université Paris Cité - CNRS
Nianjun **YANG (Main Organizer)**	–	Hasselt University
Paula **COLAVITA**	–	Trinity College Dublin
Quan-Hong **YANG**	–	Tianjin University, China

SYNTHESIS AND FUNCTIONALIZATION D05

09:00 Controlling impurity doping in CVD grown (111) diamond layer for quantum technologies 789
Hiromitsu KATO

09:30 Tailoring Single-Walled Carbon Nanotubes: From Polymer Synthesis and Chirality-Oriented Separation to Covalent Functionalization 1376
Andrzej DZIENIA

09:45 Functionalization of highly porous, reduced graphene oxide paper via cold atmospheric pressure dielectric barrier discharge linear jet. 1113
František ZELENÁK

10:00 MXene-Based Catalysts for Environmental Degradation of Chlorinated Hydrocarbons: A DFT Perspective 1373
Miroslav KOLOS

10:15 CVD-MOF synthesis of nanoporous ZIF-8-derived carbon electrodes for microsupercapacitors 1274
Jeng-Yu LIN

10:30 Coffee break

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11:00 Engineering the sp_-sp_ Carbon Puzzles: Microporous Three-Dimensional Boron-Doped Diamond Nanoarchitectures as Multifunctional Electrochemical Platforms for Next-Generation Energy Storage 310
Robert BOGDANOWICZ

11:30 2D materials and its composite for energy storage 1559
Jinhua SUN

11:45 Performance improvement of “moisture-enabled electric generating paper” based on carbon-nanotube-composite paper by impregnation with sodium dodecyl sulfate solution 967
Hiyu MITSUMAKI

12:00 Turning Olive Waste into High-Performance Hard Carbon Anodes for Sodium-Ion Supercapacitors: From Synthesis Challenges to a High-Current-Density Competitive Device 1065
Manuel PINZON

12:15 Sustainable hydrogen storage: activated carbon from agri-food waste 349
Chiara MILANESE

12:30 Lunch

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14:00 Bandgap engineering of nanodiamonds: towards photoreactivity under visible light 63
Jean-Charles ARNAULT

14:30 Enhanced photoluminescence of single walled carbon nanotubes due to carbyne encapsulation 1298
Dido DENIER VAN DER GON

14:45 Crossing the blood brain barrier and other biological barriers by carbon quantum dots 27
Sabine SZUNERITS

15:00 Immersion infrared reflection-absorption spectroscopy studies on diamond-like carbon surfaces. III. Post-growth modifications of a-C 1550
Vitaly RAEV

15:30 Coffee break

APPLICATION II D08

16:00 An Electrochemical Study on the Impact of Nitrogen Incorporation in Carbon Nanowalls on their Catalytic Activity 1170
Angelina PASTÖTTER

16:15 Sodium Carboxymethylcellulose-Carbon Nanotube Hybrid Composite: A Sustainable Approach to Humidity Detection 1429
Dorota BIERNACKA

16:30 Enhanced Long-term Anthracene Detection and Degradation on Nanocrystalline boron-doped Diamond Electrodes 1603
Yao LI

16:45 Improvement of power generation efficiency of transpiration-type thermoelectric power generating paper based on carbon-nanotube-composite paper by controlling its liquid absorption ability 965
Kazuhide YAKATA

17:00 INickel-Modified Laser-Induced Graphene based Wearable Microsupercapacitors for Temperature Monitoring
ABHISHEK PANGHAL

17:30 Laser Induced Graphene nano-anchored WS2/WO3 heterostructures for electrocatalytic oxygen evolution reaction and seawater splitting 01_1116
Tanuja SINGH

17:30 Nickel-Modified Laser-Induced Graphene based Wearable Microsupercapacitors for Temperature Monitoring 02_1120
Abhishek PANGHAL

17:30 Modification of photoluminescent emission from single-walled carbon nanotubes through aryl peroxides chemistry 03_1123
Patrycja TABOROWSKA

17:30 Effect of different surface terminations on MXene's reactivity for water dissociation: A DFT study 04_1218
Talha KALSOOM

17:30 o-Aminophenol-functionalized Ti_C_T_ coupled with laser-induced graphene for micro-droplet detection of fenbendazole 05_1612
Mei LIU

17:30 Highly sensitive electrochemical sensor based on laser carbonization of Cu-COF 06_1614
Can WU

17:30 Diamond-Graphene Nanohybrid Composite Films_ Preparation, Characterization and Application 07_1646
Wen ZHANG

17:30 Fabrication of Fe/Ni-NC/PC Composite and Highly Sensitive Electrochemical Sensor for Carbendazim Detection 08_1718
Liudi JI

17:30 A Highly Sensitive Electrochemical Sensor for Ciprofloxacin based on In Situ Coupling of Cu-BTC with Brick Tea-Derived Porous Carbon 09_1720
Liudi JI

17:30 Voltage-electrolyte tailored graphene electrodes for nM-level dual detection of Ponceau 4R and Rhodamine B in food products 10_1725
Kangbing WU

17:30 Simultaneous On-Site Detection of Zearalenone and Methyl Parathion Using a Cu–Ni Bimetallic Aerogel/Graphene Sensor 11_1730
Xiaoyu LI

17:30 Phase Engineering of Nanomaterials (PEN): 2D Nanomaterials 12_1760
Hua ZHANG

17:30 Impact of carbon nanodot uptake on complex impedance charge transport and energy storage mechanism in aloe vera leaves 13_236
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17:30 Innovative CVD Activation for High-Performance Mesoporous Carbon in Zinc-Ion Hybrid Capacitors 14_359
Guoli ZHANG

17:30 Laser-induced graphene coated wearable smart textile electrodes for biopotentials signal monitoring 15_661
Vidhya C M

17:30 Synthesis of Excitation-Tunable Carbon Quantum Dots for Ratiometric Sensing and Cancer Bioimaging. 16_733
Jithin VARGHESE

17:30 Synthetic Approaches for Stable Polymeric Carbon Nitride Panels for Photoelectrochemical Water-Splitting and Flow/Batch Photochemical Reactions 17_809
Michael VOLOKH

Wednesday, 17 September 2025

09:00 **PLENARY SESSION**

12:30 Lunch

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Lifeng LIU

14:30 N-doped Carbons - from Electrochemical Hydrogen Storage to Electrocatalytic Hydrogenation Reactions 866
Mateusz ODZIOMEK

14:45 Binder-free integration of Ti3C2 MXene on graphene nanowalls-coated carbon felt for hydrogen evolution catalysis 153
Roger AMADE

15:00 Investigating interfacial interaction between graphene and flowing water for energy conversion 127
Takeru OKADA

15:15 Experimental and Theoretical (DFT/TDDFT) Studies of Carbon Quantum Dots for Optoelectronic Applications 616
Shruti SHARMA

15:30 Coffee break

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16:30 Improving Conversion Efficiency of Paper-Based Dye-Sensitized Solar Cells by Extra Dye Impregnation 744
Chihiro SHIMIZU

16:45 Donor-acceptor 2D covalent organic frameworks as cathode material for aluminum energy storage device 1256
Cataldo VALENTINI

17:00 Bio-Sourced Modified Laser-Induced Graphene with Quasi-Solid Electrolyte for Flexible Supercapacitors in Wearable Devices 1240
Van BUI-THI-TUYET

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

E-MRS 2025 Fall Meeting

Symposium E

Sessions: Room 208 | Main Building
Poster Session: Aula | Faculty of Physics

Characterization, Simulation and Artificial Intelligence

Materials discovery, modeling, and characterization for sustainable energy applications

Symposium organizers:

Biplab **SANYAL**	– Uppsala University
Graziella **MALANDRINO**	– Università degli Studi di Catania
Jost **ADAM** **(Main Organizer)**	– University of Kassel
Poulumi **DEY**	– TU Delft

Monday, 15 September 2025

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Martin FRIÁK

09:30 Scalable Continuous-Flow Synthesis of PtNiRu@Graphene Nanoalloys for Enhanced HER Performance in Acidic Media 294
Srinivas KATAM

09:45 Carbon-based materials for H2 production through sustainable solar photoreforming reactions 432
Maria Teresa ARMELI IAPICHINO

10:00 Tailoring Electronic Properties of W1-xNbxS2 ternary alloy nanosheets by composition tunning: to enhance Hydrogen Evolution Reaction 480
Manoj PALABATHUNI

10:15 Strain Modulated Catalytic Activity of Pt2XSe3 (X = Hg, Zn) in Hydrogen Evolution Reactions 1404
Caique DE OLIVEIRA

10:30 Coffee break

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11:00 Structure and phonon dynamics of Cu/Ag-based thermoelectric materials by combining first-principles and neutron scattering 389
Bao-Tian WANG

11:30 V2Se2O and Janus V2SeTeO: Monolayer altermagnets for thermoelectric applications 101
Shubham Rakesh SINGH

11:45 Outstanding Thermoelectric Properties of Functionalized 2D MXenes (ZT ~ 5) 1300
Jan KOLODZIEJCZYK

12:00 Effect of atomic structure and molecular templates on thin film thermoelectric performance. 1762
Samuel JARVIS

12:15 Exploring Different Routes to Unlock the Potential of High Entropy Alloys for Electrocatalytic Water Splitting 1436
Ugur UNAL

12:30 Modelling-Guided Fabrication of Robust Patterned Transparent FTO Substrates for Scalable Photovoltaic and Photoelectrochemical Energy Systems 1452
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14:30 A computational exploration of photocatalytic hydrogen and oxygen evolution reaction pathways in low-dimensional Ni/MoS_ systems 1411
Aku LEMPELTO

14:45 Activity Enhancement in Al-Cu-Fe-Ni-Ti High Entropy Alloy for Hydrogen Evolution Reactions 1423
Pedro AUTRETO

15:00 Green Hydrogen Objective: Chemical Functionalization of GaN Nanowires for the Development of Innovative Photocatalysts 515
Hiba EL IDRISSI BOUYAHYAOUI

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Ayat ELSHAZLY

15:30 Coffee break

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16:30 First principles study of oxidation resistance of amorphous Si-(B)-C-N materials, and experimental verification 356
Jemal Yimer DAMTE

16:45 Novel heterobimetallic compounds for fluoride-based materials and their applications 916
Claudia BARBAGALLO

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17:15 Advanced characterization of copper thin film deformation under simultaneous applied stress and ion beam irradiation 528
Fabien ONIMUS

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Sol_ne DE MÉZERAC

17:30 Data-Driven Forecasting of Microstructure Evolution in Carbon and Low alloy Steel 02_1028
Atul SRIVASTAVA

17:30 Raman spectra deconvolution of NMC materials for compositional and state-of-charge diagnostics 03_1139
Dominika BUCHBERGER

17:30 High cycle fatigue behavior of low carbon micro-alloyed dual phase steel sheets for sustainable and affordable car body structures 04_138
Gaurav PANDEY

17:30 LTO solid electrolytes for alkaline metallic batteries. Electronic and mechanical properties modified by atomic sustitutions 05_157
José Alejandro LEÓN CANCINO

17:30 Long-Term Degradation Mechanisms in Perovskite Solar Cells: A Three-Year Study 06_161
Mohammad Istiaque HOSSAIN

17:30 Deep eutectic solvent utilizing potassium iodide and propylene glycol as redox electrolyte for hybrid electrochemical capacitors – characterization and optimization. 07_199
Aleksandra MROZIEWICZ

17:30 Electrochemical fabrication of copper sulfate microneedles for needle sensors 08_244
Ryoma OKADA

17:30 O content and room-temperature aging effects on deformation modes in metastable _ titanium alloy 09_306
Xin HUANG

17:30 Construction of MoS2 Nanosheets/Hydrogenated Graphene Hybrid Catalysts for Highly Efficient Electrocatalytic Hydrogen Evolution 10_330
Xiuxiu HAN

17:30 Development of SOH Diagnostic Model Based on Partial Charging Data for Electric Vehicles 11_338
Sang Jun PARK

17:30 MoxTiyCx+y_1 Double-Transition Metals Mxenes as electrodes of supercapacitors: A DFT study 12_344
Hamidreza JOUYPAZADEH

17:30 Study of the influence of alkali metals on the atomic structure of Cu(In,Ga)Se2 using Raman spectroscopy 13_357
Eryk LICHOCKI

17:30 Electrochemically formed Single-Atom Centers of MXenes for the Selective Electrochemical Reduction of Nitrogen to Ammonia 14_36
Diwakar SINGH

17:30 Formation of Cu– ZnO catalyst with composite structure of Cu dendrite crystals and ZnO thin-film plates 15_387
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17:30 Innovative Solution-Based Approach for Synthesis of Polycrystalline LiNbO3 Thin Films Using a novel bimetallic Li–Nb complex 16_424
Francesca LO PRESTI

17:30 Numerical analysis of plasmonic particles formed by direct laser writing 17_426
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17:30 First principles study of oxidation resistance of amorphous Si-(B)-C-N materials, and experimental verification 18_428
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17:30 In-situ Polymerized Fluorinated Solid Polymer Electrolytes Enabled by High-Energy Electron Beam Irradiation for Lithium Batteries 19_446
Wookil CHAE

17:30 Ultrafast Photo Carrier Dynamics in CeO_ Revealed by Time-Resolved X-ray Absorption Spectroscopy 20_449
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17:30 Oxygen Evolution Reaction on Twisted Layered Double Hydroxides 21_457
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17:30	A Simulation-Based Framework for Electropolishing PBF-Fabricated Inconel 625 in energy applications **Hyunbin JO**	22_466
17:30	Machine Learning models enable the prediction of PVDF Nanogenerator performance optimization **Md Mehedi Hasan APU**	23_509
17:30	Bandgap Engineering of PbI_(1-x) Br_(x) Prepared by Room Temperature Chemical Solution **Hamad ALBRITHEN**	24_533
17:30	Stabilization of the Cubic _-Phase of SnS with Calcium Impurities **Susmita PAUL**	25_549
17:30	Modelling stress corrosion cracking resistance at high deformation **Jason LEE**	26_581
17:30	Engineered Ni-P Coated Graphite Catalysts for Sustainable _-Valerolactone Production via Photothermocatalysis **Pol VILARI_O**	27_597
17:30	Electrodeposited Multimetallic Electrocatalysts for the Selective Aqueous Electroconversion of Biomass-Derived Levulinic Acid into Value-Added Molecular Platforms **Pol VILARI_O**	28_598
17:30	Advanced Electroless Plated Metal Foams for Enhanced Thermal Management with Liquid Metals **Yook DONGGYU**	29_632
17:30	Electrochemical Evaluation of Wet-Spun Ti_C_T_ MXene Fibers for High-Performance Supercapacitors **Aleyna AKILLI**	30_64
17:30	Strain-dependent modulation of metal/WS2 Schottky nanocontacts **Andrea GERBI**	31_644
17:30	Ceramic fiber composites based on recycled materials for thermal insulation applications **Krzysztof KOGUT**	32_675
17:30	AFM Characterization of the Mechanical Properties of Hydrogels: Calibration and Evaluation of Young's Modulus on the Nanoscale **Helena VALENTOVÁ**	33_689
17:30	Biocompatible Energy Harvesting Devices for Low frequency operation **Sunny SHARMA**	34_788

17:30 Predicting Formability in Halide Perovskites through Accelerated ML Screening 35_803
Soheila ABBASIMOFRAD

17:30 Modeling performance and stability enhancement in R-NN1/MnO2 by substitution of Co and Ni 36_821
Anurag JHA

17:30 MOCVD-grown Calcium Ferrite thin films as photocatalysts for water remediation 37_857
Laura SALAMONE

17:30 Voltage-Induced Degradation in Nickel-rich NMC Electrodes: In-Situ XRD and Raman Study 38_878
Pawel STEPNICKI

Tuesday, 16 September 2025

MULTI-SCALE MODELING I E05

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Ryoji SAHARA

09:15 Polaronic effects induced topological phase transitions in quantum (spin) Hall flat band insulators 1587
Saurabh BASU

09:45 Plasma Facing Materials, Multiscale modeling of Damage evolution 1383
Giorgio LO PRESTI

10:00 Multi-scale characterization of carbon-based polymer fibers and composites using Small and Wide-Angle X-Ray Tensor Tomography 712
Carolina GUTIÉRREZ BOLANOS

10:15 Cobalt Diffusion in SrTiO3 Thin Films: A Multi-Scale Characterization Approach 1339
Qian MA

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11:00	Calculation data-driven design and optimization of coatings for Ti bipolar plates in PEM water electrolyser environment **Chaofang DONG**	216
11:30	Data-Driven Discovery of Thin-Film Phospho-Sulphides Semiconductors Using Combinatorial Synthesis and FAIR Principles **Eugene BERTIN**	1154
11:45	Data-driven discovery of metal-organic framework catalysts for small molecule conversions **Shubhajit DAS**	1312
12:00	Computational approach to fast analysis of Electrochemical Impedance Spectroscopy **Cristiano LO PO**	601
12:15	Fast-Tracking Solar Cell Materials Discovery Using Automation, Physics Modeling and Bayesian Machine Learning **Joseph CHAKAR**	1027
12:30	Teaching oxidation states to neural networks **Cristiano MALICA**	872
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14:00	From electronic structure to polycrystals via machine learning: Lithium transport in argyrodite solid electrolytes **Blazej GRABOWSKI**	666
14:30	Practical Investigations of Machine-Learning-Based Molecular Dynamics Using Quantum Thermal Bath for Nuclear Quantum Effects in Perovskite Oxides **Kansei KANAYAMA**	341
14:45	Following reaction kinetics in multiphase systems using local descriptors from machine-learned interatomic potentials **Agnieszka WARNICKA**	690

15:15 High-throughput and data-driven search for stable optoelectronic AMSe_ materials 182
Nikhil SINGH

15:30 Coffee break

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Francesco MARESCA

16:30 Response of Halide Perovskites to Mechanical Stress using Molecular Dynamics Simulations 751
Pranjul Chandra BHATT

16:45 Disorder, Dynamics, and Transport in Naphthalene-Diimide Mixed Ionic-Electronic Conductors 119
Marco SEVERI

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Maciej MAKUCH

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Antonio CAMMARATA

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Sylvain LE GALL

17:30 Influence of Bi__ Heterovalent Doping on Negative Capacitance and Ionic Conductivity in MAPbBr_ Single Crystals: Prospects for Neuromorphic Applications 02_1125
Farha Naaz MANSOORIE

17:30 Niobium and Tantalum Addition to Ti/V-Based High Entropy Alloys for Hydrogen Storage 03_1148
Jose Antonio VILLAJOS COLLADO

17:30	Optimizing Supercapacitor Design: A Diffuse-Interface Computational Framework for Enhanced Electrochemical Performance via Morphology Engineering **Parul PARUL**	04_1228
17:30	Compatibility of compositions in core-shell NMC cathodes for lithium-ion batteries **Michal GRYGIEL**	05_1245
17:30	Core-Shell NMC cathodes for High-Performance Lithium-Ion Batteries - The Role of Calcination Temperature, Atmosphere, and Process Pathways **Natalia FIRLEJ**	06_1297
17:30	Data-Driven Analysis of Structure–Property Relationships in Crack-Defined Nanomesh Networks **Jo NAMHUN**	07_1299
17:30	Strain path dependent microstructure and texture evolution in _-Titanium during ambient temperature Multi-Axial Forging **Sujit NAYAK**	08_1317
17:30	Efficient Bandgap Modeling of Double Perovskite Oxides Using Deep Neural Networks **Soheila ABBASIMOFRAD**	09_1391
17:30	Deep Learning-Driven Optimization of Eco-Friendly CIGS Solar Cells: Synergistic Effects of Plasmonic Light Trapping and Bandgap Engineering **Faycal DJEFFAL**	10_1412
17:30	From NMC to NMC: Recycling of NMC622 Cathode Materials **Magdalena WINKOWSKA-STRUZIK**	11_1424
17:30	DFT investigation of the Photocatalytic Performance of Monoclinic Bismuth Vanadate (BiVO4) Through Synergistic Surface Facet and Intrinsic Defect Engineering **Shaikhah LARADHI**	12_1466
17:30	Asymmetric Perylene Bisimides at the Bay Positions: Charge Transfer and Photostability studies **Chenbo MENG**	13_1468
17:30	First-Principles Investigation of Nitrogen Doping and Stacking-Dependent Electronic Structure Modulation in Imine-Based 2D Covalent Organic Frameworks **Diksha SRIVASTAVA**	15_1504

17:30 Design and simulation of lead free Perovskite Solar Cell 16_1520
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17:30 Hydrogen Production through Zr-Based MOFs Synthesized from PET-Derived Terephthalic Acid 17_1530
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17:30 Enhanced Ionic Conductivity and Structural Insights in Zr-Doped LiTa_PO_ Ceramics 18_1540
Konrad KWATEK

17:30 Linking Ionic Conductivity, Microstructure and Sintering Tempeerature in Ti-doped LiTa2PO8 Ceramics 19_1541
Klaudia PACHULSKA

17:30 Investigation of chemical species in Uranium-containing Deep Eutectic Solvent (DES) and preparation of UO2 fuel microspheres 20_1564
Yan ZHANG

17:30 Discerning the duality of H in Mg: H-induced damage and ductility 21_1572
Yucheng JI

17:30 Oxygen adsorption behavior of various BCC Iron surfaces: A Density Functional Theory study 22_1583
Poulumi DEY

17:30 Synthesis and characterization of AgBiS2 thin films prepared by magnetron sputtering followed by sulfurization 23_1596
Marius FRANCKEVICIUS

17:30 In-situ XANES Analysis of Redox Properties in CeO2-Al2O3 for Enhanced Oxygen Storage Property in Ni Catalysts 24_1635
Krongthong KAMONSUANGKASEM

17:30 In-plane thermal conductivity measurements in nanoscale materials based on two laser Raman thermometry 25_1636
Timm SWOBODA

17:30 Optimizing Polymer Electrolytes Using POSS Nanoparticles and Machine Learning: A Pathway to Superior Li-ion Battery Performance 26_1661
Anji Reddy POLU

17:30 Effect of surface modification in form of coating on structural and electrochemical properties of lithium iron phosphate 27_1697
Jakub MRÓWCZYNSKI

17:30 Flexible CIGS BIPV Modules: A Sustainable Solution for Modular Construction 28_1705
Joao MAGALH_ES

17:30	Eco-Friendly Microwave Synthesis of Dy-Doped Sodium Zinc Molybdate for Superior Luminescence and Photocatalysis **Sourabh GOURAHA**	29_1723
17:30	Deformation mechanism in copper columnar nanotwin structure under tensile loading : Insights from the molecular dynamics simulation **Nitin Kishore RAWAT**	30_1727
17:30	Revealing rich magnetic phases and novel spin-wave spectra in Orthorhombic perovskite TbCrO3: a first principles study **Fengyi ZHOU**	31_1761
17:30	Innovative concepts applied in obtaining new anode materials for Li – ion batteries **Ioana-Cristina BADEA**	32_1803
17:30	High-Performance Supercapacitor Based on Borophene/V_CT_ MXene 2D Hybrid Electrodes **Berfin Gülay GÜLER**	33_1827
17:30	Designing Organic Redox active Polymer as Cathodes for High-Performance Zinc-Ion Batteries **Anita SAMAGE**	34_1835
17:30	Enhanced Performance of Graphene-Based Supercapacitor Electrodes via Stepwise Electrophoretic Deposition **Haniyeh ZAFARKISH**	35_1843
17:30	The Momentum Microscope at the Beamline P22 as Tool for Materials Characterization. **Volkmar KOLLER**	36_1846
17:30	From nanoparticle individuality to ensemble behaviour, the road to protein corona **Anna FUCIKOVA**	37_768
17:30	Highly Stable Lead-Free Tin Perovskite Nanocrystals Through Structural Engineering **Sunardi RAHMAN**	39_886
17:30	Crystal Structure Prediction in p-Type _-Conjugated Organic Semiconductors Based on Machine Learning and Molecular Simulations **Takuya SEKI**	40_984

Wednesday, 17 September 2025

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12:30 Lunch

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Tanmoy PAUL

14:30 Data-driven Lithium Salt Design for Long-Cycle Lithium Metal Battery 280
Kyungju NAM

14:45 New methodology for the mechanical characterization of interfaces in all-solid-state lithium batteries 514
Daphné MOLÉ

15:00 Selectivity aspects in critical metal recycling from spent Li-ion batteries 1523
Jedrzej PIATEK

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PHOTOVOLTAIC AND PEROVSKITE MATERIALS E10

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Iulia Emilia BRUMBOIU

16:30 Tuning spin polarized lifetime in two-dimensional perovskites 99
Xihan CHEN

16:45 Combining Component Screening, Machine Learning and Molecular Engineering for the Design of High-Performance Inverted Perovskite Solar Cells 527
Thierry PAUPORTÉ

17:00 Spectral Modulation of Lead-free Cs2NaInCl6 Double Perovskites via Sb3+/Mn2+ Co-doping and Bromide Ion Substitution for Multifunctional Applications 92
Anjana YADAV

17:15 Enhanced Water Stability of Halide Perovskites via Graphene Flake Encapsulation: Insights from CsPbI_ and Beyond 1562
Oussama ER-RIYAHI

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 18 September 2025

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Foad GHASEMI

09:00 Broadband non-linear response in noble metal dichalcogenides 1537
Paul SEIFERT

09:30 From MAX to MXene: Decoding the etching protocols behind 2D MXene formation 1368
Mehya MANSOOR

09:45 Janus monolayers of Ge2SeTe for harvesting green energy and sustainable technologies: A Computational Approach 1382
Mohaddeseh Mehmandoust Khajeh DAD

10:00 First principles study of photocatalytic activity in ZnO-Janus van der Waals heterostructures 526
Tahir WAHAB

10:15 Construction of MoS2 Nanosheets/Hydrogenated Graphene Hybrid Catalysts for Highly Efficient Electrocatalytic Hydrogen Evolution 329
Xiuxiu HAN

10:30 Coffee break

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11:00 Emergence of polar skyrmions in 2D Janus CrInX3 (X=Se, Te) magnets 1289
Duo WANG

11:30 Nanostructure-Dependent Vibrational Properties of Phosphorene Nanoribbons: An ARPRS and First-Principles Study 114
Jacek JASINSKI

11:45 First-Principles Insights into Halide-Terminated MXenes for Stabilizing Halide Perovskites 1473
Tamar GOLDZAK

12:00 Optimal Substrates for Single-Layer Boron Phosphide from First-Principles Calculations 1118
Walter ZUCCOLIN

12:15 From single bond to line defects: a case study from a novel two-dimensional network-forming material 1310
Marco DIRINDIN

12:30 Lunch

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14:30 Orbital-order as the driving mechanism for superconductivity in ruthenates 796
Julien VARIGNON

14:45 Theoretical Study of Phonon Anharmonicity in Two-Dimensional MoS_/hBN and WS_/hBN Heterostructures: Impact of Rotational Invariance Violation 1372
Konrad WILCZYNSKI

15:00 Charge Manipulation in Hematite Fe2O3 as a Route to Polaron Physics 231
Sreehari SREEKUMAR

15:15 Optical and excitonic properties in 2D materials and their van der Waals heterostructures using hybrid TD-DFT 1474
František KARLICKÝ

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Materials with Complex Interactions E14

16:00 Inversion and time-reversal asymmetry-enabled energy-saving spintronic applications 1357
Nirmal GANGULI

16:30 Ultrafast Hot Carrier Transfer and Bond Activation in Nitrate Photoreduction on CdSe Quantum Dots: Insights from Ab Initio Quantum Dynamics 722
Ankita KUMARI

16:45 Understanding the Atomic-Scale Origins of Interface States in Crystalline and Amorphous Al_O_/GaN Interfaces 915
Marouane AMMAR

17:00 On approaches to predicting shear-coupled grain boundary migration in materials 1667
Andrej OSTAPOVEC

E-MRS 2025 Fall Meeting

Symposium F

Sessions: Room 226 | Main Building
Poster Sessions: Aula | Faculty of Physics

Characterization, Simulation and Artificial Intelligence

Advanced interoperability in atomistic simulations of materials

Symposium organizers:

Antonio **CAMMARATA (Main Organizer)** – Czech Technical University in Prague

Miguel **PRUNEDA** – CSIC-CINN, and CSIC-ICN2

Roberta **POLONI** – CNRS, UGA SIMaP

Monday, 15 September 2025

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09:15 New functionalities of the AiiDA infrastructure 1262
Xing WANG

09:45 PerQueue: A Dynamical, Graph-Based Workflow Manager 431
Peter BECK

10:00 Atomistic insights into the intermolecular interactions governing glycerol removal from biodiesel using deep eutectic solvents 1532
Mirat KARIBAYEV

10:15 Accelerating Density Functional Theory Relaxations Through the Synergistic Integration of AI/ML Force Fields: A Comprehensive Study Utilizing CHGNet and MACE 732
Arsalan AKHTAR

10:30 Coffee break

SESSION 2 F02

11:00 Computational materials engineering with active learning 1757
Milica TODOROVIC

11:30 Machine Learning Interatomic Potentials for Structural Modeling of Large Carbon-Based Materials 1783
Ignazio VACANTE

11:45 Unraveling Temperature-Induced Vacancy Clustering in Tungsten: Atomistic Insights via Data-Driven Bayesian Sampling 488
Anruo ZHONG

12:00 Density functional Bogoliubov-de Gennes theory for superconductors in SIESTA 1459
Zeila ZANOLLI

12:30 Lunch

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14:00	Effects of oxygen adsorption on resistivity in ruthenium thin films **Takahisa TANAKA**	1710
14:15	Transport properties of carbon nanotube structures in ultrahigh magnetic field **Teresa KULKA**	1284
14:30	Computation of Magnetic Parameters: TB2J's Extended Implementation of the Magnetic Force Theorem **Xu HE**	924
15:00	Evolution of Spin Waves with Coherent Phonon Excitation in Magnetic Oxides **S S JAYAKRISHNAN**	1046
15:15	Efficient atomistic modelling of finite-temperature effects in magnetic metal alloys **Léo HALLÉGOT**	1025
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16:00	Nonlinear optical effects from first-principles: a real-time approach **Myrta GRÜNING**	914
16:30	Van der Waals heterostructures of PtSSe/WXY (X, Y = S, Se, Te): Ab initio study on photovoltaic and photocatalytic applications **Shivprasad Shivaram SHASTRI**	706
16:45	Effects Induced by Anion Ordering in Perovskite Oxynitrides: a Many Body Study **Sudha Priyanga GANESAPANDIAN**	588
17:00	Engineering defect clustering in diamond-based materials for technological applications via quantum mechanical descriptors **Matúš KAINTZ**	852

SESSION 5 F05

09:30	Phonon calculations, related properties and materials discovery **Atsushi TOGO**	1538
10:00	Resonant raman spectra of Cadmium Sulfide wurtzite: A first-principles simulations study **Ali KACHMAR**	1328
10:15	DFT Study of Temperature-dependent Thermal Expansion and Phonon-phonon Coupling in Single-layer MoS_ in Monocrystal and Polycrystalline Forms **Konrad WILCZYNSKI**	1378
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SESSION 6 F06

11:00	Transport of electrons and phonons: scaling the state-of-the-art and improving the theory **Nakib PROTIK**	748
11:30	On the origin of charge density waves as an emerging phenomenon from electron-phonon interactions in ZrTe_ **Raghottam Manoj SATTIGERI**	1585
11:45	Mesoscale phonon propagation in Lattice Thermal Quantum Field **Domenica RACITI**	1394
12:30	Lunch	

SESSION 7 F07

14:00	Accelerating Lattice-Dynamics Calculations with Machine-Learning Tools **Jesús CARRETE**	782

14:30 Deep Potential Molecular Dynamics Study of Au(111)/MX_ (M=Mo, W and X = S, Se, Te)/Si Tip 683
Suresh RAVISANKAR

14:45 Study of Nanofriction Control in Transition Metal Dichalcogenides using Density Functional Theory and Machine Learning Force Fields 693
Ravikant KUMAR

15:00 Investigation of System-Size Dependence in Transport Coefficients with Machine Learning Force Fields 697
Arsenios GKOURRAS

15:15 Design rules for doped transition metal dichalcogenides 525
Elliot PERVIZ

15:30 Coffee break

SESSION 8 F08

16:00 Materials simulation with Second Principles: Polar skyrmions, optical properties and polaron mobility 411
Pablo GARCIA-FERNANDEZ

16:30 Oxygen Vacancy Stabilization at Ferroelectric Domain Walls: A Molecular Dynamics Simulation Study 517
Hikaru AZUMA

16:45 Analysis of nanofriction with collective coordinates 430
Gianfranco ORLANDO

17:00 Experimental and Molecular Dynamics simulation study on deformation mechanism of CoCrNi MEA under nanoscratch test 1695
Vamsi Krishna MAJETI

POSTER SESSION 2 FP02

17:30 Investigating the Multimeric Protein Complex Structure Involved in Cell Motility Using Molecular Dynamics Simulation and AlphaFold2 01_1305
Tomoki NOGUCHI

17:30 Molecular Dynamics Simulation for Ferroelectric Nematic Liquid Crystals in External Electric Fields 02_1307
Tetsu KATAYAMA

17:30	Molecular Dynamics Simulation Reveals Free Energy Landscapes of Supramolecular Mechanophores **Machi SASHIKATA**	03_1389
17:30	Combined DFT and SCAPS-1D Investigation of Doped SnO as a Hole Transport Layer for Lead-Free Perovskite Solar Cells **Faycal DJEFFAL**	04_1420
17:30	Protein Adsorption on Alkyl-Substituted Cellulose Interfaces: All-Atom Molecular Dynamics Simulation and Free Energy Calculation **Koichiro ISHIBASHI**	05_1503
17:30	Atomistic Insights into Ammonia Storage in Deep Eutectic Solvents: Role of Hydrophobicity in Molecular Interactions **Erbol USEN**	06_1526
17:30	Piezoelectric and Dielectric Properties of Perovskite-type RbNbO3 Predicted with Molecular Dynamics Simulation **Yuta TAKAHASHI**	07_804
17:30	Cr-benzene Complex as a new candidate for molecular spin qubit **Soumyasree JENA**	08_973

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

E-MRS 2025 Fall Meeting

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Symposium G

Sessions: Room 208 | Main Building
Poster Sessions: Room 237 (Small Hall) | Main Building

Characterization, Simulation and Artificial Intelligence

Artificial Intelligence to accelerate the development of new advanced materials for energy

Symposium organizers:

Johannes **BÜNZ**	– European Innovation Council
Paolo **BONDAVALLI (Main Organizer)**	– European Innovation Council
Sophia **FANTECHI**	– DG RTD, European Commission
Valeria **NICOLOSI**	– Trinity College Dublin

Tuesday, 16 September 2025

HIGH-THROUGPUT METHODS AND AUTOMATED PLATFORMS IMPLEMENTIG AI FOR ADVANCED MATERIALS — G05

09:00	Machine Learning for Materials Discovery: From Big Data to Predictive Insights for Energy Applications **Silvana BOTTI**	1301
09:30	High-throughput materials screening for renewable energy storage using Machine Learning and Artificial Intelligence **Josua VIETEN**	1213
10:00	Robots, Automation, and Artificial Intelligence: On the Quest for Accelerating Perovskite Research **Jesper JACOBSSON**	361
10:30	Coffee break	

AI FOR ADVANCED MATERIALS FOR ENERGY I — G06

11:00	Accelerated Optimization of Battery Manufacturing by combining Computational Simulations & AI **Alejandro FRANCO**	1186
11:30	Accelerated Discovery of Electrolyte Additives for Aqueous Mg-Air Batteries by Machine Learning **Darya SNIHIROVA**	1430
11:45	AI-Driven Discovery of High Performance Polymer Electrodes for Next-Generation Batteries **Subhash V.S GANTI**	40
12:00	Cloud-connected Labs of Future for Energy Materials **Kourosh MALEK**	1460
12:30	Lunch	

AI FOR ADVANCED MATERIALS FOR ENERGY II G07

14:00 What drives structural distortions in two dimensional hybrid halide perovskites? 1365
Priya MAHADEVAN

14:30 Effective exploration of the vast design space for metal-based reactive materials using active learning surrogate models 139
Carole ROSSI

14:45 Automated Experimental Platform for AI-Driven New Energy Materials Discovery 770
Andy HUANG

15:00 Real-time autonomous combinatorial experimentation: from atomic layer synthesis to metal additive manufacturing 772
Ichiro TAKEUCHI

15:30 Coffee break

THEORETICAL APPROACH FOR AI AND MATERIALS G08

16:00 Shallow Learning for Interpretable and Data-Efficient Inference of First-Principles Hamiltonians 1619
Simon M.-M. DUBOIS

16:30 Physics-informed neural network for efficient simulation of coupled fields in structural supercapacitors 1513
Davood PEYROW HEDAYATI

16:45 Optimization of multi-principal element alloy compositions using a machine-learning assisted high-throughput methodology 1233
Rebekka MAESS

17:00 Physics_Aware Data_Driven Multi_Objective Inverse Design of Battery Cathodes 685
Ali BADAKHSHAN

POSTER SESSION 2 GP02

17:30 Deep learning model for the design of redox active molecules applicable to AORFBs 01_1146
Byeongjik HAN

17:30 Challenges and Opportunities in AI-Assisted Research and Materials Acceleration Platforms for Functional High-Entropy Alloys Designed for Harsh and Extreme Environments 02_1417
Bogdan POSTOLNYI

17:30 Influencing factors, limitations, opportunities and segmentation of artificial intelligence application in the energy sector 03_148
Tatyana STETSYUK

17:30 Atomistic and AI-Driven Insights into Ferroelectric Switching in Hybrid Improper Double Perovskite Oxides 04_1547
Gayathri PALANICHAMY

17:30 MaTableGPT: GPT-Based Table Data Extractor from Materials Science Literature 05_1570
Jiwoo CHOI

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

AI FOR GROWTH AND SYNTHESIS OF ADVANED MATERIALS I G09

14:00 NanoIC pilot line – addressing sub 2nm leading edge technologies 725
Inge ASSELBERGHS

15:00 Exploring the electronic-structure genome of known inorganics 1197
Nicola MARZARI

15:30 Coffee break

AI FOR THERMAL AND VIBRATION DIFFUSION IN ADVANCED MATERIALS G10

16:00 Machine Learning for Phonon Engineering 1731
Giorgia FUGALLO

16:30 Enabling Automated and Contactless Voice Recognition through an Underwater Vibration Sensor 894
Debasmita SARKAR

16:45 Machine Learning-Enhanced Thermal Conductivity Measurements in Thin Films: Integrating Nanoscale Surface Topography and Thermal Analysis 93
Mohsen DEHBASHI

17:00 Machine Learning extensions of anharmonic phonon methods 1390
Matthieu VERSTRAETE

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 18 September 2025

MATERIALS II G11

09:00 Metal Doping of TMDC monolayers: A Data-Driven Path to Functional Alloy Discovery 1448
M. Sufyan RAMZAN

09:30 Searching for optimal multi-elemental catalytic materials by Bayesian active learning combined with experiments 173
Min Young HA

09:45 Understanding Oxidation Dynamics in Amorphous Boron Nitride via Machine Learning Molecular Dynamics 1070
Onurcan KAYA

10:15 Deep Representation Learning for Break-Junction Data Analysis 1758
Sam HARLEY

10:30 Coffee break

ORAL SESSION G12

11:00 EIC vision on AI for advanced materials 1089
Paolo BONDAVALLI

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applications and materials science

Symposium H

Sessions: Room 231 | Main Building
Poster Session: Aula | Physics Building

Characterization, Simulation and Artificial Intelligence

Reliable characterisation of functional nanomaterials and of materials for energy storage or conversion

Symposium organizers:

Claudia **FLEISCHMANN**	– imec and KU Leuven
Karin **KLEINER**	– Insitut national de la rechereche scientifique (INRS)
Matthias **MÜLLER (Main Organizer)**	– Physikalisch-Technische Bundesanstalt
Sebastian **WOOD**	– National Physical Laboratory

Monday, 15 September 2025

CHARACTERISATION FOR SUSTAINABLE ENERGY MATERIALS I — H01

09:00 In-Operando Atomic Force Microscopy on Functional Layers in Batteries and Electrochemical Water Splitting Devices 1609
Florian HAUSEN

09:30 Atomic-Scale Structural Dynamics at a-Si:H/c-Si Heterointerface During Low-Temperature Thermal Annealing 1277
Xianlin QU

09:45 Synthesis and Synchrotron-based Characterization of Ni/Co Oxides Derived from Mixed Metal-TEA Complexes for Thermal Catalytic Biomass Conversion to Chemical Feedstock 1626
Suparat SINGKAMMO

10:00 Real-time Raman Monitoring of Ni-based LDHs during the Oxygen Evolution Reaction 1594
Madjid TARABET

10:15 Comprehensive Analysis of Hydroxyl Groups in Zeolites Using Advanced Temperature-Programmed Desorption 1571
Shunsuke SHIMIZU

10:30 Coffee break

CHARACTERISATION OF BATTERY MATERIALS I — H02

11:00 Understanding Interfacial Reactions in Li-ion Batteries using X-ray Spectroscopy Combined with Spectral Simulations 1892
Robert WEATHERUP

11:30 Unraveling the failure modes of solid-state batteries: an in-situ synchrotron X-ray laminography electro-mechanical analysis 388
Clara AIMAR

11:45 Operando chemical analysis of batteries by quantitative x-ray spectrometry 1824
Burkhard BECKHOFF

12:00 Synchrotron-based X-ray diffraction and X-ray absorption spectroscopy for in-situ analysis of the enhanced performance and stability of zinc-ion batteries 1094
Suttipong WANNAPAIBOON

12:15 Unveiling electronic structures using a new wavelength-dispersive spectrometer for advanced x-ray analysis 1402
Adrian JONAS

12:30 Lunch

NANOMATERIAL CHARACTERIZATION I H03

14:00 X-ray Photoelectron Spectroscopy (XPS): Importance, Challenges, and Significant Opportunities 1893
Donald R. BAER

14:30 Chemistry of buried interfaces in III-V heterostructures using lab-scale HAXPES and ToF-SIMS 369
Eugénie MARTINEZ

14:45 Quantitative element-sensitive analysis of individual nanoobjects 1315
André WÄHLISCH

15:00 Characterization of complex multilayer nanostructures with high aspect ratio 635
Erkki IKONEN

15:15 Surface-sensitive metrology on periodic nanostructures with X-ray fluorescence spectroscopy methods 1341
Vinh TRUONG

15:30 Coffee break

NANOMATERIAL CHARACTERIZATION II H04

16:00 Analytical X-ray nanoscopy in the soft and tender X-ray range 1026
Andreas HAIDL

16:15 Evidence for the (146 0 -130) diffraction peak in DyScO3 using the S-Dirac super-resolution method. 404
Cyril GUEDJ

16:30 A Validation Dataset to Benchmark Machine Learning and Conventional Algorithms for the Morphological Characterization of Fractal Aggregates like Soot 1478
Tobias KLEIN

16:45 Correlative Metrology of Thermoelectric and Electronic Properties in Nanoscale Materials Using Graphene-Coated Probes and Thermal-Electric Force Microscopy 1769
Benjamin ROBINSON

17:00 GIWAXS and GIXAS development at BL7.2W, SLRI 1316
Chatree SAIYASOMBAT

POSTER SESSION 1 HP01

17:30 Understanding degradation and durability of Au nanoparticle decorated 2D-MoSe2 for Hydrogen Evolution Reaction (HER) using in-situ identical location TEM studies 01_1076
Rajashree KONAR

17:30 Machine Learning-Assisted TOF-SIMS Analysis of Wrapping Polymers for Differentiating Carbon Nanotube Diameters 02_1159
Wen-Shan ZHANG

17:30 Microstructural study of a peculiar stress-induced reversible phase transformation in YNbO4-modified ZrO2 (3Y) 03_1164
Chen-Chia CHOU

17:30 Recent experimental determinations of X-ray fundamental parameters at PTB 04_1211
Philipp HÖNICKE

17:30 The SMURFnano Project - Surface Functionalities on Nanoparticles and their Standardized Measurement 05_1286
Lena SCHOLTZ

17:30 From the EU metrology projects AEROMET I & II to the HE project MI-TRAP - Reliable chemical aerosol analysis by X-ray spectrometry without calibration samples 06_1325
André WÄHLISCH

17:30 Potentiometric and Optical Titration for Cost-Efficient Quantification of Surface Functional Groups on Silica Nanoparticles 07_1337
Isabella TAVERNARO

17:30 All-Optical Characterization of Elastic Properties of van der Waals Crystals 08_1398
Bartlomiej GRACZYKOWSKI

17:30 Waterborne Gas Barrier Coatings and Thin Films 09_1465
Magdalena GRODECKA

17:30 SThM thermal conductivity uncertainties on rough surfaces 10_1576
Miroslav VALTR

17:30	Improving the Precision of Thermoelectric Atomic Force Microscopy Measurements **Sam HARLEY**	11_1786
17:30	Matrices for radioactive waste disposal: A structure investigation of Gd2(Ti1-xZrx)2O7 pyrochlores **Carlo CASTELLANO**	12_190
17:30	Electrocaloric Analysis of PVDF-TrFE Copolymer Films Prepared Using BCZT Ceramics **Ebru MENSUR**	13_24
17:30	In-situ investigation of anode reaction in Anion Exchange Membrane Fuel Cell using NAP-XPS **Samiran CHAKRABORTY**	14_278
17:30	Synthesis of B, P, and S -doped CQDs and its use to enhance the photovoltaic parameters of organic solar cells **Cisem KIRBIYIK KURUKAVAK**	15_43
17:30	From Binary to High-Entropy: A Nano-Spinel Oxide Series Tuned via Coprecipitation **Namhee KIM**	16_543
17:30	Thermal-Induced Morphological Transformation of Electrospun Single-Phase Ternary Oxide Nanofibers **Joohee LEE**	17_557
17:30	Thermally Activated Molecular Gearing Effect **Piyush Kanti SARKAR**	18_586
17:30	In situ electrochemical scanning microscopy of molecular electrocatalytic process **Dong WANG**	19_698
17:30	Size-Dependent Photocatalytic Activity of Mesoporous Thiospinel Nanostructures **Gerasimos ARMATAS**	20_785
17:30	Synthesis of bifunctional IrxPt1-x electrocatalysts and investigating the active species evolution during electrochemical reaction via ambient pressure XPS **Chia-Hsin WANG**	21_993

ANALYTICAL TECHNIQUES FOR FUNCTIONAL MATERIALS H05

09:00	SIMS-based strategies for reliable physico-chemical characterization of advanced functional materials **Valentina SPAMPINATO**	1419
09:30	Ultra-Low Impact Energy SIMS for Advanced Si-based Defects Characterization in GaAs **Adrianna REJMER**	1622
09:45	Correlative Multimodal Analytical Workflow with STEM-CL, EDS and EELS for Functional Nanomaterials **Paolo LONGO**	1611
10:00	Synchrotron-based X-ray Diffraction Microscopy platform for multi-scale analysis of functional materials **Agnieszka CORLEY-WICIAK**	1331
10:15	Functional Thin Films of 2D Imine-Based Semiconducting Covalent Organic Frameworks for Scalable Electronics **Diksha SRIVASTAVA**	1834
10:30	Coffee break	

CHARACTERISATION OF BATTERY MATERIALS II H06

11:00	Characterization of Structure and Defects in Lithium-Rich Layered Oxide as Cathode for Lithium-Ion Batteries **Arcangelo CELESTE**	869
11:30	High-Performance On-Chip Mesoporous Silicon Anodes Enabled by Surface Sealing through Rapid Thermal Annealing **Roza LATIFI**	1741
11:45	Advanced Characterisation in Battery Domain: Decoding LNMO Cathodes through Integration of Nanomechanics, Imaging and AI **Aikaterini ARGYROU**	1253
12:00	Solid-State NMR Investigation of Sulphide-based Solid Electrolyte **Louiza LARBI**	928
12:15	Exploring Unconventional NMC Cathode Compositions for Advanced Lithium-Ion Batteries **Alicja GLASZCZKA**	1359

12:30 Lunch

ANALYTICAL TECHNIQUES FOR EFFICIENT SEMICONDUCTORS I — H07

14:00 Nanoscale Chemical Characterization of Novel Semiconductor Materials using Tip-Enhanced Optical Spectroscopy 1082
Naresh KUMAR

14:30 Nanoscale metrologies for the study of dopant spatial behavior in Semiconductors 1185
Richard MORRIS

14:45 3D Insights into Stacking Faults and Elemental Segregation in InGaN/GaN Quantum Wells via Atom Probe Tomography 1485
Ruiying SHU

15:00 Development of a Next-Generation STM Break Junction 1788
Sam HARLEY

15:15 Flexoelectric modulation of Si and Ge-based nanoscale Schottky barrier diodes
Andrea GERBI

15:30 Coffee break

CHARACTERISATION FOR SUSTAINABLE ENERGY MATERIALS II — H08

16:00 EXAFS investigations of high and medium entropy alloys for electrocatalysis 1237
Dirk LÜTZENKIRCHEN-HECHT

16:15 Ambient-Air Degradation and Refurbishing of Ni-Rich NMC Cathodes for Li-Ion Batteries 1416
Magdalena WINKOWSKA-STRUZIK

16:30 In-Depth Characterization of Black Mass for Lithium-Ion Battery Recycling Applications 718
Carolina FERNANDES

16:45 Construction of MoS2 Nanosheets/Hydrogenated Graphene Hybrid Catalysts for Highly Efficient Electrocatalytic Hydrogen Evolution 333
Xiuxiu HAN

17:00 Spatial distribution of crystal polymorphs in ultrathin poly(vinylidene fluoride) films 1369
Michal WYSKIEL

17:15 Combining photoluminescence and ellipsometry in situ of the ALD : A new approach to analyse and optimize ALD materials for photovoltaic applications 52
Navid MOUHAMAD

POSTER SESSION 2 HP02

17:30 Quantification of Transition Metal Valence States in NCM Cathodes During Charge–Discharge Cycling Using X-ray Emission Spectroscopy (XES) 01_1015
Hikari TAKAHARA

17:30 SoTeXS @ BESSY II: Towards a Multimodal Operando Platform for Electrochemical Systems 02_1144
Philipp HÖNICKE

17:30 Complementary C-AFM/XPS characterisation platform for battery-related materials 03_1178
Matej HÝVL

17:30 Investigating the Electrochemical Performance and Degradation Mechanism of Na3V2(PO4)3 for Sodium-Ion Batteries 04_1227
Akshita SHARMA

17:30 Enhancing Cycle Life with Solution-Processed Laminar Li3VO4 Anodes for Li, Na, and Aqueous Zn-Ion Batteries 05_1263
Tejveer Singh ANAND

17:30 A systematic beam damage study on solid state electrolytes for LiS batteries 06_1405
Adrian JONAS

17:30 Tailoring Solvent Systems to Enhance Li–CO2Mars Battery Performance with RuNi/CSC Cathodes 07_1535
Surya Babu S

17:30 Lead Electrodeposition from Inorganic Precursors: Electrochemical Properties and Structural Evolution on Different Substrates 08_1706
Ornapsorn HASDIN

17:30 Ionic grain conductivity in (Sc,Ce)-stabilized ZrO2 ceramic electrolytes: the effect of raw nanopowders origin and sintering regimes 09_1837
Larysa KHOMENKOVA

17:30	Characterization of sodium-ion batteries by ambient pressure hard X-ray photoelectron spectroscopy **Satoshi YASUNO**	10_343
17:30	Interface stabilization of Li-metal anode with interlayer for sulfide-based all-solid-state batteries **Ki-Hun NAM**	11_371
17:30	Tailoring Fe_O_ Nanostructures for Enhanced Anode Performance in Metal-Air Batteries **Duygu CEVHER**	12_401
17:30	X-ray Spectrometry Study of Organo-Sulfur Material **Hongfei YANG**	13_437
17:30	Mitigating silicon anode challenges with solution-processable quasi-defect-free reduced graphene oxide **Seung Yol JEONG**	14_548
17:30	Surface Decorating Strategy of NCM/Graphene composite for Improved Stability Lithium-Ion Battery **Sang Won LEE**	15_651
17:30	Graphene/NCM Composites for Enhanced Lithium-Ion Battery Performance via a Surfactant-Free Encapsulation Strategy **Jae Hun HWANG**	16_652
17:30	Nickel-substituted Manganite Perovskite Na-CO2 Battery **Sandra SAJEEV**	17_687
17:30	Multidentate bonding-induced carbon nano-oligomer assembly for boosting charge transfer and capacitance of textile pseudocapacitors **Jinhan CHO**	18_741
17:30	Poly(2-ethyl-2-oxazoline)-Based Solid Polymer Electrolytes for Multifunctional Structural Batteries **Negar AMIRHAGHIAN**	19_78

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

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14:00 SI-traceable Calibration of Raman Shifts for Strain Metrology in Semiconductors and 2D Materials 1891
Stefan WUNDRACK

14:30 Advanced Correlative Analysis of Crystallographic Defects in Next-Gen Semiconductor Substrates: from micro to nanoscale 707
Giancarlo LA PENNA

14:45 Simulation of Interference-Enhanced Raman Amplification for Advanced Microelectronic Applications 399
Damien MONTEIL

15:00 Coherent Fourier Scatterometry for Optical Characterization of Anisotropy of van der Waals Materials 1591
Anubhav PAUL

15:15 Thermal transport across twisted bilayers of 2D transition metal dichalcogenides 1439
Marianna SLEDZINSKA

15:30 Coffee break

CHARACTERISATION OF BATTERY MATERIALS III — H10

16:00 Ex-situ study of NMC electrodes long-term cycled under various charging protocols 1208
Sai Rashmi MANIPPADY

16:15 Microstrain Analysis of Electrode Fabrication Effects in NMC Electrodes 883
Pawel STEPNICKI

16:30 Reliable characterisation of PVDF-based solid polymer electrolytes for energy storage applications 1686
Sylwia KOZDRA

16:45 Influence of Charging Strategies on the Structural Evolution of NMC Cathode Materials 1350
Alicja GLASZCZKA

17:00 Degradation of LCO in aqueous electrolytes through in situ liquid-cell S/TEM 716
Rui SERRA MAIA

17:15 Ultrastable Zn-ion Battery with Laser Processed Nano V2C/V2O5 Electrodes for Body Temperature Monitoring 798
Sujit DESHMUKH

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

E-MRS 2025 Fall Meeting

Symposium I

Sessions: Room 213 | Main Building
Poster Session: Aula | Physics Building

Characterization, Simulation and Artificial Intelligence

Frontiers of imaging and spectroscopy in transmission electron microscopy

Symposium organizers:

Masashi **WATANABE**	– Tohoku University
Pierre **RUTERANA**	– CEA Grenoble (INAC/SP2M)
Vesna **SROT**	– Centre de Recherche sur les ions les matériaux et la photonique
Yi **WANG** **(Main Organizer)**	– Nanjing University of Aeronautics and Astronautics

Tuesday, 16 September 2025

TECHNIQUES I05

09:00 Measuring charge at interfaces in nanocapacitors by in-situ biasing electron holography 1590
Martin HYTCH

09:30 X-Ray Absorption-Corrected STEM-EDS Tomography for Absolute Quantification Across Mg-Al-Ca Alloy Interfaces 576
Jessica SNELSON

09:45 Novel single particle analysis workflow for atomic-resolution reconstruction of nanomaterials 1737
Monika EGGENBERGER

10:00 Novel ns-resolved nano-optical spectroscopies with in the scanning transmission electron microscope 1859
Mathieu KOCIAK

10:30 Coffee break

INSTRUMENTS I06

11:00 Advancing Spectroscopy and Field-Free Imaging with the Iliad STEM: New Capabilities in Extreme Energy-Loss Data Collection (XEELS™) and Corrected Lorentz STEM 1493
Paolo LONGO

11:30 Enhancing the spatial resolution of High-Resolution TEM and STEM datacubes via the S-Dirac super-resolution algorithm. 469
Cyril GUEDJ

11:45 In situ straining in TEM: an unvaluable tool to investigate deformation mechanisms in materials for nuclear applications 523
Fabien ONIMUS

12:00 JEOL: cutting edge products for time resolved microscopy and TEM evolutions 1874
Guillaume BRUNETTI

12:30 Lunch

SEMICONDUCTING MATERIALS I — I07

14:00 Measurement of surface segregation and interdiffusion in the GaAsBi semiconductor alloy system 1529
Thomas WALTHER

14:30 Electron Beam damage threshold for nitride semiconductors: carrier dynamics in InN, GaN, and InGaN Alloys 1652
Xiaoyi WANG

14:45 Precession Electron Diffraction and In-Situ TEM applied to the study of phase segregation in IGZO compounds 1023
Marta AGATI

15:00 Investigation of Residual Strain and Relaxation in Nanowires Based on Semiconductor Compounds via TEM Techniques 1172
Slawomir KRET

15:30 Coffee break

SEMICONDUCTING MATERIALS II — I08

16:00 Atomic-Scale Imaging of Hydrogen-Induced Platelet Defects in Proton-Bombarded n-Type GaAs Using Probe-Cs-Corrected STEM 1343
Ezra Jacobus OLIVIER

16:30 Atomic-Scale Structural Dynamics at a-Si:H/c-Si Heterointerface During Low-Temperature Thermal Annealing 1632
Xianlin QU

16:45 Investigation of vacancy-like defects in monolayer of WSe_ using differential phase contrast imaging in the scanning transmission electron microscope 829
Maja GROLL

17:00 From Miscibility to Unexpected Separation: In-Situ TEM Insights into Au–Pd Alloy Behavior at High Temperatures 1457
Abhijit ROY

17:15 Investigation of planar defect evolution in Au-Pd-Pt-Ru-based compositionally complex solid solution thin films using analytical transmission electron microscopy 55
Miran JOO

17:30 Revealing defects in nitride semiconductor structures in TEM 1860
Julita SMALC-KOZIOROWSKA

POSTER SESSION 2 IP02

18:00	Growth Phase Diagram of NbN on AlN Investigated by Electron Diffraction and Modeling **Anna KALETA**	01_1311
18:00	Study of Potassium Diffusion at asymmetric 36.9° SrTiO3 tilt Grain Boundary **Qian MA**	02_1354
18:00	3D Electron Diffraction Study on the Local Structure of a doped Metal-organic Framework TCNQ@ZIF-4 **Jianbo SONG**	03_1665
18:00	Cross-Sectional Analysis of Porcelain from the “Nanhai I” Shipwreck **Houyi HUANG**	04_1684
18:00	A rapid, accurate and robust method for atomic column locating **Yi WANG**	05_1765
18:00	Real-time In-situ TEM Analysis of Interfacial Behavior in Cu-based Micro-bumps under Combined Stress Conditions **Yoon Kyung SEO**	06_612
18:00	Atomic-Scale Analysis of Ferroelectric Polarization in Perovskite Oxides **Zheng HU**	07_855

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

OXIDES AND FUNCTIONAL MATERIALS I I09

14:00	Scanning precession nano beam electron diffraction strain mapping of _-(InGa)_O_/_-Ga_O_/Al_O_ layers **Marco SCHOWALTER**	1592

14:30 Irreversible Lattice Expansion Effects in Nanoscale Indium Oxide for CO2 Hydrogenation Catalysis 1598
Mengsha LI

14:45 An in situ TEM study of the formation and thermal stability of crystalline phases in solidified Au–Ge alloy nanoparticles 904
Olha KHSHANOVSKA

15:00 In Situ TEM on Off-Stoichiometric SrTiO3 and Ga2O3 502
Dan ZHOU

15:30 Coffee break

OXIDES AND FUNCTIONAL MATERIALS II I10

16:00 Localized Phenomena in Quantum and Energy Heterostructures Revealed by Multimodal STEM 1840
Hongguang WANG

16:30 Strain and Domain Landscape in Pbnm Orthorhombic LaFeO_ Thin Films: Implications for Photoresponse in Epitaxial Heterostructures 1109
Mario VILLA

16:45 In operando studies of solid oxide electrolysis and fuel cells by transmission electron microscopy 1022
Soren Bredmose SIMONSEN

17:15 The Functional and Structural Significance of Surface Layer in Rodent Incisors: Mechanisms of Coloration and Material Optimization 729
Vesna SROT

17:30 Characterization of crustacean biomaterials using analytical transmission electron microscopy 1861
Miloš VITTORI

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 18 September 2025

OXIDES AND FUNCTIONAL MATERIALS III — I11

09:00 Robust Analysis Tool for Position Averaged Convergent Beam Electron Diffraction Patterns and Quantitative Scanning Transmission Electron Microscopy using a Foundation Model — 1085
Daesung PARK

09:30 TEM Investigation of Point-Defect Formation in _-(AlxGa1-x)2O3 Single Crystals — 1121
Arub AKHTAR

09:45 Atomic-Scale Investigation of Symmetry-Forbidden LaAlO3 (001)/La0.67Sr0.33MnO3 (111) Interfaces — 1811
Yuhan WANG

10:00 Triggering and tracking defect phase transformation at atomic resolution — 130
Siyuan ZHANG

10:30 Coffee break

FRONTIERS IN METHODS I — I12

11:00 Imaging and EBIC of oxide and semiconductor interfaces — 1875
A.M. SANCHEZ

11:30 Revealing stacking-induced domains in multilayer PtSe2 using quantitative 4D-STEM structural mapping — 1475
Hanako OKUNO

11:45 Exploring 4D-STEM in SEM with an Event-Driven Direct Electron Detector: Low-Dose, High-Speed, and Sparse Data — 822
Bowen LIU

12:00 Imaging of point defects and correlated structural distortions at the atomic scale in metal oxides — 1219
Zhen CHEN

12:30 Lunch

14:00 Phonon spectroscopy and beyond in the electron microscope at high spatial or momentum, and energy resolutions 1862
Quentin M. RAMASSE

14:30 Characterizing electrical properties of semiconducting materials at nm length scales by 4D Transmission Electron Microscopy 1863
Martien Ilse DEN HERTOG

15:00 Revealing the Mechanism of Gas-Solid Interface Interactions Using Environmental Scanning Electron Microscopy 1888
Zhujun WANG

E-MRS 2025 Fall Meeting

Symposium Sponsors

WILEY ADVANCED

10 YEARS ADVANCED ELECTRONIC MATERIALS Open Access

Symposium J

Sessions: Room 219 | Main Building
Poster Session: Room 237 (Small Hall) | Main Building

Thin Film, Flexible and Composite Materials and their Formation Techniques

Unconventional Materials and Flexible Electronics for Sustainable Technologies

Symposium organizers:

Denys **MAKAROV**	– Helmholtz-Zentrum Dresden-Rossendorf e.V.
Giuseppe **CANTARELLA (Main Organizer)**	– University of Modena and Reggio Emilia
Manish **K. TIWARI**	– UCL Mechanical Engineering, – University College London
Niko **MÜNZENRIEDER**	– Free University of Bozen-Bolzano

Monday, 15 September 2025

SESSION 1 J01

08:30	Dynamically Responsive Organic Optoelectronic Materials **Ye TAO**	1251
08:45	Electronic biosensing systems: from rigid to flexible and biodegradable platforms **Larysa BARABAN**	1057
09:00	Large-scale fabrication of indium oxide nanowire and MoS2 nanoflake channel transistors using a combination of high throughput solution processing techniques **Subho DASGUPTA**	1812
09:30	Smart Flexible Materials in Prosthetics and Orthotics: Toward Personalized, Sensor-Integrated Systems **Jose GONZALEZ-VARGAS**	1809
10:30	Coffee break	

SESSION 2 J02

11:00	Flexible robotic materials with programmable magnetization: modeling, prototyping and potential applications **Veronica IACOVACCI**	1692
11:30	Self-Maintainable Electronic Materials with Skin-Like Characteristics **Alireza DOLATSHAHI-PIROUZ**	1659
12:00	Flexible light-emitting materials and devices **Wei HUANG**	1688
12:15	High-accuracy Image Recognition using Biodegradable Synaptic Transistors Fabricated with Rhodophyta-extracted Materials **Somnath BHATTACHARJEE**	1536
12:30	Lunch	

SESSION 3 J03

14:00	Perovskite photovoltaics, light-emitting diodes and X-ray detectors for flexible electronics **Wei HUANG**	793
14:30	Printable Nacre-Mimetic MXene Nanocomposite Sensors for Health Monitoring Using Machine Learning **Lulu XU**	1871
15:00	Sustainable, High-Performance, Flexible Paper-based Functional Thermoelectric Generators from CuXYS3 (X= 2, 3 and Y= Sn, Bi) Nanocrystals **Surajit DAS**	1582
15:15	Force-Sensorised Surgical Gloves: Evaluating Viscoelastic Interactions for Accuracy in Stiffness Characterisation **Thurga Reshe NAVASEELAN**	921
15:30	Coffee break	

SESSION 4 J04

16:00	Edible, Flexible and Smart: Redefining Electronics with Natural Biopolymers **Dimitrios PAPAGEORGIOU**	57
16:30	Flexible Devices: From Healthcare to Agriculture **Firat GUDER**	500
17:00	Study of Structural Changes Induced in Copper-based Metal Organic Framework during Photocatalytic Dye Degradation of Methylene Blue using Vibrational Spectroscopy **Sonia .**	1655
17:15	Flexible perovskite oxide LaFeO_ layers investigation **Edyta CHLOPOCKA**	923
17:30	Solution-processed organic LEDs **Guohua XIE**	1623

17:45 Powering Electrochemical Biosensors with Rechargeable Aqueous Micro-Batteries 1105
Yeonkyung LEE

Tuesday, 16 September 2025

SESSION 5 J05

08:15 Edible Hydrogen Peroxide Biosensor for Monitoring Gut Metabolites and Peroxidase Activity 1527
Valerio Francesco ANNESE

08:30 Autonomous, High_Fidelity Dissolved Oxygen Sensing via Photonic Films for Dynamic Ocean Monitoring 1166
Manish K. TIWARI

08:45 Detection of Protease Activity using a Paper based Sensor 1431
Cláudia SILVA

09:00 High-Performance Vitrimers for Sustainable Electronics 1472
Daniel SCHMIDT

09:30 Plant wearable sensors towards precision agriculture 819
Snezana DJURIC

10:00 A 3D printed aqueous organic sodium-ion battery based on cross-linked PEDOT:PSS-containing electrodes 1292
Evan FISHER

10:15 Sustainable Soft Sensor Design by Machine Learning Tools 1557
Haitao YANG

10:30 Coffee break

SESSION 6 J06

11:00 ZnO quantum dots and mechanochemically engineered halide perovskites for game-changing improvements in light harvesting devices 1141
Janusz LEWINSKI

11:30	Printable sustainable-by-design materials for ubiquitous flexible electronics **Zlatka STOEVA**	907
12:00	Printable Piezoresistive Foam Sensors for Pressure Monitoring in Surgical Applications **Maryam JAVIDAN**	561
12:15	Skin-Compatible AgZn(MoO_)(WO_)/PDMS Composite for Piezoelectric Sensing and Energy Harvesting in Wearable Eye-Tracking Devices **Sasikumar RAGU**	185
12:30	Lunch	

SESSION 7 J07

14:00	Circular and Sustainable RF-Enabled Wireless Flexible Electronics **Mahmoud WAGIH**	1895
14:30	Biomass based skin-integrated triboelectric sensors **Wenzhuo WU**	79
15:00	Energy-Efficient Electronic Devices Fabrication Using TENG-Powered Nanomaterials assembly **Mohammed Hadhi PAZHAYA PUTHANVEETTIL**	1805
15:15	Flexible paper-based OECT for biological sensing **Sumantha Aithal PANAMBUR**	275
10:30	Coffee break	

SESSION 8 J08

16:00	Ecosystem-centered robot design: Towards Ecoresorbable Sustainability Robots **Florian HARTMANN**	840
16:15	From Hierarchical Composites to Self-Healing Silicones: A Materials Approach to Sustainable Stretchable Electronics **Rafael LIBANORI**	140

16:30 Controlled Growth of two-dimensional (C4H9NH3)2PbBr4 Fast Scintillator for Particle Discrimination and Dynamic X-Ray Imaging 160
Shilin LIU

16:45 Printed Recyclable Magnetoresistive Sensors and Temperature Sensors 447
Lin GUO

17:00 Molded, Solid-State Biomolecular Assemblies with Programmable Electromechanical Properties 1115
Krishna HARI

17:15 Perovskite field-effect transistors and light-emitting transistors 994
Zhongbin WU

POSTER SESSION 2 JP02

18:00 Stretchable, breathable, and selectively transformable devices into sensors and electrodes based on structural deformation of nanomesh 01_1032
Juhee SHIN

18:00 Deep Eutectic AlCl_–EMIC:GdnHCl Electrolyte for Flexible Aluminum–Graphite Batteries 02_1033
Karthik NAMACHIVAYAM

18:00 Ultra-thin, high-resolution, transfer-printed breathable electrodes for seamless integration with electronic skin devices 03_1037
Hyeokjoo CHOI

18:00 Breathable, Conformable, and Micro-Patterned Wearable Piezoelectric Energy Nanogenerator with Increased Energy Conversion Efficiency 04_1071
Jihoon BAE

18:00 Magnetic La0.7Sr0.3MnO3 membranes synthesized by etching a Sr3Al2O6 sacrificial layer using an intermediary manganite protection layer 05_1173
Moussa MEZHOUD

18:00 High-Performance CMOS-Like Inverter Based on Well-Balanced Ambipolar Transistor 06_1265
Nak Hee KANG

18:00 Uniaxial Conjugated Polymers Chain alignment for 2D Charge Transport 07_1271
Jin Seok YOON

18:00	Preparation of Porous TPU Substrates via Non-Solvent-Induced Phase Separation for Wearable Electronics **Doga DOGANAY**	08_1428
18:00	Semiconducting Conjugated Polymer Nano-Network Structures for High Performance Phototransistors **Ji Hyeok HWANG**	09_1440
18:00	Cocrystal engineering towards high electron mobility organic semiconductors **Arkalekha MANDAL**	10_1467
18:00	Photo-adaptive Visuomorphic Electronics for Efficient Machine Vision **Haifeng LING**	11_1518
18:00	Wet-Spun Core–Shell TPU/TiO_ Fibers for High-Performance Triboelectric Nanogenerators and Wearable Electronics **Onur DEMIRCIOGLU**	12_1664
18:00	FTIR Characterization of Hot-Pressed Green Composites Using Recycled Concrete Powder, Cellulose, Hemicellulose, and Lignin **Ejazulhaq RAHIMI**	13_1740
18:00	Sustainable and Green Solvents for Zinc Ion-Batteries **Recep YUKSEL**	14_1795
18:00	Flexible Piezoelectric Energy Harvesters Using Biodegradable Electrospun Silk Nanowebs **Chang Kyu JEONG**	15_262
18:00	Proton-conducting membranes made from plant-based proteins as sustainable and biodegradable green alternatives for fuel cell applications **Ziyu YANG**	16_315
18:00	Biocompatible and Flexible High-k Dielectric Materials for Transient Electronic Applications **Sangho CHO**	17_47
18:00	Machine Learning-Assisted PVDF-HFP-Based Triboelectric Nanogenerators for Early Prediction of Knee and Foot Injuries **Asma AKTER**	18_501
18:00	Environmentally Sustainable and Degradable Carboxymethyl Cellulose (CMC) Based Aqueous Zinc-ion Battery **Seungmin HYUN**	19_539

18:00 Transient and Biocompatible Chitosan-Based Thin-Film Temperature Sensors Aiming Sustainable Electronics and Multifunctional Sensing 20_599
Alessandro ALLEVA

18:00 Crawling Soft Robot Locomotion by Asymmetric Temperature Distribution On Paper-based Electrodes 21_618
Seongyeol KIM

18:00 Controlling GaN Nanorod Growth on Flexible Tantalum Foils via Surface Nitridation: From Interface Chemistry to Field Emission Performance 22_943
Bipul Kumar PRADHAN

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

SESSION 9 J09

14:00 Steering Miniaturized Agents 1606
Sarthak MISRA

14:30 Embedding electronics within a yarn-like structure to create electronic textiles: Recent developments and applications 695
Theo HUGHES-RILEY

15:00 Development of Polypyrrole Electrodeposited in a Supercritical Carbon Dioxide-in-Water Emulsified Electrolyte for Next-Generation Flexible Devices 77
Punvinai VINAISURATERN

15:15 Sustainable Flexible Electronics Based on Fish Gelatin 795
Hai-Dong YU

15:30 Coffee break

SESSION 10 J10

16:00	Degradable Materials and Sensors for Environmental and Plant Health Monitoring **Pietro CATALDI**	487
16:30	Electronic Systems Based on Emerging and Non-Standard Materials and Fabrication Technologies **Almudena RIVADENEYRA**	283
17:00	From Marine Sponge ECG Electrodes to Wooden Floor Dryers: Use of Bio-Based Substrates in Combination with Carbon Nanomaterials **Agnieszka LEKAWA-RAUS**	104
17:15	Imperceptible magnetoresistive sensors for interactive magnetoelectronics **Rui XU**	717
17:30	Electrogelation: An alternative route for the deposition of PEDOT:PSS and its copolymers for Bioelectronics **Antonio DOMINGUEZ-ALFARO**	701
17:45	Versatile Green Transfer Printing of Magnetoelectronics for Interactive Electronics **Olha BEZSMERTNA**	316

Thursday, 18 September 2025

SESSION 11 J11

08:00	Fabrication of flexible substrate with partially embedded back-contacts for piezoelectric zno-based arms movement sensors **Habeebur RAHMAN**	492
08:15	Novel terpineol-based silver nanoparticle ink with high stability for ink-jet printing **Boris POLYAKOV**	625
08:30	Hysteresis in Organic Electrochemical Transistors **Ramesh KUMAR**	624
08:45	Wetting-Mediated Sacrificial-Layer-Free Transfer of Large-Area Ultra-Thin Electronics **Riccardo ZAMBONI**	131

09:00 Leaftronics: Natural lignocellulose scaffolds – A Sustainable Substrate for Reliable Printed and Conventional Electronics 156
Hans KLEEMANN

09:30 Empowering the Next Billion Devices: Low-Power TFTs for Displays and IoT 1497
Pedro BARQUINHA

10:00 Eco-Friendly and Multifunctional Ionogels for Thermo-Tactile Perception in Soft Robotic Manipulation 436
Lorenzo MIGLIORINI

10:15 Electronic Skin for Energy Harvesting and Health Monitoring: A Triboelectric Nanogenerator with Sweat Sensing Capabilities 504
Md Mehedi Hasan APU

10:30 Coffee break

SESSION 12 J12

11:00 Celebrating the 10th anniversary of the journal Advanced Electronic Materials: a decade of excellence and innovation 1890
Gaia TOMASELLO

11:30 MoS_ Nanogap Memristive Devices for Energy-Efficient Neuromorphic Computing 1075
Roshni SATHEESH BABU

12:00 Cyanobacterial Polysaccharide 'Sacran' for Ultrathin Flexible and Biodegradable Organic Electrochemical Transistors 372
Serpil TEKOGLU

12:15 Redesigning Epoxy Resins for the Circular Economy: Imine Vitrimers as Reprocessable Alternatives 230
Sharine Noelle BENDULO

12:30 Lunch

SESSION 13 J13

14:00 Contact-controlled transistors for sustainable temperature sensing and display arrays 68
Radu SPOREA

14:30 Natural Dielectrics for Bio-Organic Electronics 1058
Mihai IRIMIA-VLADU

15:00 Fabrication of Flexible High-k Dielectric CuO-Loaded PVA/Chitosan-Based Sustainable Ternary Nanocomposites for Energy Storage Applications 453
Tajamal HUSSAIN

15:15 Biodegradable Microwave Cavity Resonator 267
Mohammad Javad BATHAEI

15:30 Coffee break

SESSION 14 J14

16:00 Ultra-thin and flexible FlexICs for low-cost, low-carbon edge and item-level intelligence at scale 691
Julio COSTA

16:30 Electrochemical Capacitors as a Sustainable Energy Storage Device using Advanced Functional Materials for Flexible and Wearable Applications 1889
Libu MANJAKKAL

17:00 Sustainable and Air-Stable Zinc Inks for Printed Flexible Electronics Using Cellulose Binder and Multistep Sintering Strategy 346
Naveed ALVI

E-MRS 2025 Fall Meeting

Symposium K

Sessions: Room 103 | MINI Building
Poster Session: Room 237 (Small Hall) | Main Building

THIN FILM, FLEXIBLE AND COMPOSITE MATERIALS AND THEIR FORMATION TECHNIQUES

3D AND ADDITIVE MANUFACTURING OF ORGANIC MATERIALS AND NANOCOMPOSITES FOR ADVANCED APPLICATIONS

Symposium organizers:

Antonio **DOMINGUEZ-ALFARO** – University of Cambridge

Eleonora **FERRARIS** – KU Leuven

Miriam **SEITI** – University of Brescia,
– KU Leuven

Miryam **CRIADO-GONZALEZ** – Spanish National Research Council
(Main Organizer)

LIGHT-BASED PRINTING: SLA AND DLP K05

08:30 3D Printed Bioelectronic Model of the Intestinal Tissue Architecture 207
Maria LOPEZ CAVESTANY

09:00 Sustainability aspects in vat photopolymerization; from recyclable resins to pseudothermoplastic materials 238
Xabier LOPEZ DE PARIZA

09:30 Designing Lightweight Mechanical Metamaterials for AM Using Hybrid and Functional Architectures 211
Kashif AZHER

09:45 Additive Manufacturing for Flow Biocatalysis 503
William PRITCHARD

10:30 Coffee break

LIGHT-BASED PRINTING: SLA AND DLP K06

10:30 Hybrid fabrication of bioelectronic devices 245
Johannes GURKE

11:00 Printable Soft Electronics for Epidermal Healthcare Interfaces 571
Fabrizio Antonio VIOLA

11:30 Metal elements doped SiOC based negative Poisson's ratio structure to activate efficient piezoresistivity and temperature detection performance 874
Taotao HU

11:45 Volumetric additive manufacturing of composites via hydrogel infusion 246
Daryl YEE

12:00 Scaling up in-vitro, real-time cell monitoring through large area printing of PEDOT:PSS OECTs 589
Francesco DECATALDO

12:30 Lunch

LIGHT-BASED PRINTING: SLA AND DLP K07

14:00	Novel Sustainable Materials for Green Electronics **Shweta AGARWALA**	1505
14:30	Additive Manufacturing of Functionalized Glass Vapour Cells for Next-Generation Quantum Technologies **Feiran WANG**	860
14:45	Tomographic Volumetric Bioprinting On A Chip **Riccardo RIZZO**	293
15:15	Bone Scaffolds Made of Bioactive Glass by Two-Photon Lithography **Leonhard HAMBITZER**	1495
15:30	Coffee break	-

LIGHT-BASED PRINTING: SLA AND DLP K08

16:00	Two-Photon Absorption based 3D Printing of Nanocrystals for Circularly Polarized Photodetectors **Fu LI**	1
16:15	3D Macro and Micro Printing of Semiconductor Based Photoresins and Their Optoelectronic Applications **Ozan KARAKAYA**	222
16:30	In-situ Study on Defect Formation Mechanisms in TC4 Titanium Alloy Fabricated by Laser Powder Bed Fusion Additive Manufacturing **Jun WANG**	891
16:45	Catalyst Surface Engineering for Electroless Plating on Glass Interposers **Seeun NAM**	647
17:00	Gas-Triggered 3D Printing of Calcium Carbonate Structures via Localized CO?-Induced Mineralization **Chenxing XIN**	704

17:15 Self-assembled Bioactive Protein/HA/CUR-based amyloidogenic nanohydrogel dressing for rapid infected diabetic wound healing via enhanced angiogenesis and anti-inflammation 1807
Saurabh Kumar SRIVASTAVA

17:30 Additively Manufactured Functional Materials with Embedded Sensing and Actuation 28
Robert NAWROCKI

17:45 Investigation into the Interlaminar Fracture Toughness of Composites Based on a Novel Gel-DCPD Prepreg 873
Xu CAO

POSTER SESSION 2 KP02

17:30 Tip-assisted Electrohydrodynamic Printing of Out-of-Plane Tactile Sensor for Surgical Applications 01_1072
Junhao CHEN

17:30 Multi-material 3D printing of flexible piezoelectric sensors using electroactive composite materials custom-produced via scalable and sustainable melt processing 02_1364
Rolanas DAUKSEVICIUS

17:30 Aerosol Jet Printed Hydrogel-Based Ionic Conductors for Wearable and Implantable Bioelectronics 03_1716
Madeshwaran SEKKARAPATTI RAMASAMY

17:30 CNT-Grafted ZnO Tetrapod Nanofillers for High-Performance Carbon Fiber Reinforced Polymers 04_1792
Manjeet Singh GOYAT

17:30 3D Printed Injectable Protein-Cellulose Hybrid Hydrogel Dressing For Rapid Wound Healing With Enhanced Antioxidant And Anti-Inflammation Properties 05_1808
Saurabh Kumar SRIVASTAVA

17:30 3D printable/injectable personalized amyloidgenic hydrogel for accelerated wound healing and tissue regeneration 06_1847
Shikha TRIPATHI

17:30 Thin film p-n junction of organic-inorganic quinoline derivative/titanium dioxide for optoelectronic purposes 07_208
Luis SCALVI

17:30 Degradable Substrates for Extended-Gate Electrode Arrays in Field-Effect Transistor Biosensors 08_442
Bogdana DORDEVIC

17:30 Advancing Organic Electronic Devices through Spin Crossover Nano Material Integration 09_66
Shiv Prakash VERMA

17:30 3D-printed carbon-based electrodes for electrochemical flow reactors 10_723
Wei GUO

17:30 3D printed barocaloric composites for refrigeration and cold storage applications 11_791
Ángel FERRADANES MARTÍNEZ

17:30 Magnetopiezoelectric Biopolymer Nanocomposites with Quantum Dot Crystals: A Novel Approach for Neural Tissue Engineering 12_868
Hossein MALEKI GHALEH

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

PRINTED BIO-ELECTRONICS K09

14:00 Printed stretchable electronics based on nanocomposites and conductive liquids 19
Klas TYBRANDT

14:30 Customized 3D Architectures of Degradable Hydrogels for Impedimetric Biosensing Interfaces and Mimicking of the Tumor Microenvironment 478
Željko JANICIJEVIC

15:00 Development of Molecularly Imprinted Polymer (MIP)-Based Sensors for Biomarker Detection Using Aerosol Jet Printing Technology 1427
Anjana Ramesh PERINGATH

15:15 Inkjet-Printing of LowD Materials: towards flexible and wearable healthcare sensing devices 519
Charlie HEATON

15:30 Coffee break

16:00	Liquid Metal Stretchable Electronics: Production and Reliability **Monika RAI**	1049
16:30	Beyond poly(3-hexyl-thiophene) thin films: strategies for nanoporous and 3D structuring for bioelectronics **Ilaria ABDEL AZIZ**	677
17:00	Direct Ink Writing of Poly(ionic liquid) based conductive composites **Sagar BHAGWAT**	1595
17:15	3D-printed biohybrid interfaces: integrating conjugated polymer nanoparticles for advanced biophotonic applications **Manuela CIOCCA**	1229
18:00	**YOUNG RESEARCHER AWARDS CEREMONY**	
18:30	**SOCIAL EVENT**	

E-MRS 2025 Fall Meeting

Symposium L

Sessions: Room 105 | Faculty of Mathematics
Poster Session: 237 (Small Hall) | Main Building

HIN FILM, FLEXIBLE AND COMPOSITE MATERIALS AND THEIR FORMATION TECHNIQUES

PROGRESS IN UNDERSTANDING FUNDAMENTAL, FUNCTIONAL MATERIAL AND HEALTH ASPECTS OF MELANINS, POLYDOPAMINE AND RELATED POLYINDOLE QUINONE MATERIALS

Symposium organizers:

Albertus **MOSTERT** – Swansea University

Carlos **F.O. GRAEFF (Main Organizer)** – Universidade Estadual Paulista "Julio de Mesquita Filho"

Pooi See **LEE** – Nanyang Technological University

Monday, 15 September 2025

SESSION 1 L01

09:00	Reflections on Challenges and Opportunities Related to the Formation, Molecular Structure and Properties of Polydopamine Coatings **Phillip MESSERSMITH**	60
09:30	Self-Assembly of Chiral Polycatecholamines Particles **Radoslaw MRÓWCZYNSKI**	1342
09:45	Hollow polydopamine spheres decorated with MoS2 nanosheets for hydrogen evolution reaction **Murilo SANTHIAGO**	109
10:00	Beyond the Binary: A Perspective on the Coexisting Forms of Synthetic Melanin **Valentina MARASSI**	1599
10:30	Coffee break	

SESSION 2 L02

11:00	Melanin Catalysts for Sustainable Processes **Paola MANINI**	580
11:30	Nanoscale Melanin Patterning via Scanning Electrochemical Cell Microscopy (SECCM) for Nanoelectrode and Optical Applications **Noah AL-SHAMERY**	951
11:45	Rediscovering Natural Melanins from unexpected sources: Unlocking Chemical, Physical, Biological, and Electrical Potential **Marianna AMBRICO**	167
12:30	Lunch	

SESSION 3 L03

14:00	Synthetic Melanin as a Physicochemical Platform for Peptide-Based Cancer Vaccines: From Nanostructure to Clinical Application **Antoine F. CARPENTIER**	1899
14:30	Bioactive Composite Scaffolds for Advanced Biomedical Applications: The Merger of Melanin Pigments and Photo-crosslinkable Polymers for the Design of Versatile Bioinks **Simone POTENTI**	1216
14:45	A View of Melanin's Structure Through the Lens of Model Compounds **Jean-Philip LUMB**	1443
15:30	Coffee break	

SESSION 4 L04

16:00	Towards a theoretical melanin platform **Lluís BLANCAFORT**	04_289
16:30	Harnessing BSF-Eumelanin & Keratin derived from Waste for sustainable Inkjet Impedance Humidity Sensors **Marianna AMBRICO**	04_289
16:45	Enhancing Charge Storage in Melanin via Sulfur Functionalization for Supercapacitor Applications **Joao Victor MORAIS LIMA**	273
17:00	Fundamental investigation of broad band absorption and charge transfer properties in natural eumelanin. **Vishal GHADGE**	1660

POSTER SESSION 1 LP01

17:30	Characterization of Stacked Polydopamine Membranes for Stimuli-Responsive Applications **Adam KRYSZTOFIK**	02_1484

17:30 From CUMIN seeds to NIGELLA Melanin: Extraction/ Physics/Chemistry and perspectives in sustainable device engineering. 03_286
Marianna AMBRICO

17:30 Unconventional Melanin from Fungi: extraction, chemistry and electrical response of Aspergillus Carbonarious 05_496
Marianna AMBRICO

17:30 Eumelanin-Driven Interfacial Passivation Strategies for Enhancing Perovskite Solar Cell Stability 06_73
Joao Vitor PAULIN

E-MRS 2025 Fall Meeting

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Symposium M

Sessions: Room 103 | Faculty of Mathematics
Poster Session: 237 (Small Hall) | Main Building

Thin Film, Flexible and Composite Materials and their Formation Techniques

Next-Generation Thin Films: Innovations in PVD and CVD techniques

Symposium organizers:

Kostas **SARAKINOS**	– University of Helsinki
Petru **LUNCA POPA (Main Organizer)**	– University of Luxembourg
Rodica **PLUGARU**	– National Institute for Research and Development in Microtechnologies
Silviu **COLIS**	– University of Strasbourg

SEMICONDUCTOR FILMS M02

11:00	Key Points of Compound Semiconductor Material Evaluation by High resolution XRD **Shyjumon IBRAHIMKUTTY**	256
11:45	Ex-situ incorporation of Al in Ge by sputter deposition and pulsed laser melting: a new approach to fabricate hyper-doped Ge:Al alloys **Enrico DI RUSSO**	1092
12:00	Mapping the Optoelectronic Properties of Bi2FeCrO6 Thin Films Across the Epitaxial Growth Conditions **Chenyue HU**	1336
12:15	RF Magnetron Co-sputtered GeSe2-Bi2Se3 Thin Films for Photonic Applications: Influence of Rapid Thermal Annealing **Anupama VISWANATHAN**	32
12:30	Lunch	

ADVANCES IN CVD AND ALD TECHNIQUES M03

14:00	Low-temperature, fast printing of oxide thin films for energy and environmental applications **David MUNOZ-ROJAS**	1589
14:30	Exploring New Precursor Pathways for ALD of NiO: Impact on Structure and Photoelectrochemical Response **Vyshnav KANNAMPALLI**	438
15:00	MOCVD-Grown Nanostructured Calcium Ferrite thin films for efficient Dye Degradation **Laura SALAMONE**	854
15:15	Single Step Synthesis of Boron Doped Carbon Nanowalls via MWPECVD as Multifunctional Interfaces for Directional Water Transport and Electrowetting **Deepak DEEPAK**	1112

15:30 Coffee break

VAPOR-BASED SYNTHESIS OF THIN OXIDE FILMS M04

16:00 Effect of growth conditions on oxide thin film obtained by magnetron sputtering 241
Dan-Gheorghe DIMITRIU

16:30 Crystalline HfZrO2 formation from (HfO2)m/(ZrO2)n nano-laminate and amorphous HfZrO2 by atomic layer deposition and annealing process 784
Toshihide NABATAME

16:45 Engineering the Ferroelectric Properties of Bi_FeCrO_ Thin Films 1425
Silviu COLIS

17:00 Approaching the Insulator-to-Metal Transition (IMT) in ALD-Deposited VOx: Significant Impact on a Broad IR Transmission Range 1353
Christophe LABBÉ

17:15 Innovative ß-diketonate Alkali Metal Precursors for Lead Free Piezoelectric Films 497
Stijn ENGELAAR

Tuesday, 16 September 2025

FUNDAMENTALS OF THIN FILM GROWTH M06

11:00 Competitive growth between Amorphous and crystalline phases in thin films: Modelling the kinetics, local scale characterization, and functional properties 1558
David HORWAT

11:30 Decoupling the effects of kinetic energy and potential energy of ions on the crystallinity of thin films in cathodic arc deposition 370
Yeliz UNUTULMAZSOY

11:45 Influence of bias voltage on the microstructure and mechanical properties of TiN, ZrN and TiZrN coatings prepared by reactive magnetron sputtering in industrial conditions 1647
Sahand BEHRANGI

12:00 Role of hydrogen dynamics and deposition conditions in photochromic YHO/MoO3 bilayer films 1602
Martins ZUBKINS

12:30 Lunch

FUNCTIONAL SURFACES M07

14:00 Carbon Nitride Thin Films for Artificial Photosynthesis 39
Paolo GIUSTO

14:30 Conformal Atomic Layer Deposition of Metallic Nanoparticles on 3D Substrate to Enhance Electrocatalytic Activity of Transition Metal Electrocatalysts for Hydrogen Electrolysis 1079
Alireza SHARIFIRAD

14:45 Large-Surface Diamond Electrodes—Increase efficiency by 1000% 731
Mengai MAO

15:00 From Corrosion Shielding to Ultra-Low Friction: A Hybrid Strategy Using a-C:H Coatings and Graphene-CNT Composites 1690
Pankaj BHARTI

15:15 A Highly Sensitive and Selective Hydrogen Gas Sensor Based on WS2-Decorated PdSe2 Nanostructures 537
Suresh KUMAR

15:30 Coffee break

HIGH THROUGHPUT DESIGN OF THIN FILMS M08

16:00 Design and multifunctional applications of high-entropy material films 1414
Wenyi HUO

16:30 From Surface to Statistics: Quantitative grain size analysis of MoS2 thin films using Atomic Force Microscopy (AFM) 676
Aashi GUPTA

16:45 Data-Driven Exploration of Transparent Conductors Using Combinatorial Chemistry, Bayesian Optimisation and Machine Learning. 837
Seonghyeok PARK

17:00 Accelerating the development of oxynitride coatings by 2-dimensional combinatorial magnetron sputtering approaches 1346
Stefanie FRICK

17:15 Micro Probe System for Diverse In-Situ Applications 1231
Young Kil KIM

POSTER SESSION 2 MP02

17:30 Novel cost-effective oxidation resistant SiC coating for graphite parts in semiconductor applications 01_1006
Chloé SEIMETZ

17:30 Optimizing the Defect Density of Silicon Carbide by Finite Difference Time Domain Simulation 02_1063
Tsung-Yu HUANG

17:30 Room Temperature Growth of MoTe2 for Ultrafast Broadband Photodetectors 03_1189
Vinit SHEOKAND

17:30 Comparative Analysis of Transparent TiO_ Nanotube Thin Films on TCO coated Flexible and Glass Substrates 04_1206
Krunoslav JURAIC

17:30 Control of Imprint and Capacitive Effect in Ferroelectric Heterostructures 05_1345
Chenyue HU

17:30 Multisource magnetron sputtered elastic thin-film thermoelectric generator for harvesting waste heat from heat exchangers and heat flux measurement 06_1387
Ariel LEWANDOWSKI

17:30 Room Temperature Growth of MoTe2 for Ultrafast Broadband Photodetectors 07_1714
Vinit SHEOKAND

17:30 Barrier high-temperature non-metallic coatings on metals to prevent uncontrolled spreading of metallic solders during the manufacturing and operation of microelectronic and optical devices 08_174
Tatyana STETSYUK

17:30 Growth of orthorhombic _-Ga_O_ thin films on N-polar GaN by mist chemical vapor deposition 09_212
Misaki NISHIKAWA

17:30 Mechanism of Atomic Layer Deposition of BaTiO3 with Metal _-diketonate and Ozone Precursors 10_290
Ji LIU

17:30 Development of High-Purity Precursor Reference Materials for ALD-Deposited High-k Dielectric Thin Films in Advanced Semiconductor Devices 11_375
Sangbeom LEE

17:30 A method for preparing Cu2O-Pt composite thin films by combining PVD and liquid-phase deposition techniques 12_378
Tsubasa KEMMIZAKI

17:30 Development of Inorganic Contaminants Analysis Method for Tracking Etching of Ceramic Components during Plasma Processes 13_452
Minjin LEE

17:30 Suppression of Leakage Current in Low-Temperature ALD HfO_ Films via Oxidant Feeding Optimization 14_534
Jeong Hwan KIM

17:30 Hydrophilic Surface Modification of Microfluidic Channel by Room Temperature PEALD SiO2 Technology 15_778
Chien-Wei CHEN

17:30 Growth and study of Ta2O5 thin films by radiofrequency magnetron sputtering 16_805
Aimane CHEIKH

17:30 Understanding Thin Film Metallic Glass Forming Ability from Data-Driven Bayesian Optimization 17_889
Xuliang LUO

17:30 Epitaxial Growth of _-Ga_O_ Thin Films by RF Magnetron Sputtering for Power Devices 18_987
Chang-Yong KIM

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

DEVICE AND HETEROSTRUCTURE FABRICATION M09

14:00	Laser-Induced Forward Transfer of metallic compounds for flexible circuits manufacturing **Sorin GRIGORESCU**	1563
14:30	Liquid Metal-Assisted CVD Graphene Synthesis: Insights from Sn-In Binary Alloy Systems **Maryam SAEED**	724
14:30	Fabrication of high quality, large-area twisted TMD bi-layers **Daniel CAPOLAT PALOMAR**	1578
15:00	Defect engineering in single-layer graphene upon sputter deposition of thin metal films **Franck Louba NADJI ADJIM**	754
15:15	Morphological and Electrical Characterization of Thermally Evaporated Fluoride Thin Films for 2D-based Electronics **Behzad DADASHNIA LEHI**	1230
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DEVICE AND HETEROSTRUCTURE FABRICATION M10

16:00	Low-Field Memristive Switching in Epitaxially Strained SnS Thin Film **Michael ROHDE**	249
16:30	Growth of orthorhombic _-(InxGa1-x)2O3 thin films on (111) 3C-SiC templates via mist chemical vapor deposition **Masatoshi KOYAMA**	171
16:45	Freestanding GaN thin films grown on graphene and amorphous carbon-coated c-sapphire for Flexible Electronic Devices **Muhammad Sabbtain ABBAS**	443
17:00	Strain evolution and in-situ phase transitions in freestanding BaTiO3 epitaxial membranes via La2/3Sr1/3MnO3 sacrificial layer **Gurukrishna KELAYATHODI**	423

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

E-MRS 2025 Fall Meeting

Symposium N

Sessions: Room 134 | Main Building
Poster Session: 237 (Small Hall) | Main Building

Thin Film, Flexible and Composite Materials and their Formation Techniques

Synthesis and Characterization of Functional Nanocomposite Materials

Symposium organizers:

Gil **GONCALVES** – University of Aveiro

Katarzyna **SIUZDAK** – Institute of Fluid-Flow Machinery Polish Academy of Sciences

Raghvendra Singh **YADAV (Main Organizer)** – Tomas Bata University in Zlin

Monday, 15 September 2025

OPTOELECTRONICS NANOMATERIALS I N01

09:00 Eco-friendly preparation of emissive and photothermal ultrasmall gold-nanoclusters: effect of N- and S-ligand on optical properties. 381
Salvatore PETRALIA

09:30 1789 Inkjet-Printed Graphene–Perovskite Photodetectors for UV–Visible Sensing 1789
Julia MARÍ-GUAITA

09:45 Luminescent, Semiconductor Nanoparticle-Loaded Polymer Microbeads – Comparing Particle Architectures 1217
Lena SCHOLTZ

10:00 Metal-Coated Carbon Nanotubes as optical filters for astrophysical application: a spectroscopic investigation. 1767
Luisa SCIORTINO

10:15 Carbon Dot-Based Room Temperature Phosphorescent Materials with Tunable Emission via Polymer matrices 1836
Maruthapandi MOORTHY

10:30 Coffee break

OPTOELECTRONICS NANOMATERIALS II N02

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Lukasz MARCINIAK

11:30 Designing Hybrid BiOI Photocatalysts: Thin Films, Microstructures, and Nanofibers for Enhanced Water Treatment 668
Laura HUIDOBRO RODRÍGUEZ

11:45 Multifunctional metal oxide membrane for simultaneous oil-water separation and contaminant degradation 623
Santhra KRISHNAN P

12:00 Atomic Layer Deposited Titanium Oxynitride Interlayers to Tailor n-Si/NiOx Interfaces for Photoelectrochemical Applications 520
Giorgia MALANO

12:15 Advancing Solar-Light Driven Photocatalysis and Antibacterial Control with NZAF/MXene Nanocomposite 1615
Anne MASIH

12:30 Lunch

ADVANCED NANOCOMPOSITES I N03

14:00 Advanced Nanomaterials and Composites for Energy Harvesting and Hydrogen Generation 1657
Sanjay MATHUR

14:30 Electrosprayed functional TiO_–PMMA nanocomposites for photocatalytic water treatment 403
Vincenzo Manuel MARZULLO

14:45 Laser synthesis of transition metal oxide nanoparticles for titania nanotube decoration as efficient water splitting catalyst 602
Cristiano LO PO

15:00 Thermally Conductive and Electrically Insulating Nanocomposites for Battery Applications 240
Anne COLOIGNER

15:15 Tunable Piezoelectric and Thermoelectric Properties of PVDF-co-TrFE-Based Polymer Composites 67
Thibaut MOREL

15:30 Coffee break

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16:00 Scalable Fabrication of High-Performance CNT-Based Composites Using Tailored Polyimide 425
Bon-Cheol KU

16:45 Tuning Thermoresponsive Nanoparticle Assembly at Interfaces: The Surprising Role of Ionic Strength 1192
Rafal ZBONIKOWSKI

17:00 Al-Doped ZnO-Based Nanostructures for Transparent Electrochemical Capacitors as an Energy Storage Device and Temperature Sensor in Smart Building Applications 1356
Febin PAUL

17:15 Facet-Engineered Multicomponent High-Entropy Nanocrystals: CO-Mediated Synthesis and Electrocatalytic Applications 856
Chia-Ying WU

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17:30 Reverse Pilloti-Inspired Evaporator for Enhanced Interfacial Evaporation and Salt Rejection in Sustainable Water Purification 01_1010
Dong Geon LEE

17:30 Self-Cleaning Underwater Anti-Oil-Fouling Filters with Partially Dissoluble Surfaces for Enhanced Interfacial Oil/Water Separation 02_1012
Eun Jin KIM

17:30 Precisely Engineered Alginate Capsules via a Facile Strategy for Advanced Multifunctional Applications 03_1051
Seung Hee HAN

17:30 Reverse Engineering and Crystallographic Analysis of Metal-Oxide-Semiconductor Field-Effect Transistors using Electron Microscopy 04_106
Lee JU HO

17:30 Enhancement of Ferroelectric and Memory Performance of P(VDF-TrFE) based FeFET by MAPbI_ composites 05_1110
Hyeonje KIM

17:30 Zn nanoparticles and Cu nanowires epoxy composites and hydrogels: EMI shielding performance and dielectric properties investigation. 06_1188
Dzmitry TSYHANOK

17:30 Eco-Friendly Nanoparticles for Rapid Cardiac Biomarker Testing 07_1201
Carmen Marinela MIHAILESCU

17:30 Electrochemical synthesis and characterization of a Polyaniline-Azulene nanocomposite film for formaldehyde sensing applications 08_1222
Mihaela SAVIN

17:30 Tailored ZIF-8 Growth on Silicon and Optical Fibers: Linking Morphology, Refractive Index, and Gas Sensing Performance. 09_1272
Artur Tadeusz SAMP

17:30 Design of Experiments for the Optimization of PNVCL Fiber Fabrication via Electrospinning and Solution Blow Spinning Techniques 10_1348
Maria Antônia Rodrigues DE PAULO

17:30 Composite polymeric Bragg reflector membranes for optical vapor sensing 11_1361
Pola PAWLIKOWSKA

17:30 High-temperature synthesis of nanostructured aluminum diboride coatings in halide-oxide melts 12_147
Tatyana STETSYUK

17:30 Synthesis of nanostructured powders and coatings of chromium silicides by currentless diffusion saturation and metallothermal reduction methods 13_149
Tatyana STETSYUK

17:30 Synthesis and Characterization of 2D Graphite/Carbon Dot Films via Scalable Flexographic Printing for Non-Faradaic Electrochemical Quantification of IL-8 14_198
Abdulaziz ASSAIFAN

17:30 Field_effect transistor based on reduced graphene oxide film with ZnO and porous silicon absorbers for ionizing radiation detection 15_210
Igor OLENYCH

17:30 Vibration damping performance of carbon nanotubes-embedded rubber composites 16_282
Jaehan LEE

17:30 Hybrid nanostructures of carbon nanotubes and CdTe nanoparticles 17_292
Nataliia KURGAN

17:30 Non-covalent interactions between carbon nanotubes and rare-earth bisphthalocyanines 18_305
Lina M. BOLIVAR PINEDA

17:30 Construction of MoS2 Nanosheets/Hydrogenated Graphene Hybrid Catalysts for Highly Efficient Electrocatalytic Hydrogen Evolution 19_332
Xiuxiu HAN

17:30 Facile Engineering of Transparent TiO2 Nanotube Electrodes with Metal Sulfides for Efficient Water Splitting 20_354
Katarzyna SIUZDAK

17:30 Precisely Engineered Alginate Capsules via a Facile Strategy for Advanced Multifunctional Applications 21_368
Seung Hee HAN

17:30 Pre-Compression-assisted Approach to Wavy Networks of Metal Nanowires Imparting Omnidirectional Stretchability and Transparency 22_37
Sang-Soo LEE

17:30 Understanding the FC-CVD process for the synthesis of carbon nanotubes 23_419
Lukasz NOWICKI

17:30 Tailoring Thermoelectric Properties of Solution-Processed SnSe_ Thin Films through ZnO Nanoparticle Incorporation 24_434
Roupen VARTIAN

17:30 Quantum dot based luminescent signage with enhanced thermal management using bio-inspired nanocomposites 25_451
Min-Sang LEE

17:30 Power Dependent Tunable Optical Nonlinearity in Iron oxide/Borophene Core-Shell Nanoparticles Under Ultrashort Laser Excitation 26_476
Akanksha PANDEY

17:30 Engineered silica-hybrid aerogel particles for advanced thermal insulation 27_507
Jeong-Gu YEO

17:30 Development of a laboratory X-ray microscope for investigating the setting and hardening process of refractories by full-field imaging, STXM and XRF 28_535
Heinrich TOST

17:30 Development of Zinc Stannate based Antibacterial and UV-protective Thermoplastic Polyurethane Nanocomposites: A Sustainable Solution for Medical Inflatables Applications 29_558
Bharti RANA

17:30 Polymer fluidic gates with physicochemically tunable wetting properties and their applications to reconfigurable liquid manipulation 30_607
Sehwan SONG

17:30 Investigation of Pt, Ru, and Pd Catalysts Supported on Alumina Synthesized by Spray Pyrolysis for MBT Hydrogenation 31_608
Toan Minh PHAM

17:30 Computational approaches to the investigation of responsive nanomicelles for drug delivery 32_631
Dario ORLIC

17:30 Electrospun BiOI/SnO_ Nanofibers for Efficient Photocatalytic Water Treatment 33_672
Laura HUIDOBRO RODRÍGUEZ

17:30 Visible Light Photocatalytic Degradation of Rodamin B Using Ti3C2Tx MXene Film 34_71
Halime AK

17:30 Structural Properties of HMTP Organic Semiconductor Thin Films on Epitaxial Graphene vs. Bare 6H-SiC(0001) at Elevated Temperatures 35_720
Devanshu VARSHNEY

17:30 Enhanced IR Emissivity of Functionalized PVDF-Based Electrospun Nanofibers Incorporating SrTiO_ Nanoparticles 36_761
Muhammad Usman MUNIR

17:30 Pulsed laser deposition of bulk-like (111)- and (001)- NiO thin films 37_842
Simranjeet KAUR

17:30 Surface Functionalization of Ti3C2Tx MXenes in Epoxy Nanocomposites: Enhancing Conductivity, EMI Shielding, Thermal Conductivity, and Mechanical Strength 38_887
Syed Muhammad Shabbir Madad NAQVI

17:30 Plasma-Assisted Nanoengineering: Tailoring Surfaces and Nanomaterials via DBD-Driven Laser Ablation 39_890
Nazim ASLAM

17:30 Extreme Ultra-violet Metal Oxide Resist Synthesis as Hard Mask for Nano Structure Fabrication 40_936
Janghyun JU

17:30 Biodegradability Assessment of Biodegradable Plastics in Various Environments 41_942
Hye Kyeong SUNG

17:30 Metal-Organic Frameworks Derived Transition Metal Nitride/Carbon Composite as Anodes for Lithium-Ion Batteries 42_957
Seong Ho JUNG

17:30 Silicon-Embedded Hollow Transition Metal Oxide/Graphitic Carbon Composite Microspheres via a Scalable Process as Anodes for Lithium-Ion Batteries 43_958
Beom Su JO

17:30 Localized MoS_ Conversion and Crystallinity Enhancement via Laser Parameter Control 44_971
Naryeong HONG

17:30 Thermoresponsive MBGNs@PNVCL Nanoparticles for Biomedical Applications 45_98
Arthur GABRIEL

17:30 Stretchable Conductive Nanocomposites for Washable Textile Electronics via Control of Intermolecular Interactions: Experiment and Simulation 46_986
Heesuk KIM

17:30 Effect of Water Sorption on the Mechanical Properties of Direct and CAD/CAM Subtractive Dental Resin Composites 48_990
Georgiana OSICEANU

17:30 Magnetic Amino-Functionalized COF Nanocomposite: From Material Design to Toxic Dye Removal Application 49_991
Khin Moe LWIN

17:30 Interfacial energy transfer and emission tunability via spatial control of sensitizer in core@shell@shell upconverting nanophosphors 50_999
Cinumon K. V.

Tuesday, 16 September 2025

NANOMATERIALS FOR HEALTHCARE I N05

09:30 Nanomaterials for Antimicrobial and Antiviral Applications: From Surface Engineering to Selective Biocontrol 1268
Jan PACZESNY

09:45 Advancing Diabetic Wound Healing with Nanomaterials: Harnessing the Regenerative Power of Zinc Oxide, Silver, and Cerium Oxide Nanoparticles 1633
Aneela ANWAR

10:00 Sol-gel derived boron–aluminum–silicon oxide thin films with enhanced antibacterial properties: A comprehensive characterization study 1673
Gökhan Gurur GÖKMEN

10:15 Self- assembled functional hybrid nanomaterials composed of metal nanoparticles and cyclodextrins for biomedical applications 792
Mariachiara TRAPANI

10:30 Coffee break

NANOMATERIALS FOR HEALTHCARE II N06

11:00 Chemical, morphological and functional characterization of surface modified silicon carbide (SiC) substrates 243
Maria Elena FRAGALA

11:30 Engineering nanoparticles-based and polymer-based anti-phage materials 1393
Bartlomiej BONCZAK

11:45 Tailored PDMS Nanocomposite Thin Films via RSM-Guided Fabrication for Light-Guided Biomedical Applications 578
Dorna ESRAFILZADEH

12:00 Investigating the Effect of Morphological and Structural Parameters for Antibacterial Efficacy of Zinc Stannate-based Thermoplastic Polyurethane nanocomposites 553
Bharti RANA

12:15 From Natural Dyes to Engineered Nanoparticles: Selective Inactivation of Bacteriophages Using Functional Materials 472
Sada RAZA

12:30 Lunch

HYBRID NANOMATERIALS I N07

14:00 Modified 2D Transition Metal Dichalcogenide Flakes for Sensing Applications 41
Mahesh KUMAR

14:30 Enhanced CO2 adsorption through triethylenetetramine functionalized Cu-grown carbon nanomatrices supported on porous activated carbon fiber: Experimental investigations, Isotherm, and RSM modelling 70
Bhaskar BHADURI

14:45 Colloidally Stable Electroactive Polypyrrole Nanoparticles for Electrocatalysis and Sensing 696
Piyush Sindhu SHARMA

15:00 Tailoring CoFe?O? - BiFeO? 0-3 nanocomposite thin films by chemical solution processing for energy harvesting
Karla MENA AGUILAR

15:15 Optical spectroscopic investigations of the layer-dependant electronic and thermal properties of two-dimensional MoSe2 1329
Shyama RATH

15:30 Coffee break

HYBRID NANOMATERIALS II N08

16:00 Composite electrodes for electrochemical actuators with augmented functionalities 818
Pooi See LEE

16:30 Metal Halide Perovskites for Gas Sensing Applications 1444
Georgios LANDROU

16:45 Laser Synthesis of Colloids: Mechanisms of Formation, Tailored Properties, and Emerging Applications of Composite Nanoparticles 1569
Zaneta SWIATKOWSKA-WARKOCKA

17:00 Fabrication and Evaluation of Biodegradable Biphasic Nanocomposite Scaffold for Osteochondral Regeneration 1634
Aneela ANWAR

17:15 Thermal Degradation Kinetic Analysis of Hybrid Tetrapod Nanomaterial Energised Phase Change Material: 1709
Kalidasan BALASUBRAMANIAN

POSTER SESSION 2 NP02

17:30 Ti-Cu-O photocatalytic thin films deposited via AA-MOCVD for marine antifouling applications 01_1004
Sara GHAZI

17:30 Biodegradable Implantable Lignin-base Electrospun Patch for Hernia Repair 03_1182
Elaheh YOUSEFIMIAB

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Kristine O'DWYER

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Wednesday, 17 September 2025

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Adarsh Kumar PANDEY

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Bartosz KAMINSKI

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Jie CUI

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Guldana ZHIGERBAYEVA

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Dongmin SHIN

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Raghvendra Singh YADAV

11:20	Sustainable Metal–Polyphenol Nanocomposite Coating for Enhancing Fouling Resistance of Ultrafiltration Membranes **Khin Moe LWIN**	962
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Yashvi SHETH

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Kartikey CHATURVEDI

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Juno LEE

E-MRS 2025 Fall Meeting

Symposium O

Sessions: Room 308 | Main Building

Electronic, Photonic, Nano, Low-dimensional and Quantum Materials

Topological Textures in Antiferroic and Ferroic Materials

Symposium organizers:

Céline **LICHTENSTEIGER**	– Université de Genève
Jean-Yves **CHAULEAU (Main Organizer)**	– SPEC, CEA Saclay
Marta **GIBERT**	– TU Wien
Vincent **GARCIA**	– Laboratoire Albert Fert

SESSION 5 O05

09:00	Domain walls in multiferroics and multiferroic domain walls **Manfred FIEBIG**	1597
09:30	Distribution of antiferromagnetic rare-earth domains in multiferroic Dy0.7Tb0.3FeO3 **Mads WEBER**	1498
09:45	Probing theTHz dynamics of single domain multiferroic BiFeO3 **Stephane FUSIL**	1745
10:00	Nanoscale electrostatic control in ferroelectric thin films through lattice chemistry **Morgan TRASSIN**	1879
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11:30	Antiferroelectrics: we love them, but what's next? **Cosme MILESI-BRAULT**	1823
11:45	Atomistic simulations in PbZrO_ and Zr-rich Pb(Zr,Ti)O_ **Marek PASCIAK**	1797
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Catherine DUBOURDIEU

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Kohei TAKAHASHI

14:45 Photogalvanic shift currents in BiFeO3-LaFeO3 superlattices 1773
Francesco DELODOVICI

15:00 Unveiling Polar Architectures in BiFeO_ Superlattices via Scanning Transmission Electron Microscopy 1750
Razvan BURCEA

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Lei YIN

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Inigo ROBREDO-MAGRO

16:30 Unsupervised Machine Learning Phase Diagram Construction for a 2D Effective Model of PbZrO_ 1778
Pavel BALÁŽ

16:45 Ferroelectric antiskyrmions in barium titanate. 1780
Jiri HLINKA

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Wednesday, 17 September 2025

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Paulina J. PRUSIK

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Joo Von KIM

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Louis BASTOGNE

16:45 Defect-Driven Polar Topologies in Room-Temperature Layered Multiferroic Thin Films 400
Lynette KEENEY

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Salia CHERIFI-HERTEL

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

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Kristina HOLSGROVE

09:45 2D hybrid molecular ferroelectrics with switchable ferroelectricity and photoelectric robustness down to monolayer 536
Yuzhong HU

10:00 Unexpected competition between polar displacements and Rashba phenomena in strained SrTiO_ 473
Julien VARIGNON

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Fernando GÓMEZ-ORTIZ

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Guillaume NATAF

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Dennis MEIER

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14:45 Non-reciprocal neutral ferroelectric domain walls in BiFeO_ 1810
Mauro António PEREIRA GON_ALVES

15:00 Probing the Emergent Phases in Ferroic Domain Walls 1881
Shelly CONROY

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E-MRS 2025 Fall Meeting

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Symposium P

Sessions: Room 412 | Main Building
Poster Session: 237 (Small Hall) | Main Building

Electronic, Photonic, Nano, Low-dimensional and Quantum Materials

2D Materials for Magnetism and Spintronics: from Fundamentals to Integrated Technology

Symposium organizers:

Bruno DLUBAK (Main Organizer) – Laboratoire Albert Fert CNRS-Thales

Hiroshi NAGANUMA – Tohoku University

Stephan HOFMANN – University of Cambridge

Monday, 15 September 2025

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12:00	TMD and 2D ferromagnet Engineering of 2D-Magnetic Tunnel Junctions From Barriers to Electrodes by Pulse Laser Deposition **Jane DANIEL**	1479
12:15	Unveiling the Magnetic and Optical Landscapes of Novel MXenes: An Ab Initio Approach **Jiri KALMAR**	1001
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14:00	Controlling Magneto-Optics and Ultrafast Magnetization Dynamics in 2D Magnetic Materials **Marcos H.D. GUIMARAES**	670
14:30	From Theory to Device: Bridging First-Principles Modeling and Spin-Transport Experiments in 2D Heterostructures **Simon M.-M. DUBOIS**	1604
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Masako SUZUKI-SAKAMAKI

16:30 2D material/Heusler compound van der Waals heterostructures for spintronic applications 448
Sakai SEIJI

17:00 Large-Area Epitaxial 1T-TaSe_ Monolayers on Semiconducting Substrates for Room-Temperature Mottronics 1290
Pascale DIENER

17:15 Competing Quantum Orders in 6R-TaS_2: Unconventional Superconductivity, Charge Order, and an Anomalous Hall Effect phase 183
Orion GERGURI

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Athanasios DIMOULAS

09:30 Rectification in two-dimensional spintronics systems 427
Witold SKOWRONSKI

10:0 presentation of ENSEMBLE3
Kingshuk BANDOPADHYAY

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Bogdana BORCA

10:30 Coffee break

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Pierre SENEOR

11:30 First-principles study of heterointerfaces between 2D materials and iron-based magnetic alloys for spintronics applications 800
Mitsuharu UEMOTO

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Yan WANG

12:30 Lunch

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14:00 Symphony of Engineered Materials: Tailored Platforms for Photonics and Emerging Technologies
Kingshuk BANDOPADHYAY

14:30 Excitonic response in TMD heterostructures from first-principles: impact of stacking, twisting, and interlayer distance 107
Riccardo REHO

15:00 Spin polarized dichalcogenide alloy for selective adsorption of gases 220
Ahmad AYESH

15:15 Pulsed laser crystallisation of sputtered MoS2: role of synthesis conditions in determining film properties 836
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Thi Van Anh NGUYEN

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Shubham BHATT

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17:30	Growth and characterization of the two-dimensional electron gas at NiFe2O4/AlOx/SrTiO3 heterointerfaces for spin-charge conversion through the inverse Edelstein effect **Amit CHANDA**	03_1128
17:30	Toward Strain-Controlled Spin Logic: Interfacial Rashba States in Topological Insulator/Two-Dimensional Materials Heterostructures **Pei-Yu CHUANG**	04_124
17:30	Understanding the missing superconductivity in La0.77Ca0.23NiO2 infinite layer **Aimane CHEIKH**	05_1340
17:30	Direct CVD Graphene integration for Spintronics **Jérémy PERRIN**	06_1470
17:30	Chiral multiferroicity in two-dimensional hybrid organic-inorganic perovskites **Haining ZHENG**	07_1533
17:30	DFT analysis on electronic structure of graphene based magnetic tunnel junctions **Matsumoto NAOHIRO**	08_1534
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Wednesday, 17 September 2025

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Marta GALBIATI

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Emma AOUSTIN

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Mohamed BAIBOUD

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Juan Francisco SIERRA GARCIA

17:00 Applications of second harmonic generation microscopy on domain boundaries in ferroics 215
Hiroko YOKOTA

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 18 September 2025

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Cecilia MATTEVI

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Anna DYRDAL

10:00 Development of wafer-scaled topological insulators for spintronics 38
Roberto MANTOVAN

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Fei WANG

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Julien VARIGNON

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Nakul KUMAR

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Mohammadali RAZEGHI

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Mengting JIANG

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Abhirami SAMINATHAN

15:15 Polaronic effects induced topological phase transitions in quantum (spin) Hall flat band insulators 755
Saurabh BASU

E-MRS 2025 Fall Meeting

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Symposium Q

Sessions: Room 327 | Main Building
Poster Session: 237 (Small Hall) | Main Building

Electronic, Photonic, Nano, Low-dimensional and Quantum Materials

Group-IV Semiconductor Materials for Nanoelectronics and Cryogenic Electronics

Symposium organizers:

Daniel **HILLER (Main Organizer)**	– Technical University Bergakademie Freiberg
Dirk **KÖNIG**	– Australian National University
Moritz **BREHM**	– Johannes Kepler University Linz
Ray **DUFFY**	– Tyndall National Institute / University College Cork

Monday, 15 September 2025

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Kao KUO-HSING (FRANK)

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11:30 Applications of Junctionless Nanowire Transistors 510
Artur ERBE

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Shubham BABBAR

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15:00	Pulsed laser crystallisation of sputtered MoS2: thin films synthesis compatible with Si-based devices **Alessandro TONON**	846
15:15	A scalable approach towards the fabrication of MoS2 devices through standard semiconductor processing **Daniele DEMENEGHI**	1100
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17:00	Band-edge electrochemiluminescence of colloidal silicon quantum dots in a thin-layer liquid cell **Toshihiro NAKAMURA**	440
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Daniel HILLER

17:30 Optimization of O3-Ga2O3 Thermal-ALD for SiO2:Ga Modulation Acceptor Doping 02_1132
Shail SHAH

17:30 ALD-Al2O3 oxidant/precursor variations & SiO2:Al nanolaminates for Modulation Acceptor Doping 03_1238
Daniel HILLER

17:30 Hybrid Numerical–ML Framework for Feature Importance Analysis of 10 nm Junctionless GAA FET Design Parameters in Nanoscale Digital Circuits 04_1422
Faycal DJEFFAL

17:30 Label-Free Detection of Sodium Azide in Buffer Solution Using Functionalized Nanochannel Chemical Field Effect Transistor (ChemFET) 05_1516
Menka SHARMA

17:30 DFT study on thermal equilibrium concentration and stable atomic configuration of Sn atoms in Si or Ge crystals 06_392
Koji SUEOKA

17:30 Pressure-controlled growth and structural modification of crystalline silicon thin films deposited on SiO_/Si substrates via ultra-low-pressure thermal CVD 07_983
Dhiman MONIKA

Tuesday, 16 September 2025

MODELLING, SIMULATION, MACHINE LEARNING Q05

09:00 From Atomistic to Machine Learning Methods for Simulations and Modelling Novel Electronic Devices 277
Vihar GEORGIEV

09:30 Progressing strained layer growth by deep learning 319
Francesco MONTALENTI

10:00 First principles calculation of the spin and charge transport properties of group IV alloys 705
Felipe MURPHY-ARMANDO

10:15 Optical absorption in hexagonal-diamond Si and Ge nanowires: insights from STEM-EELS experiments and ab initio theory 633
Michele AMATO

10:30 Coffee break

ADVANCED NANOSCALE CHARACTERIZATION Q06

11:00 Nanoscale terahertz dynamics of silicon surfaces and nanomaterials 1338
Frank HEGMANN

11:30 Integrated TEM Approach for Structural, Chemical, and Strain Analysis of Aggressively Scaled Semiconductor Devices 870
Paola FAVIA

11:45 Dimensional and analytical metrology of semiconductor nanostructures employing X-ray fluorescence techniques 1214
Philipp HÖNICKE

12:00 Characterization methods for metal contamination and gettering to enhance silicon devices performances 1324
Océane FEVRIER

12:15 Point defects in proton-irradiated highly Ga- and B-doped Ge 1446
Pejk AMOROSO

12:30 Lunch

MODULATION DOPING Q07

14:00 Cryogenic Transport in Silicon Structures with Acceptor-Doped Dielectric Shell 1867
Soundarya NAGARAJAN

14:30 Modulation-Acceptor-Doped SiGe Schottky Barrier Field-Effect Transistors 882
Andreas FUCHSBERGER

14:45 SiO2:Ga Modulation Acceptor Doping: Ga2O3 - PEALD vs. O3-Thermal-ALD 1137
Shail SHAH

15:30 Coffee break

SI-GE-SN & OPTOELECTRONICS Q08

15:45 Towards optical metasurface devices with self-assembled Sn nanoislands on Ge 1293
Inga Anita FISCHER

16:15 Shedding light on the lattice strain and interface quality of Si and Ge quantum wells at the nanoscale 248
Giovanni CAPELLINI

16:45 Low temperature epitaxy of supersaturated SiGe and Ge layers on Si and SOI 1021
Moritz BREHM

17:00 Epitaxial formation and deterministic integration of silicon color centers into light-emitting diodes 895
Johannes ABERL

17:15 Gated Hall-bar devices to evaluate the electronic properties of Ge quantum well heterostructures 582
Mehwish HANIF

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

RECONFIGURABLE FETS Q09

14:00 Reconfigurable Si, SiGe and Ge nano-sheet Transistors: from Charge Selection to Ferroelectrically Enhanced Neuromorphic Functionality 1482
Walter WEBER

14:30 Common Channel Reconfigurable Field Effect Transistors 811
Cigdem CAKIRLAR

14:45 Ultra-Low Power Cryogenic Field-Effect Transistors 1349
Joachim KNOCH

15:15 Closing Remarks
Ray DUFFY

15:30 Coffee break

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 18 September 2025

NANOIC PILOT LINE WORKSHOP I (JOINT SESSION WITH SYMP. V) Q11

09:00 NanoIC pilot line – addressing sub 2nm leading edge technologies 727
Inge ASSELBERGHS

09:30 Integrating Emerging Materials into Advanced ICs: Tyndall's Role in the NanoIC Pilot Line 590
Niamh WALDRON

10:00 Si/SiGe/Si double heterostructure diodes: a promising approach to pseudomorphic lasers for the Si material system 1458
Moritz BREHM

10:15 Epitaxy of Ge/SiGe 2D hole gases for quantum electronics 366
Jean-Michel HARTMANN

10:30 Coffee break

NANOIC PILOT LINE WORKSHOP II (JOINT SESSION WITH SYMP. V) Q12

11:00 New semiconductor channels for advanced nanotechnologies 1191
Pierre MORIN

11:30	Cryo-FIB sample preparation for advanced sub-nanometer S/TEM semiconductor devices metrology **Iulian BOERASU**	1399
12:00	Hydrogen-Free PVD SiN For Low Loss Waveguides On 300 mm Silicon Platform **Eleonora GARONI**	1898
12:15	Si/SiGe epitaxial multi-stacks on SOI for CFET devices **Anjani AKULA**	1395
12:30	Lunch	

E-MRS 2025 Fall Meeting

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Advanced Tools for electron diffraction

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Symposium R

Sessions: Room 437 | Main Building
Poster Sessions: 237 (Small Hall) | Main Building

Electronic, Photonic, Nano, Low-dimensional and Quantum Materials

Ultra-doped Semiconductors Made by Non-equilibrium Processing for Electronic, Photonic and Spintronic Applications IV

Symposium organizers:

Eric GARCIA HEMME	– Universidad Complutense de Madrid
Francesca CHIODI	– C2N, Université Paris-Saclay
Sébastien KERDILES (Main Organizer)	– Université Grenoble Alpes, CEA-LETI
Wei DU	– University of Arkansas

PULSED LASER MELTING R02

11:00 Hyperdoping of group IV semiconductors by pulsed laser melting 728
Enrico NAPOLITANI

11:30 Hyperdoped and Highly Strained Ge:Sb layers by Pulsed Laser Melting for Next-Generation Cristalline Gamma-Ray Sources 694
Francesco SGARBOSSA

11:45 Morphology, Structure, and Composition Modifications by Pulsed Laser Annealing in SiGe Nanostructures 799
Antonino LA MAGNA

12:30 Lunch

HYPERDOPING FOR OPTOELECTRONICS I R03

14:00 All-silicon waveguide-coupled photodetectors enabling telecom-wavelength detection at room temperature 301
Yonder BERENCEN

14:30 Sub-Bandgap Absorption in Silicon via Combined Surface Texturing and Gold Hyperdoping Using Pulsed Laser Melting 1753
Núria ROCA-GIMÉNEZ

14:45 Tellurium-implanted Silicon: correlation between impurity lattice location and electrical/optical properties 1519
Mao WANG

15:30 Coffee break

SI, GE DOPING FOR NANO/MICROELECTRONICS I R04

16:00 Meeting the Needs of Future Nodes - Dopant Activation at Millisecond and Nanosecond Timescales 700
Michael WILLEMANN

16:30 N-type hyperdoping of Ge/Si and SiGe/Si epitaxial layers by UV-nanosecond laser processing 794
Giulia Maria SPATARO

16:45 Boron hyperdoping of silicon by solid-phase epitaxial regrowth 1157
Alan LE BOTERF

17:00 Ultra-low temperature epitaxy enabling high active doping for advanced logic devices 1013
Rami KHAZAKA

POSTER SESSION 1 RP01

17:30 Structural and phase evolution of Te-hyperdoped silicon under thermal annealing 01_1193
Yonder BERENCEN

17:30 Heavily doped n-type GeSn for plasmonic-enhanced mid-infrared photodetection 02_1215
Yonder BERENCEN

17:30 Enhanced near-infrared absorption in Au-hyperdoped Si: interplay between mid-gap states and plasmon resonance 03_1640
Songyuan PENG

17:30 Hyperdoped Ge for plasmonics: tunable plasmonic frequency by doping concentration and plasmonic structural design 04_1641
Minjuan YUAN

17:30 Light-trapping and carrier extraction for enhanced sub-bandgap photoresponse in hyperdoped semiconductors 05_1707
Eric GARCÍA-HEMME

17:30 Transport Mechanisms in Te-Hyperdoped preamorphized Germanium: Evaluating the Influence of Rapid Thermal Annealing Prior to Pulsed Laser Melting 06_1849
Rafael BENÍTEZ FERNÁNDEZ

17:30 Tellurium implanted Si for infrared optoelectronics 07_204
Shengqiang ZHOU

17:30 Flash lamp annealing for semiconductor applications 08_398
Lars REBOHLE

17:30 Geometrical local molten regions formation on Si surfaces by pulsed laser annealing 09_486
Sebastien KERDILES

17:30 Molecular beam epitaxy of III-IV-V alloys for new compound semiconductor materials 10_681
Ishizu GAKU

17:30 Lateral GeSn p-i-n waveguide photodetectors covering eitire short-wave infrared band 11_777
Ting-Yu CHEN

17:30 Comparative study of rapid thermal and microwave annealing on compressively-strained ultra-doped GeSn alloys on silicon 12_858
Ruei-Jhang WANG

Tuesday, 16 September 2025

R05 Si, Ge Doping for Nano/Microelectronics II R05

08:30 Short time scale (ns and _s) UV laser annealing solutions: a novel approach for ultra doped semiconductors 710
Zeinab CHEHADI

09:30 Leveraging nanosecond laser solid phase epitaxial regrowth to reach ultra-high P active concentrations in Si 1002
Mathieu OPPRECHT

09:45 Ex-situ incorporation of Al in Ge by sputter deposition and pulsed laser melting: a new approach to fabricate hyper-doped Ge:Al alloys 1084
Enrico DI RUSSO

10:00 Nanosecond UV laser annealing solutions for wafers and panels 1248
Thomas MICHALAK

10:30 Coffee break

GeSn and Other Alloys R06

11:00 GeSn Quantum Well laser advances based on GeSnOI technology 763
Moustapha EL KURDI

11:30 Synthesis of supersaturated GeSn alloys on Ge and Ge-on-Si by nanosecond pulsed laser melting 767
Daris FONTANA

11:45 Engineering plasmonic resonance modes in the top layer of Ge1-xSnx comb-like grating antennas for mid-infrared photodetection applications. 1005
Ali AZIMI

12:00 Hyperdoped GeSn:Sb layers obtained by combining layer deposition process with pulsed UV laser annealing 587
Richard DAUBRIAC

12:15 Endotaxy of bismuth into InAs 1509
Janusz SADOWSKI

12:30 Lunch

ULTRADOPING ADVANCED CHARACTERIZATION R07

14:00 Contribution of atom probe tomography to the study of ultra-doped semiconductors 592
Sébastien DUGUAY

14:30 Measuring excited carrier lifetime improvements in hyperdoped semiconductors with using terahertz spectroscopy 1377
Meng-Ju SHER

15:00 Structural characterization of hyperdoped Silicon using Precession-Enhanced 4D Scanning Transmission Electron Microscopy 1794
Martijn FRANSEN

15:30 Coffee break

SUPERCONDUCTIVITY IN SI, GE AND DIAMOND R08

16:00 Exploiting the “bad” superconductivity of boron-doped diamond for quantum technology applications 567
Georgina KLEMENCIC

16:30 Importance of the laser temporal profile on nanosecond laser doped superconducting silicon 823
Aiken VAN WAVEREN

16:45 Superconductivity in Ga-Doped SiGe via Ion Implantation and Flash-Lamp Annealing 1521
Yu CHENG

17:00 Silicon-Based Superconducting Thin Films: From Material to Quantum Devices 470
Fran_ois LEFLOCH

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

PLASMONICS IN SI AND GE R09

14:00 Probing hyper-doped Silicium metallicity at optical frequency using Fourier transform spectroscopy 512
Jean-Marie POUMIROL

14:30 Studies of near- and mid- infrared plasmonic properties of ultra-doped Silicon 1476
Vy YAM

14:45 Influence of SiN/SiO2 passivation on the interaction of a highly doped plasmonic Ge antenna cladding with albumin in the THz range 195
Elena HARDT

15:00 Localized surface plasmon resonance in hyperdoped size-controlled Si nanocrystals embedded in a silica matrix 1194
Hervé RINNERT

15:30 Coffee break

HYPERDOPING FOR OPTOELECTRONICS II R10

16:00 Ultrafast Laser Hyperdoping: From Silicon to Germanium 454
Xiaolong LIU

16:30 Strategies for Enhanced Light Absorption in Microstructured Hyperdoped Silicon 1844
Pastor DAVID

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

E-MRS 2025 Fall Meeting

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Symposium S

Sessions: Room 306 | Main Building
Poster Sessions: 237 (Small Hall) | Main Building

Electronic, Photonic, Nano, Low-dimensional and Quantum Materials

Nanomaterials of the Future: Advancements in Energy and Sensing

Symposium organizers:

Maria Caterina **GIORDANO**	–	Università degli Studi di Genova
Maria Josè **LO FARO (Main Organizer)**	–	University of Catania
Pedro **M. P. SALOME**	–	INL - International Iberian Nanotechnology Laboratory
Sabrina **SARTORI**	–	University of Oslo

2D MATERIALS FOR OPTOELECTRONICS S01

08:30	Multi-scale modelling and simulations of 2D-material based devices for low-power electronics **Damiano MARIAN**	1038
08:45	Large photoresponse and grain boundaries of LaFeO_-based heterojunctions **Jaume GAZQUEZ**	1009
09:00	Photodetectors Based on 2D Materials for Near- to Far-Infrared Applications **Domenico DE FAZIO**	62
09:30	Phonon Engineering in Twisted WS_ Bilayers: Tunable Interfacial Thermal Transport for Advanced Thermal Management **Jiaqi YANG**	1561
09:45	Topological semimetal PtTe_ for MIR photodetection **Matteo GARDELLA**	1729
10:00	Large scale synthesis of multilayer PtSe2 for high frequency optoelectronics **Pierre LEGAGNEUX**	1091
10:15	Universal mechanical exfoliation of large-area transition metal dichalcogenide monolayers **Ermes PECI**	1030
10:30	Coffee break	

NANOSTRUCTURED MATERIALS FOR SENSING AND PLASMONICS S02

11:00	Hydrogen sensing with AI-designed plasmonic metasurfaces **Andrea BALDI**	87
11:30	Graphene and Copper Nanoparticles based electrochemical sensors for the determination of Glyphosate in Water **Uswah YASIN**	817

11:45 I-III-VI quantum dots: synthesis, applications and chirality 1653
Lorenzo BRANZI

12:00 Platinum-coated Silver Nanoplates: synthesis and application as a reliable SERS substrate 1360
Antonio BRANCATO

12:00 Mid Infrared Active Non-Toxic Colloidal Quantum Dots 1464
Rajesh BERA

12:15 Interconnected Network of Gold Nanoparticles functionalized with dithiols: synthesis, characterization and sensing application 802
Beatrice PENNACCHI

MATERIALS FOR BIOSENSING S03

13:45 Biomass-derived carbon materials modified with gold nanoparticles for acethaminophen sensing 1825
Livia Alexandra DINU

14:00 Array-based Polymer-Phage Biosensors for Detection and Differentiation of Bacteria 579
Enkhlin OCHIRBAT

14:15 Attomolar Detection with Gold Nanoclusters: A Biocompatible Approach to Sensing in Blood Matrices 257
Regina Maria CHIECHIO

14:30 Experimental and DFT Investigation of MXene/Cu_O-Modified Quartz Tuning Fork Sensors for Ultrasensitive Glucose Detection 912
Abdullah ALODHAYB

14:45 Nanoengineered Capsule System Incorporating Gold Nanoparticles for Contrast-Enhanced Multimodal In Vivo Cell Tracking 781
Sneha SINGH

15:00 Precision Sensing at the Nanoscale: Probing extracellular vesicle drug interactions for cancer therapy monitoring 1546
Sijun PAN

15:15 ZnO Tetrapod-Coated Silicon Nanowire Sensor for Real-Time and Non-Invasive Respiratory Monitoring 1772
Muhammad Taha SULTAN

15:30 Coffee break

NANOMATERIALS FOR ENVIRONMENTAL SENSING S04

16:00 Ammonia Sensing via Pseudo Molecular Doping in UV-Activated Ambipolar Silicon Nanowire Transistors 1793
Vaishali VARDHAN

16:15 W-Cr Janus-like thin film nanocolumns for gas sensing 394
Guillem VILAR

16:30 A paper-based vapoluminescent chemosensor of a Zinc(salen)-type complex for the discriminative and sensitive detection of volatile diamine vapors 664
Agostino ATTINA

16:45 Designing ultra-high performance VOCs gas sensors utilizing Tungsten tri-oxide(WO3) compositing with 2D graphitic carbon nitride(g-C3N4) at room temperature(RT). 1680
Meghana N

17:00 Capacitive Humidity Sensor based on Ultrathin Zn-HKUST-1 Nanosheets Thin Film for AI-powered Applications 555
Syed Adil SARDAR

17:15 New chromogenic and fluorogenic Zn(salen-type) molecular materials and their potential application as sensor arrays for the detection of heavy-metal cations in seawater/wastewater 702
Sara SCUDERI

POSTER SESSION SP01

17:30 Liquid-Metal-Derived BiSn Core-Shell Particles: An Intrinsic Single-Particle Platform That Unites Broadband Light Harvesting with Record Photothermal Conversion 01_1119
Simge CINAR-AYGÜN

17:30 Versatile synthesis of silver and silver-derived aerogels for enhanced electrocatalysis 02_115
Beibei WENG

17:30 Probing the Electrochemical Activity of the 114 Cobaltite Structures for the Oxygen Evolution Reaction 03_1150
Abhishek BHARTI

17:30 Study of Energy Application based on Nanostructured Conducting Polymers 04_1244
Perizat ASKAR

17:30	Molecularly Engineered Self-Doped and Ionic Polymers: A Pathway to High-Efficiency Solar Cells and Rechargeable Batteries **Dana KANZHIGITOVA**	05_1249
17:30	High-Piezoelectric properties of GaN Nanowires for Powering Medical Implants **Szu-Wei CHEN**	06_1288
17:30	Enhancing Solar Evaporation Efficiency Using Nickel Ferrite Nanoparticles: Experimental and Analytical Insights **Kousik PRADHAN**	07_1386
17:30	Enhanced Hydrogen Storage in Bimetallic ZIF-67: Tuning Porosity through Metal Substitution **Aigerim OSPANOVA**	08_1528
17:30	Enhancing Triboelectric Nanogenerators Performance with MXenes -Silicone Nanocomposites: A Leap Forward in Energy Harvesting and Touch-Sensitive Technologies **Navaneeth MADATHIL**	09_1662
17:30	Peony-Structured ZIF-8-infused lyophilized Hydrogel as a high-performance Bifunctional Electrocatalyst for Hydrogen Peroxide Fuel Cells and its Electrochemical Detection in Tap Water Samples **Manaswini RAVIPATI**	10_169
17:30	Engineering Duo-Dimensional MoSSe for Efficient DC-Link Energy Storage in Electric Vehicles **Vimal Kumar MARIAPPAN**	11_1815
17:30	Engineering Valence State of Ni in Ni_P@PPy Composite for Selective Application **Jong Hun KIM**	12_200
17:30	Conformal surface intensive doping of low-valence Bi on Cu_O for highly efficient electrochemical nitrate reduction to ammonia production **Won Tae HONG**	13_201
17:30	Construction of MoS2 Nanosheets/Hydrogenated Graphene Hybrid Catalysts for Highly Efficient Electrocatalytic Hydrogen Evolution **Xiuxiu HAN**	14_328
17:30	Interface engineering and band alignment studies of Cu doped NiO as a hole transport layer for triple cationic perovskite solar cells **Puja PUJA**	15_340
17:30	Synthesis, structure and electronic properties of perovskite thin films CH_NH_PbX_ (X=Cl, Br, I) **Volodymyr KARBIVSKYY**	16_352

17:30	Synthesis of Mixed Phase Iron Oxide Nanoparticles by Thermal Plasma in a Magnetic Field Environment **Savita PANNU**	17_412
17:30	Synthesis of an indirect Z-scheme ZnO-Au-WO3 thin films for PEC water oxidation **Muhammed L FATTY**	18_529
17:30	Dielectrophoretic Assembly of Metal Nanowire Electrodes for Highly Efficient On-Chip Micro-Supercapacitors **Yeonwoo KIM**	19_615
17:30	Magnetic Self-Assembly of 3D Micro Pillar Electrodes for Highly Effective Supercapacitors **Seongyeol KIM**	20_617
17:30	Understanding the impact of doping on the structural, hydrolytic, and thermal stability of HKUST-1 **Priya MAHATO**	21_80

Tuesday, 16 September 2025

NANOMATERIALS FOR ENERGY AND CATALYSIS S05

08:45	Transition metal nitrides and carbides syntheses from metallic clusters: applications to heterogeneous catalysis **Franck TESSIER**	1539
09:00	Energy Nanostructures at Atomic Scale: AI-automatic detection of single atoms and vacancies in 2D & 3D catalysts **Jordi ARBIOL**	31
09:30	Electrocatalytic Modulation using Vibrational Strong Coupling **Jyoti LATHER**	1135
09:45	High Entropy Alloys based-Electrocatalysts developed on Ni-fiber and used for Water Electrolysis **Yashwant Pratap KHARWAR**	258
10:00	Laser irradiation in water of Graphene Oxide for Oxygen Evolution Reaction **Cristiano LO PO**	600
10:15	Ordered assembly of plasmonic nanoparticles for enhanced hydrogen evolution reaction **Muhammad HARIS**	1704

10:30 Coffee break

ADVANCED MATERIALS AND NANOSTRUCTURES S06

11:00 The Material Evolution Revolution 348
Erik GARNETT

11:30 1D to 2D Photoswitchable Plasmonic NP Superstructures 649
Jaime Gabriel TRAZO

11:45 1T MoS2 synthesis with tailored morphology from liquid phase 1344
Lifu ZHANG

12:00 Local strain engineering in 2D TMD semiconductor nanocircuits via thermal-Scanning Probe Lithography 1438
Giorgio ZAMBITO

12:15 Safe and Sustainable by Design MOF beads for Selective Entrapment of Rare Earth Elements 42
Prathmesh BHADANE

12:30 Lunch

MATERIAL DESIGN AND OPTIMIZATION S07

14:00 Accelerating materials research with machine learning 1095
Miguel MARQUES

14:30 Bioinspired and biotemplated semiconductor nanostructures derived from butterfly wings with structural coloration 1242
Gábor PISZTER

14:45 From unusual building blocks to responsive 2D systems at the air/water interface 1276
Jan PACZESNY

15:00 Suppressing surface amorphization in BSCF-based perovskites through A-site deficiency for use as anodes in water electrolysis. 1326
Sarah GEO

15:30 Coffee break

NANOMATERIALS FOR SENSING S08

16:00 Large Area PEDOT:PSS-Graphene Electrode for Minimally Invasive Biosensor 1486
Paolo CORSARO

16:15 Ternary Nanoparticle Systems for Next Generation Catalyst and Sensing Materials 1236
Martin NEUMEIER

16:30 Influence of Layer Number and Oxidation State on the WS_ Acetone Sensing 1721
Yusuke TANIZAKI

16:45 Organic Mixed Ionic Electronic Conductors Nanochannels fabrication for Vertical Electrochemical and Ionic Transistors 1512
Francesco DECATALDO

17:00 Piezoelectric MEMS VOC Sensors Enabled by Polymeric Thin Films and Nanostructures 1176
Duygu AKKOC

17:15 Flexible Capacitive Touchscreen with Silver Nanowires for Tactile Displays Using Gesture Recognition for the Visually Impaired 491
Ahmed HAMZA

POSTER SESSION 2 SP02

17:30 Plasmonic Effect of Ag-Au Bimetallic Nanoparticles on GaN-based Photodetectors Fabricated by Sputtering Method 01_105
Eun Kyu KIM

17:30 Synthesis of high-quality and high yield Ti_C_T_ MXene assisted by in-situ intercalation 02_1056
Muhammad Imran RAMEEL

17:30 Surface-Enhanced Raman Spectroscopy of Gold-Nanoparticle-Decorated Random Networks of Single-Walled Carbon Nanotubes 03_1131
Brahim AISSA

17:30 Numerical analysis of metasurfaces for field intensity enhancement in silicon substrate for photodetection 04_1133
Roxana TOMESCU

17:30 Inorganic nanolayers of noble metals and their compounds 05_1232
Natalia SZCZEPANSKA

17:30 Exploring metasurface-based fluorescence enhancement in azulene-tetrazole derivatives for biosensing applications 06_1235
Veronica ANASTASOAIE

17:30 Highly Sensitive NO2 Sensor Based on Conjugated Polymer Backbone Alignment 07_1264
Bum Hwan KIM

17:30 Portable acoustic biosensing platform combined with paper-based fluidics and biofunctionalized AuNPs as signal amplifiers for the detection of protein biomarkers 08_1304
Dimitra CHRONAKI

17:30 Enhanced Fluorescence-Based DNA Detection Using Nanoimprinted Au-PVDF Biosensors 09_133
Ghadeer ALMOHAMMADI

17:30 Synthesis of Palladium Nanostructures as a Substrate for UV-SERRS 10_1379
Lina MIKOLIUNAITE

17:30 Spectroscopic Detection of Explosives 11_1418
Sevki Can CEVHER

17:30 Microwave-assisted growth of zinc oxide nanostructures for impact pressure sensing applications 12_1469
Maria MORAIS

17:30 Wide Dynamic Range and Ultralow-Light Detection in FAPbI_ Perovskite photodetectors via HTL Engineering 13_1696
Prabal Dweep KHANIKAR

17:30 Efficient Dark Current Suppression in Solution-Processed PbS Quantum dots-based Near-Infrared Photodetectors Through Remote Trap Passivation 14_1698
Parmod KUMAR

17:30 Short and Mid-Wave Infrared Photodetection Using Low-Noise Black-Arsenic/Germanium Heterostructure 15_1752
Harmanpreet Kaur SANDHU

17:30	Fabrication of the magnetic halides nanowires confined within single-walled carbon nanotubes and their crystal structure analysis **Aleksandra FIDLER**	16_1802
17:30	Femtosecond Laser-Engineered Copper Nanostructures for Efficient Ultraviolet Surface-Enhanced Raman Sensing **Martynas TALAIKIS**	17_320
17:30	UiO-66(Zr):_Tb3+, Eu3+/PVDF Composite Films for Dual-emissive Optical Thermometry Above Physiological Temperature **Ipshita MAJUMDAR**	18_384
17:30	Visible Light-Driven Electronic Nose Based on Type-I In2S3/In2O3 Heterojunction Array for Selective Multi-Gas Discrimination **Ki Chang KWON**	19_391
17:30	Development of Pt Nanoarray Electrodes via Electroplating for Enhanced Hydrogen Peroxide Detection **Youngwoo LEE**	20_611
17:30	Improved Face-Selective DEP Assembly of Fin-LEDs via Dielectric Pixel-Defining Layer on Interdigitated Electrodes **Heemin OH**	21_639
17:30	Front, Back, and All Around: Measuring Chirality in Perovskites the Right Way **Arina NARUDIN**	22_656
17:30	Direct nanoimprinting for the fabrication of high resolution, high aspect ratio metasurface **Sung-Hoon HONG**	23_738
17:30	Label-Free Detection of Sodium Azide in Buffer Solution Using Nanochannel Chemical Field Effect Transistor (ChemFET) **Menka SHARMA**	24_863

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

MATERIALS FOR PHOTOVOLTAIC AND ENERGY APPLICATIONS S09

14:00	Tailoring nanostructured photovoltaic window layers for solar to fuel conversion **Negar NAGHAVI**	730
14:30	Optimization and Development of Light Management Schemes for Ultrathin and Bifacial Solar Cells **António OLIVEIRA**	1196
14:45	Aesthetically Tunable Flexible CIGS Solar Cells for Integrated Photovoltaic Applications **Xavier Leitao PINHEIRO**	259
15:00	Advancing Thin-Film Photovoltaics: Single-Step CIGS Fabrication and Low-Temperature AgBiS2 Absorbers **Neha KUMARI**	709
15:30	Coffee break	

NANOMATERIALS FOR ENERGY AND CATALYSIS S10

16:00	Multi-pattern single-step nanofabrication enabling novel rear architectures for ACIGS solar cells **André VIOLAS**	1246
16:30	Spectroscopic Insights into Reverse Bias Effects in Wide-Bandgap Perovskite Solar Cells **Simone BARBAROSSA**	1755
16:45	Al-Doped ZnO Nanostructures for Transparent Electrochemical Capacitors: Pioneering Structural Energy Storage and Temperature Sensing Solutions for Smart Buildings **Febin PAUL**	1330
17:00	Interlayer Anion-Driven Synergy at NiFe-LDH/Nickel Cobaltite Heterointerface for Energy-Efficient Alkaline Water Electrolysis **Minakshi SHARMA**	877

17:15 Lead-Free Piezoelectric Ceramics for Energy Conversion and Packaging Applications 1751
Dhanranjan KUMAR

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 18 September 2025

SUPERCONDUCTIVITY AND QUANTUM EFFECTS S11

08:45 EuS interfaces for low temperature spintronics 688
Sara CATALANO

09:15 Ultralow Lattice Thermal Conductivity and Colossal Thermoelectric Figure of Merit of the Room Temperature Antiferromagnet CsMnBi 102
Shubham Rakesh SINGH

09:30 Hybrid Josephson junctions based on InSb nanoflags 1672
Matteo CARREGA

09:45 Synergistic Pyro-Photo-Catalytic Hydrogen Evolution Driven by Ferroelectric/Semiconductor Heterojunction 929
Salma TOUILI

10:00 Interface Engineering of Ag@Au Nanohybrid for Ultra-strong Electron-phonon Coupling and Non-classical Electron Transport 1853
Tuhin Kumar MAJI

10:15 Nanoscale thermoelectric energy generation through the realisation of quantum interference effects in self-assembled molecular-scale junctions 1748
Benjamin ROBINSON

10:30 Coffee break

WEARABLE AND SENSING INTERFACES FOR HEALTH AND ENVIRONMENT S12

11:00	Sprayed Graphene for Wearable Textile-Triboelectric Nanogenerators and Biomechanical Sensors **Hongyang DANG**	232
11:15	Doped graphene based nanozyme for ultrasensitive electrochemical detection of pollutants **Livia Alexandra DINU**	1162
11:30	Flexible Metal-oxide Graphene Composite-based Nitrate monitoring sensor **Prasutha MARKAPUDI**	1267
11:45	"Zero-on" NIR-II Photoacoustic Organic Nanoprobes for Ultra-accurate Companion Diagnostics in Early Cancer Immunotherapy Response **Xiaomei LU**	959
12:00	Acoustic-Based Damage Detection Using ZnO Sensors: A Machine Learning Approach for structural damage detection employing ambient vibrations **Keshavmurthy Subramanian SRIKANTH**	1432
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14:15	Cu-doped Nanocrystal Carbon Dots for Integrated Fabrication of Ultrabright Luminescent Solar Concentrators **Mahnoor HASSAN**	417
14:30	Effect of Post-Synthesis Treatments on 1L-MoS2 Nanocomposite Properties **Emanuele SANGIORGI**	1719
14:45	Enhanced Removal of PMMA Residues from Graphene via Time and Temperature Assisted Solvent Cleaning **Monika CHOUDHARY**	465

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Duygu INCE

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Soumia EL BOUMLASY

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Murilo SANTHIAGO

16:15 Exploring Ta_N_ Nanostructures for Hydrogen Production through Water Vapor Photoelectrolysis 416
Salman MUHAMMAD

16:30 Au@Cu_S_-Decorated TiO_ Nanowires with Full-Spectrum Responsiveness for Enhanced Solar Hydrogen Production 540
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16:45 Activation of metal oxides by microwave irradiation and induction heating as new strategies for hydrogen production 629
Maria TAENO

17:00 Hydroelectric cell fabrication and hydrogen generation using hollow sphered silver ferrite nanoparticles 1746
Shashank Bhushan DAS

17:15 Silver Contamination from Ag/AgCl Electrodes and its Implications for Nanoscience 1682
Chuhongxu CHEN

E-MRS 2025 Fall Meeting

Symposium T

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Poster Sessions: 237 (Small Hall) | Main Building

Electronic, Photonic, Nano, Low-dimensional and Quantum Materials

Smart Materials for Nanoelectronics - Nanophotonics & European Doctorate Network: PCAM (Physics and Chemistry of Advanced Materials) Summer School 2025

Symposium organizers:

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Franciszek **KROK**	– Jagiellonian University
Horst-Günter **RUBAHN (PCAM Chair)**	– University of Southern Denmark
Sigitas **TAMULEVICIUS**	– Kaunas University of Technology
Yannick **J. DAPPE (Main Organizer)**	– Yogendra Kumar MISHRA

Monday, 15 September 2025

SMART DEVICES T01

09:00	Wireless Electroassisted Chiral Resolution with Miniaturized Tubular Devices **Sara GRECCHI**	1866
09:30	Data-Driven Insights into the Forming Ability of Thin-Film Metallic Glasses via Bayesian Classification **Xuliang LUO**	1852
09:45	Compact Stretchable Ultrasound Arrays via Surface Charge Engineering for Gesture and Material Detection **Naveen TIWARI**	1736
10:00	Improving the stability of thin films for molecular electronics through on-surface cross-linking **Richa ARJARIYA**	1717
10:15	Biological transistor (bioFET) for the specific and label-free sensing of CRP in unprocessed blood **Shubham BABBAR**	1670
10:30	Coffee break	

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11:30	Detection and Analysis of Biological Particles using Terahertz (THz) to Infrared (IR) Metamaterial Impedance Spectroscopy **Rudrarup SENGUPTA**	1637
11:45	Emission rate of conjugated molecular emitter near plasmonic nanostructures: point-dipole approximation and forbidden transitions **Colin VAN DYCK**	1174
12:00	Architecture Optimization and Sensitivity Enhancement of Nano-structure Metamaterials for Impedance Spectroscopy in Terahertz **Heena KHAND**	1638
12:15	A finer approach towards 1D microparticle chains formation: methods, mechanisms, and applications. **Gunjan TIWARI**	1270

12:30 Lunch

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Sanjeev Kumar SHARMA

14:30 Filamentary mechanism of resistive switching in CuO-based memristors 90
Monika OZGA

14:45 A twist for tunable electronic and thermal transport properties of nanodevices 1455
Karolina MILOWSKA

15:00 Fabrication of Transition Metal Oxide thin films employing RF Magnetron Sputtering for Resistive Random Access Memory Devices 1764
Devesh Kumar AVASTHI

15:30 Coffee break

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Vipul SHARMA

16:30 2D Transition Metal Oxides for Memristive Devices: A Case Study on MoO3 Resistive Switching 1375
Aleksandra NADOLSKA

16:45 Harnessing the Efficiency of Twin Boron Nitride and Graphene Monolayers for Anticancer Drug Delivery: Insights from DFT 1728
Basant ROONDHE

17:00 Flexible optoelectronic devices for wearable and implantable photodynamic therapy 1790
Peng LI

17:30 Low temperature Characterization of MOCVD Graphene Hall Sensor: Responsivity, Sensitivity, and Noise Behavior. 1869
Rajveer Singh RAJAURA

17:30	Direct, Ligand-Free Synthesis of Highly Luminescent Ternary Chalcogenide Quantum Dots **Apostolos KALAFATIS**	01_1061
17:30	Bimetallic Plasmonic Nanostructures for SERS **Gytaute SIRGEDAITE**	02_1593
17:30	Copper-based deep ultraviolet surface enhanced Raman scattering **Shivani YADAV**	03_1625
17:30	Enhanced NO2 Gas Sensing with Spray-Deposited ZnO Thin Film **Sugato HAJRA**	04_1674
17:30	Biomaterial-based triboelectric nanogenerator and battery-free humidity sensor **Swati PANDA**	05_1675
17:30	Multifunctional Use of Calcium Copper Titanate for Energy Harvesting and Drug Contaminant Removal **Kushal Ruthvik KAJA**	06_1683
17:30	Light induced faster absorption and desorption of hydrogen in PdAg alloy thin film revealed by in-situ Synchrotron XRD **Madhuri SURYA**	07_1766
17:30	Novel 2D/3D Interface-Engineered MXene-ZnO Tetrapod Electrode for Asymmetric Supercapacitor Device. **Sahil JANGRA**	08_1776
17:30	Incorporation of CoFe2O4 Nanoparticles and Graphite Flakes in Cement Matrix and its Influence on Microwave Absorption Properties **Vanamoorthy MARIAPPAN**	09_1796
17:30	Unveiling the Intrinsic Optical Anisotropy of ZnO Thin Films on Isotropic Substrates **Jordi GOMIS BRESCÓ**	10_1806
17:30	Nano-structured Ag-modified Co3O4 for degradation of Methylene Blue: effect of Ag content on physicochemical and photocatalytic properties **Aya BENSLIMEN**	11_1841

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09:00	Tungsten Oxide and its composites for sensing and other applications **Ratnesh PANDEY**	1781
09:30	Ultrasensitive Point-of-Care Detection of Luteinizing Hormone Using a Flexible Pd-Ti3C2 MXene-Based Electrochemical Biosensor for Women's Health Applications **Akanksha SHRIVASTAV**	393
09:45	A finer approach towards 1D microparticle chains formation: methods, mechanisms, and applications. **Gunjan TIWARI**	1575
10:00	Synthesis and characterization of luminescent ZrO2 nanoparticles doped with rare-earth ions for biological applications **Julita ROSOWSKA**	1544
10:15	Development of Selective VOC Biomarker Sensing Materials for Healthcare Applications **Sunny SHARMA**	1631
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11:00	Thermoelectric Power Generation Below Room Temperature by 2D Layered Chalcogenide Crystals and Other Materials **Numan SALAH**	1865
11:30	Flat-optics 2D TMD semiconductor heterostructures for large-area photoconversion applications **Maria Caterina GIORDANO**	1247
11:45	Effect of Surface Wettability on Electrochemical Performance Characteristics **Dr Sunil LUHAR**	1656
12:00	Colloidal (de)stabilization of graphene nanoplatelets and mesosponges for formulation of graphene based nanofluids **Tamas SZABO**	1663
12:15	Nano-engineered Materials for Wastewater Remediations **Ajay Kumar MISHRA**	1701

12:15 Nano-engineered Materials for Wastewater Remediations 1701
Ajay Kumar MISHRA

12:30 Lunch

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14:00 Scalable, Highly Uniform and Low-cost Carbon Nanostructures 1864
Numan SALAH

14:30 Wrapped Right: Targeted Extraction of SWCNTs with Conjugated Polymers 595
Dominik JUST

14:45 Atomistic Modeling of CNT Growth from Ferrocene: Influence of Cyclopentadienyl Ligands and Carbon Feedstocks 1102
Narayan N. SOM

15:00 Hydrothermally Synthesized ZnO Nanorods (ZNRs) and Nitrogen doped Carbon Quantum Dots (N-CQDs): N-CQDs/ZNRs Hybrid Thin Film UV Photodetectors 264
Kuppusamy THANGARAJU

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Amrita JAIN

16:30 High-Performance Quasi-Solid-State Supercapacitors based on Nickel-Doped MoS2 Pompom Nanostructures 1127
Abhishek PANGHAL

16:45 Effect of hole transport layers on response speed of inverted perovskite solar cells 1303
Rajapaksha MUWANWELLA

17:00 Mesoporous WO3 Nanoplates: Smart Materials for Integrated Photonic Energy Storage and Catalysis 1774
Tariq SAJJAD

17:30 Trimodal Thermal Energy Storage Materials with High Heat Storage Capacity 1496
Karolina MATUSZEK

18:00 Operando X-ray absorption spectroscopy on MAX and MXene-based electrodes for Na and Li-ion batteries 1877
Martina FRACCHIA

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Rachele TOSI CELLI

17:30 Concentration-Controlled Patterning of Single-Crystalline Perovskite Microarrays 02_1086
Omolara ADISA

17:30 Plasmonic resonances in cylindrical and conical-shaped silicon nanowires. 03_1180
Rizwan RAFIQUE

17:30 Silver Nanoplates transformation under solvent exchange 04_1352
Antonio BRANCATO

17:30 Label-Free Detection of Sodium Azide in Buffer Solution Using Functionalized Nanochannel Chemical Field Effect Transistor (ChemFET) 05_1515
Menka SHARMA

17:30 Ir Nanostructures decorated 3D ZnO Tetrapodal Nanocomposite with Enhanced Electrocatalytic Performance 07_196
Shivalingayya GADDIMATH

17:30 From Colloids to LEDs: Thiophene-Driven Surface Engineering of AgInS2 Quantum Dots 08_506
Spyros ORFANOUDAKIS

17:30 Conjugated polymer extraction for obtaining chirality-controlled single-walled carbon nanotubes 09_516
Cosmos UZOMA

17:30 Laser-Induced Covalent Janus Functionalization of Graphene for Programmable Electronic Asymmetry 10_801
Shishi LIU

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

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14:00 MnCoFeS4@MoS2 piezoelectric nanogenerator?integrated supercapacitor: Turning biomechanical energy into green hydrogen production 1850
Sasikumar RAGU

14:30 Orange Peel-Based Triboelectric Nanogenerator for Sustainable Energy Harvesting Applications 1681
Ajani Lakmini Jayarathna JAYASINGHE ARACHCHILAGE

14:45 Flexible optoelectronic devices for wearable and implantable photodynamic therapy 1784
Peng LI

15:15 Electron-beam spectroscopy of metallic and dielectric nanoparticles 1885
Panagiota Elli STAMATOPOULOU

15:30 Trimodal Thermal Energy Storage Materials with High Heat Storage Capacity 757
Karolina MATUSZEK

15:30 Coffee break

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16:00 Temperature Stabilization in Directed Energy Deposition Additive Manufacturing: A Case Study on SS316L 1848
Ayca Mircan OZCAN

16:30 Investigation of Process Parameter Effects on Elastic Modulus via Vibration-Based Non-Destructive Testing in Additive Manufacturing 1838
Nurcan CEVIK

16:45 Effects of process parameters on porosity for the additive manufacturing of molybdenum 1831
Nafel DOGDU

17:00 Improved Properties Of Additively Manufactured Hybrid Lattice Structures with Novel Design Approach 1826
Seymanur SIRTLI

17:15 Tailoring Grain Structure, Porosity and Hardness of DED Fabricated Inconel 718 via Normalised Directed Energy Density (NDED) 1813
Alkim AYDIN

17:30 Bio-inspired Out-of-Equilibrium Semiconducting Hydrogels: Unlocking Fuel and Light-Responsive Transient Conducting Properties
Ruchi SHUKLA

17:30 Fabrication and Properties Ti64 Advanced Bone Implants: Materialistic View
Muhammad Usama ZAHEER

Thursday, 18 September 2025

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Adem TUNC

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11:00 Liquid-Metal-Derived BiSn Core-Shell Particles: An Intrinsic Single-Particle Platform That Unites Broadband Light Harvesting with Record Photothermal Conversion 1839
Simge CINAR-AYGÜN

11:30 Improving AM Printability of Inconel 738-LC via Scheil-Based Thermodynamic Alloy Design 1818
Elifnaz SALAMCI

11:45 Tailoring Mechanical Properties of a Single-Phase BCC High Entropy Alloy via Spinodal Decomposition and Microstructure Control 1821
Emre GUNES

12:00 Mechanical Characterization of Silicon Oxide Thin Films for Sound Velocity Determination via Nanoindentation 61
Peter NAGUIB

12:15 Tetrapods based Advanced Materials for Advanced Technologies 260
Yogendra MISHRA

12:30 Controlled Selective Laser Melting of Ti6Al4V Implants for Tailored Surface Morphology and Enhanced Osseointegration 1872
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12:30 Lunch

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Raghvendra Singh YADAV

14:30 Ion-beam induced changes in MXene Composites for applications in Smart coatings 1567
Indra SULANIA

14:45 Cement Composites Based on Graphite / MnFe2O4 Spinel Ferrite Nanoparticles for Electromagnetic Interference Shielding and Microwave Absorption Application 1798
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15:00 Ultrasonically Synthesised CoFe2O4 and ZnO Nanoparticles and their Polymer Nanocomposite for Enhanced EMI Shielding: A Comprehensive Investigation 1801
Vanamoorthy MARIAPPAN

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Lilian Amen DAVID-EGBUNU

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Electronic, Photonic, Nano, Low-dimensional and Quantum Materials

Metal Oxide Nanomaterials for Advanced Optoelectronics and Environmental Applications

Symposium organizers:

David **HORWAT** – Université de Lorraine
Jung Hyuk **KOH** – Chung-Ang University
Raul **GAGO** – Instituto de Ciencia de Materiales de Madrid
Renata **RATAJCZAK** – National Centre for Nuclear Research
Slawomir **PRUCNAL (Main Organizer)** – Institute of Ion Beam Physics and Materials Research

Monday, 15 September 2025

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Giuliana IMPELLIZZERI

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Zofia ZAWISTOWSKA

09:45 Ferrite-Based Nanoparticles for Photodegradation of Organic Dyes 158
Tso-Fu Mark CHANG

10:00 Atomic Layer Deposition of NiO: Investigating the Potential of New Precursor Combinations for Photoelectrochemical Water Oxidation 324
Vyshnav KANNAMPALLI

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Julien CARDIN

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11:30 Strongly thermochromic W-doped VO2 films with a large temperature coefficient of electrical resistance near room temperature 9
Sadoon FARRUKH

11:45 Multiscale investigation of ZnO nanorods' photoresponse mechanism using C-AFM, KPFM and XPS 91
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12:00 Interfacial electronic properties of ZnO/CoPc hybrid structures 407
Sakineh AKBARI NIA

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Wafae EL BERJALI

12:30 Lunch

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Simona FILICE

14:45 Advanced Nanoarchitectures of Cu_O-Based Metal Oxides for Efficient Photoelectrochemical Water Splitting 901
Yerbolat MAGAZOV

15:00 Intrinsic Limitations to Mobile Charge Carrier Yield in Fe-Based Metal Oxide Photoanodes for Solar Water Splitting 922
Daniel GRAVE

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Roopa .

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17:30 The Electrical Characteristics of AZO/p-GaN Heterojunction for Power Devices 02_1020
Go-Eun BANG

17:30 Characterization of ZnO Nanorod Gas Sensors Fabricated on Anodized Aluminum Oxide Templates 03_1029
Jeonghye YOON

17:30 ITO-based structures for smart windows and radiative cooling: a spectroscopic ellipsometry investigation 04_1044
Ermes PECI

17:30 Multifunctional Tb__, Eu__, and Li_ Co-Doped CaMoO_ Phosphor: Tunable Emission, Antibiotic Sensing, and Non-Contact Optical Thermometry 05_1073
Astha TYAGI

17:30 Photocatalytic Water Splitting with Ta and V Doped 2D Niobate Perovskites 06_1078
M. Tugrul AVCU

17:30 High Energy Density Electrodes as Components of Lithium-Ion Batteries 07_1104
Lars REBOHLE

17:30 Facile Synthesis of Copper Oxide Decorated Graphitic Carbon Nitride for Removal of Chemical Pollutant - Bisphenol A 08_125
Sudarshan SARKAR

17:30 Sonochemical Synthesis of Cobalt-Doped BaTiO_ Nanoparticles for Enhanced Visible-Light Photocatalysis 09_1280
Ziba DARGAHI

17:30 Template-Directed Synthesis of In_O_–SnOx Nanowire Composites for Volatile Organic Compound Detection 11_1447
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17:30 Bioinspired Filter with MOF Coating for Enhanced Microplastric Capture and Dye Removal 12_1678
Jooran KIM

17:30 Optimizing Yb__/Er__ ratio in oxyfluorophosphate glass for solar cell upconversion efficiency 13_197
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17:30 Highly Selective Photoelectrochemical Glycerol Valorization towards Lactic Acid with Low-Valence Bimetallic Overlayer on CuWO_ 14_202
Jaekyum KIM

17:30 TiO2 Phase Engineering by Millisecond Range Annealing for Highly Efficient Photocatalysis 15_203
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17:30 Light, heat, action! ZnCdO:Eu for ultrafast broadband photodetection enhanced with pyro-phototronic effect 16_225
Igor PERLIKOWSKI

17:30 PtNi Alloy Supported on Oxygen Vacancy-Rich Black TiO_ for Enhanced Hydrogen Evolution in Acidic and Alkaline Media 17_263
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17:30 Oxidative dehydrogenation of alkane to ethylene via solid oxide cells with Pr0.1Sr2.9Fe1.7Ni0.3O3-_ metal oxide electrode 18_312
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17:30 Synergistic Bi_MoO_/CaFe_O_ Heterostructure with Accelerated Charge Dynamics for Enhanced Photoelectrochemical Efficiency 19_318
Archita KAR

17:30 Piezocatalytic Decomposition of Malachite Green Using Hydrothermally Synthesized NiFe2O4 Nanoparticles 20_380
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17:30 Flash-Lamp-Annealing of Titanium Oxide Films Produced by Oblique-Angle Deposition: Photocatalytic Properties 21_429
Raul GAGO

17:30 Understanding the incorporation and compensatory doping processes of Cu into ZnO nanowires 22_522
Manuel Marcos MANRIQUE REYES

17:30 Source Substitution for Synthesis of Iron Compounds for Selenate Removal from Wastewater 23_563
Upasana JHARIYA

17:30 Size Reduction and Confinement in p-type Transparent Conducting Oxides 24_569
Ciarán COOLING

17:30 Conductivity of sputtered Al-doped ZnO modulates area selective deposition of Cu and Cu2O 25_596
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17:30 ALD Grown ZnMgO:Al on Si for Photovoltaic Applications: Effect of High Mg Alloying and Al Doping 26_648
Ramon SCHIFANO

17:30 Enhanced Magnetocaloric Response in Gd_CrMnO_ Double Perovskite for Cryogenic Cooling Applications 27_686
Meenakshi MEENAKSHI

17:30 Low-Emissivity ZnO-Ag-ZnO Glass Coatings Activated by ms-range Flash-Lamp Annealing 28_773
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17:30 Electrodeposited WO3 Thin Films as a Photoanode for Photoelectrochemical Water Splitting 29_893
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17:30 Stabilizing High-Valent Mn Single Atoms on Defect-Rich CeO_ Nanoislands to Enhance N_ Selectivity and SO_ Resistance in Ultra-Low-Temperature NH_-SCR Process 30_96
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Tuesday, 16 September 2025

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09:30 Pseudobrookite Nanopowder Synthesized via Coprecipitation for Efficient Heavy Metal Removal from Wastewater 1433
Yahya SORKHE

09:45 Mutual electronic interaction between zinc oxide and metal phthalocyanines: a class-dependent interaction 1152
Sakineh AKBARI NIA

10:00 Self-Assembled CuO–CuSnO_ Nanostructured Mesh for Sunlight-Driven Dye Degradation and Rapid Oil–Water Separation 609
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Ciarán COOLING

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Rafael BENÍTEZ FERNÁNDEZ

11:45 Sol_Gel VO2 Films obtained by ns Pulsed Laser Annealing as Selective Chemoresistive and Optical H2 Gas Sensors 274
Maria BASSO

12:00 Laser-Assisted Low-Temperature RF Magnetron Sputtering of Epitaxial _-Ga_O_ Thin Films for Power and UV Electronics 956
Yoon-Young HUH

12:15 Ultra-Thin Titanium Oxynitride Interlayers for Enhanced Charge Injection in n-Si/NiOx Photoanodes 518
Giorgia MALANO

12:30 Lunch

METAL OXIDES FOR OPTOELECTRONICS II U07

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14:30 Enhancing Output Performance of Flexible Hybrid Nanogenerators via Micro-Pyramidal BaTiO_-PDMS Surface Structuring for Wearable Electronics 948
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14:45 NIR-Assisted Drying for Enhanced Electrical and Optical Properties of AgNW Networks on DC Magnetron Sputtered Al-Doped ZnO Transparent Conductive Films 674
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15:00 Investigating Reconstructions and Photocatalysis of Thermally Reduced LiNbO_(0001) Surfaces 1099
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15:15 Improving the long-term stability of new-generation perovskite-based TCOs using binary and ternary oxides capping layers 1165
Moussa MEZHOUD

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16:45 Core Shell ZnO-Ga_O_ Nanowire Heterostructures for Piezoelectric Devices 1042
Emilien LEFEBVRE

17:00 Phase transformation as a strategy to engineer the optical properties of RE-doped lanthanum vanadate nanoparticles 1257
Oksana CHUKOVA

17:15 Sequential infiltration synthesis of Al2O3 in PS-PMMA lamellar structures with low periodicity for sub 10 nm lithographic applications 1627
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Myungjin JANG

17:30 Design of a Reaction-Tracking Framework for ALD Process Control Using In-situ QMS: Case Study of Ga2O3 Thin Films 02_1122
Ae Rim CHOI

17:30 Electrical properties of CuI/ZnO heterojunctions 03_1239
Stanislav TIAGULSKYI

17:30 Understanding the missing superconductivity in La0.77Ca0.23NiO2 infinite layer 04_1351
Aimane CHEIKH

17:30 Combined DFT and SCAPS-1D Investigation of Doped SnO as a Hole Transport Layer for Lead-Free Perovskite Solar Cells 05_1426
Faycal DJEFFAL

17:30 Unveiling Bi-doping induced structural and optical evolution in _-Ga_O_: a combined experimental and first-principles study 06_1643
Wen WANG

17:30 High-Quality Heteroepitaxial Growth of _-Ga_O_ Thin Films on Si (111) Substrates for Self-Powered Solar-Blind Photodetectors 07_1645
Tingting WANG

17:30 Hyperbolic-to-hyperbolic polaritonic transition in low-symmetry crystals 08_1649
Chunqi ZHENG

17:30 Enhancing UV–photoluminescence in reactively sputtered Cu_O thin films via plasmonic layer integration for optoelectronic applications 09_1733
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17:30 Investigation of Electrical and Optical properties of CVD grown MoS2(1_x)Se2x 10_1739
Kamini BHARTI

17:30 SHI-Induced Thermal Stress and Its Role in Au Nanocluster-Nanoring Density Upsurge 11_1747
Shivani CHAUDHARY

17:30 Thin transparent conductive oxide (TCO) layers applied to extensive surfaces for use in electromagnetic shielding applications 12_1816
Valentin ION

17:30 Enhanced Surface Blistering Efficiency of H+ Implanted Lithium Tantalate by Chemical Reduction Modification 13_295
Limin WAN

17:30 Plasmonic Disruption: Interaction of Metallic Nanoparticles with Oxide-based Self-powered Photodetectors 14_362
Adrian KAIM

17:30 On the effective mass, Burstein-Moss shift, and bandgap narrowing in degenerate Al-doped ZnO: Experimental and DFT insights 15_374
Shreelekha MISHRA

17:30 Functionalisation of metal oxides by milliseconds range flash lamp annealing 16_383
Slawomir PRUCNAL

17:30	The Role of Crystal Orientation and Annealing in Tuning Defect Structures and Luminescence in _-Ga_O_:RE Systems **Renata RATAJCZAK**	17_433
17:30	Controlling the Insulator-to-Metal Transition in VO_ Thin Films through Tailored Magnetron Sputtering Deposition Conditions **Jérémie GONCALVES**	18_508
17:30	Deposition of AZO thin Films by High-Pressure Sputtering: Influence of H2/Ar and O2/Ar gas mixtures on Optical and Electrical Properties. **Sebastián DUARTE-CANO**	19_550
17:30	Effects of Water Exposure Duration and Temperature on the Performance of Solution-Processed a-IGZO TFTs **Giyoong CHUNG**	20_739
17:30	Light Extraction Enhancement in Top-Emitting QLEDs Using Solution-Processed High Refractive Index Nanoparticle Layers **Hyunsun KIM**	21_74
17:30	The use of impedance spectroscopy to study the properties of powder materials of various origins **Barbara SOLECKA**	22_838
17:30	“Development and Photoluminescence Analysis of High-Efficiency Vanadium Oxide Nanorods for Advanced Photodetector Applications” **Pawan KUMAR**	23_880
17:30	Understanding the Atomic-Scale Origins of Interface States in Crystalline and Amorphous Al_O_/GaN Interfaces **Marouane AMMAR**	24_913
17:30	Effect of flash lamp annealing on electrical and optical properties of Ti-Al co-doped ZnO films deposited by DC magnetron sputtering **Mingyu KIM**	25_963
17:30	Sol-gel preparation of Ga_O_:Sb Thin-Films with varying surfactant concentration and composition **Luiz PEDRINI**	26_972
17:30	Stable and High-Performance SnO_ Thin-Film Transistors Enabled by Sol-Gel-processed Ga_O_ Passivation Layers **Suhyeon CHOI**	27_975
17:30	AgxTe Nanoparticle-based CRS RRAM devices with Improved Uniformity by Suppressing Nanoparticle Aggregation **Jongmin YOON**	28_976
17:30	Growth of n-ZnO Nanowires Doped with Group III Elements via Vapor Transport Deposition **Jeongmin LEE**	29_977

17:30 Top Electrode Effect on Memory Characteristics of AgxTe Nanoparticle-based CRS RRAM devices 30_989
Kim TAESU

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

FUNCTIONAL OXIDES I U09

14:00 Defects in functional oxides probed by positron annihilation spectroscopy 325
Maciej Oskar LIEDKE

14:30 Defect Modification in AZO Thin Films Induced by Single Femtosecond Laser Pulses: A Multi-Spectral Micro-photoluminescence Study 409
Haotian XU

14:45 Opto-electronic properties of co-sputtered amorphous ITO-ZnO mixed oxide-based transparent conducting films 678
Shuvaraj GHOSH

15:00 Eu-Doped ZnMgO-Based Short-Period Multi-Quantum Well Structures 468
Adrian KOZANECKI

15:15 Defect modeling and damage buildup in ion-bombarded metal oxides 382
Przemyslaw JÓZWIK

15:30 Coffee break

ANTIMONY CHALCOGENIDES I U10

16:00 Atomic Displacement Effects in X-ray Scattering of Implanted _-Ga_O_, _-MoO_, and in Oxide Quantum Heterostructures: Advances Using the MROX Software 489
Sergio MAGALHAES

16:30 Structural evolution of TiO_ during stoichiometry restoration after reduction 1198
Franciszek KROK

16:45 Analysis of UO2/Ga2O3 structural spectra using Wavelet Transform based method 1067
Kazimierz SKROBAS

17:00 Laser-Induced MgAl-Layered Double Hydroxides/Graphene In situ Growth on Waste-Cellulose-Derived Membrane for Ultra-efficient Removing Phosphate from Wastewater 112
Yi-Ting LAI

17:15 Multifunctional TCOs: A combinatorial study on In-Zn-O thin films as transparent electrically conductive Cu diffusion barriers 1309
Stefanie FRICK

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 18 September 2025

FUNCTIONAL OXIDES III U11

09:00 Chemistry of innovative materials for sustainable integrated devices on silicon 721
Adrian CARRETERO GENEVRIER

09:30 Performance enhancement of piezoelectric nanogenerators based on ZnO/Al2O3 core-shell heterostructures 524
Manuel Marcos MANRIQUE REYES

09:45 Development of Self-Cleaning Rubber Composite Using Fe-Doped TiO_ Photocatalysts Activated by Visible Light 1677
Jooran KIM

10:00 Novel Low-emissivity Coating for Smart Windows Made of ALD-grown Al-delta-doped ZnO Superlattices 771
Guoxiu ZHANG

10:15 Advanced strategies for tailoring transparency window in Correlated Transparent Conductors 910
Aimane CHEIKH

10:30 Coffee break

E-MRS 2025 Fall Meeting

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Symposium V

Sessions: Room 309 | Main Building
Poster Sessions: 237 (Small Hall) | Main Building

Electronic, Photonic, Nano, Low-dimensional and Quantum Materials

Integration of Advanced Materials on Silicon: from Classical to Neuromorphic and Quantum Applications

Symposium organizers:

Andrea **DE IACOVO**	–	Roma Tre University
Costanza Lucia **MANGANELLI**	–	IHP – Leibniz Institute for High Performance Microelectronics
Karoline **STOLZE (Main Organizer)**	–	Leibniz-Institut für Kristallzüchtung
Ross **MILLAR**	–	University of Glasgow

Monday, 15 September 2025

SiGe I V01

09:15 Isotope- and strain-engineered germanium quantum wells 1101
Simone ASSALI

09:45 High-Gain, Low-Excess Noise Ge-on-Si Short-Wave Infrared Avalanche Photodiodes Linear Arrays 1830
Jaroslaw KIRDODA

10:00 Thickness and annealing interplay on the structural and thermal properties of Ge Virtual Substrates 1363
Agnieszka CORLEY-WICIAK

10:15 UV-nanosecond laser melting on in-situ P-doped Ge-on-Si and SiGe-on-Si epitaxial layers grown by LEPECVD 810
Giulia Maria SPATARO

10:30 Coffee break

Devices for Quantum Applications V02

11:00 Ge-based platform for hosting spin qubits 406
Nikolay PETKOV

11:30 Impact of gate dielectrics on 2D electron gas transport in Si/SiGe heterostructures 1200
Alberto MISTRONI

11:45 Temperature-dependent Electronic Transport in Multi-Gate Ge/Sn and SiGeSn Schottky Barrier Field Effect Transistors 875
Masiar SISTANI

12:00 Contact engineering in strained SiGe/Si heterostructures for quantum computing applications operating at cryogenic temperatures fabricated by phosphorus ion implantation 513
Fabian FIDORRA

12:15 Single spin conveyor-belt shuttling in Si/SiGe for material analysis 655
Lars SCHREIBER

12:30 Lunch

SiGe II V03

14:00 Ge/SiGe Quantum Well Heterostructures for Advanced Mid-Infrared Photonics 1266
Stefano CALCATERRA

14:30 Effects of annealing temperature on photoluminescence properties of germanium multiple quantum wells 1620
Diana RYZHAK

14:45 GeSnOI electrically driven technology 764
Moustapha EL KURDI

15:00 Forward/Reverse Ge-rich SiGe graded layers for mid-infrared integrated photonics 825
Jacopo FRIGERIO

15:30 Coffee break

Light Detection & Sensing V04

16:00 Towards a CMOS compatible refractive index sensor 1313
Inga Anita FISCHER

16:30 Biological transistor (bioFET) for the specific and label-free sensing of CRP in unprocessed blood 1668
Shubham BABBAR

16:45 Effect of Silicon Nanowire Moth-Eye Structures on Reflectance Reduction 931
Koki SHIRAKAWA

17:00 Lateral GeSn p-i-n waveguide photodetectors covering eitire short-wave infrared band 947
Ting-Yu CHEN

17:15 Machine-Learning Assisted Imaging and Crack Detection of Wafer Features using Cavity-Enhanced Upconversion Nanoparticles and Si camera
Dileep KOTTILIL

Poster Session 1 VP01

17:30 Unraveling the Ion-mediated Conductance Modulation in Electrolyte-gated Transistors with Fluorinated Interfaces for Neuromorphic Applications 01_1000
Yeonseo KIM

17:30	Porous PVDF-HFP Interlayer for Ion-Gated Synaptic Transistors with Enhanced Retention and Reservoir Computing System **Jiyeon KIM**	02_1161
17:30	Preparation and characterisation of transfer printable III-V dies for hetero-integration on silicon **Isabella PERACCHI**	03_1252
17:30	Towards ultra-low gate capacitance in GaN-HEMTs via airgap approach using SF_ Plasma Etching and Al_O_/SiN/AlN Stack **Simon ST-JACQUES**	04_1260
17:30	Organic Field Effect Transistors Based on Doped Conjugated Polymers for Neuromorphic Applications **Jae Eun KIM**	05_1269
17:30	Effects of asymmetry, interface dipoles and magnetoelectric coupling on the performance of La0.7Sr0.3MnO3/BiFeO3/Au ferroelectric tunnel junction **Neculai PLUGARU**	06_1525
17:30	Impact of Growth Time on the Morphology and Defect Formation of Epitaxial GaAs Islands on CMOS-Compatible Si Nanotips **Adriana RODRIGUES**	07_1608
17:30	Rapid Dynamics of VO2 Switching Devices for Neuromorphic Applications **Amir GILDOR**	08_179
17:30	Multi-Gas Photoacoustic Environmental Sensor: calibration in air for five representative gases **Maeva DORON**	09_390
17:30	Revealing Dopant–Structure–Process Interplay in Tetravalently Doped Hf_._Zr_._O_: Toward Rational Design of High-Performance Ferroelectric Thin Films **Jihye PARK**	10_775
17:30	Optimization of Pulsed Laser Deposited Hf_._Zr_._O_ Thin Films: Effects of Trivalent Dopants and Substrate Variation **Soo Jin JUNG**	11_861
17:30	Controlling the resistive switching characteristics of a-IGZO-based resistive memory via hydrogen ion doping **Hee Yeon NOH**	12_937
17:30	Comparative study of rapid thermal and microwave annealing on compressively-strained ultra-doped GeSn alloys on silicon **Ruei-Jhang WANG**	13_944
17:30	Laser-Induced Synthesis of ATM-Based Multilayer MoS_ for Logic Device Applications: A Crystallinity Enhancement Approach **Hyehyeon PARK**	14_968

2D MATERIALS ON SI V05

08:45 Van der Waals epitaxy and ferroelectric properties of quasi-2D (GeTe)m(Sb_Te_)n layered alloys on silicon 1241
Stefano CECCHI

09:15 Localised metal-MoS2 intermixing by pulsed laser annealing for low resistance contacts - tackling a grand challenge for MoS2 devices 552
Pavlina METAXA

09:45 Enhanced Synaptic Behavior in MoSe2 Three-Terminal Neuromorphic Devices Using ALD-Grown Al2O3 Gate Dielectric 998
Tamkeen FAROOQ

10:00 Integration of Graphene with III-V Semiconductors for Next-Generation Reconfigurable Electronic Devices 1628
Luca ANZI

10:15 Brillouin light scattering of acoustoplasmonic nanomembranes 1845
Anuj Kumar DHIMAN

10:30 Coffee break

SIGESN V06

11:00 Raman spectroscopy of SiGeSn alloys for thermal and vibrational properties 145
Davide SPIRITO

11:30 On the impact of mechanical constraint on band structure and photo-elastic effect in photonic resonators 1083
Jon SCHLIPF

11:45 Temperature-dependent performance of a GeSn thermophotovoltaic cell 413
Ignatii ZAITSEV

12:00 Topological lasing based on direct bandgap Ge1-xSnx photonic crystals 1080
Ian COLOMBO

12:30 Lunch

NEUROMORPHIC DEVICES V07

14:00	Directional spiking in integrated photonic neurons via non-Hermitian microrings **Stefano BIASI**	1106
14:30	HZO-Enhanced Schottky Barrier FETs for Neuromorphic Computing **Viktor WAHLER**	1221
14:45	Interface Dipole Engineering in Silicon-Integrated IGZO/HZO FeFETs for Neuromorphic Applications **Wangseop LIM**	234
15:00	All Optical Controlled Neuromorphic FET Based on Ferroelectric/Semiconductor Heterostructure **Anurag GHOSH**	35
15:15	Charge Transport and Noise in PVP-Coated Silver Nanowire Networks: Implications for Neuromorphic Applications **Charu SINGH**	521
15:30	Coffee break	

III-V ON SI V08

16:00	Monolithic Integration of III-V on silicon for photonic and electronic applications **Fariba HATAMI**	1195
16:30	Photoluminescence and structural properties of monolithically integrated GaAsP islands on Si(001) nanotips wafer **Hanna ILLNER**	1618
16:45	Impact of structural defects on the electrical and optical properties in Indium Phosphide (InP) nanowires **Vihar GEORGIEV**	1574
17:00	Micro-transfer printing for heterogeneous integration on silicon photonics **Gunther ROELKENS**	150

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

WORKSHOP - LASTSTEP EUROPEAN PROJECT I V09

14:00 Exploring the potential of GeSn alloys for efficient mid-IR light sources 1362
Alexei CHELNOKOV

14:30 (LASTSTEP European Project) Epitaxy of intrinsic and in-situ doped GeSn/SiGeSn heterostructures for mid infra-red optoelectronics 365
Jean-Michel HARTMANN

14:45 [LASTSTEP European Project] Process integration and nanofabrication strategies for next-generation GeSn technologies 363
Nicolas PAUC

15:00 New light on light emitters: the lattice strain and composition fluctuation in GeSn devices investigated at the nanoscale 252
Giovanni CAPELLINI

15:30 Coffee break

WORKSHOP - LASTSTEP EUROPEAN PROJECT II V10

16:00 MBE growth of strain-relaxed GeSn film on Si via Sn-composition gradient buffer for mid-infrared photodetectors 776
Guo-En CHANG

16:30 Monolithic integration of GeSn photodetectors on silicon platforms (LASTSTEP European Project) 1320
V. REBOUD

16:45 Exploring the properties and performance of GeSn alloys and devices using high pressure and low temperature techniques (LASTEP workshop) 862
Stephen SWEENEY

17:10 GeSn Semiconductors: The Road Ahead and Emerging Opportunities 1177
Oussama MOUTANABBIR

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 18 September 2025

NANOIC PILOT LINE WORKSHOP I (JOINT SESSION WITH SYMP. Q) V11

09:00 NanoIC pilot line – addressing sub 2nm leading edge technologies 726
Inge ASSELBERGHS

09:30 Integrating Emerging Materials into Advanced ICs: Tyndall's Role in the NanoIC Pilot Line 591
Niamh WALDRON

10:00 Si/SiGe/Si double heterostructure diodes: a promising approach to pseudomorphic lasers for the Si material system 1896
Moritz BREHM

10:15 Epitaxy of Ge/SiGe 2D hole gases for quantum electronics 1897
Jean-Michel HARTMANN

10:30 Coffee break

NANOIC PILOT LINE WORKSHOP II (JOINT SESSION WITH SYMP. Q) V12

11:00 New semiconductor channel materials for advanced nanotechnologies 1212
Pierre MORIN

11:30 Cryo-FIB sample preparation for advanced sub-nanometer S/TEM semiconductor devices metrology 1406
Iulian BOERASU

12:00 Hydrogen-Free PVD SiN For Low Loss Waveguides On 300 mm Silicon Platform 444
Eleonora GARONI

12:15 Si/SiGe epitaxial multi-stacks on SOI for CFET devices 1395
Anjani AKULA

E-MRS 2025 Fall Meeting

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Symposium W

Sessions: Room 437a | Main Building
Poster Sessions: 237 (Small Hall) | Main Building

Electronic, Photonic, Nano, Low-dimensional and Quantum Materials

Defect-induced Effects in Low-dimensional and Novel Materials

Symposium organizers:

Daesung **PARK** – Technical University of Denmark
Elżbieta **GUZIEWICZ** – Institute of Physics - Polish Academy of Sciences
Nikolai A. **SOBOLEV** – Universidade de Aveiro
Shengqiang **ZHOU** – Helmholtz-Zentrum Dresden-Rossendorf

Monday, 15 September 2025

OXIDE FILMS AND MEMBRANES I W01

09:00 Induced piezoelectricity in fluorite-type oxides 1461
Paul MURALT

09:30 Tunable Pyroelectricity in Epitaxial Fluorite Oxide Films 1024
Alessandro PALLIOTTO

09:45 Oxygen Vacancy Effect on the Sub-Cycling Behavior of HfZrOx-based Ferroelectric Capacitor 871
Pin-Jiun WU

10:00 Electrostriction in oxygen-deficient materials 367
Pierre-Eymeric JANOLIN

10:30 Coffee break

DEFECTS CHARACTERIZATION W02

11:00 New in situ isotope exchange Raman spectroscopy (IERS) methodologies for measuring oxygen defect transport kinetics 1210
Monica BURRIEL

11:30 Defect and Crack Evolution Induced by H+ and He+ Implantation during the Crystal Ion Slicing of Single-Crystal LiTaO3 296
Limin WAN

11:45 Optimizing GaN Surface Morphology Through Controlled Photo-Electroless Etching for Enhanced Optical Properties 206
Antouman SALLAH

12:00 Visualizing solid-state amorphization in ferroelectric In2Se3 through in situ electron microscopy 1854
Pavan NUKALA

OXIDE FILMS AND MEMBRANES II W03

14:00	Redefining Material Design: The Impact of Freestanding Oxide Membranes **Nini PRYDS**	385
14:30	Epitaxial Growth and Strain Engineering of Freestanding La0.7Sr0.3MnO3 Membranes **Eric BRAND**	930
14:45	High-quality SrTiO3 membranes through optimized release strategies **Christina HGOFELDT**	1624
15:00	Defects, strain and interface control in single crystalline complex oxide membranes **Mariona COLL**	657
15:30	Coffee break	

QUANTUM TECHNOLOGY W04

16:00	Engineering spin defects in 2D materials using mega-electron volt focused ion beams **Andrew BETTIOL**	992
16:30	Quantum imaging of vortex stray fields in a permalloy disk using spin defects in hexagonal boron nitride **Peiting WEN**	1040
16:45	Coupled atomistic simulations for the design of solid-state quantum devices **Antonino LA MAGNA**	1779
17:00	Photoluminescenc investigation of the silicon vacancy defect in 4H-SiC relevant for quantum metrologies **Shyama RATH**	1319
17:15	Stress-Induced Defect Formation in Hexagonal Boron Nitride for High-Yield Quantum Emission **Sofiya KARANKOVA**	111

17:30	Defects and Functional Behavior in Black Tourmaline (Schorl) Thin Films Deposited by E-Beam and Sputtering **Marina SPARVOLI**	01_1138
17:30	Negative photoconductivity and ferroelectricity in non-stoichiometric CVD grown ReS2 films **Sakshi GARG**	02_1225
17:30	Microstructural properties of ion-implanted GaAs/AlGaAs core-shell nanowires **Yuxuan SUN**	03_1250
17:30	Engineering the point defects in ZnO nanowires using thermal annealing and H plasma treatments **Emilien LEFEBVRE**	04_1306
17:30	Template-Assisted Synthesis and Structural Characterization of Unconventional 4H-HCP/FCC Phase Au@Pd Core–Shell Nanoribbons **Abhijit ROY**	05_1463
17:30	Effects of Surface Roughness and Doping Non-Uniformity in efficiency of Chemically Thinned Silicon PIN Diodes **Marina SPARVOLI**	06_1471
17:30	Cluster induced superconductivity in Ga-Doped SiGe via Ion Implantation and Flash-Lamp Annealing **Yu CHENG**	07_1580
17:30	Metal–Insulator Transition via Ion Irradiation in Epitaxial La0.7Sr0.3MnO3-_ Thin Films **Shengqiang ZHOU**	08_193
17:30	CMOS-compatible electrically driven single-photon sources operating at the telecommunication wavelengths **Alessandro PUDDU**	09_461
17:30	Doping of two-dimensional monolayers by ion implantation **Slawomir PRUCNAL**	10_495
17:30	On the synthesis of stacked single crystalline freestanding membranes **Longyi FAN**	11_714
17:30	Computational modelling to study the effect of intrinsic defect on halide ion migration in Lead-Iodide perovskite **Pranjul Chandra BHATT**	12_749

17:30 Defect induced magnetic phase transition in CrSBr 13_833
Shengqiang ZHOU

17:30 DFT study of structural and electronic effects of oxygen vacancies at La0.7Sr0.3MnO3/BaTiO3/BaSnO3 (001) interfaces 14_908
Rodica PLUGARU

Tuesday, 16 September 2025

FIRST-PRINCIPLES CALCULATION AND MACHINE LEARNING I W05

09:00 Alloy engineering for tailoring magnetic properties in van der Waals crystals 1088
Magdalena POPIELSKA (BIROWSKA)

09:30 Ab initio modeling of defects in hexagonal-diamond silicon 638
Michele AMATO

09:45 From Mononitride to Pernitride: Defect-Structure-Property Relationships in CrN-Based Materials 396
Barsha BHATTACHARJEE

10:00 Band Offsets and Defect Properties in _-Ga_O_-Based Alloys: First-Principles Insights 1090
Mohamed Abdelilah FADLA

10:15 A Phase-Field Gradient Approach for Antiferroelectrics with Localized Point Defects 152
Dilshod DURDIEV

10:30 Coffee break

ATOMIC-SCALE VISUALIZATION W06

11:00 Understanding Defect Dynamics in 2D Mo(X)2 by Scanning Transmission Electron Microscopy 1887
Paulo FERREIRA

11:30 A direct observation of phase transformation in defective MoSe2 within a vdW heterostructure, induced by electron beam irradiation 1396
Hanako OKUNO

11:45 Oxide precipitates characterization in High Resistivity industrial silicon wafers using micro-photoluminescence imaging and Deep Level Transient Spectroscopy 532
Jérémi CROZELON

12:00 Defects in quantum materials: first-principles material design
Arthur ERNST

12:30 Lunch

MATERIALS FOR ENERGY AND ENVIROMENT W07

14:00 Enhanced performance of (Photo)electrocatalytic nanomaterials through introducing defect by ion beam 353
Ren FENG

14:30 Shell effects and free-electrons in electromigrated oxidized Cu-nanocontacts 270
Regina HOFFMANN-VOGEL

14:45 Investigation of gallium oxide thin films deposited by sputtering for photomemristor applications 941
Marina SPARVOLI

15:00 Induced defects in high-entropy materials and their effects 925
Wenyi HUO

15:30 Coffee break

2D AND 1D MATERIALS I W08

16:00 vdW Integrated Ideal Interfaces for High Performance Optoelectronic Devices 1501
Laiyuan WANG

16:30 Controllable Synthesis of Ti_C_T_ MXene and New Insights on Its Gas Sensing Mechanism 314
Danyao QU

16:45 Investigation of defect evolution in few layer WSe2 by Ion beam irradiation 1190
Madhuri CHENNUR

17:00 Nature of spinons in the 1D spin chains 1136
Teresa KULKA

17:15 Novel Ga_O_ Monolayer as a Promising Material for Gas Sensing and Scavenging Applications: A First-Principles Study 1322
Afreen ANAMUL HAQUE

Wednesday, 17 September 2025

9:00 **PLENARY SESSION**

12:30 Lunch

OXIDE FILMS AND MEMBRANES III W09

14:00 Topological polar textures in ferroelectric nanostructures 812
Dong Jik KIM

14:30 Topographical patterns in La0.7Sr0.3MnO3 single crystalline membranes 713
Martí RAMIS GARCÍA

14:45 Shallow Donor Defect-Controlled Conduction Mechanisms in ZnMgO: Influence of Magnesium Content on Temperature-Dependent Electrical Conductivity 505
Krishna Rajendra LONE

15:00 The enhancement of p-type conductivity in ZnO thin films by defect engineering 460
Slawomir PRUCNAL

15:30 Coffee break

ELECTRONICS AND OPOELECTRONICS W10

16:00 Turning Negative into Positive: Traps and Trapping Phenomena in Charge-Trapping Non-Volatile Memories. 985
Albena PASKALEVA

16:30 Study of the behavior of graphene-based memristors in a circuit emulating neuronal membrane 326
Marina SPARVOLI

16:45 Photonic Potential Modulation Through Engineered Topological Defects in Chiral Nematic Liquid Crystal Microcavities 1639
Joanna MEDRZYCKA

17:00 Tuning Optical Emission of ZnO Nanoparticles Synthesized via Microwave-Assisted Hydrothermal Method through Chemical Reagent Selection. 1483
Julita ROSOWSKA

17:15 Interface Spin-orbit Coupling Induces Ferromagnetic Insulator at Room Temperature 1610
Yuhao HONG

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 18 September 2025

FIRST PRINCIPLES CALCULATION AND MACHINE LEARNING II W11

09:00 Exploring Moiré Oxide Interfaces through First-Principles and Machine-Learning Techniques 1855
Juan Maria GARCÍA-LASTRA

09:30 Composition-Dependent Properties of Mo1_xWxS2 Monolayers: A First-Principles Study 1817
Maciej SZYSZKO

09:45 QM/MM Investigations of Defects in MgO and Their Use as a Model System for High-Tc Superconductivity 228
Liam MORGAN

10:00 Electron-phonon coupling at interfaces and grain boundaries from first principles calculations 679
Miguel PRUNEDA

10:30 Coffee break