

# CONFERENCE PROGRAMME



16<sup>th</sup> - 19<sup>th</sup> September



## 2024 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

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16 - 19 September



## 2024 FALL MEETING

**Jin Hyeok KIM**

Chonnam National University  
South Korea



**Małgorzata LEWANDOWSKA**

Warsaw University of Technology  
Faculty of Materials Science & Engineering  
Poland

**Valentin CRACIUN**

National Institute for Laser, Plasma and Radiation Physics,  
Magurele, Romania and Extreme Light Infrastructure for  
Nuclear Physics  
Romania



**TONY KENYON**  
**President**  
Department of Electronic & Electrical Engineering  
UCL



**GIUSEPPINA PADELETTI**  
**Vice President**

ISMN - CNR  
Italy



**FRANCK TESSIER**  
**Vice President**

Institut des Sciences Chimiques de Rennes  
France



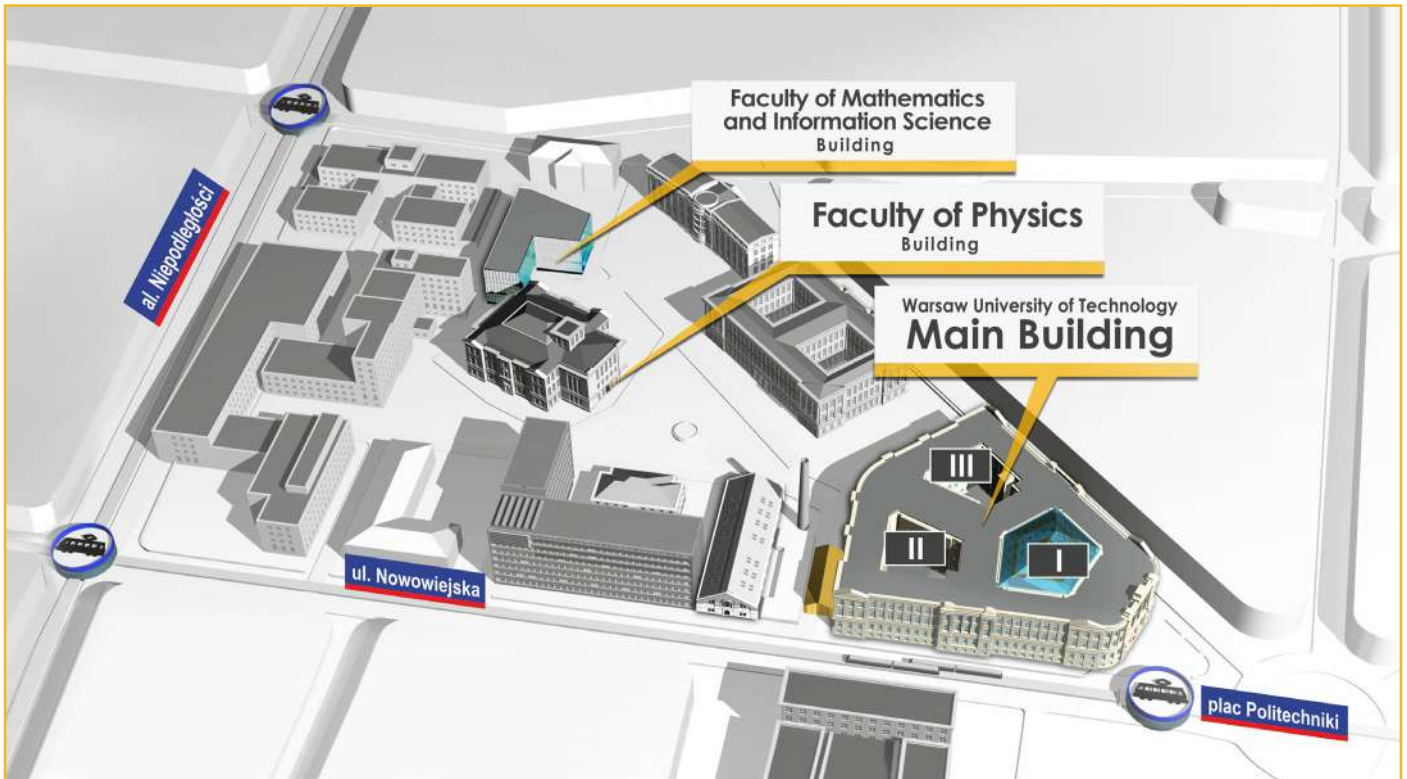
**PAUL SIFFERT**  
**General Secretary**  
**Past President (1983-1988)**

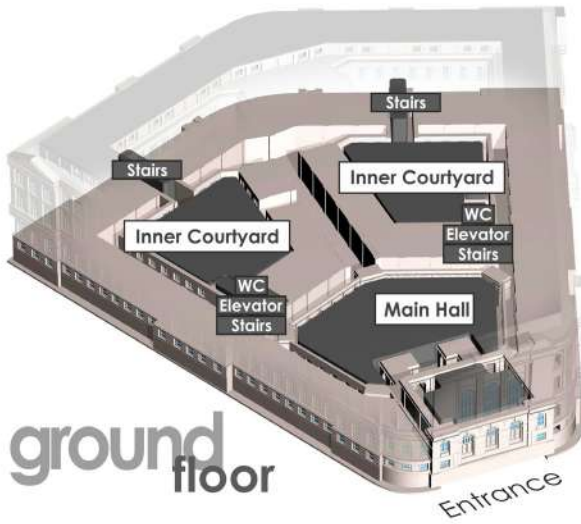
E-MRS Headquarters  
France



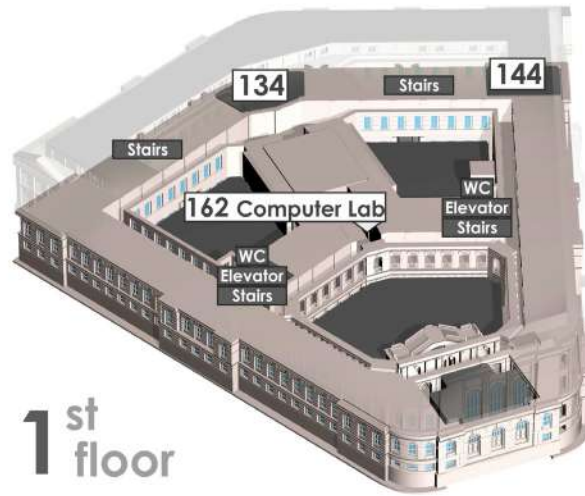


CONFERENCE VENUE

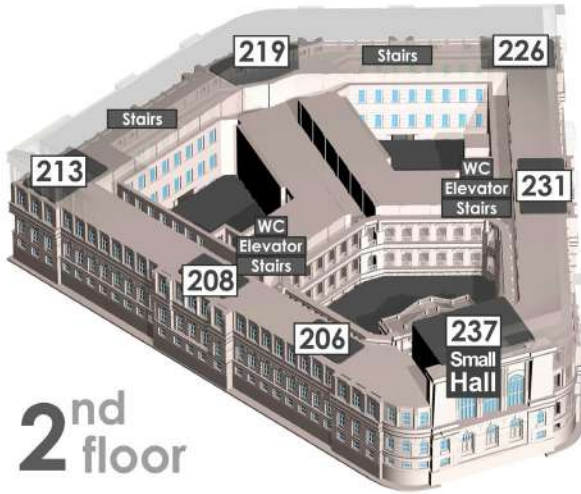




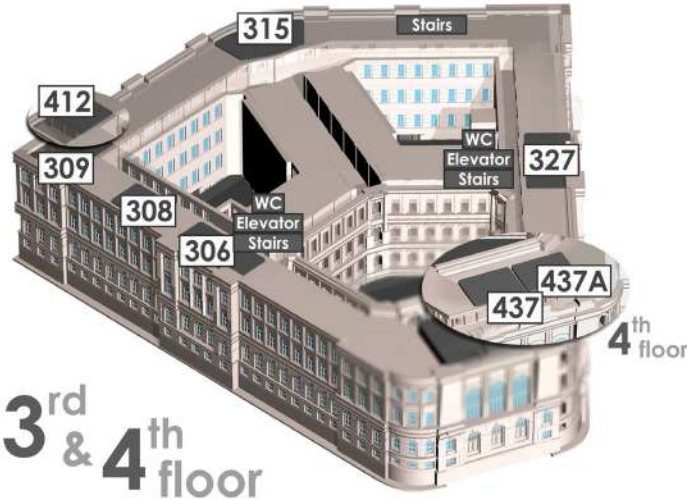
ground floor



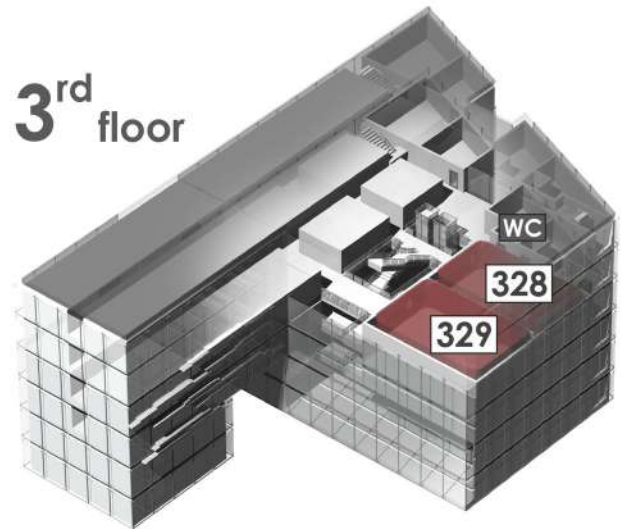
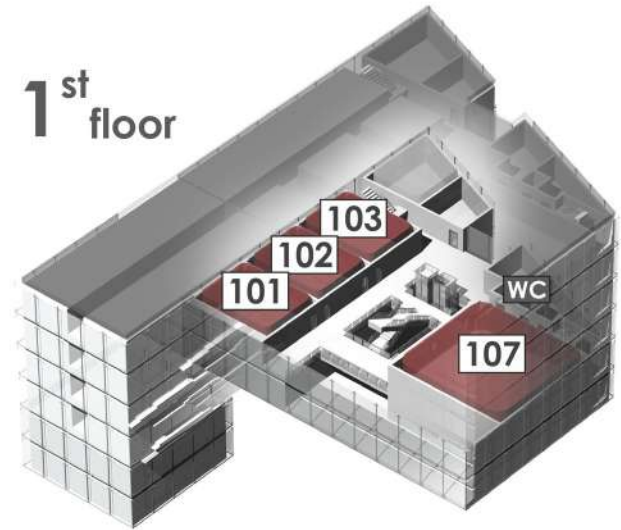
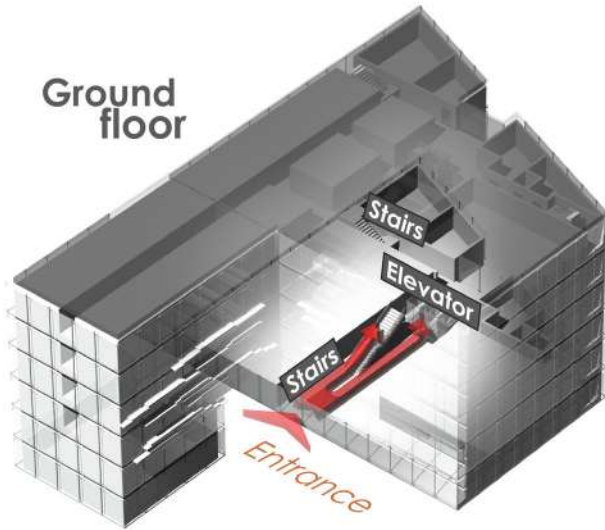
1<sup>st</sup> floor



2<sup>nd</sup> floor



3<sup>rd</sup> & 4<sup>th</sup> floor



Wednesday, 18 September 2024 - Main Hall

- 9:15 Introduction - Conference Organizers
- 9:25 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 Czocharlski Award to Prof. Daniel Loss

9:50 **Czocharlski Award laureate - Prof. Daniel Loss,**  
University of Basel, Switzerland

**Spin Qubits in Semiconductors for Scalable Quantum Computers**



10:35 **Prof. Władysław Wieczorek**  
Warsaw University of Technology, Warsaw, Poland

**Electrolytes. Forgotten part of the battery. Desing and formulation of new systems**



11:20 **Erich Wimmer**  
Materials Design Inc., San Diego, USA

**Multiscale Materials Modeling in the Age of Machine Learning**





- A** Thin Film Chalcogenide Photovoltaic Materials - 2024
- B** Biogenic and bio-derived materials for sustainable energy systems
- C** Sustainable materials for chemical and electrochemical energy storage II
- D** Advanced Catalytic Materials for (photo)electrochemical energy conversion V
- E** Advanced ceramics for energy and environmental applications
- F** Photocharging materials, light driven ionics and their applications in energy conversion & storage
- G** Exploring emerging photo and electrochemical systems for CO<sub>2</sub> conversion to fuels and chemicals

**ELECTRONICS, PHOTONICS AND SPINTRONICS**

- H** Integration of advanced materials on silicon: from classical to neuromorphic and quantum applications
- I** III-nitrides and their use in electronics and optoelectronics
- J** Smart materials for advancing electronics & photonics
- K** Ultra-doped semiconductors made by non-equilibrium processing for electronic, photonic and spintronic applications II
- L** Ultra-Wide-Bandgap Semiconductors challenges: from materials to devices

**NANOMATERIALS AND FUNCTIONAL MATERIALS**

- M** Innovative organic materials for probing and stimulating biological systems
- N** Progress in structural, optical, dielectric and magnetic properties investigations of ferroics and multiferroics
- O** MXenes and related materials
- P** Boron Nitride: from advanced growth approaches to advanced applications
- Q** Defect-induced effects in low-dimensional and novel materials
- R** Synthesis and characterization of functional nanocomposite materials

**MODELLING**

- S** Advanced modeling and characterization for sustainable energy and health solutions
- T** Advanced computational methods for materials design

Symposium symbol	Symposium location		Monday September 16 <sup>th</sup>	Tuesday September 17 <sup>th</sup>	Wednesday September 18 <sup>th</sup>	Thursday September 19 <sup>st</sup>
Symposium A	Main Building	231	09:00-17:30 (1)	09:00-17:30 (2)	14:00-17:15	09:00-17:30
Symposium B	Main Building	206		(2)	14:00-18:00	09:00-12:30
Symposium C	Main Building	134	09:30-17:30 (1)	09:00-17:30 (2)	14:00-17:30	09:00-16:00
Symposium D	Main Building	144	09:00-17:30 (1)	09:00-17:05 (2)	14:00-17:30	09:00-17:30
Symposium E	Main Building	226	09:00-17:30 (1)	09:00-17:30 (2)	14:00-17:30	09:00-11:00
Symposium F	Main Building	213	09:00-17:30 (1)	09:00-16:30		
Symposium G	Main Building	208	09:00-17:30 (1)	09:00-17:30 (2)	14:00-17:30	
Symposium H	Main Building	309	09:00-17:30 (1)	09:00-17:30	14:00-17:30	
Symposium I	Main Building	306	09:00-17:30 (1)	09:00-17:30	14:00-17:30	09:00-17:30
Symposium J	Main building	219	08:30-18:00	08:30-18:15	16:00-18:00	08:00-18:15
Symposium K	Main Building	327	14:00-17:30 (1)	09:00-17:30 (2)	14:00-16:30	
Symposium L	Main Building	315	09:00-17:30 (1)	09:00-16:00 (2)	14:00-17:30	09:00-16:00
Symposium M	MINI Building	102		09:00-18:00		
Symposium N	MINI Building	328	09:00-17:30 (1)	09:00-17:30	14:00-17:45	09:00-14:00
Symposium O	MINI Building	103		09:00-17:00 (2)	14:00-17:30	
Symposium P	MINI Building	101	09:00-17:45	09:00-17:30	14:00-17:30	
Symposium Q	MINI Building	329	09:00-17:30 (1)	09:00-17:30	14:00-17:30	
Symposium R	MINI Building	107	09:00-17:30 (1)	09:00-17:30 (2)	14:00-17:30	09:00-14:00
Symposium S	Main Building	437	09:00-17:30	09:00-17:30 (2)	14:00-16:00	
Symposium T	MINI Building	437a	14:00-17:30 (1)	09:00-17:30 (2)	14:00-17:30	
Poster Session*	Main Building - 237 (Small Hall) * Poster Session 17:30-19:00 but may vary depending on symposium timing		(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

16-18 September 2024, 09:00-17:15

Location: Main Hall | Main Building



ACCESSR's mission is to create a reliable, simple and efficient gateway to provide European companies and research laboratories with the best tools for research and development in the fields of energy storage and materials :

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Dr. Eberl MBE-Komponenten GmbH is a global, family-owned business with partners in the USA, India, Japan, Singapore, and China. Our team, including physicists, engineers, and software specialists, develops high-quality MBE systems and components for producing SiGe, III/V heterostructures, and emerging materials like topological insulators, 2D materials, and qubits. We also specialize in oxide MBE and magnetic layer deposition for various applications. Collaborating with leading scientists, we continuously enhance our products. Renowned for evaporator development, we offer tailored solutions through evaporation process simulation, optimizing layer profiles and material consumption from planning to implementation.

# ETRI

KoMaP (<https://www.komap.ai>) is a digital data platform developed by ETRI for accelerating material development using artificial intelligence. Established in 1976, the Electronics and Telecommunications Research Institute (ETRI) is a non-profit, government-funded research institute that has played a leading role in advancing ICT research and development in Korea. As of the end of 2022, ETRI had approximately 2,300 employees, including about 1,900 researchers, and a research and development budget of 560 million USD. ETRI aims to contribute to the nation's economic and social development through the research, development, and distribution of industrial core technologies in the fields of artificial intelligence (AI), 6G communications, hyper-reality metaverse, digital convergence technologies, and ICT materials and components.



INNOVA is a startup incubator and accelerator which specialises in IP management (everything concerning patents, utility models and trademarks, how and when to get them, and how to use them), technology transfer (how to start the industrialisation phase of a prototype, demonstrate your market fit and get your first customers to try your solution), and commercialisation (how to get to your first sale). We work A LOT on attracting finance, mostly in the form of European and national grants and investment, but also from private investors. We are at E-MRS 2024 Fall Meeting representing HYSOLCHEM, a H2020 project on artificial photosynthesis.





Korvus Technology manufactures highly modular thin film deposition systems. The company's HEX series offers an unmatched level of user control and customization, designed to incorporate the latest thin film technologies and performance into single chamber and cluster systems.

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Since its inception in 1951 in Tokyo, Japan, Rigaku has been at the forefront of analytical and industrial instrumentation technology. Today, with over 2,000 employees in more than 60 countries and with hundreds of major innovations to its credit, the Rigaku group of companies is a world leader in the fields of general X-ray diffraction, thin film analysis, X-ray fluorescence spectrometry, small-angle X-ray scattering, protein and small molecule X-ray crystallography, Raman spectroscopy, X-ray optics, semiconductor metrology, X-ray sources, computed tomography, non-destructive testing, and thermal analysis.



The Royal Society of Chemistry is the world's leading chemistry community, advancing excellence in the chemical sciences. With over 50,000 members and a knowledge business that spans the globe, we are the UK's professional body for chemical scientists; a not-for-profit organisation with 175 years of history and an international vision for the future. We promote, support and celebrate chemistry. We work to shape the future of the chemical sciences - for the benefit of science and humanity.



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The Gas Professionals

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EMRS

2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

## Symposium A

Sessions: Room 231 | Main Building

Poster Sessions: 237 (Small Hall) | Main Building

ENERGY MATERIALS

## THIN FILM CHALCOGENIDE PHOTOVOLTAIC MATERIALS - 2024

Symposium organizers:

Bart VERMANG

- University of Hasselt

Oana COJOCARU-MIRE DIN

- University of Freiburg

Romain CARRON  
(Main Organizer)

- EMPA

**Monday, 16 September 2024**
**ANTIMONY CHALCOGENIDES I A01**

9:00	Progress in unleashing the potential of Sb <sub>2</sub> Se <sub>3</sub> for a new era in thin-film solar technology <b>Giulia SPAGGIARI</b>	1197
9:30	Advancements in Solar Cell Absorber Materials: Tailoring Properties for Enhanced Performance <b>Jitendra KUMAR</b>	799
9:45	Towards all-inorganic antimony sulphide semi-transparent solar cells <b>Merike KRIISA</b>	585
10:00	Analysis of SnO <sub>2</sub> buffer layer for Sb <sub>2</sub> Se <sub>3</sub> thin film solar cells <b>Narges TORABI</b>	704
10:15	Close-spaced sublimation of (Sb,Bi) <sub>2</sub> S <sub>3</sub> thin films for photovoltaics applications: an in-depth study of chemical, structural and microstructural properties <b>Mykhailo KOLTSOV</b>	841
10:30	Coffee break	

**CIGS ALTERNATIVE DEPOSITION METHODS A02**

11:00	Over 14% Efficient, Ambient Air-Processed, Molecular Ink-Based, Submicron CuIn(S,Se) <sub>2</sub> Solar Cells <b>Sunil SURESH</b>	58
11:15	Improving the grain size and charge carrier concentration of amine-thiol solution-based CIGS solar cells <b>Nada BENHADDOU</b>	598
11:30	Growth of Cu(In,Ga)Se <sub>2</sub> micro solar cells on pre-structured substrates with Na barrier <b>Marina ALVES</b>	611
11:45	Cu(In,Ga)Se <sub>2</sub> micro solar cells: Analysis of deposition methods and growth conditions <b>Maria GONZALEZ-JUAREZ</b>	786
12:00	Comparison of polycrystalline and epitaxial Cu(In,Ga)Se <sub>2</sub> solar cells with high Ga contents <b>Jiro NISHINAGA</b>	905

12:15 Ag-Alloying of CIGS Absorber Layers: Impact of the Composition, Deposition Temperature and Bandgap Variations 1161  
**Thomas TOM**

12:30 Lunch

### KESTERITE SOLAR CELLS **A03**

13:45 High-Efficiency Kesterite Solar Cells with Solution-Processed Cation Substitution and Wide-Range Bandgap Tuning 1236  
**Yuancai GONG**

14:15 Rational design of Cu<sub>2</sub>ZnSn(S,Se)<sub>4</sub> thin film photovoltaics for adopting RF-sputtered Zn(O,S) as an environmental-benign buffer layer 667  
**Rachmat Adhi WIBOWO**

14:30 Manganese-containing quaternary chalcogenides: new earth-abundant semiconductors for solar energy conversion 678  
**Susan SCHORR**

14:45 An effective strategy of lithium treatment for CZTSSe based solar cells 862  
**Ikram ANEFNAF**

15:00 Insights into the limitations of Cu<sub>2</sub>ZnSn(SxSe<sub>1-x</sub>)<sub>4</sub> solar cells fabricated through aqueous spray coating 758  
**Ikram ANEFNAF**

15:30 Coffee break

### NEW CHALCOGENIDE MATERIALS **A04**

16:15 Sulfurization of Binary Sulfides of Ba and their Impact in the Formation of BaZrS<sub>3</sub> Perovskite Thin Films 319  
**Corrado COMPAROTTO**

16:30 Phase stability of chalcogenide perovskite BaZrS<sub>3</sub> 720  
**Lucy WHALLEY**

16:45 Effect of annealing temperature on structural, optical, and morphological properties of CdZnTe thin films produced by a simple two-electrode electrodeposition system for solar cells Application 1480  
**Ibrahim BEKER**

17:00 Study of Ultra-Thin Cadmium Telluride Solar Cells 739  
**Mariyam MUKHTAR**

17:15 Formation of SbSeI thin films by vacuum deposition methods  
**Rokas KONDROTAS**

562

		POSTER SESSION I	AP01
17:30	Photo-stimulated interaction of free and defect carriers in photojunction <b>Bronislaw ORLOWSKI</b>		01_1034
17:30	Unveiling Transport Mechanisms in Thin Film Solar Cells: Towards an Automated System Based on Machine Learning Methods <b>Pawel ZABIEROWSKI</b>		02_1053
17:30	The formation of a thin cadmium-free buffer layer for chalcogenide solar cells <b>Asta BRONUSIENE</b>		03_1081
17:30	Photon transport through low index medium anti-reflective coating for improved efficiency in halide perovskite solar cells <b>Gede ADHYAKSA</b>		04_1189
17:30	SnO <sub>2</sub> :F transparent conducting oxide thin film properties for CZTSSe solar cell <b>Abdesselam BOULOUFA</b>		05_12
17:30	Efficient CZTS solar cells using gold nanoparticles and back grooves: FDTD-SCAPS numerical simulations <b>Faycal DJEFFAL</b>		06_1536
17:30	Pulsed laser deposition and characterization of 2D MoS <sub>2</sub> heterostructures with wide bandgap semiconductors <b>Marianna ŠPANKOVÁ</b>		07_167
17:30	Characterization of Cu <sub>2</sub> SnS <sub>3</sub> single crystal grown by direct melting technique for thin film solar cells <b>Rania MAHDADI</b>		08_246
17:30	Large area and high-performance broadband photodetector based on PtS <sub>2</sub> /MoS <sub>2</sub> heterostructure <b>Gaurav BASSI</b>		09_258
17:30	Degenerate top transparent electrode for soft thin film-based Photovoltaics <b>Ananta PAUL</b>		10_904
17:30	Revealing the Essential Impact of Counter Anions on Performance Uniformity of Solution-Processed CZTSSe Solar Cells <b>Romain CARRON</b>		11_982

Tuesday, 17 September 2024

**ANTIMONY CHALCOGENIDES II** **A05**

9:00	Precursor and interface engineering to enable efficient and stable, spin-coated Sb <sub>2</sub> S <sub>3</sub> solar cells <b>Thomas STERGIOPOULOS</b>	1363
9:30	Sb <sub>2</sub> S <sub>3</sub> solar cells with TiO <sub>2</sub> electron transporting layers synthesized by ALD and USP methods <b>Tatjana DEDOVA</b>	956
9:45	Defect tolerance of grain boundaries in antimony triselenide <b>Anchal ANCHAL</b>	879
10:00	Electronic Band Structure and Defects' Characterisation in Bi- and Sb- Chalcogenides Using Energy-Resolved Electrochemical Impedance Spectroscopy <b>Daria MILIAIEVA</b>	1218
10:15	Photovoltaic Efficiency Enhancement through Highly Crystalline Antimony Selenide Interface Engineering <b>Udari WIJESINGHE</b>	1287
10:30	Coffee break	

**CHARACTERIZATION I** **A06**

11:00	Microscopic origins of radiative performance losses in thin-film solar cells and the correct assessment of the Urbach energy <b>Daniel ABOU-RAS</b>	520
11:30	Urbach tails as Carrier Trap States in Cu(In,Ga)Se <sub>2</sub> Solar Cells Evaluated by Transient Photocapacitance and Photocurrent Spectroscopy <b>Cheuk Kai Gary KWOK</b>	261
11:45	The effect of a band gap gradient on the radiative loss in the open circuit voltage of CIGSe solar cells <b>Sevan GHARABEIKI</b>	421
12:00	Analysis of Recombination Kinetics in CIGS Solar Cells <b>Secil GÜLER</b>	1079
12:15	Alkali post deposition treatments of CIGS absorber: impact of Na and absorber inhomogeneities <b>Jessica DE WILD</b>	452

12:30 Lunch

**SPECIAL SESSION: PASSIVATED BACK CONTACTS**
**A07**

13:45	Optimizing ACIGS solar cells on ITO rear contacts and rear passivation boost <b>André VIOLAS</b>	757
14:15	Understanding is the Key; Tools are Diverse and Versatile <b>Gizem BIRANT</b>	477
14:30	Hi-BITS: High efficiency bifacial thin film chalcogenide solar cells <b>Sascha SADEWASSER</b>	924
14:45	Mitigating backside recombination: CGSe/Sputtered InOx hole selective layer for Backside Passivation in Submicron CIGSe Solar Cells <b>Saeed BAYAT</b>	876
15:00	Ultrathin CIGSe Solar Cells: Enhanced Absorption by Nanotextured Functional Back Contacts <b>Merve DEMIR</b>	669
15:15	Fill factor effects of a novel passivating back contact: the role of Na and Cu annealing <b>Francesco LODOLA</b>	551
15:30	Coffee break	

**SPECIAL SESSION: TRANSPARENT BACK CONTACTS AND WIDE-GAP CHALCOGENIDES**
**A08**

16:00	Bifacial semi-transparent ultra-thin Cu(In,Ga)Se <sub>2</sub> solar cells <b>Martina SCHMID</b>	1370
16:30	Aluminum Incorporation Effects and Photovoltaic Efficiency Enhancement of Wide-Gap Chalcopyrite CuGaSe <sub>2</sub> Thin-Film Solar Cells <b>Shogo ISHIZUKA</b>	243
16:45	Enhancing Photocurrent Collection in Wide-Gap CIGS Solar Cells <b>Matthias DIETHELM</b>	130
17:00	Semitransparent wide-gap CIGS <sub>2</sub> solar cells for tandem architecture <b>Kulwinder KAUR</b>	270

17:15 Transparent wide bandgap Cu(In,Ga)S<sub>2</sub> solar cells for tandem and bifacial applications

355

**Fabien PINEAU**

**POSTER SESSION II AP02**

17:30 Characterization of widegap CIGS/ZTO heterojunction solar cells

01\_100

**Takeshi NISHIDA**

17:30 Enhancing the external quantum efficiency response under rear illumination in Bifacial CIGS Solar Cells

02\_1084

**Matteo DE MARZI**

17:30 Passivating Rear Contacts for Enhanced Efficiency in Ultra-Thin CIGSe Solar Cells

03\_1119

**Aleksandra BOJAR**

17:30 Treatment of amine-thiol solution-processed thin film CIGS by alkali chloride thermal evaporation

04\_1295

**Jacques KENYON**

17:30 Comparative study of Cd-free Cu(In,Ga)Se<sub>2</sub> solar cells with In<sub>2</sub>O<sub>3</sub>:H and ZnO:Al as front contact layer

05\_137

**Diego Alejandro GARZON CASTELLANOS**

17:30 Effect of Silver on the electronic parameters of high and low gallium CIGSe solar cells by comparing their digital twins

06\_184

**Chang-Yun SONG**

17:30 Simulations of the grain boundary defects impact on the parameters of CIGS solar cells

07\_525

**Eryk LICHOCKI**

17:30 Semi-Transparent Cu(In,Ga)Se<sub>2</sub> solar cells for window applications

08\_662

**Nuno RODRIGUES**

17:30 The path to the integration of transparent back contacts in an industrial Cu(In,Ga)Se<sub>2</sub> deposition process

09\_690

**Dimitrios HARISKOS**

17:30 Understanding the Cu(In,Ga)Se<sub>2</sub> formation during the selenization process through in-situ Raman and X-ray diffraction

10\_858

**José FONSECA**

17:30 Semi-transparent Wide-Bandgap ACIGS Solar Cells by Low Temperature Processes

11\_872

**Ceren MITMIT**



17:30	Proton irradiation and annealing recovery strategies on Cu(In,Ga)Se <sub>2</sub> -based solar cells for space applications <b>Bruno Pocas FALCAO</b>	12_890
17:30	Optimisation of reflective back contacts for ultrathin CIGS solar cells <b>Loukiana KOZLOV</b>	13_969
17:30	Modelling and Optimization of Light Management Architectures in Ultrathin and Bifacial CIGS-based Solar Cells <b>António J. N. OLIVEIRA</b>	14_996

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch

**COMPUTATIONAL APPROACHES**

**A09**

14:00	Computational Discovery and Optimization of High-Performance Materials for Intermediate-Band Solar Cells <b>Matteo CAGNONI</b>	537
14:15	Bulk photovoltaic effect in antimony chalcogenides: ab-initio simulations <b>Giuseppe CUONO</b>	738
14:30	Off-stoichiometry and ordered defect compounds in Cu(In,Ga)Se <sub>2</sub> <b>Kostiantyn SOPIHA</b>	1540
14:45	Exploring thermodynamics and kinetics in (Ag,Cu)(In,Ga)Se <sub>2</sub> solar cell absorbers with cluster expansion and machine learning methods <b>Delwin PERERA</b>	447
15:00	Visualizing chemical bonds in Cu(In,Ga)Se <sub>2</sub> <b>Riccardo FRECCERO</b>	1369
15:15	Broadband Optical Solution for Bifacial Ultrathin ACIGS Solar Cells <b>André VIOLAS</b>	1040
15:30	Coffee break	

BEYOND PHOTOVOLTAICS

A10

16:00	From solar cells to solar fuels: Can we use Cu(In,Ga)(S,Se) <sub>2</sub> materials as photo-electrode for CO <sub>2</sub> reduction? <b>Negar NAGHAVI</b>	664
16:30	Chalcogenides in Direct Z-scheme junctions <b>Nithin Thomas JACOB</b>	487
16:45	Rethinking chalcogenides solar cells architecture for solar fuel production <b>Leo CHOUBRAC</b>	1006
17:00	Structural and Optoelectronic Properties of a Bismuth-based Chalcogenide Thin Film for Photo Electrochemistry <b>Daniely REIS SANTOS</b>	1217
18:00	<b>YOUNG RESEARCHER AWARDS CEREMONY</b>	
18:30	<b>SOCIAL EVENT</b>	

Thursday, 19 September 2024

CHARACTERIZATION II

A11

9:00	Grain boundary passivation model could explain the beneficial effect of alkali element doping of CIGS solar cells <b>Aniela CZUDEK</b>	449
9:15	Thermal Admittance Spectroscopy for the Investigation of Composition-Dependent Behaviours in Wide-Gap (Ag,Cu)(In,Ga)Se <sub>2</sub> <b>Patrick PEARSON</b>	14
9:30	The grain boundary model for the interpretation of capacitance-based methods in CIGS solar cells <b>Aleksander URBANIAK</b>	563
9:45	Reducing recombination losses at the p/n-junction of chalcopyrite thin film solar cells: A surface science perspective <b>Amala ELIZABETH</b>	385
10:00	Conductive atomic force microscopy tomography on Cu(In,Ga)Se <sub>2</sub> solar cell absorbers <b>Sascha SADEWASSER</b>	923

10:15 Ultrafast terahertz spectroscopy of epitaxially grown Cu(In,Ga)Se<sub>2</sub> thin films to investigate mobility 779  
**Aline VANDERHAEGEN**

10:30 Coffee break

**TANDEM PHOTOVOLTAICS A12**

11:00 Modeling recombination junctions for tandem solar cells 1600  
**Johan LAUWAERT**

11:30 Development of monolithic two-terminal ACIGSe/Si tandem solar cells 693  
**Julia HORSTMANN**

11:45 Towards two-terminal bonded CIGS/Si tandem solar cell 985  
**Thomas BIDAUD**

12:00 Optimization of CuGaSe<sub>2</sub> thin films solar cells for application in silicon tandem photovoltaics. 1229  
**Giulia SPAGGIARI**

12:15 Enhancement of conversion efficiency of light-weight flexible Cu(In,Ga)Se<sub>2</sub> solar cells with narrow bandgap fabricated on polyimide substrates 761  
**Yukiko KAMIKAWA**

12:30 Lunch

**BUFFER LAYERS A13**

14:00 Latest developments for CIGS thin film applications 1599  
**Hossam ELANZEERY**

14:30 Thin film oxide semiconductors as buffer layer in CIGS photovoltaics 19  
**Sarallah HAMAETI**

14:45 Impact of absorber composition on performance of Cu(In,Ga)Se<sub>2</sub> solar cells with sputtered In<sub>2</sub>S<sub>3</sub>:Na buffers 689  
**Dimitrios HARISKOS**

15:00 Formation of ZnS and ZnOS buffer layers in CIGS based solar cells by ionic bath layer-by-layer deposition (IBLLD) 813  
**Alexei NAZAROV**

15:15 Waste-Free Inkjet Printed Cadmium Sulfide Buffer Layes for Cu(In,Ga)(S,Se)<sub>2</sub> Thin-Film Solar Cells 1198  
**Paul PHIPPS**

15:30 Coffee break

**CHARACTERIZATION III A14**

16:00 The chemical composition and energy level alignment of ZTO/ACGSe interfaces 122  
**Angelika DEMLING**

16:30 Role of light and heavy alkalis in Cu(In,Ga)Se<sub>2</sub> absorbers 754  
**Oana COJOCARU-MIRE DIN**

16:45 Revealing the driving factors for bond length changes and tetragonal distortion in (Ag,Cu)(In,Ga)Se<sub>2</sub> and other chalcopyrites 764  
**Claudia SCHNOHR**

17:00 Three-dimensional structure models of real Cu(In,Ga)Se<sub>2</sub> solar cells give insight into the silver effect 183  
**Chang-Yun SONG**

17:15 Ag fluctuations, solubility and redistribution inside Cu(In,Ga)Se<sub>2</sub> thin-film solar cells 701  
**Ava KARAMI**



€-MRS

2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

Symposium Sponsors



## Symposium B

Sessions: Room 206 | Main Building

Poster Sessions: 237 (Small Hall) | Main Building

ENERGY MATERIALS

## BIOGENIC AND BIO-DERIVED MATERIALS FOR SUSTAINABLE ENERGY SYSTEMS

Symposium organizers:

Claudia **BAROLO**

- University of Torino

Pedro **BRANA COTO**

- Spanish National Research Council

Ruben D. **COSTA**  
(Main Organizer)

- University of Munich

**Tuesday, 17 September 2024**
**POSTER SESSION I      BP01**

17:30	Energy harvesting via high-performance chemically functionalized triboelectric nanogenerators <b>Gulnur KALIMULDINA</b>	01_1176
17:30	Electrodeposited polyaniline modified graphite felt (PANI/GF) electrode enhances acetate production from CO <sub>2</sub> in microbial electrosynthesis cell <b>Jung Rae KIM</b>	02_1342
17:30	Housing of electrosynthetic biofilms using a roll-up carbon veil electrode increases microbial electrosynthesis of CO <sub>2</sub> <b>Jung Rae KIM</b>	03_1343
17:30	Composite salt in biomass derived highly porous carbon matrix for sustainable atmospheric water harvesting <b>Raveesh G</b>	04_1474
17:30	Multifunctional opportunities of the paper filled with luminescent oxide and carbon nanotubes <b>Olga YASHCHENKO</b>	05_1514
17:30	Novel-type diazole derivatives based Solar cells incorporated with nitrogen and selenium groups: A DFT study <b>Pulapa Venkata Kanaka RAO</b>	06_1555
17:30	Optimizing light harvesting efficiency with innovative novel linear carbon chain-based dyes: A computational investigation <b>Giuseppe FORTE</b>	07_586
17:30	Metal complex polymers as hole conductors for perovskite solar cells <b>Iacopo BENESPERI</b>	08_592
17:30	Ion channel inspired osmotic energy conversion device by using graphene oxide membranes <b>Heonseung CHAE</b>	09_638
17:30	Controlling the charge transport properties of halide perovskites and derivatives <b>Roc MATHEU</b>	10_795

Wednesday, 18 September 2024

9:00 PLENARY SESSION

12:30 Lunch

**BIOPOLYMERS AND PHOTOVOLTAICS B01**

- |       |   |      |
|-------|---|------|
| 14:30 | Design principles for the use of sustainable sources of proteins for making protein-based polymers toward functional materials<br><b>Nadav AMDURSKY</b> | 1329 |
| 15:00 | Self-assembled, sustainable Sugarcane Bagasse derived Carbon and MoS2 nanocomposite electrodes for solid-state supercapacitors<br><b>Shivam TYAGI</b>   | 1312 |
| 15:15 | Bio-based polymers towards multifaceted enhancement on performance and stability of rechargeable zinc-ion batteries<br><b>Rongrong CHEACHAROEN</b>      | 1512 |
| 15:30 | Coffee break  |      |

**BIOPOLYMERS AND PHOTOVOLTAICS B02**

- |       |   |      |
|-------|---|------|
| 16:00 | Cellulose-based Optical Fibers<br><b>Cordt ZOLLFRANK</b>  | 1415 |
| 16:30 | Sustainable Luminescent Solar Concentrators<br><b>Andrea PUCCI</b>  | 52   |
| 17:00 | Photonics and Luminescence: Materials Driving Digital Innovation<br><b>Rute FERREIRA</b>  | 1596 |
| 17:30 | Cryo-EM imaging of oriented photosystem I on single layer graphene underlies the significantly improved photocatalytic performance of the biophotovoltaic nanodeviceses<br><b>Miriam IZZO</b> | 454  |

- |       |  |     |
|-------|--|-----|
| 17:45 | Surface Optimisation of Regenerated Cellulose Membranes for development of a sustainable and efficient low-grade waste heat harvester<br><b>Anjali ASHOKAN</b> | 356 |
| 18:00 | <b>YOUNG RESEARCHER AWARDS CEREMONY</b>  |     |
| 18:30 | <b>SOCIAL EVENT</b>  |     |

**Thursday, 19 September 2024**

**LIGHTING AND BIOPROCESSES B03**

- |       |  |      |
|-------|--|------|
| 9:00  | Protein Design meets Phosphors for Light-Emitting Diodes<br><b>Horst LECHNER</b>                                     | 473  |
| 9:30  | Understanding Isomerization Reactions - Insights from Hybrid QM/MM Simulations<br><b>Igor SCHAPIRO</b>               | 1597 |
| 10:00 | Turning Biomass into Ultrabright Carbon Nano Onion through Microwave-Driven Pyrolysis in Seconds<br><b>Yunzi XIN</b> | 920  |
| 10:15 | Biomolecules for Sustainable Optoelectronics<br><b>Piotr HANCZYC</b>   | 1389 |
| 10:30 | Coffee break   |      |

**LIGHTING AND BIOPROCESSES B04**

- |       |  |      |
|-------|--|------|
| 11:00 | Generation of Biomolecules by Fed-batch Fermentation in a pre-industrial process, scalable to industrial<br><b>Giulio GHERSI</b> | 262  |
| 11:30 | Steam explosion of larch ( <i>Larix decidua</i> Mill.) bark as a way to sustainable ethanol production<br><b>Aleksandra JEZO</b> | 1030 |



11:45	Development of protein hybrid materials for energy related applications <b>Niclas SOLIN</b>	1463
12:00	Nano-structured protein fibrils: dye film for efficient down-conversion of UV light <b>Shah Ekramul ALOM</b>	1464
12:15	Cellulose derived Carbon Dots for White Light Generation <b>Souvik LAYEK</b>	1344



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2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

Symposium Sponsors

## Symposium C

Sessions: Room 134 | Main Building

Poster Sessions: 237 (Small Hall) | Main Building

ENERGY MATERIALS

## SUSTAINABLE MATERIALS FOR CHEMICAL AND ELECTROCHEMICAL ENERGY STORAGE II

Symposium organizers:

Arndt **REMHOF**

Erika Michela **DEMATTEIS**

Michael **HEERE**

Paul **JERABEK**  
(Main Organizer)

- EMPA
- University of Turin
- Technische Universität Braunschweig
- Institute of Hydrogen Technology

Monday, 16 September 2024

8:50 Opening - Welcome INT1  
 Paul JERABEK

**ANODES I C01**

9:00 Potential and challenges of layered transition-metal-dichalcogenides as sodium-ion battery anodes 945  
 Denis KRAMER

9:30 Low-dimensional SnSe - Ti3C2 MXene Composite as Binder-free Anode for Energy Storage Applications 31  
 Kavin ARUNASALAM

9:45 Inkjet-printed well-synthesized tin nanoparticles as anodes for next-generation binder-free lithium-ion batteries 317  
 Jawad RESLAN

10:00 S-doped Hard Carbon as high electrochemical performance anode material for Sodium-ion batteries 112  
 Sanchita MANNA

10:15 CVD-coated carbon xerogels with various nodule size for high performance Na-ion battery negative electrode 726  
 Berke KARAMAN

10:30 Coffee break

**ANODES II C02**

11:00 Wetting engineering of alkali metals towards high-performance anode-less batteries 755  
 Gustav GRAEBER

11:45 Enveloping Physicochemical and Electrochemical Properties of Pure Si NW Electrodes as High-Performance LiB Anodes 600  
 Rafael TOMEY

12:00 Thermochemical Investigation of SnS2 Anodes 572  
 Mahmoud REDA

12:30 Lunch

**STRUCTURE & SOLID ELECTROLYTES**
**C03**

14:00	What a mess! Order-disorder transitions in intercalation type batteries <b>Dorthe Bomholdt RAVNSB_K</b>	1073
14:30	Influence of the local structure of solid electrolyte for all-solid-state battery on the ionic conductivity <b>Yohan BIECHER</b>	929
14:45	Terbium tungstate engineering 2D molybdenum disulfide-based battery-free self-charging power system integrated by wearable flexible piezoelectric nanogenerator and asymmetric supercapacitor for portable electronics <b>Sasikumar RAGU</b>	433
15:00	Synthesis and electrochemical characterization of organic materials for solid-state batteries <b>Anne GUINET</b>	1264
15:15	Fueling from the Electrochemistry of Halide Solid Catholytes - Impact of the composition <b>Branimir STAMENKOVIC</b>	1466
15:30	Coffee break	

**BATTERY DEVELOPMENT**
**C04**

16:00	Combining physics-based modeling and artificial intelligence to optimize battery manufacturing processes <b>Alejandro A. FRANCO</b>	696
16:30	Semisolid Electrodes for Higher Specific Capacity and Lower Cost Al-ion Batteries <b>David MUNOZ-TORRERO</b>	1129
16:45	Silicon-dominant anodes: how the TRL level can influence the production process <b>Elisa RAVESIO</b>	785
17:00	Driving a Circular Battery Economy: Innovations in Lithium Battery Recycling and Redox Flow Battery Refurbishing <b>Julio J. LADO</b>	1239
17:15	Multiscale computational characterization of polyelectrolyte systems for applications in safe and efficient batteries <b>Niels VAN DER LEM</b>	1089

POSTER SESSION I CP01

17:30	Investigation of the Eco-friendly Cathode Fabrication with Fluorine-free Binder <b>Je-Nam LEE</b>	01_1064
17:30	SnS deposited Silicon Nanowire Arrays as Promising Photocatalyst for Dye Degradation and Solar Hydrogen Generation <b>Pravesh NEGI</b>	02_1066
17:30	Investigation of the effect on the cutting process on the fabrication of dry process cathode electrode <b>Je-Nam LEE</b>	03_1075
17:30	Effect of Ru and Sn Doping on the Structural Stability of $\text{Li}_{1.2}[\text{Ni}_{0.1625}\text{Co}_{0.1625}\text{Mn}_{0.675}]_{0.8-x}\text{Me}_x\text{O}_2$ Cathode Materials <b>Jeom-Soo KIM</b>	04_1102
17:30	Environmentally Friendly Liquid-Phase Exfoliated Graphene Films for Li-ion Battery Anodes <b>Joao CUNHA</b>	06_1120
17:30	Electrochemical Formation of Quaternary Graphite Intercalation Compounds via Diglyme-Induced Co-intercalation <b>Youhyun SON</b>	07_1144
17:30	Development of Non-Fluorinated Water-Repellent Fabrics for Global Regulatory Compliance <b>Jooran KIM</b>	08_115
17:30	Stabilization of $\text{Na}_2\text{Fe}[\text{Fe}(\text{CN})_6]$ cathode by Mg doping for sodium-ion batteries <b>Ashwani TYAGI</b>	09_1154
17:30	Effect of Precursor Surface Modification on the Performance of $\text{LiNi}_{\dots}\text{Co}_{\dots}\text{Mn}_{\dots}\text{O}_{\dots}$ <b>Jeom-Soo KIM</b>	10_1157
17:30	Stabilization of $\text{Na}_2\text{Fe}[\text{Fe}(\text{CN})_6]$ cathode by Mg doping for sodium-ion batteries <b>Ashwani TYAGI</b>	11_1165
17:30	Cyanofluoroborate Anions: Organic Salts and Low-Melting Ionic Liquids for Supercapacitors <b>Merlin BOHN</b>	12_1174

- |       |   |         |
|-------|---|---------|
| 17:30 | Investigating the electrochemical behavior of silicon anodes for Li-ion batteries through single particle and electrode-level measurements<br><b>Gautam SREEDEVI JACOB</b>                          | 13_1201 |
| 17:30 | Sustainable Production of Graphene and MXenes for Spray-Coated Flexible Microsupercapacitors<br><b>Rodrigo ABREU</b>  | 14_1211 |
| 17:30 | Study on the Co-precipitation Process Synthesizing Precursors for O3- NaNi___Fe___Mn___O_ Cathode Material<br><b>Jeom-Soo KIM</b>   | 15_1213 |
| 17:30 | Electrochemical Characteristics of TiO_ <sub>2</sub> -Coated LiNi_ <sub>0.8</sub> Co_ <sub>0.1</sub> Mn_ <sub>0.1</sub> O <sub>2</sub> for High Energy Cathode Material<br><b>Jeom-Soo KIM</b>      | 16_1230 |
| 17:30 | Synthesis of NCM Precursors with Bi-modal Size Distribution via Co-precipitation Method<br><b>Jeom-Soo KIM</b>  | 17_1241 |
| 17:30 | Preparation and phase relations of some oxides in La-(Fe,Mn)-O system for hydrogen electrode materials<br><b>Benedetta BERTOLOTTI</b>   | 18_1273 |
| 17:30 | Emerging Bismuth-based Materials: From Fundamentals to Energy Applications<br><b>Ayat EL-SHAZLY</b>   | 19_1361 |
| 17:30 | Two-dimensional manganese carbide for high energy-density asymmetric supercapacitor<br><b>Debabrata NANDI</b>   | 20_1382 |
| 17:30 | Core-shell MOF-derived nanocomposite electrospun carbon nanofibers as freestanding cathode catalysts for advanced scalable Li-CO <sub>2</sub> Mars batteries<br><b>Ankit Kumar CHOURASIA</b>        | 21_1403 |
| 17:30 | Thermo-responsive Hydrogel composites based on Biocompatible Cellulose and Application of Removing microplastics system driven by diurnal temperature variation<br><b>Jihye KIM</b>                 | 22_1419 |
| 17:30 | The influence of deposition parameters on the morphology of sputtered Mg <sub>84</sub> Al <sub>8</sub> Ti <sub>8</sub> thin films and their potential for hydrogen storage<br><b>Stefan EDINGER</b> | 23_1421 |
| 17:30 | Enhancing solid polymer electrolyte performance for Li-ion batteries through ternary composite systems with active and passive fillers<br><b>Vera MACEDO</b>  | 24_1423 |

17:30	Hydrogen interactions with minerals: calcite, dolomite and quartz as case studies <b>Erika Michela DEMATTEIS</b>	25_1427
17:30	1,3,5-Triethynylbenzene-based Conjugated Microporous Polymers: Green Mechanochemical Synthesis and Energy Storage Applications. <b>Srinivasa Rao RAVULAKOLLU</b>	26_1451
17:30	Li <sub>2</sub> S/C/SnS <sub>2</sub> Composite-Based Cathode Material for Lithium-Sulfur Batteries <b>Irshad MOHAMMAD</b>	27_1454
17:30	High-voltage aqueous dual-ion batteries based on water-in-salt electrolytes <b>Jirí CERVENKA</b>	28_1505
17:30	Carbon Nanowalls Grown Directly on Carbon Paper as Microporous Layers for Proton Exchange Membrane Fuel Cells <b>Adriana-Elena BALAN</b>	29_1521
17:30	Paraffin-multilayer graphene compounds for thermal energy storage <b>Adriana-Elena BALAN</b>	30_1525
17:30	Preparation and electrochemical activation of Co-Ni-Mn catalyst for efficient oxygen evolution reaction <b>Ana Luisa SILVA</b>	31_1546
17:30	Multiscale Modelling of Silicon-Doped TiFe for Solid State Hydrogen Storage <b>Lekshmi DINANCHANDRAN</b>	32_1586
17:30	Implementing Machine Learning in Nanocluster Global Optimisation <b>Elouan HAY-FOURMOND</b>	33_1587
17:30	Maleic Anhydride Copolymer Aerogel with Photoluminescence Characteristics and Its Application in Phase Change Energy Storage <b>Yue RU</b>	34_181
17:30	Novel bio-based proton exchange membranes for PEMFCs <b>Alba GONDA LAZKANO</b>	35_205
17:30	Unlocking Pathways for Selective Separation of Light Rare Earth Elements: Integrated Oxidative Precipitation and Solvent Extraction Techniques <b>Hossein SALEHI</b>	36_282

17:30	Dual Crosslinked Interpenetrating Polymer Network-based Porous Hydrogel Membrane for Solid-State Supercapacitor Applications <b>Aparajita PAL</b>	37_566
17:30	Kubas interactions between H <sub>2</sub> molecules and Ca-functionalized biphenylene monolayer: The effect of “d”-“s” level exchange <b>Vikram MAHAMIYA</b>	38_630
17:30	Sustainable Synthesis Strategy & Environmental Impact Assessments of Activated Carbon from Waste Biomass Using Organic Salt for Energy Storage Applications <b>Muhammad ASHRAF</b>	39_709
17:30	Zero-Gap Alkaline Electrolyzers for Sustainable Hydrogen Production <b>Jakub PAWLOWSKI</b>	40_783
17:30	Tailoring Electrode Materials for Alkaline Electrolysers <b>Aleksandra MAKARUK</b>	42_885
17:30	Pseudo capacitors using polymer electrolyte-added $\gamma$ -MnO <sub>2</sub> Nanoflower electrodes for energy storage applications <b>Shrishti SHARMA</b>	43_931
17:30	Ketene Derivatives for Carbon Materials Design <b>Elif Begum YILMAZ</b>	44_978

**Tuesday, 17 September 2024**

		CATHODES	C05
9:00	Electrode-Electrolyte Reactivity trends at the Positive Electrodes in Li-ion Batteries <b>Livia GIORDANO</b>		1294
9:30	Novel Na <sub>0.7</sub> MnO <sub>2</sub> cathode material with a sustainable water-based processing for sodium-ion batteries <b>Sergio RAMOS LOZANO</b>		728
9:45	Vanadium-free glasses : potential positive electrode material for Li-ion and Na-ion batteries <b>Alexis DELANOE</b>		480



10:00	Eco-Friendly Synthesis of LiFePO <sub>4</sub> Cathodes Using Biomass-Derived Carbon Coating and Water-Based Electrodes <b>Maria CASTELLVÍ BARNÉS</b>	834
10:15	Interesting ion intercalation mechanisms of Prussian blue analogues as the cathode materials of post lithium batteries <b>Yang XU</b>	38
10:30	Coffee break	

**INSIGHTS FROM THEORY I C06**

11:00	Design rules for the development of materials with high hydrogen-to-metal ratio <b>Vitalie STAVILA</b>	792
11:30	Multi-Physics Modeling Metal-Hydride Hydrogenation Processes: The FeTi-H Case Study <b>Ebert ALVARES</b>	777
11:45	Structural and electrical properties of Si-doped LiTa <sub>2</sub> PO <sub>8</sub> ceramics <b>Konrad KWATEK</b>	1146
12:00	Computational Analysis on the Mechanism for Suppression of Deterioration in Mg-doped Silicon Oxide as Negative Electrode Materials <b>Wataru SEKINE</b>	428
12:15	Doping of NMC811 cathode material for Li-ion batteries <b>Mauro Francesco SGROI</b>	622
12:30	Lunch	

**INSIGHTS FROM THEORY II C07**

14:00	Tuning of the electrode/hydridoboride solid state electrolyte interface <b>Zbigniew LODZIANA</b>	221
14:30	Computational Analysis of a Promising Earth Abundant, Stable, Lithium Solid Electrolyte <b>Benjamin WILLIAMSON</b>	1376

14:45	Theoretical study on high entropy oxyfluoride cathodes for sodium-ion batteries <b>Khorsed ALAM</b>	871
15:00	Density functional calculation for designing novel Oxide based transition metal superhalogen anions PdnOm (n=1-2 m=1-5/9) electrolyte for Lithium-ion battery <b>Vijay SINGH</b>	1533
15:15	Atomistic Simulation of Protic Ionic Liquids as an electrolyte for mid-temperature fuel cells. <b>Federico PARISI</b>	1438
15:30	Coffee break	

**ADVANCED BATTERY MATERIALS**

**C08**

16:00	Multi-scale modelling of transport and degradation phenomena in battery materials <b>Paolo DE ANGELIS</b>	345
16:30	Additives for rechargeable high-energy bivalent metal-organic batteries <b>Maciej MARCZEWSKI</b>	450
16:45	Boosting the electrochemical performance of hexagonal MoO3 / AlCl3-Urea / Al batteries through Ni doping <b>Paloma ALMODÓVAR</b>	590
17:00	Exploring the impact of graphene-based surface texture in electrochemical energy storage applications <b>Alazmi ALAZMI</b>	88

**POSTER SESSION II**

**CP02**

17:30	Surface stabilization of LiNi <sub>0.80</sub> Co <sub>0.10</sub> Mn <sub>0.10</sub> O <sub>2</sub> cathode with LiTaO <sub>3</sub> <b>Jeom-Soo KIM</b>	01_1044
17:30	Improving Interfacial Stability of LiNi <sub>1-x-y-z</sub> Co <sub>x</sub> Mn <sub>y</sub> O <sub>2</sub> by Nb oxide coating for Sulfide-Based All-Solid-State Batteries <b>Jeom-Soo KIM</b>	02_1048

17:30	The Impact of Metal Oxide Band Gap Energy on the High-rate Performance of LiNi <sub>x</sub> Co <sub>y</sub> Mn <sub>z</sub> O <sub>2</sub> Cathode Materials	03_1051
	<b>Jeom-Soo KIM</b>	
17:30	Understanding the storage mechanism of Hard Carbon in Ether and Ester-based electrolytes for Sodium-ion batteries	04_110
	<b>Sanchita MANNA</b>	
17:30	Phosphorus-Doped Nickel Oxide Micro-Supercapacitor: Unleashing the Power of Energy Storage for Miniaturized Electronic Devices	05_147
	<b>Shumile AHMED SIDDIQUI</b>	
17:30	Sustainable Halide-Based Solid-State Electrolyte by Coprecipitation Strategy and Atmospheric-Dependent In-Situ Analysis	06_151
	<b>Mu-Huai FANG</b>	
17:30	Enhanced potential window and high-performance supercapacitor based on Ti <sub>3</sub> C <sub>2</sub> T <sub>x</sub> MXene	07_154
	<b>Aleyna AKILLI</b>	
17:30	Anthraquinone-polydiacetylene and anthracene electrodes for high energy organic asymmetric supercapacitors	08_192
	<b>Sudipta BISWAS</b>	
17:30	Redox mediated oxygen evolution mechanism in atomically dispersed Pt supported NiO: Defying the hydroxylated mechanism of NiO	09_204
	<b>Jatin NAMA</b>	
17:30	Rotational Polyanion Correlated Li Ion Dynamics in Superionic Conductors	10_209
	<b>Juncao BIAN</b>	
17:30	Aluminum Alloy Development to Improve Plating/Stripping in Aluminum Base-Batteries	11_223
	<b>Ghadir RAZAZ</b>	
17:30	Vanadium-based cathodes for sustainable aqueous Na-ion batteries	14_265
	<b>Julie LAM CHEN</b>	
17:30	Wetting interactions between porous carbon hosts and liquid alkali metals: Investigating forced wetting vs. spontaneous wetting with X-ray CT	15_301
	<b>Johannes BALLER</b>	
17:30	Different Manganese Dioxide Polymorphs for Aqueous Rechargeable Zinc-ion Batteries	16_318
	<b>Yauhen ANISKEVICH</b>	

17:30	Quasi-solid-state electrolytes based on polyimide paper and ionic liquid <b>Zhenni HE</b>	17_327
17:30	Graphene-Intercalated P4Se3@CNF Hybrid Electrode for Sustainable Energy Storage Solution: Enabling High Energy Density and Ultra-long Cyclic Stability <b>Daya RANI</b>	18_348
17:30	Battery research at ESRF ID26 <b>Sami VASALA</b>	19_350
17:30	Sustainable ion conducting oxides : an anisotropy study <b>Mathilde ARNAUD</b>	20_391
17:30	The effect on performance 75Li2S_25P2S5 solid-state electrolyte system through doping Li2O <b>Chen MI</b>	21_4
17:30	A Promising Anode Candidate For Rechargeable Nickel Metal Hydride Power Battery An Mg <sub>0.5</sub> Al <sub>0.25</sub> Ni <sub>0.25</sub> Fe <sub>0.25</sub> A <sub>0.25</sub> (A=Cr,V) Alloys <b>Gülhan ÇAKMAK</b>	22_41
17:30	Form-stable phase change materials from the composite of PEG and degradable polymeric materials <b>Yejin HONG</b>	23_426
17:30	N-allylthiourea as an electrolyte additive to modulate surface dendrite growth on Zn metal anodes <b>Sukeun YOON</b>	24_430
17:30	Discarded Laboratory Tissue Derived Porous Carbon/UiO-66 Composite Electrode Material for Asymmetrical Supercapacitor Application <b>Prashant DUBEY</b>	26_460
17:30	Unraveling the Spatial Asynchronous Activation Mechanism of Oxygen Redox-involved Cathode for High-voltage Solid-state Batteries <b>Shu Chih HAW</b>	27_49
17:30	Understanding the diffusion behavior of Mg ion in Chevrel phase, Mo6S8 for rechargeable Mg batteries <b>Gazal GUPTA</b>	28_504
17:30	Web-Like Silver Nanowire Networked Film for Highly Transparent Supercapacitor Electrodes <b>Sinil KIM</b>	29_547
17:30	Effects of the electrolyte composition on the charge storage reversibility of organic sodium-ion battery materials <b>Ivan SALMERON SANCHEZ</b>	30_548

17:30	Enabling an Inorganic_Rich Interface via Cationic Surfactant for High_Performance Lithium Metal Batteries <b>Zejun SUN</b>	31_553
17:30	Reversible electrochemical charge accumulation in polypyrrole thin films <b>Natallia KAREVA</b>	32_588
17:30	Study on acetamide-based additives to improve Zn-ion battery performance <b>Sukeun YOON</b>	33_636
17:30	Shedding Light on the Origin of Sodium Dendrite Growth to Build Better Sodium Metal Batteries <b>Chhail Bihari SONI</b>	34_642
17:30	Study of charge storage behaviour in a compost-based symmetric multi-functional device: effect of different composts, electrodes and electrolytes <b>Poonam YADAV</b>	35_682
17:30	Fundamentals of alkali-metal wetting and phase change phenomena towards high-performance alkali-metal batteries <b>Naiyu QI</b>	36_735
17:30	Hierarchical transition metal selenide nanostructures as a potential electrode for supercapacitors and thermo-electrochemical cells <b>Rupa Ranjani PALANISAMY</b>	37_747
17:30	Constructing a High-Performance Quasi-Solid-State Lithium ions Battery Using Dynamic Crosslinking Polyrotaxane-Based Ionogel and Competitive Coordination Principles <b>Shanshan YAN</b>	38_753
17:30	PCBM Functionalized WS <sub>2</sub> -MWCNT Hybrid Nanostructures: Towards Binder-Free Li-Ion Battery Anodes <b>Shahab AHMAD</b>	39_76
17:30	Influence of Electrolyte on the Electrochemical Performance of the Biomass-derived Hard Carbon for Potassium Ion Batteries <b>Ramaprabhu SUNDARA</b>	40_781
17:30	Investigation of Cyanofluoroborate-based Ionic Liquids as High Voltage Electrolytes for Supercapacitors <b>David MUELLER</b>	41_782
17:30	Cyanofluoroborate Anions: Organic Salts and Low-Melting Ionic Liquids for Supercapacitors <b>Merlin BOHN</b>	43_812

17:30	Phase Diagram, Chemical Stability and Sintering Study of Proton Conductors BaZrxCe0.8-xY0.1Yb0.1O3-δ (0 ≤ x ≤ 0.8)	44_85
	<b>Lozane HAMZE</b>	
17:30	Real-time light-modulation of capacity and impedance in lithium-ion battery anode	45_853
	<b>Hong YIN</b>	
17:30	Waste-Derived Zn Coating for Improved Performance of Lithium-Sulfur Batteries: A Sustainable Approach to Battery Material Management	46_87
	<b>Mohsen HAJIAN FOROUSHANI</b>	
17:30	Biodegradable-polymer-pectin based porous membrane and carbon electrodes for Na-ion hybrid capacitors and supercapacitors	47_895
	<b>Niyaz AHMAD</b>	
17:30	High performance polymer blend based quasi solid state electrolyte system for sodium metal battery	48_909
	<b>Vineeth SASIKUMAR KALA</b>	
17:30	Effect of moderately concentrated electrolyte on sodium ion battery performance	49_934
	<b>Dhrubajyoti DAS</b>	
17:30	Laser induced graphene with Sn-Sb NPs as novel anode for sodium and lithium-ion batteries	50_980
	<b>Vincenzo VEZZONI</b>	
17:30	Interphase-Designable Additive-Enabled Ethylene Carbonate-Free Electrolyte for Wide-Temperature, Long-Cycling, High-Voltage Lithium Metal Batteries	51_989
	<b>Jianmin MA</b>	
17:30	Reversible Intercalation of Mg ion in Chevrel phase, Mo6S8 for rechargeable Mg batteries	52_993
	<b>Gazal GUPTA</b>	
17:30	Novel electrolyte additives for lithium-ion batteries with metallic anodes – electrochemical characterization and cycle life enhancement	53_1615
	<b>Natalia IZDEBSKA</b>	

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch

**METAL HYDRIDES**
**C09**

14:00	Computational modelling of clean and safe production and storage of hydrogen <b>Anna GARDEN</b>	939
14:30	A model-based study on metal hydride compressor systems and applications for hydrogen refueling stations <b>Torben STRUVE</b>	1096
14:45	Analyzing the kinetic behavior of hydrides applying the Markov Chain Monte Carlo (MCMC) method <b>Julian PUSZKIEL</b>	96
15:00	La-Ni-H metal hydride system aging effects identification <b>Yuanyuan SHANG</b>	844
15:15	Direct reduction of New Zealand sands to hydrogen storage material <b>Alexander HAACK</b>	124
15:30	Coffee break	

**SUSTAINABLE ENERGY MATERIALS**
**C10**

16:00	Solid-state hydrogen storage for a decarbonized society <b>Claudio PISTIDDA</b>	658
16:30	ReMade@ARI: a hub for materials research for the circular economy <b>Marta LIPINSKA/CHWALEK</b>	331
16:45	Andersson-Wadsley oxides as quantum materials for electrical energy storage <b>Brigitte LERIDON</b>	417
17:00	Synthesis of TiFe alloy for hydrogen storage applications by direct calciothermic reduction of ilmenite sand <b>Mohammad Zarar RASHEED</b>	35
17:15	Extraction of lithium from highly saline media by hierarchical mineral exchangers <b>Ma_I FERRAND</b>	168

18:00 YOUNG RESEARCHER AWARDS CEREMONY

18:30 SOCIAL EVENT

Thursday, 19 September 2024

## CHEMICAL AND ELECTROCHEMICAL STORAGE

C11

- |       |   |      |
|-------|---|------|
| 9:00  | Simulating interfacial mass and charge transport in solid-state energy storage materials<br><b>Brandon WOOD</b>   | 1391 |
| 9:30  | Bio-sourced electrode materials for all-carbon supercapacitors<br><b>Elsun AZIZOV</b>   | 898  |
| 9:45  | Biochar from agrifood waste: a dual mechanism approach to hydrogen storage<br><b>Alessia RINALDI</b>  | 1259 |
| 10:00 | Coupled visual and acoustic water distribution investigation in PEM fuel cells for verification of sound-based flooding mitigation<br><b>Arne GRAF VON SCHWEINITZ</b> | 492  |
| 10:15 | Pt-based PEMFC Nanocatalyst Layers by Sputtering onto Liquid Polyethylene Glycol<br><b>Björn LÖNN</b>   | 490  |
| 10:30 | Coffee break  |      |

## ENERGY EFFICIENT MATERIALS

C12

- |       |  |      |
|-------|--|------|
| 11:00 | Battery2030+ initiative can be the driver of the European research on batteries? Post Lithium ion technologies and disruptive technologies for future storage systems.<br><b>Silvia BODOARDO</b> | 740  |
| 11:30 | XPS, XAFS, XRD, and FTIR Operando Studies of a Vanadium-based (H <sub>2</sub> V <sub>3</sub> O <sub>8</sub> ) Lithium-ion Battery<br><b>Ignacio José VILLAR GARCÍA</b>                           | 1497 |
| 11:45 | Designing a passive hydrogen recirculation subsystem in a PEMFC system by applying CFD and Modelica simulation<br><b>Guang YANG</b>  | 866  |



12:00	Fabrication of Zn-based energy storage system by inkjet printing technique for wearable electronics application <b>Sagnik SARMA CHOUDHURY</b>	55
12:15	Oxidation kinetics of aluminium as an energy carrier for seasonal energy storage <b>Nigel Willy VAN DE VELDE</b>	546
12:30	Lunch	

## BATTERIES FOR STATIONARY STORAGE **C13**

14:00	Design and Optimization of a Zn//Lignosulfonate Redox Flow Battery <b>Rebeca MARCILLA</b>	524
14:15	Low-cost Catholyte Design of Environmentally Friendly Zinc-Iron Redox Flow Battery to Enhance Battery Performance and Stability <b>Rongrong CHEACHAROEN</b>	1039
14:30	Ultrahigh-Rate Zn Stripping and Plating by Capacitive Interfacial Process Boosting High-rate Zn-ion Storage <b>Yurong ZHOU</b>	576
14:45	Converting Industrial Polymer into Organic Cathode for Sustainable and Practical Aqueous Zinc-ion Batteries <b>Jesus SANTOS-PENA</b>	819
15:00	Sustainable chemistry for highly efficient room-temperature Na-S batteries <b>Tim HORNER</b>	367
15:15	A unique approach to control nitrogen doping in microporous carbon at ambient conditions for a stable reversible room-temperature sodium-sulfur battery <b>Sungjemmenla .</b>	725
15:30	Coffee break	



# 2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

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## Symposium D

Sessions: Room 144 | Main Building

Poster Sessions: 237 (Small Hall) | Main Building

ENERGY MATERIALS

## ADVANCED CATALYTIC MATERIALS FOR (PHOTO)ELECTROCHEMICAL ENERGY CONVERSION V

### Symposium organizers:

Byungha SHIN

– Korea Advanced Institute of Science and Technology (KAIST)

Joachim JOHN  
(Main Organizer)

– Interuniversity MicroElectronic Centre (IMEC)

Joanna KARGUL

– Centrum Nowych Technologii  
Uniwersytetu Warszawskiego

Lifeng LIU

– Songshan Lake Materials Laboratory (SLAB)/  
International Iberian Nanotechnology Laboratory

**Monday, 16 September 2024**
**ELECTROCATALYSIS**
**D01**

9:00	Electrochemical and chemical cycle for membraneless water electrolysis in NaBr electrolyte <b>Avner ROTHSCILD</b>	1331
9:30	Orbital Occupancy Triggering the Oxygen Evolution Reaction at LaNiO <sub>3</sub> Nanostructures <b>David FERMIN</b>	506
9:50	Nitinol: A Promising PGM-free Catalyst for Hydrogen Evolution Reaction in Anion Exchange Membrane Water Electrolysis <b>Mengmeng LAO</b>	78
10:05	Ex situ and in operando characterization of Pt and Pt <sub>3</sub> Co catalyst degradation for proton-exchange membrane fuel cells <b>Marco BOGAR</b>	353
10:20	Metal Organic Chemical Vapour Deposition of cobalt oxide films and their application in electrochemical hydrogen production <b>Matteo BOMBACI</b>	1035
10:30	Coffee break	

**PHOTOELECTROCATALYSIS**
**D02**

11:00	Understanding Catalyst Nanoparticles for Energy Conversion by Advanced Electron Microscopy <b>Paulo FERREIRA</b>	1604
11:30	Rational Design of Photoelectrochemical Perovskite-BiVO <sub>4</sub> Tandem Devices for Stable Fuel Production <b>Virgil ANDREI</b>	159
11:50	Photoelectrochemical tandem cell based on tungsten selenide and tungsten oxide for solar water splitting <b>Maxime CONTRERAS</b>	1250
12:05	Photoelectrochemical properties of anodic tungsten oxide-based materials <b>Karolina SYREK</b>	174

12:20 Comparison of Photoelectrochemical Water-splitting Performance of modified BiVO<sub>4</sub> based Photoanodes 152  
**Devulapalli AMARANATHA REDDY**

12:30 Lunch

**PHOTOELECTROCATALYSIS D03**

14:00 Can We Drive Photoelectrochemical CO<sub>2</sub> Reduction on Bare Semiconductor surface ? The curious case of CuInGaS<sub>2</sub>-Electrolyte Interface 1188

**Sudhanshu SHUKLA**

14:20 Strategies for enhancing the photovoltage and stability of 3C-SiC photoanodes for solar water splitting 1595

**Jianwu SUN**

14:40 Elucidating the Synergistic Effects of Ti-Sn Co-Doping on the Photoelectrochemical Water Splitting Performance of Hematite Nanowires 1535

**Francisco Javier FERNÁNDEZ-ALONSO**

14:55 Assessment of Ni-Mo-Fe based Catalysts for Solar Hydrogen Production 299

**Si-Thanh DONG**

15:10 Investigation of Strontium-Doped WO<sub>3</sub> Photoanodes for Improved Photoelectrochemical Water Splitting Efficiency 1036

**Rana Basit ALI**

15:30 Coffee break

**ELECTROCATALYSIS D04**

16:00 Preparation of electrodes for alkaline water electrolyzers by dip-coating of ceramic precursors 1070

**Katarzyna OSTROWSKA**

16:15 Self-powered hydrogen production from asymmetric seawater electrolysis 284

**Zhipeng YU**

16:30 Low overpotential NiFe-Layered-Double Hydroxide on Ni foam for OER catalyst and anode in anion exchange membrane electrolyzer 681

**Rachmat Adhi WIBOWO**

16:45	The spin effect on the oxygen evolution reaction at Fe-doped NiOOH <b>Piotr KOWALSKI</b>	1184
17:00	Enhanced Stability of HEA in Acidic Electrolytes for Hydrogen Evolution Reaction Using Zr and Cr Metals <b>Sitaramanjaneya THALLURI</b>	238
17:15	Inverse Design of Promising Alloys for Electrocatalytic CO <sub>2</sub> Reduction via Generative Graph Neural Networks Combined with Optimization Algorithm <b>Song ZHILONG</b>	9

**POSTER SESSION I      DP01**

17:30	Persistent Photoconductivity and Photo(electro)catalysis from Engineered Transition Metal Dichalcogenide Atomic Layers <b>Ravi Kumar BIROJU</b>	01_1099
17:30	Copper sulfide electrocatalyst for HER and CO <sub>2</sub> reduction <b>Roser FERNANDEZ CLIMENT</b>	04_1135
17:30	Synthesis and Applications of Bismuth-based MOFs for Water Splitting and Environmental Purification” <b>Antonella CASTRO</b>	05_1148
17:30	Carbon Nitride Thin Films for Energy Conversion <b>Paolo GIUSTO</b>	06_1208
17:30	Corrosion-resistant and Electrically Conductive Ti-Nb-O-Based Coatings for Metal Bipolar Plates in PEM Electrolyzers <b>David KOLENATY</b>	07_1222
17:30	Development and Scale-Up of Hematite/PEM/CuO Tandem Cells for Enhanced Photovoltaic Performance and Water Splitting Efficiency <b>Maxime CONTRERAS</b>	08_1244
17:30	Plasmon-Enhanced TiO <sub>2</sub> Hybrids by Laser Ablation/Irradiation for Photocatalytic and Photoelectrochemical Applications <b>Pooja RAVEENDRAN NAIR</b>	09_1252
17:30	Manufacturing Process of Raney-Ni Electrode via a Simple and Large-area Dip-Coating Method for Alkaline Water Electrolysis <b>Hae In LEE</b>	10_1358

17:30	Two-dimensional Ni <sub>3</sub> TeO <sub>6</sub> semiconductor as an efficient electrocatalyst for oxygen evolution reaction and Urea oxidation reaction in alkaline medium <b>Manisha SHARMA</b>	11_1367
17:30	Methane conversion into platform molecules over CIGS solar cells under ambient conditions <b>Andrei KHODAKOV</b>	12_1445
17:30	Gold nanoparticles deposited on semi-conducting materials for the production of H <sub>2</sub> by photoreforming of carbohydrates <b>Gwladys POURCEAU</b>	22_1274
17:30	Iron Oxide Thin Film Deposited by mf-CVD Technique for Electrocatalytic Dinitrogen Fixation <b>Naina GOYAL</b>	13_1488
17:30	Structural and electrochemical properties of CuO/MoO <sub>3</sub> based nanocomposites for dyes degradation and hydrogen production from water splitting <b>Hussein ALROBEI</b>	14_1492
17:30	Harnessing the Power of PM6:Y6 Photoanodes: Tandem OPEC/OPV Structures for Enhanced Solar Conversion with > 7 mA/cm <sup>2</sup> at 0 VRHE <b>Carles ROS</b>	15_263
17:30	Utilizing the undesirable oxidation of Lead-free perovskite for photocatalytic C(sp <sup>3</sup> ) <sub>2</sub> H activation: Unraveling the serendipity <b>Bhawna RAWAT</b>	16_540
17:30	Enhance energy and economic efficiency by coupling glycerol oxidation to carbon dioxide reduction reaction <b>Thi Hong Hanh LE</b>	17_573
17:30	Synergistic Effect of Ni-Co-Fe on Electrocatalytic Activity of Transition Metal Based Thin Films for Anion Exchange Membrane Fuel Cell <b>Alireza SHARIFIRAD</b>	18_810
17:30	RIANA: Research Infrastructure Access in Nanoscience & Nanotechnology <b>Marta LIPINSKA/CHWALEK</b>	19_811
17:30	Methanol assisted water electrooxidation on noble metal free perovskite: RRDE insight into the catalyst's behaviour <b>Shikha DHAKAR</b>	20_921
17:30	Advancing energy innovation through Structurally Engineered Perovskite Metal Oxides in The Electrochemical Oxidation Processes <b>Kritika SOOD</b>	21_99

**Tuesday, 17 September 2024**
**ELECTROCATALYSIS**
**D05**

- |       |   |      |
|-------|---|------|
| 9:00  | Chemical Storage for the energy System of the Future - needs for scale<br><b>Maximilian FLEISCHER</b>   | 1605 |
| 9:30  | The status of materials development for Gigawatt scale production of low carbon hydrogen using (photo) electrochemical energy conversion.<br><b>Sonya CALNAN</b>        | 1393 |
| 9:50  | Unearthing low overpotential of Platinum electro-grafted Ni-Co-S as efficient Hydrogen evolution electrocatalyst<br><b>Arushi ARORA</b>                                 | 236  |
| 10:05 | Z-Scheme Formation Between Potassium Intercalated g-C <sub>3</sub> N <sub>4</sub> and FePS <sub>2</sub> Leading to Increased Hydrogen Evolution<br><b>Philipp BOOTZ</b> | 542  |
| 10:20 | Magnetic Effects in Electrocatalysis: Insights from EIS Studies on the Oxygen Reactions at CoFe <sub>2</sub> O <sub>4</sub> Electrodes<br><b>Alfredo GINER REQUENA</b>  | 1202 |
| 10:30 | Coffee break  |      |

**PHOTOELECTROCATALYSIS**
**D06**

- |       |  |      |
|-------|--|------|
| 11:00 | Paired photoelectrochemical conversion of CO <sub>2</sub> /H <sub>2</sub> O and glycerol at high rate<br><b>Csaba JANAKY</b>   | 1603 |
| 11:30 | Kesterite Cu <sub>2</sub> ZnSnS <sub>4</sub> -based photoelectrochemical water reduction with high photocurrent density employing all-environmental benign materials<br><b>Rachmat Adhi WIBOWO</b> | 679  |
| 11:45 | High-throughput parallel testing of ten photoelectrochemical cells for water splitting: case study on the effects of temperature in hematite photoanodes<br><b>Roberto VALENZA</b>                 | 613  |
| 12:00 | Facile decoration of semitransparent titanium dioxide nanotubes using Successive Ionic Layer Adsorption and Reaction for photoelectrochemical applications<br><b>Katarzyna SIUZDAK</b>             | 554  |

- 12:15 Adsorption-derived visible light photocatalytic degradation of dyes using phenyl-modified graphitic carbon nitride/  
Strontium titanate composite 668  
**Saswati BAGCHI**
- 12:30 Lunch

**SOLAR FUELS**
**D07**

- 14:00 EIC Solar-to-X public funding strategy: From Scientific Curiosity to Technological Innovation 1594  
**Carina FABER**
- 14:20 Biomolecular photocatalysis for solar chemical generation 1601  
**Joanna KARGUL**
- 14:40 Evaluating the Photoelectrochemical CO<sub>2</sub> Reduction on Cu(In,Ga)Se<sub>2</sub> (CIGS) Based Photocathodes 746  
**Julian GUERRERO**
- 14:55 Copper oxide-based photocathodes for solar fuels production 584  
**Javier LLORENTE-LÓPEZ**
- 15:10 Photosystem I as a natural light-sensitive material in biohybrid systems 1267  
**Sebastian SZEWCZYK**
- 15:30 Coffee break

**PHOTOELECTROCATALYSIS**
**D08**

- 16:00 Halide perovskite and organic bulk heterojunction photoelectrodes protected with catalytic sheets of different carbon allotropes 466  
**Salvador ESLAVA**
- 16:20 Comparison of electron transfer inside and around Photosystem I in solution and immobilized on FTO conducting glass electrode 1106  
**Krzysztof GIBASIEWICZ**
- 16:55 Development of Efficient Photocatalysts: Enhancing Hydrogen Production and CO<sub>2</sub> Reduction with PCN-ZnO Nanocomposites 1049  
**Narayan SOM**



17:10 A consistent model to interpret Optoelectronic measurements of semiconductor photoanodes: steady-state and small-perturbation response 1425  
**Paola RAGONESE**

**POSTER SESSION II DP02**

17:30 Excellent performance parameters of Janus MXenes, new Infra-red active photocatalysts for water splitting 21\_395  
**Subhradip GHOSH**

17:30 Electronically Defective Tellurium-Doped TiO<sub>2</sub> Catalysts for Enhanced Photoelectrochemical Water Splitting 20\_53  
**Samar FAWZY**

17:30 In situ Proton Filter Covalent Organic Framework: A Paradigm Shift Catalyst for Efficient Aqueous Electrochemical Ammonia Production 01\_729  
**Ranjeesh KAYARAMKODATH CHANDRAN**

17:30 Novel NiMn-Based Anode for Hybrid Photoelectrochemical Systems: Simultaneous Electro-oxidation of Pollutants and CO<sub>2</sub> Reduction 02\_1221  
**Keyvan MIREHBAR**

17:30 Tin-doped hematite photoanodes for water splitting: new perspectives from local atomic order 03\_1246  
**Chiara MAURIZIO**

17:30 Graphene Quantum Dots as Hole Extraction and Transfer Layer Empowering Solar Water Splitting of Catalyst-coupled Zinc Ferrite Nanorods 04\_133  
**Soham SAHA**

17:30 Microwave-Assisted Rapid Synthesis of Ag-Decorated CuO Nanoflakes for Enhanced Solar-Driven Photocatalytic Activity 05\_1456  
**Rajesh MANDAL**

17:30 NiSe<sub>2</sub> Nanooctahedron on Nickel Foam: An Efficient Bifunctional Electrocatalyst for Overall Water Splitting 06\_201  
**Amit Kumar NAYAK**

17:30 O<sub>2</sub> dimerization and Lattice Instability in Perovskite Electrocatalysts 07\_203  
**Andrew AKBASHEV**

17:30 Role of Solvent Varied Synthesized Bi<sub>2</sub>MoO<sub>6</sub> Electrocatalyst in Maximizing the Ammonia Yield and Faradaic Efficiency Through Nitrogen Reduction Reaction 08\_206  
**Sthitapragyan PATNAIK**

17:30	Manufacturing Cu/ZnO/Al <sub>2</sub> O <sub>3</sub> catalysts via electroless plating <b>Yamato MORIOKA</b>	09_255
17:30	Fabrication of Au-Pt alloy catalysts via electroplating <b>Eidai MORI</b>	10_256
17:30	Cu-Pt alloy preparation via Cu dendrite metamorphosis: A microparticle formation method <b>Tsubasa KEMMIZAKI</b>	11_260
17:30	Exploring hydrogen evolution by unique synthesis approach of metal-carbon nanocomposites for enhanced activity by atomically unit dispersion of platinum <b>Ajay MOHAN</b>	12_268
17:30	Efficient and stable electrocatalytic chlorine evolution reaction with atomically dispersed dinuclear iridium active sites <b>Zhipeng YU</b>	13_285
17:30	Photoelectrochemical Sensor for Nitrite Determination based on the Etching of ZnCdS/BiOCl <b>Zaofen WANG</b>	14_424
17:30	Demonstration of Highly Efficient Molybdenum-based Electrocatalysts for Electrocatalytic Hydrogen Production via Ru-mediation <b>Ki Chang KWON</b>	15_425
17:30	Visible Light Photodegradation of Azo Dyes Using Free Standing and spin coated Cu-Based Nanoparticles: Application in Solar Batteries <b>Edison Patricio PAREDES CARRANZA</b>	16_579
17:30	Sintering of Fe <sub>2</sub> O <sub>3</sub> thin films from natural micaceous hematite powders as photoanodes for photoelectrochemical water reduction <b>Rachmat Adhi WIBOWO</b>	17_683
17:30	2D SnS <sub>2</sub> /g-C <sub>3</sub> N <sub>4</sub> as type _ heterojunction photoanode for efficient oxygen evolution reaction <b>Sarita .</b>	18_713
17:30	H <sub>2</sub> generation in CuO/Cu <sub>2</sub> O thin films via plasmonic catalysis <b>Ashish Kumar RANJAN</b>	19_870

**Wednesday, 18 September 2024**

 9:00 **PLENARY SESSION**

12:30 Lunch

**NANOMATERIALS**
**D09**

- |       |  |      |
|-------|--|------|
| 14:00 | Solar Hydrogen Production with Antimony Selenide Thin Film Photoelectrodes<br><b>David TILLEY</b>  | 602  |
| 14:30 | Tuning shell lattice strain in trimetallic core-shell nanoparticles for the oxygen reduction reaction<br><b>Just Pé JONASSE</b>                                      | 538  |
| 14:45 | Using Atomic Layer Deposition to Develop Nano Scaled Cobalt Thin Films as Electrocatalytic Layer for Anion Exchange Membrane Fuel Cells<br><b>Alireza SHARIFIRAD</b> | 804  |
| 15:00 | Nanoscale engineering of transition metal-based bifunctional electrocatalysts<br><b>Vishal JOSE</b>  | 1247 |
| 15:15 | AuPt Nanostructures with High Hydrogen Evolution Reaction Activity through a Halide-Mediated Microwave Assisted Route<br><b>Pablo GUARDIA</b>                        | 843  |
| 15:30 | Coffee break   |      |

**ADVANCED CHARACTERIZATION**
**D10**

- |       |  |      |
|-------|--|------|
| 16:00 | Properties of Platinum, Palladium Gold and Copper Clusters on 2DMoS2<br><b>Tamas OLLAR</b>   | 1549 |
| 16:20 | Double perovskite oxides with reduced cobalt content as catalysts for alkaline water electrolysis<br><b>Athanasios CHATZITAKIS</b>   | 1612 |
| 16:40 | Synthesis and Advanced Characterization of Hybrid Systems Based on Conjugated Porous Polymers for Photoelectrochemical Solar Energy Conversion<br><b>Mariam BARAWI MORAN</b> | 1416 |

16:55	Unlocking the hidden gems of carbon nitride in photocatalytic energy conversion <b>Sonia ZOLTOWSKA</b>	706
17:10	Exploring the Activity-Stability Landscape of Ni <sub>1-x</sub> Fex-LDH ( $x = 0-0.33$ ) for the Oxygen Evolution Reaction at Industrially Relevant Alkaline Electrolysis Conditions <b>Sarmad IQBAL</b>	1020
18:00	<b>YOUNG RESEARCHER AWARDS CEREMONY</b>	
18:30	<b>SOCIAL EVENT</b>	

**Thursday, 19 September 2024**

		<b>NOVEL MATERIALS</b>	<b>D11</b>
9:00	Living materials for photoconversion from functional molecules and photosynthetic microorganisms <b>Gianluca FARINOLA</b>		1611
9:30	Material challenges in integrated CO <sub>2</sub> capture and electrochemical reduction using amine-based electrolytes <b>Nina PLANKENSTEINER</b>		1593
9:50	Material Screening for Electrochemical Systems with Graded Catalyst Layers by Roll-to-Roll Slot Die Coating <b>George PÄTZOLD</b>		101
10:05	Tailoring 2D Nanostructures: A Strategy for Enhanced Electrocatalytic Hydrogen Production <b>Nisha T PADMANABHAN</b>		616
10:20	3D Electrode Surface Engineering by Atomic Layer Deposition of Nickel Oxide for Improved Water Oxidation Performance <b>Sina HAGHVERDI KHAMENE</b>		437
10:30	Coffee break		

		<b>PHOTOCATALYSIS</b>	<b>D12</b>
11:00	Metal-free Photocatalytic Materials for Sustainable Solar Energy Conversion <b>Demetra ACHILLEOS</b>		1228

11:20	Molecular engineering of the abiotic/biotic interface for efficient solar-converting biophotovoltaics <b>Margot JACQUET</b>	1025
11:35	Employing CSD routes towards tailored oxide photocathodes by meticulous synthetic control <b>Bjorn JOOS</b>	1140
11:50	Functionalization of Organic Molecules by Carbon Nitride Photocatalysts via Multiple Modes of Action <b>Oleksandr SAVATIEIEV</b>	483
12:05	Direct Photocatalytic Synthesis of Organic Acids from Methane over Titania-Heteropolyacid Nanocomposites <b>Andrei KHODAKOV</b>	1395
12:30	Lunch	

**BIOHYBRID AND AMMONIA D13**

14:00	Semiartificial photosynthesis and biohybrids: an outlook <b>Massimo TROTTA</b>	1602
14:20	Hacking microbial metabolisms for living electronics <b>Ardemis A. BOGHOSSIAN</b>	1613
14:40	Electrocatalytic NH <sub>3</sub> Production using a Vacancy-Rich SnO <sub>2</sub> Quantum Dot Stabilized by Polyoxomolybdate in Water <b>Laxmikanta MALLICK</b>	752
15:10	Hydroxide Ion Conduction through Viologen-based Covalent Organic Frameworks (vCOFs): an Approach towards the Advancement <b>Pampa JHARIAT</b>	1449
15:30	Coffee break	

**ELECTROCATALYSIS D14**

16:00	Cost-Effective Production of 1T-MoS <sub>2</sub> for Enhanced Hydrogen Evolution Reaction Performance via Mechanochemical Process <b>Zahra SHAYEGAN</b>	422
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16:15	Engineering Sub-Nanometer Hafnia-Based Ferroelectrics to Break the Scaling Relation for High-Efficiency Piezocatalytic Water Splitting <b>Ying PAN</b>	6
16:30	Transition metal hydroxide co-catalyst loading on hematite photoanodes <b>Amin YOURDKHANI</b>	1162
16:45	Role of oxophilicity in the performance of transition metal sulfide electrocatalysts for the hydrogen evolution reaction <b>Freddy E. OROPEZA</b>	1065
17:00	Engineering the Electronic Effect in Catalytic Materials towards Electrocatalysis <b>Chun-Hong KUO</b>	165
17:15	Conductive Cu:Ni Based Metal-Organic Frameworks (MOFs) for Electrocatalytic Applications <b>Manjeet GODARA</b>	1266



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# 2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

Symposium Sponsor



## Symposium E

Sessions: Room 226 | Main Building

Poster Session: 237 (Small Hall) | Main Building

ENERGY MATERIALS

## ADVANCED CERAMICS FOR ENERGY AND ENVIRONMENTAL APPLICATIONS

Symposium organizers:

Alberto **VOMIERO**

- Luleå University of Technology

Elisa **MORETTI**  
(Main Organizer)

- Ca' Foscari University of Venice

Juan Carlos  
**COLMENARES QUINTERO**

- Institute of Physical Chemistry  
Polish Academy of Sciences

**Monday, 16 September 2024**

		<b>SESSION I</b>	<b>E01</b>
9:00	Challenges for efficient hydrogen production in a sustainable economy driven by renewable energies. <b>Joan Ramón MORANTE</b>		157
9:25	Cu and Fe surface species onto ceramic supports: a platform for developing unconventional catalysts and electrocatalysts for sustainable energy applications <b>Massimiliano D'ARIENZO</b>		1138
9:50	Novel chalcogenide and phosphide electrocatalyst for Water Splitting <b>Daniel CHUA</b>		802
10:15	A photo-electrochemical cell with Cu <sub>2</sub> O-modified electrodes and aqueous KMnO <sub>4</sub> electrolyte for charge production <b>Sadaf Alibhai JETHVA</b>		214
10:30	Coffee break		

		<b>SESSION II</b>	<b>E02</b>
11:00	Green Solvent Perovskites- One Step Closer To Commercialization Of Lead Halide Perovskite Solar Cells <b>Sanjay MATHUR</b>		323
11:25	Optically functionalized nanoporous materials for environmental remediation and sensing <b>Francesco ENRICH</b>		998
11:50	Low-Cost Material Engineering Approaches for Fabricating All-Ambient Perovskite Solar Cells with Good Efficiency and Long-Term Stability <b>Rongrong CHEACHAROEN</b>		1513
12:05	Development of non-wetting MXene by defect engineering to be used as ETL of perovskite solar cell <b>Sriparna CHATTERJEE</b>		384
12:30	Lunch		



**SESSION III**
**E03**

14:00	Ceramic to metal joining for high temperature oxygen separation applications <b>Stefano DE LA PIERRE</b>	160
14:25	ZnO decorated with Au-Cu nanoclusters: a model system for investigating the CO <sub>2</sub> conversion to methanol <b>Pietro MARIANI</b>	1092
14:40	Insights into CO <sub>2</sub> hydrogenation to Methane over zirconia-based 3D structured foams activated by Ni/Ce-Mg catalyst <b>Neha CHOUDHARY</b>	940
14:55	Enhancement in Performance of Nanogenerator via Synergetic Triboelectric/Piezoelectric effects in MWCNT Embedded Composite Membrane <b>Shailendra KUMAR</b>	212
15:10	Catalytic oxidation for methane removal <b>Yuyin WANG</b>	5
15:30	Coffee break	

**SESSION IV**
**E04**

16:00	Antiviral/antimicrobial composite coatings deposited on air filters via co-sputtering technique <b>Cristina BALAGNA</b>	368
16:25	Luminescent K <sub>2</sub> EuPWO <sub>4</sub> -(KM <sub>2</sub> O, mB <sub>2</sub> O <sub>3</sub> , nP <sub>2</sub> O <sub>5</sub> ) glasses and glass-ceramics <b>Serhii G. NEDILKO</b>	1429
16:40	Synthesis of Al <sub>2</sub> O <sub>3</sub> 2D-particles with abundant Al <sub>2</sub> O <sub>3</sub> <b>Haruto KAMIYA</b>	1227
16:55	Zr/Ti-doped SrFeO <sub>3</sub> -based Electrode for High-Performance Symmetrical Solid Oxide Fuel Cells <b>Sunil KUMAR</b>	742
17:10	Synthesis of Chitosan-Lignin Catalysts for Sonophotocatalytic Reactions: The Role of Sonication and Isotropic Solvents <b>Behdokht HASHEMI HOSSEINI</b>	142

		<b>POSTER SESSION I</b>	<b>EP01</b>
17:30	NaNbO <sub>3</sub> nanoparticles with high photocatalytic activity <b>Eduardo MOREIRA</b>		01_105
17:30	CaMoO <sub>4</sub> mesocrystals: a new sonocatalyst for environmental remediation <b>Eduardo MOREIRA</b>		02_106
17:30	Synthesis of Pt/facet-controlled hydroxyapatite composite particles towards catalytic hydrolysis of ammonia borane <b>Haruto KAMIYA</b>		03_1232
17:30	Efficient Utilization of Solar Energy: Synthesis and Photoelectrochemical Properties of Transparent Titanium Oxides <b>Jarosław JUDEK</b>		04_1500
17:30	Comparing ceramic and ceria supported CaO catalysts for sustainable biodiesel production from waste fried cooking oil <b>Falguni SHUKLA</b>		05_431
17:30	Catalytic CO <sub>2</sub> Methanation over Ru-Supported Nano-porous Geopolymer Derived from Natural Kaolin <b>Mukesh KUMAR</b>		06_772
17:30	Cu oxides as catalysts for the electrochemical reduction of CO <sub>2</sub> <b>Falak SHAFIQ</b>		07_780
17:30	Nanostructured ZnO synthesized by polyol technique: structure, morphology, grain growth kinetics <b>Oleksandr DOBROZHAN</b>		09_91
17:30	Metal microfilter generation with solution purification effect via electrochemical method <b>Ryoma OKADA</b>		10_952
17:30	Revisiting the electrochemical properties of Zr <sub>0.9</sub> Sc <sub>0.6</sub> Y <sub>0.4</sub> O <sub>1.95</sub> single crystal <b>António A.I. LABRINCHA</b>		11_973
17:30	Defect chemistry of cerium oxide doped with gadolinium: non-equilibrium situations <b>Eduarda GOMES</b>		12_976
17:30	Fabrication and Study of the Transport Properties of YBa <sub>2</sub> Cu <sub>3</sub> O <sub>7-x</sub> Step-Edge Josephson Junction on SrTiO <sub>3</sub> (100) Substrates <b>Rajni KANDARI</b>		13_999
15:15	Nano Engineered Solid State Ionic Metal Oxides for Near-Room Temperature Oxygen Conductivity <b>Baby DHANALAKSHMI R</b>		57

Tuesday, 17 September 2024

**SESSION V E05**

9:00	Rational design of colloidal quantum dots for optoelectronic applications <b>Zhiming WANG</b>	902
9:25	Taming metal(loid) complexes and their excited states for thin-film optoelectronics <b>Matteo MAURO</b>	660
9:50	From cadmium-based to antimony-based thin film ceramic materials for solar energy production. <b>Alessandro ROMEO</b>	581
10:30	Coffee break	

**SESSION VI E06**

11:00	p-Cu <sub>2</sub> O/n-ZnO junctions for photoconversion: area-selective deposition and integration of metal nanoparticles <b>David HORWAT</b>	414
11:25	Innovative Thin Film Photocatalysts for the Removal of Emerging Contaminants <b>Amir MIRZAEI</b>	222
11:50	Integrated photocatalytic-sorbent materials for environmental application <b>Barbara DI CREDICO</b>	163
12:15	Microwave plasma hydrogenated black TiO <sub>2</sub> nanotubes for applications in photocatalytic degradation of pollutants <b>Francisco Javier FERNÁNDEZ-ALONSO</b>	1518
12:30	Lunch	

**SESSION VII E07**

14:15	Defect and Morphology Engineering in Colored TiO <sub>2</sub> Hollow Spheres Toward Efficient Photocatalysis <b>Letizia LICCARDO</b>	1582
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14:30	Multi-functional HxMoO <sub>3-y</sub> -MoO <sub>2</sub> /carbon catalyst for near-infrared-driven water remediation <b>Kunihiko KATO</b>	901
14:45	4H-SiC porous flakes for innovative photocatalytic applications in the energy and environmental fields <b>Vanessa SPANO</b>	603
15:00	Innovative Electro Chemical Etching Fabrication of 4H-SiC Nanoparticles: Photocatalysts for Water Remediation with Enhanced Stability and Efficiency <b>Matteo BARCELLONA</b>	601
15:15	Enhancing the Selectivity of Graphitic Carbon Nitride in the Photocatalytic Oxidation of Aromatic Alcohol with Single Copper Atoms: An Atomistic Understanding <b>Hanggara SUDRAJAT</b>	401
15:30	Coffee break	

SESSION VIII

E08

16:00	Solvothermal synthesis of MoO <sub>2</sub> nanocrystals and their water remediation properties <b>Mauro EPIFANI</b>	830
16:50	Enhanced Groundwater Remediation of Chlorinated Hydrocarbons through Advanced Nanomaterials: From Nanosized Zero-Valent Iron to MXenes <b>Miroslav KOLOS</b>	1279
17:05	Detection of heavy metal contamination in water by selective fluorometric BODIPY-Fe(III) sensor and synchrotron radiation-induced total reflection X-ray fluorescence spectroscopy <b>Suttipong WANNAPAIBOON</b>	1171
17:20	2D MOF coated Carbon Nanofiber Composite Membrane for Efficient Removal of Microplastics <b>Karishma JAIN</b>	11

Wednesday, 18 September 2024

9:00 PLENARY SESSION

12:30 Lunch

SESSION IX

E09

14:00	Advanced materials for energy conversion devices <b>Graziella MALANDRINO</b>	1225
14:25	Novel Materials Chemistry for Applications in Energy Storage and Conversion <b>Nicola PINNA</b>	126
14:50	Nanostructured materials for sustainable and circular energy <b>Marta Maria NATILE</b>	493
15:30	Coffee break	

SESSION X

E10

15:50	Nanoceramics and energy: past, present and future <b>Victor CASTANO</b>	568
16:15	Exploring the chemical parameters space: rational and sustainable low-temperature design of inorganic materials for environmental and catalytic applications <b>Silvia GROSS</b>	1591
16:40	EcoNano: Revolutionizing Energy and Environmental Solutions with Sustainable Nanomaterials <b>Rafik NACCACHE</b>	897
17:05	Nanoscale thermal management of advanced ceramics: near-field thermal conductivity and nanodilatometry <b>Giovanni FANCHINI</b>	513
17:30	Facile Post-Assembly Fabrication of Non-Close-Packed Nanocrystal Superlattices <b>Marek PIOTROWSKI</b>	362
18:00	<b>YOUNG RESEARCHER AWARDS CEREMONY</b>	
18:30	<b>SOCIAL EVENT</b>	

**Thursday, 19 September 2024**

		<b>SESSION XI</b>	<b>E11</b>
8:35	Easily Transferable Polydopamine Films: Functional Hybrid Heterojunctions on Demand <b>Emerson COY</b>		1592
9:00	Investigating Non-Cyclability and Time-Dependent Current Degradation in Hydroelectric Cells <b>MANJEET</b>		927
9:15	Resolving Transformative Reactions in Zeolites Under Hydrothermal Conditions <b>Neethu THOMAS</b>		653
9:30	Selective and Continuous Ion Recovery Using Flow Electrode Capacitive Deionization with a Polymer Multilayer Deposited Ion Exchange Membrane <b>Minh Khoi TRAN</b>		366
9:45	Utilizing Highly Efficient Redox-Active Materials for Enhancing Desalination Performance of Flow Electrode Capacitive Deionization <b>TRAN NGUYEN ANH THU</b>		365
10:00	Study of Transport characteristics of YBCO step edge Josephson Junction by varying step angle <b>Sandeep KUMAR</b>		131
10:30	Coffee break		



# 2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

## Symposium Sponsors



# Organic Materials

## Symposium F

Sessions: Room 213 | Main Building

Poster Sessions: 237 (Small Hall) | Main Building

ENERGY MATERIALS

## PHOTOCHARGING MATERIALS, LIGHT DRIVEN IONICS AND THEIR APPLICATIONS IN ENERGY CONVERSION & STORAGE

Symposium organizers:

Alina SCHIMPF

Filip PODJASKI  
(Main Organizer)

Katherine VILLA

Oleksandr SAVATEEV

- UC San Diego
- Department of Chemistry, Imperial College London
- Institute of Chemical Research of Catalonia (ICIQ)
- The Chinese University of Hong Kong

Monday, 16 September 2024

		OPTOIONICS I	F01
9:00	Optoionics - More Than a Fashionable Slogan <b>Joachim MAIER</b>		1482
9:30	Optoionics – A New Opportunity for Ionic Conduction-Based Radiation Detection <b>Thomas DEFFERRIERE</b>		859
10:00	Modulating Light-Induced Ionic Conductivity in Protein-Based Nanocomposites via Structural Alterations <b>Anna ZIELENIEWSKA</b>		1503
10:15	Spiropyran in light-driven energy devices, and renewable energy technologies <b>Zakir ULLAH</b>		966
10:30	Coffee break		

		OPTOIONICS II	F02
11:00	Effect of mobile ions on perovskite solar cells <b>Wolfgang TRESS</b>		650
11:30	Controlling Exciton Polarization in Plasmonic Semiconductor Nanocrystals <b>Pavle RADOVANOVIC</b>		647
12:00	Separation of Second Harmonic Generation and Multiphoton Excited Photo-Luminescence contribution in nanopowders <b>Chawki AWADA</b>		1286
12:30	Lunch		

		PHOTOCHARGING I (OXIDES)	F03
14:00	Efficient charge separation in nano crystalline anatase TiO <sub>2</sub> for self-rechargeable battery electrode <b>Frédéric SAUVAGE</b>		1523



14:30	Light-accelerated fast charging batteries <b>Buddha DEKA BORUAH</b>	846
15:00	Free-standing WO <sub>3</sub> electrode for efficient photo-rechargeable Li-ion batteries <b>Muhammad SAJJAD</b>	1538
15:15	Polyaniline and water pre-intercalated V <sub>2</sub> O <sub>5</sub> cathodes for high-performance planar zinc-ion micro-batteries <b>Yijia ZHU</b>	296
15:30	Coffee break	

**PHOTOCHARGING 2 (CATALYSIS & ORGANIC)**

**F04**

16:00	Photo(electro)catalysis with polymeric carbon nitrides: examples and challenges <b>Radim BERANEK</b>	502
16:30	Photoaccumulation of Long-lived Reactive Electrons in a Metal-organic Framework for Dark Photocatalysis <b>Shilin YAO</b>	358
16:45	Nitride-based Photoelectrodes for Designing Solar-Rechargeable Redox Flow Battery <b>Debora RUIZ-MARTINEZ</b>	360
17:00	Metal-Organic Framework-Based Colloidal Systems for Decoupled Visible-Light Charging and Dark Catalysis. <b>Shufan WU</b>	614

**POSTER SESSION I**

**FP01**

17:30	Photogenerated Carrier Dynamics at the Perovskite Interface with HTL and ITO <b>Ernestas KASPARAVICIUS</b>	01_1050
17:30	Investigation of energy alignment for fabrication of phthalocyanine - based solar cells <b>Aleksandra TOMASZOWSKA</b>	02_1094
17:30	Insights into the terahertz dielectric properties of traditional and photocharging Carbon Nitrides <b>Reehab JAHANGIR</b>	03_1147

17:30	Environmentally Friendly Photocatalytic Oxidation for Lignin-Based model compound through MBi2O4-TiO2 heterojunction. Influence of different metal species (M= Cu, Ni, Co) under visible-light	04_123
	<b>Ahmed Malek DJABALLAH</b>	
17:30	Improving photovoltaic performance of Si/CuO heterojunction by incorporating Ta2O5 passivation layer and MXene as Transparent Electrode	05_148
	<b>Shumile AHMED SIDDIQUI</b>	
17:30	Investigation of the Tribo-Photovoltaic Effect in a Metal/n-type GaAs Triboelectric Nanogenerator for Energy harvesting Applications	06_213
	<b>Shailendra KUMAR</b>	
17:30	Investigation of the Effects of Post-Growth Annealing on n-ZnO/p-NiO Heterostructures Fabricated via the Spray Pyrolysis Method	07_230
	<b>Maksym YERMAKOV</b>	
17:30	Porous Carbon Coated on Cadmium Sulfide-Decorated Zinc Oxide Nanorod Photocathodes for Photo-accelerated Zinc Ion Capacitors	08_321
	<b>Xiaopeng LIU</b>	
17:30	Growth and thermal annealing effect of Zn2SnO4 nanoparticles and films prepared by nanoink printing	09_84
	<b>Oleksii KLYMOV</b>	
17:30	Organic photo-supercapacitor based on a photoacid generator as electrolyte	10_864
	<b>Shubhra Kanti BHAUMIK</b>	

**Tuesday, 17 September 2024**

		PHOTOBATTERIES I	F05
9:00	Integrated light energy harvesting and storage; what is limiting photo-charge current?		629
	<b>Byung-Man KIM</b>		
9:30	Capacitive charging of doped metal oxide nanocrystal electrodes for photon energy storage		543
	<b>Andrea RUBINO</b>		
10:00	Light fostered capacitive enhancement in efficient bismuth ferrite perovskite oxide electrode material for solar supercapacitor		1406
	<b>Samtham MANOPRIYA</b>		
10:15	Innovative Strategies for Enhancing Energy Storage in Electric Vehicles through Solar-charged Integration: CIGS solar cells and Si/ LiFePO4 lithium batteries		438
	<b>Tseng HSUAN KAI</b>		

10:30 Coffee break

**PHOTOBATTERIES II F06**

- 11:00 Printed photorechargeable batteries for wearable electronics 1220  
**Cecilia MATTEVI**
- 11:30 Revolutionizing Indoor Energy Harvesting: From Advanced Materials to AI Integration 1158  
**Marina FREITAG**
- 12:00 Ruddlesden-Popper perovskite-MoS<sub>2</sub> hybrid heterojunctions photocathode for Stable and Efficient Photo-Rechargeable Batteries 82  
**Rashid M. ANSARI**
- 12:30 Lunch

**PHOTOCHARGING III (CATALYSIS & OTHER) F07**

- 14:00 Photocharging of Carbon Nitride Thin Films for Controllable Manipulation of Droplet Force Gradient Sensors 789  
**Lukas ZEININGER**
- 14:30 The Dependency of Photocharging TiO<sub>2</sub> Aerogels on Surface Area and Charging Conditions 293  
**Anja HOFMANN**
- 15:00 Synergistic Photocatalysis by  $\gamma$ -MoO<sub>3</sub> Nanostructures and SWCNT Nanocomposites for Efficient Crosslinking and Oxidative Degradation of Polystyrene Nanoplastics 556  
**Shivam SINGH**
- 15:15 Temperature-dependent ultrasonic-induced luminescence properties of LiTaO<sub>3</sub>:Pr at kHz and MHz range 1029  
**Syed Shabhi HAIDER**
- 15:30 Coffee break

**PHOTOCHARGING IV F08**

- 16:00 Persistent photocurrent studies to unveil charge storage and transport mechanisms in ITO nanocrystals. 1168  
**Anjana PANANGATTIL MURALEEDHARAN**

16:15 Photoexcitation-induced point defects in BaTiO<sub>3</sub> and TiO<sub>2</sub> nano- and microstructures  
**Guillem VIVES OLLÉ**

1215

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch



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2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

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## Symposium G

Sessions: Room 208 | Main Building

Poster Sessions: 237 (Small Hall) | Main Building

ENERGY MATERIALS

# EXPLORING EMERGING PHOTO AND ELECTROCHEMICAL SYSTEMS FOR CO<sub>2</sub> CONVERSION TO FUELS AND CHEMICALS

Symposium organizers:

Chrystelle SALAMEH

- University of Montpellier

Esther SANTOS  
(Main Organizer)

- University of Cantabria and APRIA Systems SL

Giancarlo CICERO

- Politecnico di Torino

**Monday, 16 September 2024**
**SESSION I      G01**

9:00	Electrochemical CO <sub>2</sub> capture and valorization for the production of e-fuels and e-chemicals <b>Peter STRASSER</b>	501
9:30	Novel catalysts design for gas phase electrocatalytic CO <sub>2</sub> reduction <b>Athanasios CHATZITAKIS</b>	621
9:45	Operando/In-situ Soft X-Ray Spectro-electrochemistry at the Diamond Light Source's B07 Beamline <b>Santosh KUMAR</b>	26
10:00	Mechanism of CO <sub>2</sub> electrochemical reduction to form hydrocarbons and alcohols, C <sub>1</sub> and C <sub>2</sub> products <b>Hannes JÓNSSON</b>	1103
10:30	Coffee break	

**SESSION II      G02**

11:00	Operando Investigations of the Cu Solid-Liquid Interface under Stationary and Pulsed CO <sub>2</sub> RR Conditions <b>Arno BERGMANN</b>	1205
11:30	Advanced X-ray spectroscopy in situ/operando characterization of catalysts <b>Pieter GLATZEL</b>	1453
11:45	Operando characterization techniques as advanced tools to investigate catalysts for CO <sub>2</sub> RR <b>Angelica CHIODONI</b>	1087
12:00	En operando Optical emission spectroscopy of discharge mechanism in varying hydroxide concentration <b>Wing Kiu YEUNG</b>	187
12:15	In-situ Phase Control of Indium-Oxide Clusters Under Potential-Driven Conditions for Regulating the C <sub>1</sub> Product Selectivity in Electrochemical CO <sub>2</sub> Reduction: An in-situ X-ray Absorption Study <b>Amisha BENIWAL</b>	406
12:30	Lunch	

**SESSION III**
**G03**

14:00	Upscaling CO <sub>2</sub> electroreduction - Tackling the stability challenge <b>Jan VAES</b>	1316
14:30	Inhibiting salt precipitation on the Gas Diffusion Electrode surface using an acidic medium in the electroreduction of CO <sub>2</sub> to formate in the gas phase. <b>Guillermo DÍAZ-SAINZ</b>	48
14:45	Reducing the Energy Consumption via the Co-electrolysis of CO <sub>2</sub> and Ethylene Glycol Using Ni-Fe Layered Double Hydroxide Anodes <b>Jiefeng LIU</b>	266
15:00	Unveiling the Dynamic Evolution of Catalysts' Surfaces During Carbon Dioxide Electroreduction <b>Juqin ZENG</b>	173
15:15	Tailoring the gas diffusion layer and catalyst structure for ethylene electrosynthesis in CO <sub>2</sub> alkaline flow cells <b>Marco ETZI</b>	233
15:30	Coffee break	

**SESSION IV**
**G04**

16:00	Advancing water and CO <sub>2</sub> electrolysis by environment manipulation <b>F. Pelayo GARCIA DE ARQUER</b>	1071
16:30	Development of new generation of HT-PEM fuel cells utilizing the Ion-Pair™ Technology <b>Christos CHOCHOS</b>	1442
16:45	Rethinking chalcopyrite solar cells architecture for solar fuel production <b>Leo CHOUBRAC</b>	1067
17:00	Scientific Publishing in Energy and Sustainability at Wiley <b>Mara STAFFILANI</b>	1618

**POSTER SESSION I GP01**

17:30	Diels-Alder Polyphenylene Membranes Tethered with Different Cation Groups for CO <sub>2</sub> Electrolysis <b>Carmelo PARATA</b>	01_108
17:30	Operando x-ray analysis of bimetallic electrocatalyst <b>Alessia BARDAZZI</b>	02_1204
17:30	Multi-shell Copper Catalysts for Selective Electroreduction of CO <sub>2</sub> to Multicarbon Chemicals <b>Yukun XIAO</b>	03_279
17:30	Microwave-assisted synthesis of CuSn bimetallic catalyst for highly efficient formate generation from CO <sub>2</sub> electroreduction <b>Lan HUANG</b>	04_419
17:30	Development of Ni-Co foam-based anodes for enhanced electrochemical CO <sub>2</sub> reduction coupled with glycerol oxidation <b>Guillermo DÍAZ-SAINZ</b>	05_56
17:30	Functionalization of Zeolite 13X with Pyrazine Derivatives: Synthesis, Characterization, and CO <sub>2</sub> Uptake Application <b>Brahim AISSA</b>	06_7
17:30	Atomic Layer Deposition of Copper-Zinc Catalysts on Gas Diffusion Layers for the Electrochemical Reduction of CO <sub>2</sub> <b>Lovelle Rhoy MANPATILAN</b>	07_707
17:30	Multiple Adsorption of CO Molecules on Single Atom Substituents in Copper Surfaces <b>Magnus CHRISTIANSEN</b>	08_762

**Tuesday, 17 September 2024**
**SESSION V G05**

9:00	Supported bismuth nanoparticles as highly selective and upscalable electrocatalyst for the conversion of CO <sub>2</sub> into formate <b>Paolo PESCARMONA</b>	1260
9:30	Advances in the application of Bi, Sn, and Sb based electrocatalysts for CO <sub>2</sub> electroreduction to formate: from fundamental studies to practical devices <b>José SOLLA-GULLÓN</b>	1248



9:45	Electrochemical CO <sub>2</sub> Reduction on Bi-Sn Eutectic Mixture Electrodes: Transitioning from Formate to Formic Acid Production <b>Avni GURUJI</b>	1007
10:00	The evolution of Bi-based electrocatalysts during CO <sub>2</sub> RR: Post-mortem and Operando investigations <b>Wenbo JU</b>	519
10:30	Coffee break	

SESSION VI

G06

11:00	CO <sub>2</sub> and CO electroreduction: structural sensitivity and electrolyte effects <b>Federico CALLE-VALLEJO</b>	797
11:30	Reactive Carbon Capture: Optimizing Bicarbonate Electrolyzers for an Energy-Efficient Carbon Value Chain <b>Alessio MEZZA</b>	1024
11:45	Correcting gas-phase errors in models of the electroreduction of carbon oxides <b>Ricardo URREGO-ORTIZ</b>	963
12:00	Automated Workflow for Surface Coverage Analysis under Electrochemical Conditions <b>Alejandro ARCHE</b>	393
12:15	Efficient mapping of CO adsorption on Cu <sub>1-x</sub> M <sub>x</sub> bimetallic alloys via machine learning <b>Mattia SALOMONE</b>	455
12:30	Lunch	

SESSION VII

G07

14:00	Advancing Semiconductor-Based Photoelectrodes for Solar-Driven Fuel and Chemical Production in Photoelectrochemical Cells <b>Francesca Maria TOMA</b>	1509
14:30	Growth-controlled gold nanoparticles on photoactive covalent organic frameworks: A hybrid material for CO <sub>2</sub> photoreduction <b>Roberto GONZALEZ GOMEZ</b>	182

14:45	Disentangling the Role of Ag-Based Nanocorals as Efficient Cocatalyst over CuBi <sub>2</sub> O <sub>4</sub> Photocathodes Toward Hydrogen Evolution Reaction <b>Miguel GARCÍA-TECEDOR</b>	475
15:00	Tailoring ligand-functionalized ZnSe quantum dots for enhanced light-driven CO <sub>2</sub> reduction <b>Max GARCIA MELCHOR</b>	1619
15:15	Coalescing solar-to-chemical and carbon circular economy: mediated by metal-free porous organic polymer under natural sunlight <b>Kamalakkanan KAILASAM</b>	98
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SESSION VIII

G08

16:00	Interface engineering for CO <sub>2</sub> electroconversion in a MEA cell <b>Damien VOIRY</b>	1386
16:30	Probabilistic techno-economic assessment of a medium-scale photo-electrochemical CO <sub>2</sub> conversion plant <b>Hannah JOHNSON</b>	623
16:45	Ethanol formation via CO <sub>2</sub> electroreduction at low overvoltage over exposed (111) plane of CuO thin film <b>Shikha DHAKAR</b>	917
17:00	High-Efficiency CO <sub>2</sub> Electroreduction to Ethylene in Continuous Flow Systems with Cu <sub>2</sub> O-CeO <sub>2</sub> based catalyst <b>Andreina ALARCÓN AVELLÁN</b>	983
17:15	Electrocatalytic reduction of CO <sub>2</sub> using CTAB modified Copper Molybdate nanomaterial <b>Guruprasad BHATTACHARYA</b>	235

POSTER SESSION II

GP02

17:30	Predicting the selectivity and activity of dilute bimetallic Cu/M(100) catalyst surfaces for CO dimerization via constant potential modelling <b>Wei WANG</b>	01_539
17:30	Technoeconomic assessment of a Three-compartment Electrolyzer for CO <sub>2</sub> Electroreduction to Formic Acid <b>Camilo PERALTA</b>	02_624

17:30	Enhancing CO2 reduction reaction towards multi-carbon products with a bimetallic Cu-W tandem electrocatalyst. <b>Fatemeh SHAHBAZI FARAHANI</b>	03_666
17:30	BiVO4-based photoanodes fabricated by electrodeposition for solar-driven CO2 photoelectroreduction to formate in gas-phase <b>Guillermo DÍAZ-SAINZ</b>	04_817
17:30	Towards the complexity of CO2 electroreduction via Machine Learning potential-based molecular dynamics <b>Michele Giovanni BIANCHI</b>	05_826
17:30	Computational design of ZnSe-quantum dots functionalized for CO2 reduction <b>Anna CIOTTI</b>	06_840
17:30	Development of Bismuth-Matrimid based Electrocatalyst for Efficient CO2 Reduction <b>Sonal RAJPUT</b>	07_943

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch

**SESSION IX**

**G09**

14:00	Increasing the Scale of Electrolyzers for Carbon Dioxide Conversion: Solving Problems and Optimizing Parameters <b>Adriano SACCO</b>	291
14:30	Surface Engineering of Bimetallic Cu-based Catalysts for the Electrochemical CO <sub>2</sub> Reduction into Selective C <sub>2</sub> Products <b>Chrysanthi GKILI</b>	329
14:45	Enhancing Cell Performance and Inhibiting Salt Precipitation through High-Pressure CO2 Electroreduction in Zero-Gap Electrolyzer <b>Xiongwei TIAN</b>	280
15:00	Effect of reaction temperature, CO2:H2 molar ratio and Gas-hourly space velocity on CO2 conversion for the supported Ni, Ni-Fe, Rh and Ru catalysts in Sabatier Reaction <b>Rahul KUMAR</b>	217

- 15:15 Two-dimensional n-type pyrite with tuned hydrogen interstitials as a highly selective CO<sub>2</sub> reduction catalyst 54  
**Samar FAWZY**
- 15:30 Coffee break

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- 16:00 Pure-water-fed electrocatalytic CO<sub>2</sub> reduction to valuable chemicals 1398  
**Shu Ping LAU**
- 16:45 Synthesis of electro-fertilizers by CO<sub>2</sub> and nitrate reduction coupling: a (U)REALity Check 387  
**Michele FERRI**
- 17:00 Development of an Aqueous Zn-CO<sub>2</sub> Flow System for Efficient CO<sub>2</sub> Utilization and H<sub>2</sub> Production 518  
**Pyo SEWON**
- 17:15 **WILEY POSTER AWARDS CEREMONY**
- 18:00 **YOUNG RESEARCHER AWARDS CEREMONY**
- 18:30 **SOCIAL EVENT**



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2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

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## Symposium H

Sessions: Room 309 | Main Building

Poster Session: 237 (Small Hall) | Main Building

ELECTRONICS, PHOTONICS AND SPINTRONICS

# INTEGRATION OF ADVANCED MATERIALS ON SILICON: FROM CLASSICAL TO NEUROMORPHIC AND QUANTUM APPLICATIONS

Symposium organizers:

Andrea DE IACOVO

Jacopo FRIGERIO

Karoline STOLZE

Katarzyna HNIDA-GUT  
(Main Organizer)

- Roma Tre University
- Physics Department of Politecnico di Milano
- Leibniz-Institut für Kristallzüchtung
- IHP GmbH Innovations for High Performance Microelectronics Leibniz-Institut für innovative Mikroelektronik

**Monday, 16 September 2024**
**QUANTUM DOTS H01**

9:00	Infrared Colloidal Quantum Dot Optoelectronics: Optical Sources and Detectors compatible with silicon integration <b>Gerasimos KONSTANTATOS</b>	1460
9:30	Quantum Dots: Towards Inexpensive Devices for On-site Explosive Detection <b>Federica MITRI</b>	354
9:45	Influence of composition and capping layers on the photoluminescence of SiGe and Ge quantum dots on Si Nanotips <b>Diana RYZHAK</b>	778
10:00	Fabrication of Quadruple Quantum Dot Architectures on Strained GeSn Quantum Wells with TiN Gates <b>Sinan BUGU</b>	1472
10:15	Germanium on Silicon dual-detector for solvent recognition <b>Afonso DE CERDEIRA OLIVEIRA</b>	1131
10:30	Coffee break	

**COMPOUND SEMICONDUCTORS ON SI H02**

11:00	Towards a III-V on Si platform for integrated quantum photonics <b>Elizaveta SEMENOVA</b>	1145
11:30	Towards III/V-on-Si Co-Integration – growth, integration, application <b>Oliver SKIBITZKI</b>	856
11:45	Optical characterization of InGaAs/Ge metamorphic buffer layers for high-efficiency multijunction photovoltaic cells <b>Jacopo PEDRINI</b>	997
12:00	Ferromagnetic hybrid superconducting materials based on InAs-Al-EuS nanowires <b>Yu LIU</b>	1257

12:15	Fabrication and Characterization of Flake-Based MoS <sub>2</sub> Back-Gated FET Devices <b>Sinan BUGU</b>	1457
12:30	Lunch	

**MATERIALS & TECHNOLOGIES FOR NEXT-GEN DEVICES I H03**

14:00	Periodic nanostructures to harness Kerr and Brillouin nonlinearities in silicon <b>Carlos ALONSO-RAMOS</b>	1401
14:30	Progress and prospects in acoustoplasmonic metamaterials: Control and characterization with Brillouin light scattering <b>Thomas VASILEIADIS</b>	1005
14:45	Large-scale fabrication of near-field-coupled plasmonic titanium nitride nanotriangle arrays in a CMOS-compatible process <b>Jon SCHLIPF</b>	842
15:00	A comparative study of low band gap SiGe and pure Si channels in advanced Schottky-barrier-tunneling FETs with high-k dielectric <b>Christoph BEYER</b>	1183
15:15	Study of epitaxial regrowth on heavily-doped Ge-on-Si layers obtained by in-situ doping and pulsed laser melting <b>Davide IMPELLUSO</b>	837
15:30	Coffee break	

**GeSn H04**

16:00	All around the thermo-opto-mechanical properties of GeSn optoelectronic devices <b>Costanza Lucia MANGANELLI</b>	605
16:30	An assessment of the GeH <sub>4</sub> + SnCl <sub>4</sub> chemistry for the epitaxy of thin and thick GeSn layers <b>Jean-Michel HARTMANN</b>	486
16:45	Epitaxial Growth using GeCl <sub>4</sub> in an APCVD Batch Reactor <b>Ella Susann SUPIK</b>	136

17:00	Toward Large Scale Production of III-VI 2D Materials and heterostructures by Pulsed MOCVD <b>Rémy BERNARDIN</b>	620
17:15	Selective Ge – GeSn etching for high fidelity suspended nanowire structures <b>Sheshank BIRADAR</b>	1023

**POSTER SESSION HP01**

17:30	Investigation of structural, optical properties of crystalline silicon thin film deposited by low pressure thermal CVD <b>Monika DHIMAN</b>	01_1077
17:30	Scaling capability analysis of Fe-JLGAA MOSFET including the effects of ferroelectric and high-k materials <b>Faycal DJEFFAL</b>	03_1529
17:30	Single photon detection with atomically flat materials <b>Alessandro PALERMO</b>	04_1552
17:30	Implementation of Insulator Thickness-Dependent Negative Differential Transconductance Device and Photomemory Device based on Organic semiconductor-Insulator-Organic semiconductor-Insulator Sandwiched Structures <b>Dong Hyun LEE</b>	05_232
17:30	Implementation of Logic Circuits in a Single Active Channel Using Split-Gate Architecture <b>Raksan KO</b>	06_244
17:30	Direct Implantation For formation S/D of CFETs with Vertically Stacked p-SiGe/n-Si Channels Using SiGe/Ge/Si Multilayer Epitaxy and Ge Selective Etching <b>Fu-Hsiang CHEN</b>	07_267
17:30	Zero-Power-Consumption CdO/Si Photodetectors: Europium Doping and Thermal Processing Effects <b>Igor PERLIKOWSKI</b>	08_274
17:30	Revisiting the Small Biological Molecule Detection Techniques of Silicon Nanowire Field-Effect Transistors through an Ex-Situ Single-Molecule SPM <b>Ming-Pei LU</b>	09_289



17:30	Coplanar Asymmetric Nanogap Patterns Obtained by Adhesion Lithography and their Applications to Versatile Materials-based Gate-Tunable Schottky Diodes	10_338
	<b>Minseo KIM</b>	
17:30	Near-field optical microscopy for unravelling light trapping mechanism in light funnel arrays decorated with deep subwavelength features	11_509
	<b>Ankit KUMAR</b>	
17:30	Planar Ionotronic OECTs: Memtransistor Performance and Energy-Efficient Neuromorphic Functionality	12_516
	<b>Muhammed SAHAD E</b>	
17:30	Analysis of the physical properties of the ZnO/ZnCdO and ZnCdO/ZnO layers on Si (111) substrates before and after annealing	13_674
	<b>Mieczyslaw PIETRZYK</b>	
17:30	Novel applications from properties of quantum grade Silicon-28	14_887
	<b>David UEBEL</b>	

Tuesday, 17 September 2024

## QUANTUM STRUCTURES FOR MODERN APPLICATION

H05

9:00	Integration of telecom C-band In(Ga)As quantum dots on silicon photonics platform	499
	<b>Michael JETTER</b>	
9:30	The effect of dislocation filtering layers on optical properties of InAs/InGaAlAs quantum dots grown on silicon substrates	476
	<b>Wojciech RUDNO-RUDZINSKI</b>	
9:45	High fidelity processing modes for Ge-based quantum devices	881
	<b>Nikolay PETKOV</b>	
10:00	Material challenges in isotopically enriched Ge quantum well heterostructures on strain-relaxed SiGe buffers	1405
	<b>Maximilian OEZKENT</b>	
10:15	Single-Ion Counting with an Ultra-Thin- Membrane Silicon Carbide Sensor for Quantum Applications	1091
	<b>Enrico SANGREGORIO</b>	
10:30	Coffee break	

**SI-GE GROWTH & CHARACTERIZATION**

**H06**

11:00	Ge-on-Si avalanche diodes; Geiger and linear mode devices for quantum and imaging applications <b>Ross MILLAR</b>	593
11:30	Germanium/Silicon Core Shell Nanowires for Spin/Hole Qubits Fabricated by Chemical Vapour Deposition <b>Nicolas FORRER</b>	29
11:45	Growth and characterization of Ge/SiGe planar heterostructures for spin qubit applications <b>Arianna NIGRO</b>	30
12:00	Value chain of quantum grade Silicon-28: From enrichment to quantum application <b>Owen C. ERNST</b>	882
12:15	Influence of an epitaxial intermediate layer on doping diffusion and CMOS RF switch performances <b>Antonin CHOLLET</b>	522
12:30	Near-infrared light trapping and avalanche multiplication in silicon epitaxial microcrystals <b>Virginia FALCONE</b>	1108
12:30	Lunch	

**PHOTONIC & ELECTRONIC DEVICES**

**H07**

14:00	Active photonic integrated circuits using transfer print technology <b>Brian CORBETT</b>	215
14:30	Compact NAND Logic Gate based on Nanogap-Split-Gate Transistors by means of Adhesion Lithography <b>Minseo KIM</b>	228
14:45	EHD-Jet printed Lead Sulfide Quantum Dots X-ray detectors <b>Marco RUGGIERI</b>	119
15:00	Wafer scale probing of low disorder and high mobility Si/SiGe heterostructures fabricated in 200 mm BiCMOS pilotline <b>Alberto MISTRONI</b>	769

- 15:15 Controlling the Properties of Hybrid Organic-Inorganic Negative Transconductance Field Effect Transistors for Advanced Electronics Applications 166  
**Juhyung SEO**
- 15:30 Coffee break

**FROM SIMULATION TO DEVICE H08**

- 16:00 Impact of structural defects on the electrical and optical properties in Indium Phosphide (InP) devices 28  
**Vihar GEORGIEV**
- 16:30 Enhanced Performance of Protonic Electrolyte-Gated Transistors via Anisotropic Hydrogen Plasma Treatment for Synaptic Electronics 51  
**Ling Li LIU**
- 16:45 Tunable spin transfer in low-loss graphene interconnects on semiconductor 1118  
**Carlo ZUCCHETTI**
- 17:00 Vertically Stacked Hybrid Complementary Inverter with Organic and Inorganic Thin-Film Transistors 339  
**Minseo KIM**
- 17:15 Device Engineering and Nanofabrication of Junctionless, Silicon Nanowire-based Wrapped-around Gate Transistors 375  
**Ramesh GHOSH**
- 17:30 Dual-Gate Zinc-Tin Oxide Thin-Film Transistors: Solution Process-based Patterned Synthesis, Charge Simulation, and Configurable Logic Operations 227  
**Juhyung SEO**

**Wednesday, 18 September 2024**

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

**COMPOUND SEMICONDUCTOR THIN FILM INTEGRATION**

**H09**

14:00	Integration of deposited LiNbO <sub>3</sub> thin films with silicon technology <b>Ausrine BARTASYTE</b>	1285
14:30	From optical response to effective thermal properties of Xenos <b>Eleonora BONAVENTURA</b>	322
14:45	Improved pulsed laser crystallisation of sputtered MoS <sub>2</sub> by controlling deposited film thickness <b>Alessandro TONON</b>	481
15:00	Dealing with delamination issues and the effect of back-gating on CVD-grown MoS <sub>2</sub> Field Effect Transistors (FETs), with the variation of SiO <sub>2</sub> thickness <b>Aashi GUPTA</b>	555
15:15	Development of Physical Unclonable Functions with a Quinary Security Key Based on Monolayer Graphene Patterned with Irregular Microparticles <b>Dong Hyun LEE</b>	1340
15:30	Optical and Electrical Properties of p-type WS <sub>2</sub> Monolayer Modified by Ion Implantation and Flash Lamp Annealing <b>Yi LI</b>	937
15:30	Coffee break	

**MATERIALS & TECHNOLOGIES FOR NEXT-GEN DEVICES II**

**H10**

16:00	Tuning Room-Temperature Single-Photon Emission with Strained CdSe/CdS Colloidal Nanocrystals <b>Iwan MOREELS</b>	530
16:30	Ion beam technology for germanium alloys infrared photodetectors <b>Shuyu WEN</b>	1060
16:45	A Mechanism of Resistance Switching in CNT Based Memory Devices <b>Alexander SHLUGER</b>	443
17:00	TEM nanostructural characterization of both filament and matrix in NbO <sub>x</sub> -based resistive switching devices. <b>Katarzyna BEJTKA</b>	1282

17:15 2D MXene- and TMD-based Electrochemical Random-access memories (ECRAM) for neuromorphic computers 1440

**Mahiar Max HAMEDI**

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**



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Symposium I

Sessions: Room 306 | Main Building

Poster Session: 237 (Small Hall) | Main Building

ELECTRONICS, PHOTONICS AND SPINTRONICS

## III-NITRIDES AND THEIR USE IN ELECTRONICS AND OPTOELECTRONICS

Symposium organizers:

Anna KAFAR  
(Main Organizer)

Eva MONROY

Matteo MENEGHINI

Takuya MAEDA

- Institute of High Pressure Physics PAS

- CEA Grenoble (INAC/SP2M)

- University of Padova

- University of Tokyo

Monday, 16 September 2024

**VERTICAL GaN TECHNOLOGY I01**

9:00	Recent progress on vertical GaN power transistors on foreign substrates <b>Max REIMER</b>	1251
9:30	Vertical GaN MOS transistor grown on SiC substrates <b>Kei May LAU</b>	1164
10:00	Trapping and reliability properties of Al <sub>2</sub> O <sub>3</sub> gate dielectrics obtained with stacked ALD deposition <b>Matteo BUFFOLO</b>	1446
10:15	Impact of Substrate Quality on Vertical GaN-on-GaN Schottky and PiN Devices <b>Maroun DAGHER</b>	770
10:30	Coffee break	

**LASER DIODES I02**

11:00	Surface-emitting lasers in the deep-ultraviolet <b>Asa HAGLUND</b>	1506
11:30	Polarization-doped III-N laser diode operating at cryogenic temperature <b>Muhammed AKTAS</b>	1125
12:00	Electrochemical etching as an avenue for innovations in nitride laser diodes <b>Marta SAWICKA</b>	824
12:15	Optical Gain and Spontaneous Emission Modelling in Wide Band Gap Aluminium Gallium Nitride Quantum Wells <b>Friedhard ROEMER</b>	975
12:30	Lunch	

**NEW NITRIDE ALLOYS**

**I03**

14:00	Sputter Epitaxy of Transition Metal Nitrides on Nitride Semiconductors <b>Kobayashi ATSUSHI</b>	634
14:30	Comparative evaluation of the structural and piezo-acoustic properties of ternary metal nitrides for applications in bulk acoustic wave devices <b>Oliver AMBACHER</b>	71
15:15	Flexible III-Nitride MEMS Resonators Fabrication through Selective Area Van der Waals Epitaxy <b>Ali KASSEM</b>	302
15:30	Coffee break	

**UV LEDs**

**I04**

16:00	Metalorganic vapor phase epitaxy of AlGaIn-based UVC LEDs <b>Tim WERNICKE</b>	1560
16:30	MBE growth of ultra-thin GaN/AlN quantum wells for cathodoluminescent UV lamps <b>Ettore COCCATO</b>	731
16:45	Photonic Atom Probe analysis of AlGaIn multilayer structures for UV lighting <b>Samba NDIAYE</b>	1284
17:00	Modeling the optical degradation kinetics of UV-C LEDs <b>Nicola ROCCATO</b>	736

**POSTER SESSION I**

**IP01**

17:30	Investigation of Defect States in InAlGaIn/GaN HEMT Structures <b>Matej MATUS</b>	01_1268
17:30	Submicron embedded air/GaN diffraction gratings for distributed feedback lasers <b>Oliwia GOLYGA</b>	02_1293



17:30	Relationship between the kink phenomenon and crystal defects in AlGaIn/GaN HEMTs under high bias conditions <b>Sano SOICHI</b>	03_254
17:30	Characteristics of crystal defects in AlGaIn in AlGaIn/GaN HEMTs regarding electric field effects <b>Junya TAKEDA</b>	04_259
17:30	Nanostructuring of GaN: A Promising Route to Quantum Single-Photon Sources <b>Antouman SALLLAH</b>	05_531
17:30	Varying of gallium nitride dislocation concentration due to non-thermal microwave treatment for HEMTs and sensors applications <b>Roman REDKO</b>	06_716

**Tuesday, 17 September 2024**

**MICRO-LEDs**

**I05**

9:00	Development of InGaIn red micro-LEDs and toward their laser diodes <b>Kazuhiro OHKAWA</b>	161
9:30	GaN-on-Si nanowire technology paves the way to high efficiency micro-LEDs for display applications <b>Thomas SANNICOLO</b>	1276
10:00	InGaIn-based multicolor micro-LED arrays via epitaxial integration <b>Yoshinobu MATSUDA</b>	80
10:30	Coffee break	

**INGAN ALLOYS**

**I06**

11:00	Full InGaIn-based red light-emitting diodes grown on ScAlMgO <sub>4</sub> substrate <b>Mohammed NAJMI</b>	423
11:15	InGaIn/GaN Nanowires as Photoactivated Biosensors with Dual Readout <b>Martin EICKHOFF</b>	1281

11:30	InGaN active regions grown on micropatterns <b>Adam BREJNAK</b>	1143
11:45	Impact of the design of InGaN/GaN quantum wells on carrier lifetime and diffusion length <b>Simon LITSCHGI</b>	1214
12:00	Correlative microscopic study of compositional, morphological and optical properties of photovoltaic devices based on InGaN quantum wells <b>Florant EXERTIER</b>	625
12:15	Impact of deposition temperature on InN/Si(100) solar cell device efficiency <b>Fernando NARANJO</b>	1309
12:30	Lunch	

**GAN RF DEVICES I07**

14:00	IAF GaN-technology towards 200 GHz operation <b>Peter BRÜCKNER</b>	390
14:30	AlGaIn/GaN RF Power HEMTs: The Workhorse Technology for 5G and 6G Base-Station Transmitters <b>Jose Carlos PEDRO</b>	153
15:00	Investigation on the Effect of Iron/Carbon-Doped Buffer Layer in AlGaIn/GaN HEMT <b>Po-Hsuan CHANG</b>	1368
15:15	Application of low temperature MOCVD regrown ohmic contacts to RF InAlGaIn HEMTs <b>Sébastien AROULANDA</b>	42
15:30	Coffee break	

**MICRO AND NANOSTRUCTURES I08**

16:00	Epitaxy of Three-Dimensional GaN Microstructures: Challenges and Prospects <b>Irene MANGLANO CLAVERO</b>	1249
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16:30	Top-down fabrication of high-aspect-ratio tapered and cylindrical GaN nanowires <b>Elcin AKAR</b>	791
16:45	Two step growth procedure for homogeneous GaN NW arrays on graphene <b>Dyhia TAMSAOUT</b>	836
17:00	Oxide shells protecting GaN nanowires against photoadsorption, strain, and luminescence quenching <b>Radoslaw SZYMON</b>	609
17:15	Anisotropy of emission diagrams in AlGaIn alloys, quantum wells and quantum dots <b>Alexandra IBANEZ</b>	835

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch

**ADVANCED III-N MATERIALS AND CHARACTERIZATION 109**

14:00	Ultrawide bandgap POLFETs on bulk AlN using distributed polarization doping <b>Debdeep JENA</b>	64
14:30	Analysis of Capacitance-Frequency Characteristics of Si-doped AlN Schottky Junction <b>Takuya MAEDA</b>	1351
14:45	Polarity-dependent structural and electronic properties of MBE grown NbN/GaN structures <b>Anand Kumar ITHEPALLI</b>	914
15:00	Characterization of the interface states in Al <sub>2</sub> O <sub>3</sub> /AlGaIn/GaN based MIS structures by means of photo assisted CV <b>Gabriele SEGUINI</b>	796
15:15	Room Temperature Deposited Highly Conductive HfN <sub>x</sub> Films for High-Performance HfN/Si Junction Diodes <b>Amir Sohail KHAN</b>	398

15:30 Coffee break

## MICROSTRUCTURE, PROPERTIES AND MODELING OF GaN ELECTRONIC DEVICES

I10

16:00	Microstructural Failure Analysis of GaN devices for power applications <b>Patrick DIEHLE</b>	1043
16:30	Modification of electrical properties of GaN by ion implantation and UHPA <b>Kacper SIERAKOWSKI</b>	464
16:45	Advanced characterization of ion-implantation on GaN on GaN Schottky and p-n diodes for edge termination <b>Zakariae M'QADDEM</b>	607
17:00	Modelling of trapping effects in GaN power transistors <b>Giovanni VERZELLESI</b>	121
18:00	<b>YOUNG RESEARCHER AWARDS CEREMONY</b>	
18:30	<b>SOCIAL EVENT</b>	

Thursday, 19 September 2024

## DEFECTS AND CARRIER LOCALIZATION

I11

9:00	Analyzing vacancy defects in GaN and AlN <b>Filip TUOMISTO</b>	569
9:30	A New Insight into the Growth Kinetics of Mg-doped GaN Using Plasma-Assisted Molecular Beam Epitaxy <b>Elcin AKAR</b>	269
10:00	Understanding the origin of carrier localisation in boron containing III-nitrides <b>Cara-Lena NIES</b>	218
10:15	The application of Photonic Atom Probe to the study of a III-N tunnel junction <b>Lorenzo RIGUTTI</b>	1292

10:30 Coffee break

## GAN ELECTRONICS: MATERIAL AND DEVICE PROPERTIES

I12

11:00	Demonstration of AlGa <sub>N</sub> -on-AlN p-n Diodes with Dopant-free Distributed Polarization Doping <b>Takeru KUMABE</b>	411
11:30	GaN-based optically triggered thyristor with doping replaced by polarization-engineering <b>Greg MUZIOL</b>	1558
11:45	High-frequency surface acoustic waves in (Sc,Al)N thin film grown on free-standing polycrystalline diamond by molecular beam epitaxy <b>Mingyun YUAN</b>	1470
12:00	700V Breakdown Voltage with Optimized Device Processing on Pseudo-Vertical GaN-on-Si p-n Diode Grown by Localized Epitaxy <b>David Alejandro PLAZA ARGUELLO</b>	132
12:15	Electrical characterization of pGa <sub>N</sub> /AlGa <sub>N</sub> /Ga <sub>N</sub> heterojunction by sheet resistance hall measurements <b>Anita PATELLI</b>	1526
12:30	Lunch	

## BULK NITRIDES

I13

14:00	Status of Bulk GaN Substrates from the Perspective of Bragg Diffraction Imaging Analysis <b>Lutz KIRSTE</b>	526
14:30	Exploring Gallium Nitride Bulk Crystal Growth <b>Tomasz SOCHACKI</b>	626
14:45	Phase diagram of GaN towards closing the gap? <b>Jacek PIECHOTA</b>	597
15:00	Elucidating the Mechanism of Aluminium Nitride High-Temperature Annealing by Ion Implantation <b>Christoph MARGENFELD</b>	1242

15:15 Characterization of III-nitride thin films by Plasma Enhanced Atomic Layer Deposition deposited at low temperature 815  
**Yves FLEMING**

15:30 Coffee break

**NITRIDE AND TERAHERTZ EMITTERS 114**

16:00 Heterointegration-Ready III-Nitride Devices Enabled by Electrochemical Etching 1178  
**Henryk TURSKI**

16:15 Harnessing III-Nitride built-in field in Multi-Quantum Well LEDs 1059  
**Mikolaj CHLIPALA**

16:30 Low and high frequency noise in LEDs 822  
**Vita IVANOVA**

16:45 GaN-based Grating-Gate Plasmonic Crystals as Active Terahertz Devices 805  
**Maksym DUB**



# 2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

## Symposium J

Sessions: Room 219 | Main Building

Poster Session: 237 (Small Hall) | Main Building

ELECTRONICS, PHOTONICS AND SPINTRONICS

## SMART MATERIALS FOR ADVANCING ELECTRONICS & PHOTONICS

### Symposium organizers:

Amrita **JAIN**

Rosaria **PUGLISI**

Vilko **MANDIC**

Yogendra Kumar **MISHRA**  
(Main Organizer)

- Division of Advanced Composite Materials (PZMK)

- CNR - IMM

- University of Zagreb

- Mads Clausen Institute, University of Southern Denmark

Monday, 16 September 2024

**NANOELECTRONICS**
**J01**

8:30	Molecular Building Blocks for Artificial Intelligence <b>Sreetosh GOSWAMI</b>	606
9:00	Local electrical properties of grain and phase boundaries <b>Hanna BISHARA</b>	1524
9:15	Wearable Electronics for Healthcare Applications: Recent Advancements and Future <b>Ajay BENIWAL</b>	1047
9:30	Resistive switching mechanism of CuO thin films grown hydrothermally <b>Monika OZGA</b>	1471
9:45	In situ TEM study of breakdown and thermal annealing effects on silver nanowire for memristive applications <b>Katarzyna BEJTKA</b>	1289
10:00	Bimodal Memristor <b>Seok Daniel NAMGUNG</b>	143
10:15	Tunable memristive performance in PVDF/LSMO junctions <b>Tongxin CHEN</b>	883
10:30	Coffee break	

**PHOTOCATALYSIS**
**J02**

11:00	Strain-Driven Photocatalytic Processes in Hybrid Structures <b>Emerson COY</b>	1566
11:45	Anisotropic transport and Photothermoelectrics of a Ni-TiO <sub>2</sub> hybrid material. <b>Harikrishnan GOPALAKRISHNAN</b>	1357



12:00 Atomic-scale investigation of Covalent Carbon Nitride materials on Ag(111) 1271  
**Nesrine SHAIK**

12:30 Lunch

**ENERGY MATERIALS J03**

14:00 Uncovering the Potential of Candle Soot Nanocarbon for Energy Storage Applications 1387  
**Chandra Shekhar SHARMA**

14:30 A fresh perspective to synthesizing and designing carbon/sulfur composite cathodes using supercritical CO2 technology for advanced Li-S battery cathodes 1598  
**Lakshmi SHIVA SHANKAR**

14:45 Delafossite-Based Electrode Materials for Energy Storage Applications 1569  
**Tanya DAGAR**

15:00 Advanced  $\alpha$ -Phase Transition Metal Hydroxide Nanostructures and their Composites for Energy Storage Electrode Materials 1568  
**Rajkamal ARYA**

15:15 Converting ionic liquids into films for energy storage application 1561  
**Amrita JAIN**

15:30 Coffee break

**PEROVSKITE MATERIALS J04**

16:45 Structural and Optoelectronic Investigations of Low-dimensional Ruddlesden-Popper and Dion-Jacobson Metal Halide Perovskite Phases 74  
**Abhishek YADAV**

17:00 Electron Tunnelling through a Single Perovskite Quantum Dot: Energetics in Weak and Strong Interaction Regimes 103  
**Abhishek MAITI**

17:15 Interface Engineering using Self-Assembled Monolayers for efficient Perovskite and Organic Light-Emitting Diodes 178  
**Gkeka DESPOINA**

17:30	Improving the Stability of Lead-Free CsSnBr <sub>3</sub> Halide Perovskite by DDAB-Assisted Post-passivation Surface Engineering <b>Anjana YADAV</b>	919
17:45	Mn <sup>2+</sup> Doping and Postpassivation Effects on Halide Perovskite Nanocrystals <b>Charu DUBEY</b>	818

**POSTER SESSION JP01**

17:30	Investigating the effect of gamma radiation on vanadium dioxide: A study of structural and electrical transformations <b>Sonika SINGH</b>	01_1003
17:30	Resistive switching of Lanthanum Titanium Oxide for Cross-Point Array Applications with Memristive Devices <b>Jeongwoo LEE</b>	02_1010
17:30	Deposition of amorphous molybdenum silicide MoSi superconducting thin films via magnetron co-sputtering <b>Luize DIPANE</b>	03_1056
17:30	Electrostatic influence on the formation and stability of One-dimensional (1-D) conductive microparticle chains <b>Gunjan TIWARI</b>	04_1104
17:30	Recycled Newspaper cellulose for eco-designed energy harvesting and pressure sensor technologies <b>Guilherme MENDES FERREIRA</b>	05_1136
17:30	Impact of Zr Doping on Subthreshold Conduction in Polycrystalline ZnTe with Threshold Switching <b>Wansun KIM</b>	06_1142
17:30	Colloidal Assemblies of Chiral Plasmonic Nanoparticles <b>Pablo MARIANI</b>	07_1212
17:30	Implementation of a reservoir computing system using volatile Au/Ti/monolayer-MoS <sub>2</sub> /Au memristors <b>Asmita THOOL</b>	08_1237
17:30	CN-based molecules as a flexible toolbox for synthesis of low-dimensional carbon nitrides structures <b>Nataliya KALASHNYK</b>	09_1291
17:30	Electron Trapping Group Induced Enhancement in Photoresponses of Organic Field-Effect Transistors <b>Sk SHAHARUKH</b>	10_1407

17:30	Funnel devices constructed using asymmetrically strained transition metal dichalcogenides <b>Kyung-Hwa YOO</b>	11_1410
17:30	PVDF/N-rGO nanofibers based Triboelectric Nanogenerator for self-powered IoT applications <b>Shilpa RANA</b>	12_1494
17:30	Surface-Enhanced Raman Scattering of a Randomly Distributed Single-Walled Carbon Nanotube Network decorated with Gold Nanoparticles <b>Ali ADNAN</b>	14_39
14:45	Microscopic study of local thermal, electrical and structural properties of ZnMgO thin films on different substrates <b>Anna KAZMIERCZAK-BALATA</b>	200
17:30	Viologen-based smart material for water detoxification <b>Marcin KULINSKI</b>	16_612
17:30	Compositional and Structural Influences on the Plasmonic Properties of Mo-based Janus Nano-Flakes <b>Marwan ALAM</b>	17_617
17:30	Soft and conductive polyacrylamide hydrogel-based flexible wearable sensors for electrocardiogram (ECG) monitoring <b>Saurabh SONI</b>	18_618
17:30	Photoresponse properties of green-assisted Fe <sub>3</sub> O <sub>4</sub> nanoparticles supported activated carbon. <b>David IDISI</b>	19_69
17:30	Optimizing growth and topotactic transitions in vanadium oxide thin films for microbolometer application <b>Ujjwal CHITNIS</b>	20_698
17:30	Distinguishable Optical Signature in Bilayer AA and AB Stacked ReS <sub>2</sub> : A Comprehensive Investigation <b>Prahalad Kanti BARMAN</b>	21_705
17:30	Energy and exciton transfer in heterostructures with mixed dimensionality <b>Anna WROBLEWSKA</b>	22_708
17:30	Magnetic field effect on resonant properties of surface plasmon-polariton photodetectors <b>Sergii MAMYKIN</b>	23_727

17:30	Broadband absorption and omnidirectional anti-reflection in Polysilicon thin films decorated with light trapping arrays for solar applications. <b>Nipun VASHISTHA</b>	24_874
17:30	Innovative Gold-Decorated Domed Pillars for Enhanced Infrared Detection of Allylamine <b>Alejandro FERNÁNDEZ</b>	25_888
17:30	Energy transfer and exciton effects in CNT thin film-WSe2 heterostructures investigated by resonance Raman spectroscopy. <b>Anna WROBLEWSKA</b>	26_970
17:30	Investigation of phase transitions in amorphous vanadium oxide thin films <b>Rodica PLUGARU</b>	27_971
17:30	Studies on Interrelationship between Annealing Duration of ZnO Films and Dark Current of Near Infrared Organic Photodetectors <b>Ji Yeon SON</b>	28_981
17:30	Electrical strength of composite varistor coatings containing carbon nano dots <b>Krzysztof KOGUT</b>	1617

Tuesday, 17 September 2024

**ADVANCED COMPOSITES**

**J05**

8:30	Advanced Nanocomposites for Electromagnetic Interference Shielding and Microwave Absorption <b>Raghendra Singh YADAV</b>	737
9:00	Reprocessable, Self-Adhering High-Performance Carbon Fiber Reinforced Vitrimer Composites with Reversible Fatigue Resistance <b>Harsh SHARMA</b>	1567
9:15	Significance of carbon nanotube network configuration on reinforcing and conductive performance in polymer-based nanocomposites <b>Alen OSELI</b>	1517
9:30	3D Printing of electrically conductive liquid composites <b>Niclas HAUTZ</b>	1206
9:45	Multi-functionality of flexible graphene foam/single wall carbon nanotube/polydimethylsiloxane composites <b>Shuting GUO</b>	654

10:00	3D printing of electroactive shape memory nanocomposites for liquid sensors <b>Xue WAN</b>	332
10:15	Ultrasensitive Breast Cancer Diagnosis via Aptamer-Enabled Electroanalytical Detection of HER-2 with ZnO Tetrapod-K4PTC Nanocomposite <b>Reema RAWAT</b>	459
10:30	Coffee break	

**HEALTHCARE MATERIALS**
**J06**

11:00	Microelectronic morphogenesis: From modular micro-origami robots to microelectronic life <b>Oliver G. SCHMIDT</b>	1562
11:30	Atomic Structure Studies of MOCVD Graphene <b>Rajveer Singh RAJURA</b>	1483
11:45	Piezoelectric peptide nanotube substrate sensors activated through sound wave energy. <b>Allan J. FINLAY</b>	1203
12:00	Soft and conductive polyacrylamide hydrogel-based flexible wearable sensors for electrocardiogram (ECG) monitoring <b>Saurabh SONI</b>	756
12:30	Lunch	

**SMART NANOSTRUCTURING**
**J07**

14:00	Laser-Processed Anodic Semitransparent Oxide Nanotubes Formed From a Ti-Au Co-Sputtered Alloy <b>Katarzyna SIUZDAK</b>	1373
14:30	Bottom-up evolution of nonstoichiometric metal/metal oxide systems <b>Vilko MANDIĆ</b>	1565
14:45	Automated dry synthesis and deposition of nanomaterials <b>Vincent MAZZOLA</b>	171

15:00	Spin Selective Charge Transfer-SERS based Label-Free Enantioselective Discrimination of Chiral Molecules on Ag Nanoparticles Decorated Ni Nanorods Array <b>Lakshay BHARDWAJ</b>	397
15:15	Tetrapods based Smart Materials for Advanced Technologies <b>Yogendra Kumar MISHRA</b>	451
15:30	Coffee break	

**NANOSENSORS**
**J08**

16:00	Smart Nanomaterials for Chemical Sensors – Enabler for Consumer Electronic Applications <b>Anton KÖCK</b>	1607
16:45	Strong Circularly Polarized Light Active Chiral 2D-Hybrid Transition Metal Perovskites <b>Anuja DATTA</b>	741
17:15	Various techniques for Accurate Measurement of Noise current and Specific Detectivity for PbS Infrared Photodetectors <b>Bhupesh BHARDWAJ</b>	1115
17:30	Reconfigurable Optoelectronic Logic Gates based on Bipolar Photo-responsive Dual-heterojunction Photodetectors <b>Taehyun PARK</b>	250
17:45	Interface characterization of pure boron on silicon/germanium for broadband photodiodes <b>Vinayak Vishwanath HASSAN</b>	1207
18:00	Development of fluorescent materials for the detection of phthalate vapors <b>Pablo LABRA-VÁZQUEZ</b>	197

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch

PLASMONICS

J09

13:00	Biowaste-Derived Gold Nanoparticles Coated Reduced Graphene Oxide Nanoplatfoms: An Electrochemical Immunosensor for The Detection of Dengue NS1 <b>Dr. Arpita Pandey TIWARI</b>	1409
13:30	Chiral Plasmonic Superlattices Based for Biosensing <b>Tsz Him CHOW</b>	297
13:45	Plasmonic resonances in cylindrical and tapered silicon nanowires <b>Rizwan RAFIQUE</b>	489
14:00	Controlling the helicity of light by electrical magnetization switching <b>Pambiang Abel DAINONE</b>	687
14:15	Near-field optical microscopy for unravelling light trapping mechanism in light funnel arrays decorated with deep subwavelength features <b>Ankit KUMAR</b>	1499
14:30	Silicon-based diffractive optics for structured light in nonparaxial terahertz imaging systems <b>Sergej ORLOV</b>	847
14:45	Colloidal Assemblies of Chiral Plasmonic Nanoparticles <b>Pablo MARIANI</b>	1105
15:00	Design and fabrication of microcavities exhibiting localised surface plasmons on stretchable transparent substrates <b>Miguel MANSO SILVÁN</b>	849
15:30	Coffee break	

PHOTONICS

J10

16:00	Boosting SWIR photosensing of group IV-based nanocrystals by alloying and embedding matrix-induced effects <b>Ana-Maria LEPADATU</b>	1584
16:30	On-chip Strain Tuning Module for Photonic Link of Diamond Spin Qubits <b>Tetsuro ISHIGURO</b>	671

17:00	Tunable ESIPT molecules applied to novel temperature responsive systems and efficient downconversion thin films <b>Guillermo MARTÍNEZ-DENEGRÍ</b>	839
17:15	Vapor Phase Polymerization of Thieno[3,4-b] thiophene-Tosylate and its Application for Dynamic Structural Coloration <b>Mohammad Shaad ANSARI</b>	446
17:30	Wavelength-dependent Multi-state Optoelectronic Logic-in-memory Operation based on Absorption Variation in Organic Semiconductors <b>Taehyun PARK</b>	139
18:00	<b>YOUNG RESEARCHER AWARDS CEREMONY</b>	
18:30	<b>SOCIAL EVENT</b>	

**Thursday, 19 September 2024**

**ACTIVE MATERIALS**

**J11**

8:00	Surface charge density optimization in nanostructured thin films synthesised by oblique angle deposition as a high electron affinity material for triboelectric nanogenerators <b>Michael MCKINLAY</b>	1564
8:30	AI-driven Self-charging TENG Sensor Insole Prototype for Fast Screening of Flat-Foot <b>Moldir ISSABEK</b>	1057
8:45	Charge-to-spin conversion by topological surface states of amorphous Gd-alloyed BixSe <sub>1-x</sub> <b>Yuan LU</b>	829
9:00	Growth of BaTaO <sub>N</sub> Crystals by an NH <sub>3</sub> -Assisted BaCl <sub>2</sub> Flux Method <b>Ginji HARADA</b>	190
9:15	Synthesis and comparative analysis of VO <sub>2</sub> thin films: thermochromic properties and air stability investigations <b>Jeremie GONCALVES</b>	773
9:30	Berry Curvature Dipole Induced Giant Mid-infrared Second-harmonic Generation in 2D Weyl Semiconductor <b>Qundong FU</b>	745



9:45	Synthesis and Characterization of Boron Nitride-doped Graphene <b>Sergi CAMPOS JARA</b>	1004
10:00	Understanding and control of the formation of metallic nanoscale silicide contacts on vertical nanostructured channel for advanced 3D nanoelectronics devices: from Si to high mobility materials <b>Jonas MÜLLER</b>	1128
10:15	Magnetron-Sputtered W-V-N alloy coatings: Unveiling Self-Lubricating Potential <b>Akula UMAMAHESWARA RAO</b>	1570
10:30	Crystallization Mechanism of Soluble Acene in Polymer Blends under Residual Solvent Evaporation <b>Wi Hyoung LEE</b>	932
10:30	Coffee break	

## 2D MATERIALS

J12

11:00	Polymer-2D materials based Triboelectric and Hybridized Systems for enabling next generation IoT applications <b>Bharti SINGH</b>	1498
11:15	Tuneable physical properties of MoS <sub>2</sub> for optoelectronic devices induced by strain via heat treatment <b>Emanuele SANGIORGI</b>	1394
11:30	Enhancing the optical properties of 1L-MoS <sub>2</sub> through thermal treatments <b>Antonino MADONIA</b>	1231
11:45	Exploring Nanostructured Graphenes Elaborated via On-Surface Reactions <b>Nataliya KALASHNYK</b>	892
12:00	MoxWx-1S2 nanotubes for field emission application <b>Bojana VIŠIĆ</b>	45
12:15	Ruddlesden-Popper Perovskite-MoS <sub>2</sub> Hybrid Heterojunctions for Stable and Efficient Self-powered Photodetectors <b>Rashid M. ANSARI</b>	81
12:30	Lunch	

**NANOMATERIALS**
**J13**

14:00	Josephson Transport across T-shaped and Series-Configured Double Quantum Dots System at Infinite-U Limit <b>Bhupendra KUMAR</b>	1390
14:15	Transfer of supramolecular arrangements from solution to surface: towards applications in device manufacturing through self-assembly <b>Melina VAVALI</b>	577
14:30	Versatile cutting-edge materials engineered to meet the demanding requirements of modern electronics <b>Aleksandra MOTYKA</b>	1028
15:00	Comparison of optical and luminescence properties of as prepared and annealed ZnO nanoparticles prepared using sol-gel method <b>Francis DEJENE</b>	1477
15:15	Ultra-level detection of heavy metals using SERS substates developed by direct laser writing lithography <b>Anjika KUMARI</b>	176
15:30	Coffee break	

**FUNCTIONAL MATERIALS**
**J14**

16:00	Functional Organic Materials For Energy <b>Maria MONTRONE</b>	1001
16:15	Engineered exciton diffusion length enhances device efficiency in highly efficient small molecules photovoltaics <b>Muhammad SAJJAD</b>	1550
16:45	Fabrication of semiconductor thin films by laser-assisted zone casting <b>Michal WYSKIEL</b>	880
17:00	Pioneering Screen-Printed RF Electronics: Transparent and Flexible Antennas and Metamaterial Absorbers <b>Sungjoon LIM</b>	340
17:15	Implementation of a Physically Unclonable Functions Capable of Generating Multiple Keys Using Small Molecules-based Heterostructure <b>Raksan KO</b>	225

- |       |   |     |
|-------|---|-----|
| 17:30 | Phase behaviour and dynamics of organic cations in Formamidinium Lead Iodide (FAPI) using machine-learned potentials<br><b>Sangita DUTTA</b>          | 868 |
| 17:45 | Room-Temperature Laser Induced Water Release in a Spin-Crossover Metal-Organic Framework: a Structure-Properties Investigation<br><b>Sara GULLACE</b> | 935 |



# 2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

## Symposium Sponsors



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SCREEN

## Symposium K

Sessions: Room 327 | Main Building

Poster Session: 237 (Small Hall) | Main Building

ELECTRONICS, PHOTONICS AND SPINTRONICS

## ULTRA-DOPED SEMICONDUCTORS MADE BY NON-EQUILIBRIUM PROCESSING FOR ELECTRONIC, PHOTONIC AND SPINTRONIC APPLICATIONS II

### Symposium organizers:

Francesca **CHIODI**

- C2N, Université Paris-Saclay

Guo-En **CHANG**

- National Chung Cheng University

Sébastien **KERDILES**

- Université Grenoble Alpes, CEALTEI

Slawomir **PRUCNAL**  
(Main Organizer)

- Institute of Ion Beam Physics and Materials Research

**Monday, 16 September 2024**
**DOPING OF GROUP-IV MATERIALS I**
**K01**

14:00	Doping in Hexagonal-Diamond Type Crystals <b>Michele AMATO</b>	298
14:30	Exploring strain relaxation limits on Ge:Sb and Ge:Sn heavy doping by pulsed laser melting <b>Francesco SGARBOSSA</b>	286
14:45	Low-Temperature Microwave Annealing for Ultra-doped GeSn on Silicon <b>Yue-Tong JHENG</b>	610
15:00	Hyperdoped group IV semiconductors for superconducting quantum information technology <b>Patrick STROHBEEEN</b>	827
15:30	Coffee break	

**DOPING OF GROUP-IV MATERIALS II**
**K02**

16:00	Sulfur-hyperdoped silicon by ultrashort laser processing <b>Sören SCHÄFER</b>	1088
16:30	Preamorphization and electrical transport mechanisms in Te-hyperdoped germanium <b>Daniel CAUDEVILLA GUTIÉRREZ</b>	1095
16:45	Hyperdoping of Ge:P/Si and SiGe:P/Si by nanosecond pulsed laser melting <b>Giulia Maria SPATARO</b>	1173
17:00	Foundations and Future Directions of Atomically Precise Arsenic Doping in Silicon and Germanium <b>Steven SCHOFIELD</b>	1495
17:30	How to get published in Nature and its sister journals <b>Jiajun ZHU</b>	891

**POSTER SESSION I KP01**

17:30	Solid-Phase Recrystallization of Phosphorus-Implanted Silicon by Nanosecond Laser Annealing <b>Sebastien Kerdiles</b>	01_1359
17:30	Ultra-doped GeSn Photodetector Arrays on Silicon for Short-Wave Infrared Image Sensors <b>Po-Rei Huang</b>	02_1365
17:30	Tuning Silicon superconductivity with nanosecond laser doping <b>Francesca Chiodi</b>	03_1413
17:30	Ultra-doped Silicon: effective mass, carriers and magnetoresistance <b>Francesca Chiodi</b>	04_1547
17:30	Ultradoped GeSn:Sb plasmonic antennas for plasmon-enhanced infrared photodetectors <b>Guillermo Godoy Perez</b>	05_194
17:30	Si <sub>1-x-y</sub> Ge <sub>y</sub> Sn <sub>x</sub> alloy formation by Sn ion implantation and flash lamp annealing <b>Slawomir Prucnal</b>	06_277
17:30	Superconductivity in Ga-Doped Si <sub>0.99</sub> Ge <sub>0.01</sub> via Ion Implantation and flash lamp annealing <b>Yu Cheng</b>	07_724

Tuesday, 17 September 2024

**GROUP IV NANOSTRUCTURES K03**

9:00	Vertical Gate-All-Around High Mobility GeSn Nanowire FETs <b>Qing-Tai Zhao</b>	488
9:30	Electrochemical Capacitance Voltage measurement in Boron Ultra Doped Silicon <b>Giacomo Priante</b>	1475
9:45	Effect of device dimensions on the performance metrics of Si:Te PIN planar photodiodes for telecom bands detection at room temperature <b>Mohd Saif Shaiikh</b>	1013

10:00	Wafer-Scale Deep UV Si Photodiodes Based on Ultra-Shallow Junction Yaping DAN	1302
10:30	Coffee break	

## HYPERDOPING OF GROUP IV K04

11:00	Breakthroughs and Future Horizons in Hyperdoped Si and Ge Photodetectors Eric GARCÍA-HEMME	498
11:30	Germanium alloys-based infrared photodetectors realized by ion beam technology Shuyu WEN	328
11:45	Fabrication of supersaturated GeSn alloys on Ge and Ge-on-Si by nanosecond pulsed laser melting Daris FONTANA	768
12:00	Ex-situ incorporation of Al in Ge by sputter deposition and pulsed laser melting: a new approach to fabricate hyperdoped Ge:Al alloys Enrico DI RUSSO	1234
12:15	Hyperdoping germanium with titanium via femtosecond laser processing Xiaolong LIU	1356
12:30	Lunch	

## 2D MATERIALS AND BEYOND K05

14:00	Anisotropic physical properties of the layered magnetic crystals. Magdalena BIROWSKA	1392
14:30	Phosphorous Doping in WS <sub>2</sub> Monolayer by Ion Implantation and Flash Lamp Annealing Yi LI	1116
14:45	Studies on Seebeck coefficient on highly doped p-type transparent off-stoichiometric Cu based delafossite thin films Petru LUNCA-POPA	193

15:00	Ruthenium for Future BEOL interconnections for CMOS: Electrical properties enhancement and Failure modes using Microsecond UV Laser Annealing <b>Richard DAUBRIAC</b>	468
15:15	A laser annealing method for manufacturing CoSi <sub>2</sub> source/drain with improved superconductivity <b>Paul DUMAS</b>	651
15:30	Coffee break	

**2D MATERIALS AND BEYOND K06**

16:00	Phase Identification in (Doped) Metal Oxide Films Grown by Magnetron (Co-)Sputtering: An X-Ray Absorption Study <b>Raul GAGO</b>	565
16:30	Tellurium/Indium Gallium Zinc Oxide Heterostructures based Transistor Exhibiting a Negative, Zero, and Positive Transconductances <b>Dong Hyun LEE</b>	231
16:45	Charge transport and charge trapping in polycrystalline highly-doped ZnO thin films <b>Alexei NAZAROV</b>	794
17:00	$\alpha$ -Ga <sub>2</sub> O <sub>3</sub> doped with Yb in the implantation process: studies on defects and optical properties <b>Mahwish SARWAR</b>	1314
17:15	A comparative study of GaAs hyperdoped with Chromium processed by ArF <sup>+</sup> excimer and Nd-YAG pulsed laser melting <b>Sari ALGAIDY</b>	1255

**POSTER SESSION II KP02**

17:30	Al-delta-doped ZnO films for low emissivity coating <b>Guoxiu ZHANG</b>	01_1027
17:30	Mid-infrared plasmonics in heavily doped GaAs <b>Shengqiang ZHOU</b>	02_1068
17:30	Advancing Mid-Infrared Silicon Photonics with Si-Based Graded GeSn Waveguide Photodetectors <b>Radhika BANSAL</b>	03_1306



- |       |   |         |
|-------|---|---------|
| 17:30 | The enhanced structural studies of $\alpha$ -Ga <sub>2</sub> O <sub>3</sub> implanted with Yb<br><b>Joanna MATULEWICZ</b> | 04_1396 |
| 17:30 | Doping of GaAs/AlGaAs core-shell nanowires by ion implantation<br><b>Yuxuan SUN</b>                                       | 05_699  |

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch

**2D MATERIALS AND BEYOND**

**K07**

- |       |   |      |
|-------|---|------|
| 14:00 | Positron annihilation spectroscopy as a probe of defect microstructure in heavily doped semiconductors<br><b>Maciej Oskar LIEDKE</b>  | 352  |
| 14:30 | Effect of soft annealing on the optoelectronic performance of Ti hyperdoped silicon photodiodes.<br><b>Rafael BENÍTEZ FERNÁNDEZ</b>   | 1097 |
| 14:45 | Spatial dispersion in doped semi-conductors: plasmons and beyond<br><b>Antoine MOREAU</b>   | 1412 |
| 15:15 | Influence of the nanocrystal size on the localized surface plasmon resonance in highly doped Si nanocrystals obtained in Si-rich SiO <sub>2</sub> /SiO <sub>2</sub> multilayers<br><b>Hervé RINNERT</b> | 1112 |
| 15:30 | Coffee break  |      |
| 18:00 | <b>YOUNG RESEARCHER AWARDS CEREMONY</b>   |      |
| 18:30 | <b>SOCIAL EVENT</b>   |      |



EMRS

2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

Symposium Sponsors



**TAIYO NIPPON SANSO**

**Symposium L**

Sessions: Room 315 | Main Building

Poster Session: 237 (Small Hall) | Main Building

ELECTRONICS, PHOTONICS AND SPINTRONICS

**ULTRA-WIDE-BANDGAP SEMICONDUCTORS CHALLENGES:  
FROM MATERIALS TO DEVICES**

**Symposium organizers:**

Ekaterine **CHIKOIDZE**

- Univeristé Paris Saclay, CNRS

Elke **MEISSNER**

- Fraunhofer Institute for Integrated Systems and Device Technology

Francis **CHI-CHUNG LING**

- The University of Hong Kong

Henryk **TEISSEYRE**  
(Main Organizer)

- Institute of Physics, Polish Academy of Sciences

Monday, 16 September 2024

		SESSION I	L01
9:00	The Emerging Ultra Wide Bandgap Semiconductor (Mg)NiO and Potential Applications <b>David ROGERS</b>		1444
9:30	NiO equips Ga <sub>2</sub> O <sub>3</sub> with bipolar conduction and avalanche capability <b>Jiandong YE</b>		208
10:00	Improved electrical properties of $\text{-Ga}_2\text{O}_3/\text{Al}_2\text{O}_3/\text{Pt}$ capacitors with modified $\text{Ga}_2\text{O}_3$ surface <b>Nabatame TOSHIHIDE</b>		224
10:15	Doping Effect and Thermal Stability of Electron Irradiation Induced Defects in $\beta$ -Ga <sub>2</sub> O <sub>3</sub> and GaN Crystals <b>Marcin KONCZYKOWSKI</b>		561
10:30	Coffee break		

		SESSION II	L02
11:00	Superior radiation tolerance of Ga <sub>2</sub> O <sub>3</sub> <b>Andrej KUZNETSOV</b>		1467
11:30	Solution processable ultra-wide bandgap semiconductors-based DUV photodetectors and their emerging applications <b>Taehyun PARK</b>		249
11:45	Application of AlHfGaO film in ultraviolet-C photodetectors using vapor cooling condensation system <b>Ching-Ting LEE</b>		253
12:00	Trapped holes and defect generation in crystalline and amorphous $\text{Ga}_2\text{O}_3$ <b>Alexander SHLUGER</b>		445
12:15	Incorporating Ba as compensating acceptor into $\text{-Ga}_2\text{O}_3$ by molecular beam epitaxy <b>Andrea ARDENGHI</b>		589
12:30	Lunch		

SESSION III

L03

14:00	Key Research Topics in Ga <sub>2</sub> O <sub>3</sub> Power Devices <b>Man Hoi WONG</b>	1504
14:30	Effects of the Deposition Temperature in Atomic Layer Deposition of Ga <sub>2</sub> O <sub>3</sub> thin films on Silicon and Sapphire Using a TEGa/O <sub>2</sub> Chemistry <b>Andy SEURET</b>	465
14:45	Deep level traps in (010) Ga <sub>2</sub> O <sub>3</sub> epilayers grown by MOCVD on native Sn-doped substrates <b>Christopher DAWE</b>	703
15:00	NiO/(Al and Ga) Ga <sub>2</sub> O <sub>3</sub> p/n heterojunctions: Material growth and diode design <b>Abderrahim MOUMEN</b>	855
15:15	Structural and optical studies of Yb-implanted Ga <sub>2</sub> O <sub>3</sub> <b>Mahwish SARWAR</b>	949
15:30	Coffee break	

SESSION IV

L04

16:00	High-speed growth of thick high-purity Ga <sub>2</sub> O <sub>3</sub> layers by low-pressure hot-wall metalorganic vapor phase epitaxy <b>Junya YOSHINAGA</b>	953
16:30	Point defects in Ga <sub>2</sub> O <sub>3</sub> as efficient UV-Vis light emission centers <b>Elzbieta GUZIEWICZ</b>	1199
16:45	Relationship between doping and intrinsic defects in UWBG semiconductors The case of Zn doping in beta-Ga <sub>2</sub> O <sub>3</sub> grown by MOCVD <b>Georges BREMOND</b>	1346
17:00	Exploring tetravalent doping in Ga <sub>2</sub> O <sub>3</sub> thin films grown by Pulsed Electron Deposition technique <b>Francesco STANCARI</b>	1384

POSTER SESSION I

LP01

17:30	The influence of anisotropy in wide-bandgap 4H-SiC on the thyristor breakdown voltage and its junction termination extension design <b>Kamil KOTRA</b>	01_1083
17:30	Photo-Gain Effect in Gallium Oxide UV-C Photoresistors Induced by Trapping of Photogenerated Holes <b>Giovanni VERZELLESI</b>	02_146
17:30	Gallium oxide thin films deposited by spray pyrolysis with low contact resistance towards indium-tin oxide and their implementation in heterojunctions with nickel oxide <b>Stefan EDINGER</b>	03_1489
17:30	Color Spectroscopy for Failure Analysis of Silicon Carbide Single Crystals using Energy Level Analysis <b>Hyoungeuk CHOI</b>	04_20
17:30	$\alpha$ -Ga <sub>2</sub> O <sub>3</sub> films on (B)GaAs as novel intermediate bandgap solar cells: from material to device design <b>Tarak HIDOURI</b>	05_216
17:30	Fabrication of transparent conductive zinc oxide films by chemical bath deposition with a rotating flow reactor <b>Hajime WAGATA</b>	06_309
17:30	Stimulation Technology of Growing Ultra-Wide Bandgap Ga <sub>2</sub> O <sub>3</sub> Semiconductor for Power Electronics. <b>Zurab KUSHITASHVILI</b>	07_312
17:30	Electron Irradiation of PLD-Grown $\alpha$ -Ga <sub>2</sub> O <sub>3</sub> Thin Films <b>Jun LIN</b>	08_718
17:30	Fabrication of vertical and planar NiO/Ga <sub>2</sub> O <sub>3</sub> diodes for optoelectronics applications <b>Abderrahim MOUMEN</b>	09_861
17:30	Anisotropic UV Photoluminescence from Bulk $\alpha$ -Ga <sub>2</sub> O <sub>3</sub> Crystals <b>Krzysztof KORONA</b>	10_962

Tuesday, 17 September 2024

ALUMINIUM NITRIDE I

L05

9:00	The preparation and application of high quality single-crystalline AlN template <b>Yuan YE</b>	141
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9:30	Influence of alloy disorder effects on the anisotropy of emission diagrams in AlGaN alloys, quantum wells and quantum dots <b>Alexandra IBANEZ</b>	820
10:00	Evaluation of Self-Heating Effects in AlGaN Channel Heterostructure field-effect Transistors grown on bulk AlN substrate <b>Jash MEHTA</b>	828
10:15	Phase-selective growth of $\text{Al}_x\text{Ga}_{1-x}\text{O}_2$ and $(\text{In}_x\text{Ga}_{1-x})\text{O}_2$ by In-mediated metal exchange catalysis in plasma-assisted molecular beam epitaxy <b>Andrea ARDENGHI</b>	968
10:30	Coffee break	

**ALUMINIUM NITRIDE II L06**

11:00	AlN based devices on AlN native substrates <b>Oliver HILT</b>	1606
11:30	Halide Vapor Phase Epitaxy of AlGaN: Perspectives for the development of novel nitride substrates <b>Arianna JAROSZYNSKA</b>	307
11:45	New strategies for obtaining efficient red emission from $\text{Eu}^{3+}$ ions in ZnMgO based quantum structures <b>Juby Alphonsa MATHEW</b>	1031
12:15	Ultra-thin GaN channel in AlGaN/GaN/AlN double heterostructure HEMTs on AlN substrates by hot-wall MOCVD <b>Minho KIM</b>	1350
12:30	Lunch	

**ALUMINIUM NITRIDE III L07**

14:00	How to improve epitaxially grown aluminum nitride layers on sapphire substrates <b>Sylvia HAGEDORN</b>	1441
14:30	Optical and electrical characteristics of the FeGa defect in dilute $\text{Al}_x\text{Ga}_{1-x}\text{N}$ alloys <b>Lijie SUN</b>	695

14:45	Probing n-ZnMgO/p-Si nanowire junctions: composition, strain, and defects revealed by Raman spectroscopy and electrical measurements	788
	<b>Eunika ZIELONY</b>	
15:00	Curvature Engineering of AlGaIn Drift Layers for Vertical Power Devices	1420
	<b>Byeongchan SO</b>	
15:15	Study on Al <sub>x</sub> Ga(1-x)2O <sub>3</sub> with different aluminum contents by metal-organic chemical vapor deposition	1557
	<b>Chih-Yang HUANG</b>	
15:30	Coffee break	

**POSTER SESSION II      LP02**

17:30	Transparent conductive fluorine and titanium co-doped zinc oxide films via aerosol assisted chemical vapour deposition	01_104
	<b>Iqra RAMZAN</b>	
17:30	Impact of chloride additive on the suppression of 2H/4H intermediate phase formation in wide-bandgap perovskite solar cells	02_1069
	<b>Saurabh SRIVASTAVA</b>	
17:30	Achieving Remarkable Enhancement in the Mobility of Organic Field Effect Transistors by Molecular Doping in Ambient Conditions	03_189
	<b>Ifra BIBI</b>	
17:30	Investigation on Energy Resolution of CsPbBr <sub>3</sub> Single-Crystal Devices	04_472
	<b>Xin ZHANG</b>	
17:30	Investigation of exciton lifetime of 4H-SiC(0001) modified by thermal annealing at 400 °C in high pressure O <sub>2</sub>	05_484
	<b>Gianmarco LAURELLA</b>	
17:30	Investigation of Anode contact on Charge Collection Efficiency Stability and Energy Resolution in Perovskite Radiation Detector	06_680
	<b>Yingying HAO</b>	
17:30	Microstructure evolution of CdZnTe crystal irradiated by heavy ions	07_760
	<b>Lu LIANG</b>	

Wednesday, 18 September 2024

9:00 PLENARY SESSION

12:30 Lunch

SESSION IX

L09

- |       |  |      |
|-------|--|------|
| 14:00 | Metal_Organic Chemical Vapor Deposition of Aluminum Yttrium Nitride and Aluminum Scandium Nitride for sustainable electronics<br><b>Isabel STREICHER</b> | 399  |
| 14:30 | Performance Improvement of ZnGa2O4 based Phototransistor utilizing Neutral Ion Beam Etching Technology<br><b>Siddharth RANA</b>                          | 351  |
| 14:45 | Persistent luminescence in Bi-doped LiYGeO4: new insights towards understanding the UV emission<br><b>Joana RODRIGUES</b>                                | 1269 |
| 15:00 | Photonic Atom Probe Analysis of Quantum Well Heterostructures: Evaluating Laser-Induced Thermal Effects at Nanoscale<br><b>Subodh K. GAUTAM</b>          | 1290 |
| 15:30 | Coffee break   |      |

SESSION X

L10

- |       |   |      |
|-------|---|------|
| 16:00 | ScAlN barrier HEMTs grown by ammonia source molecular beam epitaxy<br><b>Yvon CORDIER</b>   | 372  |
| 16:45 | Microstructural characterization of diamond epitaxial layers with variable boron doping, by X-ray Rocking Curve diffraction Imaging<br><b>Rébecca DOWEK</b> | 1383 |
| 17:00 | Temperature dependent photoluminescence excitation spectroscopy on single crystal r-GeO_ <sub>2</sub><br><b>Luca Sung-Min CHOI</b>                          | 1426 |



18:00 YOUNG RESEARCHER AWARDS CEREMONY

18:30 SOCIAL EVENT

Thursday, 19 September 2024

		<b>h_BN I</b>	<b>L11</b>
9:00	Quantum sensing with h-BN <b>Jesus ZUNIGA PEREZ</b>		210
9:30	Efficient light-matter interaction in hexagonal boron nitride <b>Guillaume CASSABOIS</b>		821
10:00	Optoelectronic Logic, Hazard Monitoring, and Security: Novel Applications of Ultraviolet Wide Bandgap Photodetectors <b>Hocheon YOO</b>		164
10:15	The Electron-Phonon Coupling Strength in hBN UV Color Centers <b>Nils BERNHARDT</b>		410
10:30	Coffee break		

		<b>h_BN II</b>	<b>L12</b>
11:00	Photo-induced doping of hBN for UVC LEDs <b>Jean Paul SALVESTRINI</b>		357
11:30	Bulk growth of hexagonal BN via a lithium-based flux method <b>Siddha PIMPUTKAR</b>		886
12:00	Cubic BN optical gap and intragap optically active defects <b>Alberto ZOBELLI</b>		1180
12:15	Exploring Gate Metal Options for AlGaIn/GaN HEMTs Technology <b>Muhammad ASAD</b>		1275

12:30 Lunch

		H_BN III	L13
14:00	Exfoliated and MOCVD h-BN as an excellent substrate for the epitaxy of 2D materials <b>Wojciech PACUSKI</b>		1608
14:30	Influence of boron precursor flow rate on structural properties of sp <sup>2</sup> boron nitride grown by two stage MOVPE on sapphire substrates <b>Mateusz TOKARCZYK</b>		1061
14:45	Optical Properties of MoSe <sub>2</sub> in Heterostructures with MgSe/ZnSe Grown by Molecular Beam Epitaxy <b>Adam SZCZERBA</b>		1404
15:00	4.1 eV defect luminescence as a tool to identify the polytype of sp <sup>2</sup> -BN <b>Jakub IWANSKI</b>		1110
15:15	Impact of annealing in nitrogen atmosphere on defect-related photoluminescence in MOVPE-grown layered boron nitride <b>Aleksandra DABROWSKA</b>		1272
15:30	Coffee break		



EMRS

2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

## Symposium M

Sessions: Room 102 | Faculty of Mathematics

Poster Session: 237 (Small Hall) | Main Building

NANOMATERIALS AND FUNCTIONAL MATERIALS

## INNOVATIVE ORGANIC MATERIALS FOR PROBING AND STIMULATING BIOLOGICAL SYSTEMS

### Symposium organizers:

Donata IANDOLO

Fabio CICOIRA

Francesco DECATALDO  
(Main Organizer)

Ilaria ABDEL-AZIZ

- Université Jean Monnet - SAINBIOSE U1059, INSERM
- Polytechnique Montréal
- University of Bologna
- University of the Basque country (EHU/UPV)

**Tuesday, 17 September 2024**

		<b>SESSION I</b>	<b>M01</b>
9:00	New strategies for electrochemical transistor materials and patterning <b>Anna HERLAND</b>		1377
9:30	Reduced Graphene Oxide-Based Electrolyte-Gated Organic Transistors for Real-Time Signal Processing and Neuromorphic Application <b>Maryam ABOUALI</b>		495
9:45	Fabrication and characterization of CD-Fe MOF for the detection and destruction of cancer cell <b>Sayani MAITI</b>		474
10:00	Protein-based polymers with ionic and mixed ionic-electronic conduction as functional materials for biodegradable electronics <b>Nadav AMDURSKY</b>		1330
10:30	Coffee break		

		<b>SESSION II</b>	<b>M02</b>
10:30	Engineering Flexible and Conductive Polymer Composites for Advanced Drug Delivery and Biosensor Interfaces <b>Željko JANICIJEVIC</b>		851
11:00	Textile electronics for wearable electronics in biomedical field <b>Vito VURRO</b>		507
11:30	Aerosol jet printing of electrochemical microactuators <b>Ji ZHANG</b>		1554
11:45	Thiophene-Fused BODIPYs: Efficient Heavy-Atom-Free Photosensitizers for Enhanced Photodynamic Therapy through Mitochondria Targeting and ROS Generation <b>Songyi LEE</b>		641
12:00	Merkel Cell-inspired Self-power Artificial Mechanoreceptor : A Composite of PVC Gel Polymer and PVDF-TrFE Copolymer <b>Dokyun KIM</b>		637
12:30	Lunch		

**SESSION III M03**

14:00	Intelligent conducting polymer materials for cutting-edge bio-integrated electronics <b>Miryam CRIADO-GONZALEZ</b>	295
14:30	Electrical Access to Bacteria by Redox Polymer-based Artificial Molecular Conduits <b>Gabor MEHES</b>	649
15:00	Optoelectronic enhancement of photocurrent by cyanobacteria on sustainable AP-VPP-fabricated PEDOT electrodes <b>Pulmu ELORANTA</b>	676
15:15	Towards Wearable Chemosensor for Metal Cations via Semiconducting Conjugated Polymer <b>Yun LIU</b>	715
15:30	Coffee break	

**SESSION IV M04**

16:00	Theranostic Chemistry <b>Johannes BINTINGER</b>	1283
16:30	Light-Based 3D Printing PEDOT:PSS for Bioelectronics <b>Antonio DOMINGUEZ-ALFARO</b>	500
17:00	Surface-grafted conjugated polymer brushes as robust conductive nanocoatings <b>Szczepan ZAPOTOCZNY</b>	878
17:15	Biodegradable Piezoelectric Nerve Conduit for Enhanced Neural Differentiation: Synergistic Effects of Ultrasound-Driven Electrical Stimulation and Drug Release <b>Vignesh KRISHNAMOORTHY KALIANNAGOUNDER</b>	1465
17:30	Implantable Nanosensors: Detecting, Communicating, and Ensuring Implant Success <b>Thomas WEBSTER</b>	180

**POSTER SESSION II MP01**

17:30	Synthesis of electrospinnable Poly (Glycerol-co-Sebacate) Acrylate (PGSA) for membrane fabrication <b>Kamal ASADIPAKDEL</b>	01_1226
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17:30	Smart Contact Lens for Visualizing Glucose Levels in Body Fluids Using Colorimetric Technology <b>Jumi KANG</b>	641
17:30	Hydrophilic Imidazolium-Based Photosensitizers: Enhancing Fluorescence and ROS Generation for Advanced Photodynamic Therapy and Bioimaging <b>Songyi LEE</b>	03_145
17:30	Synthesis and Characterization of Fluorophore-Decorated Sequence-Defined Oligomers <b>Anuj SHARMA</b>	04_370
17:30	The target rulings the oxidation and degradation ability of the ZIF-67/PtPd : A seesaw-like two-channel colorimetric platform for organophosphorus detection <b>Yunzhu TAN</b>	05_436
17:30	Vibration tactile sensor inspired by Pacinian corpuscle mechanoreceptor <b>Jin-Yup KIM</b>	06_635
17:30	Fabrication and Characteristics Analysis of Composite Materials of Filter Paper and PDMS that can be used in various biochips <b>Yo Han CHOI</b>	07_710
17:30	Bicyclic Mechanophores in Polymers for Strain-Induced Unlocking of Stored Properties <b>Alexander Perez ROXAS</b>	08_990

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch



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2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

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UNIVERSITY OF SILESIA  
IN KATOWICE

Symposium N

Sessions: Room 328 | Faculty of Mathematics  
Poster Session: 237 (Small Hall) | Main Building

NANOMATERIALS AND FUNCTIONAL MATERIALS

**PROGRESS IN STRUCTURAL, OPTICAL, DIELECTRIC AND MAGNETIC PROPERTIES  
INVESTIGATIONS OF FERROICS AND MULTIFERROICS**

Symposium organizers:

Anthony Michael **GLAZER**  
(Main Organizer)

Krystian **ROLEDER**

Philippe **GHOSEZ**

Rostyslav **VLOKH**

- University of Oxford

- Institute of Physics | University of Silesia

- University of Liège - Theoretical Materials Physics

- Vlokh Institute of Physical Optics

**Monday, 16 September 2024**
**DOMAINS I N01**

- |       |   |      |
|-------|---|------|
| 9:00  | Twisted Charged Interfaces in Ferroelectrics<br><b>Marty GREGG</b>  | 369  |
| 9:30  | Time-resolved photostriction and bulk photovoltaic effect in ferroelectrics<br><b>Gustau CATALAN</b>                    | 1385 |
| 10:00 | Assessing the nature of nanoscale ferroelectric domain walls in lead titanate multilayers<br><b>Marios HADJIMICHAEL</b> | 315  |
| 10:30 | Coffee break  |      |

**DOMAINS II N02**

- |       |  |      |
|-------|--|------|
| 11:00 | Exploring the asymmetric nanotribology and interactions with surface water of ferroelectric materials<br><b>Patrycja PARUCH</b>                                    | 991  |
| 11:30 | Exploring ferroelectrics and their response to external stimuli at the local scales by scanning transmission electron microscopy<br><b>Oana-Andreea CONDURACHE</b> | 276  |
| 12:00 | Polar textures in ferroelectric superlattices<br><b>Pavlo ZUBKO</b>  | 1127 |
| 12:30 | Lunch  |      |

**DOMAINS III N03**

- |       |   |     |
|-------|---|-----|
| 14:00 | Dynamic elastic studies of inhomogeneous nanostructures at ferroic phase transitions<br><b>Wilfried SCHRANZ</b> | 79  |
| 14:30 | Applications of second harmonic generation microscopy on Ferroics<br><b>Hiroko YOKOTA</b>                       | 552 |



15:00	Domain rotation and domain wall mobility in piezoelectric single crystals <b>Nan ZHANG</b>	373
15:30	Coffee break	

**ABO3 PEROVSKITES N04**

16:00	Atomic force microscopy-based nano-machining studies of sub-surface ferroelectric domain configurations in ultrathin films <b>Sabir HUSSAIN</b>	470
16:15	Lattice-distortion couplings in antiferroelectric perovskite oxides: A comparative study between AgNbO <sub>3</sub> and PbZrO <sub>3</sub> <b>Huazhang ZHANG</b>	413
16:30	First order polarization process and anisotropic in-plane ferroelectricity in CaTiO <sub>3</sub> thin films <b>Lukas KOROSEC</b>	494
16:45	Vortices and Antivortices in Antiferroelectric PbZrO <sub>3</sub> <b>Konstantin SHAPOVALOV</b>	774
17:00	Local Ferroic Properties of Ferroelastic Domain Walls in CaMnO <sub>3</sub> From First Principles <b>Ida Cathrine SKOGVOLL</b>	1263
17:15	Polar superorders in BiFeO <sub>3</sub> -based superlattices <b>Francesco DELODOVICI</b>	383

**POSTER SESSION I NP01**

17:30	Electric Field Dependent Thermal Transport in Functional Oxide <b>Dominik M. KOCH</b>	01_1000
17:30	Perovskite material domain analysis towards enhanced functionality <b>Ioan-Mihail GHITIU</b>	02_1015
17:30	Synthesis of boracites and many other borate phases... <b>Charlotte COCHARD</b>	03_1022

17:30	Defect-induced electrocaloric effect in disordered lead-free heterovalent and isovalent ion substituted BaTiO <sub>3</sub> -based system <b>Yammala ELIYA</b>	04_1045
17:30	Hidden Topology of Translational Boundaries in up-up-down-down-type Ferroic Systems <b>Konstantin SHAPOVALOV</b>	05_1179
17:30	Ferroelectric nonlinear polycrystalline metal-oxide synthesized via chemical solution deposition <b>Virginia FALCONE</b>	06_1240
17:30	Investigating Ferroelectricity in Freestanding PbTiO <sub>3</sub> Heterostructures <b>Sophia LINSSEN-PITSAROS</b>	07_1310
17:30	Mechanical properties of antiferroelectric lead hafnate <b>Julita PIECHA</b>	08_1476
17:30	Role of Chelating Agents on the Synthesis of Bismuth Ferrite Nanoparticles for Photocatalytic Degradation of Organic Pollutants <b>Kokkiligadda JHANSI</b>	09_1502
17:30	Performance assessment of nanoscale ferroelectric-JLGAA MOSFET using strained binary alloy channel material <b>Faycal DJEFFAL</b>	10_1531
17:30	Optimized Memristive and Synaptic Functionality via Oxygen-deficient ZrO <sub>2-x</sub> insertion <b>Turgun BOYNAZAROV</b>	11_170
17:30	Jahn-Teller effect and features of divalent copper ion behavior in multicomponent borate crystals <b>Andrey PROKHOROV</b>	12_21
17:30	Thermal conductivity of bulk BiFeO <sub>3</sub> (single domain) and thin BiFeO <sub>3</sub> films (multi-domain) determined by Raman thermometry <b>Cameliu HIMCINSCHI</b>	13_25
17:30	Magnetoelectric coupling in novel BaTiO <sub>3</sub> -CaMnO <sub>3</sub> solid solution for multifunctional Dielectric Resonator Antenna application. <b>Maneesha PUTHIYOTH</b>	14_344
17:30	Mechanical stress-induced phase in PbHfO <sub>3</sub> <b>Iwona LAZAR</b>	15_389

17:30	Pressure Tuning Properties of Spin Crossover Materials, Spin Transition as a Direction in Modern Electronics and Spintronics <b>Gerogiy LEVCHENKO</b>	16_448
17:30	Novel Approaches in Magnetic Sensing: Utilizing Laser Ablated Iron Oxide Nanoparticles in Advanced Fluxgate Magnetometers <b>Regina Maria CHIECHIO</b>	17_469
17:30	Synthesis and characterisation of TMCM-MnCl <sub>3</sub> <b>Chithra KANDAPPANTHODI</b>	18_549
17:30	A contribution to understanding the nature of the intermediate IM phase in PbHf <sub>0.7</sub> Sn <sub>0.3</sub> O <sub>3</sub> single crystal <b>Irena JANKOWSKA-SUMARA</b>	19_627
17:30	Formation and Analysis of L21-ordered Full-Heusler Co <sub>2</sub> TiSn Thin Films for Spintronic Applications <b>Artem SHAMARDIN</b>	20_776
17:30	Frequency and temperature dependent electrical conductivity and impedance studies of Sn doped BST ceramics <b>Anil KUMAR</b>	21_860
17:30	Magnetolectric coupling in novel BaTiO <sub>3</sub> -CaMnO <sub>3</sub> solid solution for multifunctional Dielectric Resonator Antenna application <b>Maneesha PUTHIYOTH</b>	22_918

**Tuesday, 17 September 2024**

**SCYRMIONS AND MULTIFERROICS I**

**N05**

9:00	Update on nonmagnetic antiskyrmions in barium titanate <b>Jirí HLINKA</b>	1122
9:30	Analysis of pattern formation in topological phases in polar heterostructure <b>Javier JUNQUERA</b>	1270
10:00	Brownian electric bubble quasiparticles <b>Hugo ARAMBERRI</b>	281
10:30	Coffee break	

**SCYRMIONS AND MULTIFERROICS II**

**N06**

11:00	Screwing Ferroelectricity and Novel Electric Dzyaloshinskii-Moriya Interaction <b>Peng CHEN</b>	514
11:30	(Re)investigating multiferroics from first principles <b>Nicholas BRISTOWE</b>	392
12:30	Lunch	

**SCYRMIONS AND MULTIFERROICS III**

**N07**

14:00	A frustrated antipolar phase analogous to classical spin liquids <b>Stanislav KAMBA</b>	371
14:30	Relaxors for neuromorphic computing <b>Brahim DKHIL</b>	912
15:00	Investigations of van der Waals epitaxial growth of Aurivillius phase ferroelectrics and multiferroics <b>Anurag PRITAM</b>	702
15:15	Temperature-, pressure-, and time-dependent magnetism in perovskite nanoparticles <b>Nikita LIEDIENOV</b>	440
15:30	Coffee break	

**SCYRMIONS AND MULTIFERROICS IV**

**N08**

16:00	Phase evolution in Hf <sub>0.5</sub> Zr <sub>0.5</sub> O <sub>2</sub> thin films deposited by off-axis magnetron sputtering <b>Yaqi LI</b>	1397
16:15	Characterization of hafnium oxide based multiferroic heterostructures for magnetoelectric spin-orbit devices <b>Maximilian LEDERER</b>	1224

16:30 Multiferroic metal with Huge polar distortion driven by spin ordering: monolayer Fe<sub>3</sub>GeTe<sub>2</sub> 1187  
**Jisoo NAM**

16:45 High-quality  $\lambda$ -BaFe<sub>2</sub>O<sub>4</sub> thin films via pulsed electron deposition: a gateway to multiferroic applications 1311  
**Michele CASAPPA**

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch

**SrTiO<sub>3</sub> N09**

14:00 The incredible diversity of structural and magnetic instabilities: from paramagnetic to spin glass, spin liquid and finally antiferromagnetic order 386  
**Annette BUSSMANN-HOLDER**

14:30 Oxidised Oxygen and quantum polarons in SrTiO<sub>3</sub> 1462  
**Mario MAGLIONE**

15:00 Anomalous Photoelectric Effects SrTiO<sub>3</sub> Single Crystals and Heterostructures 94  
**Marin ALEXE**

15:30 Coffee break

**BiFeO<sub>3</sub> N10**

16:00 Phase transitions and domain dynamics in PbTiO<sub>3</sub>/SrTiO<sub>3</sub> superlattices 33  
**Fernando GÓMEZ-ORTIZ**

16:30 Advanced Methods for Minimizing Substrate Contributions in Raman Spectroscopy of Thin Films: Example of BiFeO<sub>3</sub> grown on SrTiO<sub>3</sub>. 325  
**Thomas PERRAULT**

16:45	BiFeO <sub>3</sub> nanoparticles using atomistic simulations <b>Mauro António PEREIRA GONCALVES</b>	1078
17:00	Strong and Unexpected Piezocatalytic Behavior <b>Wafa AMDOUNI</b>	648
17:15	Anti-magnetoelectricity, a hidden order probed by Dynamical Magnetic Charges <b>Maxime BRAUN</b>	1072
17:30	Synthesis of polycrystalline LiNbO <sub>3</sub> Thin Films Using a Novel Lithium–Niobium Heterobimetallic Precursor via solution approaches <b>Francesca LO PRESTI</b>	960
18:00	<b>YOUNG RESEARCHER AWARDS CEREMONY</b>	
18:30	<b>SOCIAL EVENT</b>	

Thursday, 19 September 2024

## HYBRID COMPOUNDS I N11

9:30	Density-functional theory characterization of ferroelectric oxides at the nanoscale <b>Oswaldo DIEGUEZ</b>	1032
10:00	Anharmonicity and Soft Mode Dynamics in Cs <sub>2</sub> AgBiBr <sub>6</sub> , a Lead-Free Double Perovskite <b>Peter GEHRING</b>	304
10:30	Coffee break	

## HYBRID COMPOUNDS II N12

11:00	The role of non-covalent interactions in stabilization of polar phases in organic-inorganic ferroelectrics <b>Anna GAGOR</b>	1156
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11:30	The impact of the halogen exchange on the crystal structure and physical properties of organic-inorganic Sb(III)-based hybrids	714
	<b>Anna PIECHA-BISIOREK</b>	
12:00	Structural and Optoelectronic Investigations of Low-dimensional Ruddlesden-Popper and Dion-Jacobson Metal Halide Perovskite Phases	90
	<b>Abhishek YADAV</b>	
12:15	The impact of measuring conditions on the electrocaloric effect in PZT ceramics	692
	<b>Magdalena KRUPSKA-KLIMCZAK</b>	
12:30	Lunch	

**MISCELENOUS I N13**

14:00	Investigating structure and electronic properties in ultrathin BaTiO <sub>3</sub> films through advanced spectroscopy techniques	1510
	<b>Sara GONZALEZ</b>	
14:15	Exploring Antiferroelectric Alternatives: First-Order Polarization in Perovskite Structures	179
	<b>Louis BASTOGNE</b>	
14:30	Annealing induced transformation of thin layers of ferromagnetic MnAs to antiferromagnetic MnTe	1430
	<b>Janusz SADOWSKI</b>	
14:45	Self-Powered Pyro-Magneto-Electric Device: A Synergistic Approach to Energy Harvesting from Waste Thermal and Magnetic Energies	1335
	<b>Dalip SAINI</b>	
15:00	Unveiling Surface Properties of LaNiO <sub>3</sub> Thin Films: A Plasmonic-Assisted Raman Spectroscopy Approach	1299
	<b>Mads C. WEBER</b>	
15:15	Investigation of the active role of organic compounds in stabilization of ferroelectric polarization switching, and enhancement of switching dynamics in BaTiO <sub>3</sub> thin films	1233
	<b>Nona MIRZAMOHAMMADI</b>	
15:30	Coffee break	

16:00	On-the-fly Machine-learned Potentials for MD Simulations of Ferroelectric Phase Transitions <b>Kristoffer EGGESTAD</b>	1167
16:15	Rare-Earth Ion Modulation of Magnon and Phonon Behavior in Orthoferrites <b>Sreelakshmi KUDILINGAL GOPI</b>	1139
16:30	Improper phase transition of boracites <b>Charlotte COCHARD</b>	1009
16:45	Sliding ferroelectricity in misfit layer compound (PbS) <sub>1.11</sub> VS <sub>2</sub> <b>Tim VERHAGEN</b>	1186
17:00	Anomalous mechanical polarization switching in negative piezoelectric CuInP <sub>2</sub> S <sub>6</sub> <b>Dawei ZHANG</b>	2





# 2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

## Symposium Sponsors

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## Symposium O

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

NANOMATERIALS AND FUNCTIONAL MATERIALS

## MXENES AND RELATED MATERIALS

### Symposium organizers:

Agnieszka Maria **JASTRZEBSKA** – Warsaw University of Technology  
(Main Organizer)

Andreas **ROSENKRANZ** – University of Chile

Babak **ANASORI** – Purdue University

Michael **NAGUIB** – Tulane University

**Tuesday, 17 September 2024**
**SESSION I O01**

9:00	What MXenes Can Do for Storage of Electrical Energy <b>Yury GOGOTSI</b>	1571
9:30	Synthesis of two-dimensional goldene from Au-based MAX phases <b>Johanna ROSEN</b>	1579
10:00	MXene Chemistry and Applications <b>Vadym N. MOCHALIN</b>	1572
10:30	Coffee break	

**SESSION II O02**

11:00	Hydrogen storage in MXenes evaluated with the secondary ion mass spectrometry technique <b>Pawel MICHALOWSKI</b>	557
11:30	2D MXenes for Multispectral Electromagnetic Shielding <b>Chong Min KOO</b>	1011
12:00	Tunable Mechanical and Tribological Properties - Underlying Mechanisms and Kinetics <b>Andreas ROSENKRANZ</b>	1578
12:15	Strain-induced effects in electronic properties of thin layers of ScB <b>Magdalena BIROWSKA</b>	1288
12:30	Lunch	

**SESSION III O03**

14:00	Diverse Strategies for Pseudocapacitance in 2D Materials and beyond <b>Maria LUKATSKAYA</b>	790
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14:30	Chemical scissor-mediated structural editing of layered transition metal carbides and Beyond <b>Qing HUANG</b>	1574
14:45	MXene-TMDs based hybrids for Supercapacitor applications <b>Chandra Sekhar ROUT</b>	129
15:00	Scalable Synthesis of 2D Transition Metal Carbo-Chalcogenides: Properties and Applications <b>Michael NAGUIB</b>	1577
15:15	Exploring MBenes: Unraveling Structure, Etching, and Optical Properties <b>Madhurya CHANDEL</b>	615
15:30	Coffee break	

SESSION IV O04

16:00	MXene chemistry and topochemical reactions <b>Zdenek SOFER</b>	199
16:30	Functional 2D Materials: From Smart Diapers to Cardiovascular Health Monitoring <b>Artur CIESIELSKI</b>	1609
17:00	Excitonic Effects in MXenes <b>Frantisek KARLICKY</b>	1522
17:15	Terahertz response of structural architectures of MXenes <b>Manas Ranjan PARIDA</b>	149

POSTER SESSION II OP01

17:30	Mxene/1T-2H MoS <sub>2</sub> /Mxene self assembled sandwich like film with ultra high gravimetric capacitance for solid state supercapacitors <b>Srishti AGARWAL</b>	02_1113
17:30	Role of Ultrathin Ti <sub>3</sub> C <sub>2</sub> T <sub>x</sub> MXene layer for Developing Solution-Processed High-Performance Low Voltage Metal Oxide Transistor <b>Ankita RAWAT</b>	03_120

17:30	Topochemical Conversion of MoAIB into Mo <sub>2</sub> AIB <sub>2</sub> Single Crystals: Structure and Properties <b>Aditya SHARMA</b>	04_127
17:30	Laser scattering of gold nanoparticles-decorated Ti <sub>3</sub> C <sub>2</sub> MXene for enhanced optical biosensing <b>Zaheer BABAR</b>	05_1333
17:30	Molten salt solid-state synthesis of MAX phase with purity >99% in ambient condition <b>Ekta CHOUDHARY</b>	06_1422
17:30	Towards sustainable fabrication of MXenes - electrochemically assisted etching performed in a natural deep eutectic solvents <b>Dujearic-Stephane KOUAO</b>	07_1447
17:30	Laser treatment of MXene towards its incorporation in titania nanotubes for improved light conversion <b>Dujearic-Stephane KOUAO</b>	08_316
17:30	Pursuing an environmentally friendly route to MXenes <b>Marta POSADZY</b>	09_541
17:30	Strategic intercalation of BaTiO <sub>3</sub> nanoparticles in multilayers of Ti <sub>3</sub> C <sub>2</sub> T <sub>x</sub> MXene for enhanced supercapacitor performance <b>Jitesh PANI</b>	10_639
17:30	MXene as a negative electrode material for all-solid-state batteries <b>Kosuke KAWAI</b>	11_655
17:30	Development of a Highly Efficient and Versatile MXene Hydrogel Composite for Enhanced Urea Adsorption <b>Zhihao YEN</b>	12_89
17:30	Role of surface passivation on the magnetic properties of iMXene (Cr <sub>2/3</sub> M <sub>1/3</sub> ) <sub>2</sub> C <b>Himangshu SEKHAR SARMAH</b>	13_916

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch

14:00	Fluoride-Free Synthesis of MXenes: Towards Sustainable Production and Applications <b>Ali SHAYGAN NIA</b>	1576
14:30	Chemical Imaging of single Ti <sub>3</sub> C <sub>2</sub> T <sub>x</sub> MXenes flakes by X-ray Spectromicroscopy <b>Tristan PETIT</b>	1573
15:00	Nanoscale surface and bulk electronic properties of Ti <sub>3</sub> C <sub>2</sub> T <sub>x</sub> MXene unraveled by multimodal X-ray spectromicroscopy <b>Faidra AMARGIANOU</b>	877
15:15	Magnetic MXene Composites for Efficient Removal of Emerging Contaminants from Water <b>Haya ALYASI</b>	1610
15:30	Coffee break	
18:00	<b>YOUNG RESEARCHER AWARDS CEREMONY</b>	
18:30	<b>SOCIAL EVENT</b>	



# 2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

## Symposium P

Sessions: Room 101 | Faculty of Mathematics

Poster Session: 237 (Small Hall) | Main Building

NANOMATERIALS AND FUNCTIONAL MATERIALS

## BORON NITRIDE:

## FROM ADVANCED GROWTH APPROACHES TO ADVANCED APPLICATIONS

### Symposium organizers:

Agata **KAMINSKA**  
(Main Organizer)

Bernard **GIL**

Izabella **GRZEGORY**

James **HOWARD EDGAR**

- Cardinal Stefan Wyszyński University

- Centre National de la Recherche Scientifique

- Institute of High Pressure Physics PAS

- Kansas State University

**Monday, 16 September 2024**

		<b>DEFECTS I</b>	<b>P01</b>
9:00	Theory of defect emitters in hexagonal boron nitride <b>Adam GALI</b>		582
9:30	Manipulation of carbon color centers in hexagonal boron nitride for efficient deep ultraviolet light emission <b>Young Duck KIM</b>		1
10:00	Interaction of oxygen and quantum emitters in hexagonal boron nitride <b>Rohit BABAR</b>		1192
10:15	Carbon chain tetramer as the blue quantum emitter (435 nm) in hexagonal boron nitride <b>Marek MACIASZEK</b>		1551
10:30	Coffee break		

		<b>GROWTH I (BULK)</b>	<b>P02</b>
11:00	Solution growth of BN crystals and their residual impurity and isotope control <b>Takashi TANIGUCHI</b>		1182
11:30	BN crystal growth from ammonothermal solutions <b>Siddha PIMPUTKAR</b>		884
12:00	Application of the traveling-solvent floating-zone technique to bulk h-BN growth <b>Eli ZOGHLIN</b>		287
12:30	Comparative evaluation of h-BN crystals properties grown under high N <sub>2</sub> pressure with pure Ni and Ni-Cr solvents via thermal gradient technique <b>Bohdan SADOVYI</b>		928
12:30	Lunch		

PHYSICAL PROPERTIES I

P03

14:00	Exploring the optical properties of boron nitride polytypes through high-energy spectroscopies: combining EELS, Nano-CL, RIXS, and XEOL <b>Alberto ZOBELLI</b>	1175
14:30	Influence of additional layers on properties of point defects in hexagonal boron nitride - a theoretical study <b>Tatiana KORONA</b>	479
15:00	Thermal conductivity of amorphous boron nitride <b>Marianna SLEDZINSKA</b>	68
15:15	A novel Luminescent and Photothermal Boron Nitride Quantum Dots Shows Anti-Oxidants and Anti-Inflammatory Protective Effects. <b>Salvatore PETRALIA</b>	60
15:30	Coffee break	

PHYSICAL PROPERTIES II

P04

16:00	Acoustic Phonons in Ag, Cu, Au, Fe-intercalated 2D Hexagonal Boron Nitride from Brillouin Spectroscopy <b>Kristie KOSKI</b>	913
16:30	Flexoelectricity in two-dimensional materials from first principles <b>Miquel ROYO VALLS</b>	533
17:00	Spectral manipulation of quantum emitters in hexagonal Boron Nitride <b>Nicola MELCHIONI</b>	965
17:30	Information of the Editor of Physica Status Solidi - Boron Nitride in physica status solidi (b): A cutting-edge Special Issue publication	



**Tuesday, 17 September 2024**
**OPTICAL PROPERTIES I**
**P05**

9:00	Polytypism in hexagonal boron nitride: an optical study <b>Guillaume CASSABOIS</b>	823
9:30	Cathodoluminescence studies of hexagonal BN polytypes and monolayer BN <b>Shigefusa CHICHIBU</b>	503
10:00	Influence of Stacking Order on UV luminescence of epitaxial BN <b>Krzysztof KORONA</b>	505
10:30	Coffee break	

**GROWTH II (CVD EPITAXY)**
**P06**

11:00	Current status and challenges in hBN growth by chemical vapor deposition <b>Hyeon Suk SHIN</b>	1339
11:30	Growth of hexagonal boron nitrides by MOCVD and their applications <b>Jong Kyu KIM</b>	1417
12:00	MOVPE growth of hexagonal boron nitride - scaling up and applications. <b>Suresh SUNDARAM</b>	308
12:30	Homoepitaxy of boron nitride on exfoliated hexagonal boron nitride flakes <b>Johannes BINDER</b>	1245
12:45	Lunch	

**DEFECTS II**
**P07**

14:00	Current state of BN research using positron annihilation spectroscopy <b>Filip TUOMISTO</b>	571
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14:30	Structure characterization of hBN defects <b>Elisabeth MANSFIELD</b>	1327
14:45	Isotope substitution and polytype control for point defects identification: the case of the ultraviolet color center in hexagonal boron nitride <b>Juliette PLO</b>	595
15:00	Carbon-related spin ensemble in boron nitride obtained by MOCVD <b>Jakub IWANSKI</b>	1126
15:15	Carbon-contaminated topological defects in hexagonal boron nitride for quantum photonics <b>Rohit BABAR</b>	497
15:30	Coffee break	

### GROWTH III (NEW APPROACHES)

P08

16:00	Status of h-BN quasi-bulk crystals <b>Jingyu LIN</b>	1349
16:30	Controlled Growth of Single-crystal Boron Nitride Based on Symmetry <b>Li WANG</b>	587
17:00	Mechanochemical synthesis of alkali metal-containing B- and N-based precursors towards various boron nitride polytypes <b>Samuel BERNARD</b>	1585

### Wednesday, 18 September 2024

9:00 **PLENARY SESSION**

12:30 Lunch

**OPTICAL PROPERTIES**

**P09**

14:00	Doping and quantum defects in hexagonal and cubic BN <b>Chris VAN DE WALLE</b>	429
14:30	Excitons in linear and nonlinear optical responses of two-dimensional hBN <b>Steven G. LOUIE</b>	628
15:00	Exciton-phonon coupling in boron nitride systems: insights from theoretical spectroscopy <b>Fulvio PALEARI</b>	1317
15:30	Coffee break	

**GROWTH IV (MBE) & APPLICATIONS**

**P10**

16:00	Ion-beam-assisted MBE growth of cubic boron nitride <b>Kazuyuki HIRAMA</b>	1364
16:30	Scanning Probe Microscopy of hBN Grown by High-Temperature Molecular Beam Epitaxy <b>Jonathan BRADFORD</b>	906
17:00	5000 PPI vertical stack R/G/B micro-LED pixel architectures fabricated by advanced epitaxy on ultrathin 2d materials <b>Young Joon HONG</b>	1352
17:30	Photo-curable Functionalized Boron Nitride Nanosheets Composites for Thermal Management <b>Yixuan JIANG</b>	1341
18:00	<b>YOUNG RESEARCHER AWARDS CEREMONY</b>	
18:30	<b>SOCIAL EVENT</b>	



EMRS

2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

## Symposium Q

Sessions: Room 329 | Faculty of Mathematics

Poster Session: 237 (Small Hall) | Main Building

NANOMATERIALS AND FUNCTIONAL MATERIALS

## DEFECT-INDUCED EFFECTS IN LOW-DIMENSIONAL AND NOVEL MATERIALS

### Symposium organizers:

Agata LISINSKA-CZEKAJ  
(Main Organizer)

Mikhail BRIK

Nikolai A. SOBOLEV

Shengqiang ZHOU

- Gdańsk University of Technology

- University of Tartu

- Universidade de Aveiro

- Helmholtz-Zentrum Dresden-Rossendorf

**Monday, 16 September 2024**
**SESSION Q-Mo1**
**Q01**

9:00	Optical signatures of defects at ferroelectric domain walls in bismuth ferrite <b>Sabine KÖRBEL</b>	734
9:30	Single ion implanter for quantum technology <b>Steven CLOWES</b>	32
10:00	Atomic Scale Bunching of Electrons in a Nano Electro Mechanical Resonator <b>Abhishek MAITI</b>	95
10:15	Polarized emission from extended defects in Ge heterostructures <b>Jacopo PEDRINI</b>	1002
10:30	Coffee break	

**SESSION Q-Mo2**
**Q02**

11:00	Ion driven beta- to gamma-Ga <sub>2</sub> O <sub>3</sub> phase transition and resulting defect microstructure <b>Maciej Oskar LIEDKE</b>	1378
11:15	Defect induced magnetic phase transition in CrSBr. <b>Fangchao LONG</b>	550
11:30	Analytical impact excitation of Er/O/B co-doped Si light emitting diodes <b>Yaping DAN</b>	1303
11:45	Defect-induced nano-engineering of polymorph heterostructures <b>Andrej KUZNETSOV</b>	1473
12:30	Lunch	

SESSION Q-Mo3

Q03

- |       |  |      |
|-------|--|------|
| 14:00 | Emergence of Piezoelectric and Pyroelectric Effects in Centrosymmetric Oxides by Controlling Ionic Defects<br><b>Daesung PARK</b>  | 86   |
| 14:30 | Tailoring dielectric permittivity of epitaxial Gd-doped CeO <sub>2-x</sub> films by ionic defects<br><b>Alessandro PALLIOTTO</b>   | 1280 |
| 14:45 | Electronic and Thermal Transport Properties of Nanostructured Thermoelectric Materials Sintered from Chemically Synthesized Tin Sulfide Nanoparticles and Effects of Ag and Se Doping<br><b>Mari TAKAHASHI</b> | 306  |
| 15:30 | Coffee break   |      |

SESSION Q-Mo4

Q04

- |       |   |      |
|-------|---|------|
| 16:00 | Electronic properties and pairing of iso-electronic dopants in III/V materials studied at the single defect level by STM<br><b>Paul KOENRAAD</b>            | 158  |
| 16:30 | Highly sensitive spectroscopy tools for studying defects and charge transfer processes in novel semiconductors<br><b>Igal LEVINE</b>                        | 72   |
| 16:45 | Submicron Visualization and Quantification of Grain Boundary Thermal Resistance in Ceramics via Scanning Thermal Wave Microscopy<br><b>Alexander TSELEV</b> | 394  |
| 17:00 | Characterization of Anisotropic Thermal Diffusivity using Micro Four-Point Probe<br><b>Neetu LAMBA</b>  | 1307 |
| 17:15 | First evidence of fluorine doping in barium stannate for transparent conducting applications<br><b>Sushobhita CHAWLA</b>                                    | 1338 |

POSTER SESSION I

QP01

- |       |  |         |
|-------|--|---------|
| 17:30 | Mechanical Response of High Entropy FeNiCrCoAl Alloys: Bulk and Nanoparticle<br><b>Sergio Javier MEJÍA-ROSALES</b> | 18_1614 |
|-------|--|---------|

17:30	Damage and Degradation by Swift Heavy Ions in SiC JBS Diodes <b>Liu JIE</b>	01_1014
17:30	Fabrication and characterization of titanium-rich titanium oxide thin films for RRAM devices <b>Disha YADAV</b>	02_1177
17:30	Integrating Laser and Ultraviolet-O3 Techniques to Optimize MoTe2 Memristors for Neural Applications <b>Xin YAN</b>	03_125
17:30	Analytical impact excitation theory of defects in Si light emitting diodes <b>Yaping DAN</b>	04_1304
17:30	Analytical photoresponses of Schottky contact MoS2 phototransistors <b>Yaping DAN</b>	05_1305
17:30	Hopping Transfer Optimizes Avalanche Multiplication in Molybdenum Disulfide <b>Feng CHEN</b>	06_1355
17:30	Resistive switching with ZnO tetrapods <b>Nikolai SOBOLEV</b>	07_1583
17:30	Improved magnetocaloric properties of hydrothermal-grown ErCrO3 nanocrystals <b>Joao CARVALHO</b>	08_1590
17:30	Perovskite surface passivation with carbazole derivatives possessing various functional groups and the study of their interaction with the perovskite <b>Matas STEPONAITIS</b>	09_314
17:30	DFT study of the positioning of helium in a vacancy in metals - toward understanding the helium bubble formation <b>Wen-Tong GENG</b>	10_34
17:30	First principles calculations of the advanced phosphor materials <b>Leonid RUSEVICH</b>	11_420
17:30	Investigating Quasi 2D Lead Free Halide Perovskite Nanosheets for Non-Linear Optical Applications <b>Fency SUNNY</b>	12_432

17:30	A spin rate alteration as a tool for application-driven subtle tuning of sol-gel prepared alumina thin layer properties. <b>Aleksandra PRZYBYLA</b>	13_461
17:30	Origin of persisting photoresponse of one-year aged two-dimensional lead halide perovskites stored in air under dark conditions <b>Mahesh ELEDATH CHANGARATH</b>	14_511
17:30	Defect engineering in LiTaO3 for efficient ion slicing <b>Limin WAN</b>	15_559
17:30	The n-ZnO/ZnCdO layers degradation after annealing - in-depth analysis of deep-level traps by DLTS technique. <b>Radoslaw SZYMON</b>	16_608
17:30	Defect engineering in LiTaO3 for efficient ion slicing <b>Limin WAN</b>	17_657

**Tuesday, 17 September 2024**
**SESSION Q-TUE1**
**Q05**

9:00	The Band Gap Engineering of Perovskite Nanoparticles for Photostimulated Hydrogen Production <b>Jevgenijs KOTOMINS</b>	66
9:45	Metal Halide Perovskite Nanoparticles: Synthesis, Compositional Optimizations and Insight into Defects <b>Mohammed ASLAM</b>	1353
10:00	Disorder Induced Covalent organic Framework for the Efficient Removal of Toxic Oxo-anions from Water <b>Mebin VARGHESE</b>	1461
10:15	Disorder-Induced Hierarchical 4,4'-bipyridine based Macro/meso Porous Ionic Covalent Organic Framework for The Efficient Removal of Toxic Pollutants from Water <b>Arjun WARRIER</b>	1452
10:30	Coffee break	

**SESSION Q-TUE2**
**Q06**

11:00	An Interplay between Electronic and Ionic Processes in Oxide Resistive Switching Devices <b>Alexander SHLUGER</b>	444
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11:30	Switching phenomena in CdIn <sub>2</sub> S <sub>4</sub> related to defects induced by spinel inversion <b>Jakub ZDZIEBLOWSKI</b>	349
11:45	Circuit emulating neural response based on Ga <sub>2</sub> O <sub>3</sub> photomemristor <b>Marina SPARVOLI</b>	899
12:00	Accurate prediction of O-vacancy migration in PrMnO <sub>3</sub> and CaMnO <sub>3</sub> <b>Amrita BHATTACHARYA</b>	938
12:30	Lunch	

SESSION Q-TUE3 Q07

14:00	Fabrication of Devices Based on Nanocrystalline Multilayer Graphene and Graphene/Oxide Multilayer Structures <b>Peter K. PETROV</b>	1589
14:30	Synthesis and characterization of lanthanides nickelates thin films <b>Alex MISIAK</b>	1086
14:45	Energy level alignment consideration on the ZnO / CoPcF16 interface as a potential _hybrid _structure for optoelectronic devices <b>Sakineh AKBARI NIA</b>	496
15:00	Precursor engineering and Liquid Inclusions in Solution-Grown CsPbBr <sub>3</sub> Bulk Crystal for radiation Detection <b>Ruichen BAI</b>	324
15:30	Coffee break	

SESSION Q-TUE4 Q08

16:00	Spin defects in SiC: Creation and Sensing Application <b>Takeshi OHSHIMA</b>	933
16:30	SHI irradiation effects on polymers and their applications in fabrication of novel nanostructures <b>Jinglai DUAN</b>	659

17:00 Defect-engineered two-dimensional graphene-on-silicon-carbide platform for high-temperature magnetic diagnostics in modern fusion reactors 402  
**Tymoteusz CIUK**

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch

**SESSION Q-WE3 Q09**

14:00 Radiation defects and their thermal annealing in functional ceramics for nuclear applications 1588  
**Anatoli I. POPOV**

14:30 Tuning single-photon emission via controlling the H-induced defect complex in dilute III-V Nitride nanowires 977  
**Akant Sagar SHARMA**

14:45 Effect of strain and surface proximity on acceptor and donor states in N-doped ZnO films 1195  
**Elzbieta GUZIEWICZ**

15:00 Photoluminescence in SrTiO<sub>3</sub> through Strain Engineering 574  
**Eric BRAND**

15:30 Coffee break

**SESSION Q-WE4 Q10**

16:00 Ion beam induced defects in 2D materials for optoelectronic applications 27  
**Feng CHEN**

16:30 InAs@ZnSe core@shell/MoS<sub>2</sub> heterostructure for broad band photodetection. 1196  
**Sidharth KURIYIL**

- |       |   |     |
|-------|---|-----|
| 16:45 | Augmented Haloperoxidase Functionality in Defect-Modified Bi <sub>2</sub> Te <sub>3</sub> Nanosheets for Combatting Biofouling<br><b>Sagar KULKARNI</b> | 326 |
| 17:00 | Reaching amorphous limit of thermal conductivity in defective 2D materials<br><b>Marianna SLEDZINSKA</b>  | 63  |
| 18:00 | <b>YOUNG RESEARCHER AWARDS CEREMONY</b>   |     |
| 18:30 | <b>SOCIAL EVENT</b>   |     |



EMRS

2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

## Symposium R

Sessions: Room 107 | Faculty of Mathematics

Poster Sessions: 237 (Small Hall) | Main Building

NANOMATERIALS AND FUNCTIONAL MATERIALS

## SYNTHESIS AND CHARACTERIZATION OF FUNCTIONAL NANOCOMPOSITE MATERIALS

Symposium organizers:

Lola GONZALEZ-GARCIA

Raghendra Singh YADAV  
(Main Organizer)

Raquel VERDEJO

Szczepan ZAPOTOCZNY

Yang XU

- Saarland University

- Tomas Bata University in Zlin

- The Institute of Polymer Science and Technology (ICTP)

- Jagiellonian University

- University College London

**Monday, 16 September 2024**
**SYNTHESIS OF NOVEL NANOCOMPOSITE I R01**

9:00	Design and Applications of Diamond Composites <b>Nianjun YANG</b>	333
9:30	Interfacial engineering of Z scheme based 2D transition metal dichalcogenide based heterostructures for hydrogen evolution reaction <b>Himani SHARMA</b>	1411
9:45	Synthesis of Two-dimensional Transitional Metal Ditelluride <b>Ya DENG</b>	656
10:00	Aqua Barrier: Nanocomposite Polypropylene-Modified Ni-SiC Superhydrophobic Nanostructure Coating for Enhancing Anti-Corrosion Efficiency of Copper <b>Himanshu Prasad MAMGAIN</b>	364
10:15	Controlling the surface morphology and localized surface plasmon resonance of Au, Ag, and Pt, via solid state thermal dewetting process <b>Zekri ATEF</b>	40
10:30	Coffee break	

**SYNTHESIS OF NOVEL NANOCOMPOSITE II R02**

11:00	Phase Engineering of Nanomaterials (PEN) <b>Hua ZHANG</b>	343
11:30	Non-vacuum patterning of conductive, mechanochemically stable, flexible Ni-Cu alloy electrodes with customizable composition ratios via laser reductive sintering <b>Daeho LEE</b>	237
11:45	Harnessing Biobased Molecules and Natural Extracts for Next-Generation Functional Nanomaterials Development <b>Ricardo PINTO</b>	1315
12:00	Magnetron Sputtering as a Versatile Tool for Precise Synthesis of Hybrid Iron Oxide-Graphite Nanomaterial for Electrochemical Applications <b>Fee KÄUFER</b>	347

12:15 Study the Impact of Processing Parameters on TiO<sub>2</sub> Film Formation on Aluminium Balls Using Planetary Ball Milling 341  
**Haneen OMAR**

12:30 Lunch

## NANOCOMPOSITE FOR SENSOR I R03

14:00 Nanocomposites with responsive and active functionalities 310  
**Pooi See LEE**

14:30 Smart-Phone-Assisted Optical Biosensors Based on Silk-Fibroin-Decorated Reduced Graphene Oxide Core-shell Quantum Dots for Fluorescent sensing of Anti-Parkinson's Drug, L-dopa 594  
**Neelotpal SEN SARMA**

14:45 Plasmonic fluorescence enhancement induced by metal - coated piezoelectric Poly(vinylidene fluoride-co-hexafluoropropylene) thin film 1076  
**Eni KUME**

15:00 Biodegradable fluorescent seeds as environmental sensors 229  
**Albenc NEXHA**

15:15 Silver decorated Titania nanoparticles: tailoring the surface functionalization of inorganic nanomaterials for gas sensing application 1362  
**Martina MERCURIO**

15:30 Coffee break

## NANOCOMPOSITE FOR SENSOR II R04

16:00 Hydrothermally synthesized Ga<sub>2</sub>O<sub>3</sub> nanorod sensing membranes for high-sensitive NO<sub>2</sub> gas sensors 252  
**Hsin-Ying LEE**

16:30 Magnetron-Gas-Aggregation-Nanoparticle Thin Films for Enhanced Hydrogen Gas Sensing: Synthesis, Modeling, and Characterization 527  
**Stanislav HAVIAR**

16:45 In situ labeling of Extracellular Vesicles content by Gold Nanoclusters loaded fusogenic liposomes 529  
**Ester BUTERA**

17:00	Polyaniline/Graphene Nanocomposite fibers as Small Gas Sensor Device <b>Aliaa SALEM</b>	631
17:15	Temperature-modulated Solution-based Synthesis of Copper Oxide Nanostructures for Glucose Sensing <b>Yujiang ZHU</b>	114

**POSTER SESSION I      RP01**

17:30	Investigating Antimicrobial Behavior of Thymol/Zn Encapsulated Hierarchically Structured Zeolite and Thymol Release Kinetics <b>Melda ISLER BINAY</b>	01_1017
17:30	Phosphorus-Doped Graphitic Carbon Nitride/Graphene Aerogel: A Floating Photocatalyst for Efficient Degradation of Tetracycline <b>Tajamul SHAFI</b>	02_1018
17:30	Characteristics of high entropy alloy thin films grown by pulsed laser deposition <b>Valentin CRACIUN</b>	03_1037
17:30	Viologen-based smart material for water detoxification <b>Marcin KULINSKI</b>	04_1042
17:30	Ferroelectric materials affect Polar Proteins in Tumor Treating Fields <b>Juhyeong CHO</b>	05_1055
17:30	Emerging to emerged pollutants: Molecularly imprinted polymers to detect estrogens in wastewater <b>Muhammad Faran TAHIR</b>	06_1063
17:30	Obtention of platinum nanoparticles deposited by surface layer plasma <b>Marina SPARVOLI</b>	07_1082
17:30	Phase-resolved 3D imaging of graphene based heterostructures <b>Artur DOBROWOLSKI</b>	08_1098
17:30	Bio-Inspired Soft Actuators Mimicking Sunflower's Light Tracking Behavior <b>Anas SAIFI</b>	09_113
17:30	Amino-Termination of Silicon Carbide Nanoparticles <b>Szabolcs CZENE</b>	10_1132

17:30	Mechanically induced solid solution alloy: microstructural and thermal properties of SnTe alloy <b>Abbas HAKEEM</b>	11_1137
17:30	Electronic structure and properties of ZnO thin films, doped with Ga and Al <b>Volodymyr KARBIVSKYY</b>	12_1152
17:30	Amino-termination of nanodiamonds and investigation their properties upon annealing <b>Szabolcs CZENE</b>	13_1153
17:30	Correlation between structural and optical properties of Eu <sup>3+</sup> -doped 13X luminescent zeolites <b>Anna SAFONOVA</b>	14_1155
17:30	Dual drug delivery system based on porous fibers grafted with MOFs <b>Jiwon BYUN</b>	15_117
17:30	Composites based on ZnO and calcium apatite <b>Volodymyr KARBIVSKYY</b>	16_1190
17:30	Synthesis and Characterization of Barium Titanate Coated Carbon Nanotube Core-shell Powders for Radar Absorption Application <b>Chung-Kwei LIN</b>	18_1216
17:30	High-throughput mechanically exfoliated van der Waals materials: a characterization by X-ray photoelectron spectroscopy <b>Nuria JIMENEZ-AREVALO</b>	19_1261
17:30	Transfer of 2D material flakes by blister-based laser-induced forward transfer on LIPSS-covered substrates <b>Yoann LEVY</b>	20_1277
17:30	Synthesis of B, P, and S -doped quantum carbon dots with high photoluminescence properties and its application in perovskite solar cells <b>Cisem KIRBIYIK KURUKAVAK</b>	21_128
17:30	Single-Walled Carbon Nanotubes as an Immune Material to the Radiation Applications <b>Marina SPARVOLI</b>	22_1300
17:30	Development of the cellulose microcrystalline as a potential carrier of biologics delivery <b>Chaiya PRASITTICHAJ</b>	23_1313



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|-------|--|---------|
| 17:30 | Exploring manganese phthalocyanine-graphene based nanocomposite for the electrochemical synthesis of green ammonias<br><b>Md Ashadul ADALDER</b>                                       | 24_1318 |
| 17:30 | Aggregation induced emission of surface ligand controlled gold nanoclusters employing imidazolium surface active ionic liquid and pH sensitivity<br><b>Nanigopal BERA</b>              | 25_1334 |
| 17:30 | Allosteric peptide catalyst for $\beta$ -lactam antibiotics degradation and filtration.<br><b>Sisira MAMBRAM KUNNATH</b>   | 26_1337 |
| 17:30 | Nanostructured poly-Si and poly-SiGe layers for enhanced energy harvesting applications<br><b>Joumana EL-RIFAI</b>   | 27_1371 |
| 17:30 | 3D printable MXene/core-shell particles/photo-curable PDMS composite for thermal management of wireless communication devices<br><b>Hyunwoo BARK</b>                                   | 28_1375 |
| 17:30 | Synthesis of InP-based quantum dots with enhanced photoluminescence quantum yield and development of InP QD roll-to-roll films with improved thermal properties<br><b>Han CHANGJOO</b> | 29_140  |
| 17:30 | Morphology, optical, dielectric, and piezoelectric properties of the cellulose - (Ba/Sr)TiO <sub>2</sub> composite materials<br><b>Vitalii CHORNII</b>                                 | 30_1418 |
| 17:30 | Investigation of Novel Mineral Trioxide Aggregates with Nano-sized Ta <sub>2</sub> O <sub>5</sub> and Rapid Solidification Solutions<br><b>Pei-Jung CHANG</b>                          | 31_1450 |
| 17:30 | Synthesis and Endodontic Application of Sol-gelled Nanocrystalline Barium Titanate Powder<br><b>May-Show CHEN</b>  | 32_1459 |
| 17:30 | Mechanochemical Synthesis and Raman Analysis of a 2D Superionic Conductor KAg <sub>3</sub> Se <sub>2</sub><br><b>Yidan WANG</b>  | 33_1468 |
| 17:30 | Ceria-supported chemical vapor deposition grown carbon nano forest for the removal of aqueous Methylene blue (MB) and Lead (II) ions from water<br><b>Anmol PANDEY</b>                 | 34_1478 |
| 17:30 | Investigation of functionalized nanocomposite membranes based on polybetaines for nanofiltration<br><b>Munziya ABUTALIP</b>  | 35_1501 |
| 17:30 | Electrostatic Self-assembly of GO-CNT Nano-hybrid Structures<br><b>Lokesh SONI</b>   | 36_1556 |

17:30	High-Entropy Alloy Coatings with Antimicrobial Functionalization for Mitigation of Microbiologically Influenced Corrosion <b>Bogdan POSTOLNYI</b>	37_1563
17:30	Unveiling electronic structures using a wavelength-dispersive spectrometer for X-ray emission spectroscopy and resonant inelastic x-ray scattering <b>Ina HOLFELDER</b>	38_1581
17:30	Influence of Sm composite on thermoelectric performance of Bi-Sb-Te system <b>Ashok RAO</b>	39_16
17:30	Column purified dye-based carbon nanomaterial for composite security ink formulation <b>Dhanya SUNIL</b>	40_17
17:30	Polycation clustering creates localized electrostatic attraction for swift removal of airborne bacteria <b>Yuanyuan ZHAO</b>	41_185
17:30	Dendritic mesoporous silica nanoparticles as an efficient substrate for loading of Rosmarinic acid _DMSN-RA_ <b>Nadia ISMAIL</b>	42_271
17:30	Quantitative Nanoscale MRI for Early Detection of Sepsis <b>Yuanyuan CHAI</b>	43_273
17:30	Functionalisation of InP Quantum Dot Surfaces <b>Ashleigh CARTLIDGE</b>	44_294
17:30	Electrochemical Investigation of the Transitions Between Different Redox States of a Neuromorphic-like Nanostructured Tantalum Oxide-Polyaniline System <b>Chrysanthi GKILI</b>	45_346
17:30	MAPbBr <sub>3</sub> -microcrystalline films on GaAs substrate made of interconnected micron-sized crystals: a new hybrid heterostructure for future optoelectronics <b>Tarak HIDOURI</b>	46_36
17:30	Carbon Dots for Multiuse Platform: Intracellular pH Sensing and Complementary Intensified T1_T2 Dual Imaging Contrast Nanoprobes <b>Trisita GHOSH</b>	47_376
17:30	Synthesis of gallic acid-grafted epoxidized natural rubber and its role in self-healable flexible temperature sensors <b>Aparna GUCHAIT</b>	48_378

17:30	Obtaining of tungsten carbide nanopowders from ionic melts <b>Tatyana STETSYUK</b>	49_381
17:30	Biobased Fluorescent active and REDOX-responsive Functional Microgels for the Anticancer Drug Delivery <b>Moumita SHEE</b>	50_382
17:30	Charge transfer in sandwich-like structures based on porous silicon and reduced graphene oxide film <b>Igor OLENYCH</b>	51_418
17:30	Carbonization of hollow mesoporous organosilica for lithium-sulfur batteries <b>Ulrique VOUNCKX</b>	52_523
17:30	Fabrication of plasmonic dye sensitized solar cells built-in self-organizing gold nanostructures <b>Korin NAKANO</b>	53_558
17:30	Density Functional Theory Study on Thiolated and Functionalized Graphene Oxide for Heavy Metal Recovery from Electronic Waste <b>Giuseppe FORTE</b>	54_583
17:30	Redox-sensitive biodegradable nanocarriers for biomedical applications <b>Suresh AJMEERA</b>	55_619
17:30	Heat dissipation evaluation of epoxy-boron nitride-based non-conductive films with high thermal conductivity for fine-pitch solder bump interconnection <b>Jin-Hyuk OH</b>	56_644
17:30	Photoresponse and figures of merit of ZnO nanorod-polymer based hybrid UV photodiodes <b>Keshav NAGPAL</b>	57_652
17:30	Development of Epoxy-Based Solder Paste and Simultaneous Transfer and Bonding Process for Flexible Full-Color Mini/Micro-LED Displays <b>Chan-Mi LEE</b>	58_670
17:30	Structural and optical investigation of colloidal CH <sub>3</sub> NH <sub>2</sub> PbBr <sub>3</sub> perovskite nanoplates synthesised using a non-template wet-chemical route <b>Suhaas GUPTA</b>	59_672
17:30	Silver nanoparticles immobilized on porous candle soot for the efficient reduction of aqueous nitroarenes <b>Sourav HALDER</b>	60_673

17:30	Copper catalyzed carbon nanoforest grown on activated carbon microfibres for the efficient sequestration of aqueous Congo Red <b>Sourav HALDER</b>	61_677
17:30	Influent of magnetic field pre-treatment of ZnO NPs on absorption of nanocomposite Ag/ZnO <b>Roman REDKO</b>	62_719
17:30	Large-area transfer-free fabrication of MoS <sub>2</sub> /WSe <sub>2</sub> heterostructures by Atomic Layer Deposition and Wet chemistry approaches <b>Marco Antonio GONZALEZ-ANGULO</b>	63_743
17:30	Electrochemical response in aqueous electrolytes of SnO <sub>2</sub> nanomaterials grown with different synthesis durations <b>Reynald PONTE</b>	64_798
17:30	Pioneering Carbon Capture: Synthesis, Characterization, and Sorption Studies of Modified UiO-66 MOFs <b>Brahim AISSA</b>	65_8
17:30	Commercial Graphitic Ink Based Flexible Composites as Viable Conductive Base Layers in Disposable Electronic Devices <b>Vishal ASHOK</b>	66_807
17:30	Nanostructure control of anodized aluminum oxide for nanocomposite fabrication. <b>Yuliy YUFEROV</b>	67_83
17:30	Electrical Conduction Mechanisms in Rare Earth-doped WO <sub>3</sub> Ceramics: Experimental and Theoretical Approaches <b>Pooja NEHRA</b>	68_833
17:30	CuO with AuNPs obtained by thermal oxidation of Cu\Au thin film precursor for H <sub>2</sub> production <b>Tomasz REREK</b>	69_875
17:30	Fluorescent Silica Nanoparticles as Optical Probes for Leakages Detection <b>Bruno Pocas FALCAO</b>	70_896
17:30	Super-Stretchable, Self-Healing 2D MXene- based elastomeric Composites for Thermal Management and Electromagnetic Shielding Applications <b>Palash DAS</b>	71_915
17:30	Synthesis of Indium Arsenide Quantum Dots for Near Infrared emission. <b>Satyaprakash PANDA</b>	72_936
17:30	Visible light assisted photocatalytic degradation of sulfamethoxazole using 2D quasicrystals <b>Zahoor MANZOOR</b>	73_941

17:30	Bioactivity and Antibacterial Performance of Porous Titanium with Zinc-doped Bioactive Glass Coating <b>Chi-Han CHENG</b>	74_946
17:30	Durable strain sensor with negative Poisson's ratio using temperature-responsive cellulose <b>Hyeju PARK</b>	75_954
17:30	Three dimensional self-supporting carbon nitride aerogel for visible light-driven photocatalytic degradation of psychoactive drug in aqueous phase. <b>Debanjali DEY</b>	76_957
17:30	Wavelength selective transmission properties of polymer films having various polycyclic aromatic backbone <b>Nanami HANO</b>	77_984
17:30	Modular Surface Engineering of Functional Nanocomposites (sEV-X) for Advanced Biomedical Applications <b>Juhee JANG</b>	78_987
17:30	Investigation of carbonate ion substitution in calcium and lead apatites: structural nuances and the effect on the electronic structure <b>Ihor SUKHENKO</b>	79_995

**Tuesday, 17 September 2024**

**NANOCOMPOSITE FOR BIOMEDICAL APPLICATION**

**R05**

9:00	Synergistic interplay of carbon dots and porphyrins for enhanced photodynamic therapy <b>Gil GONCALVES</b>	303
9:45	Exploring the interactions between liquid metal-based nanodroplets and biological systems for biomedical applications <b>Chengchen ZHANG</b>	336
10:00	Direct Assembly of Metal_Phenolic Network Nanoparticles for Biomedical Applications <b>Wanjun XU</b>	37
10:15	PDMS Nanoparticles mediated siRNA delivery for breast cancer therapy <b>Sneha SINGH</b>	300
11:00	Piezoelectric Nanocomposites of Poly(vinylidene fluoride) and Molybdenum Sulphide and Their Potential Applications <b>Arup R. BHATTACHARYYA</b>	80_1616

10:30 Coffee break

## NANOCOMPOSITES FOR ENERGY APPLICATION

R06

- |       |   |      |
|-------|---|------|
| 11:00 | Nanocomposites for Solid-State Batteries<br><b>Lin XU</b>   | 640  |
| 11:30 | Synthesis and Characterization of a Novel Bimetallic Bismuth-Iron MOF for Supercapacitor Applications<br><b>Luca PULVIRENTI</b>   | 1166 |
| 11:45 | Growth of Highly Conducting Flake-like CuS Nanostructured Counter Electrode for Electrochemical Solar Energy Conversion<br><b>Nitumoni DEKA</b>                                       | 1491 |
| 12:00 | Synthesis and Characterization of Nickel Manganese Oxide/Thermally Exfoliated Graphite Oxide Nanocomposites as an Electrode Material for Lithium-ion Batteries<br><b>Blqees RAOUF</b> | 135  |
| 12:15 | 2D BTO-Driven Polymeric Nanocomposite in Flexible Negative-Capacitance Electronics<br><b>Se Yeon PARK</b>   | 643  |
| 12:30 | Lunch   |      |

## FUNCTIONAL NANOCOMPOSITES I

R07

- |       |   |     |
|-------|---|-----|
| 14:00 | Towards reversible interfaces for circular composites<br><b>Tobias KRAUS</b>  | 111 |
| 14:30 | Plasma Etching Resistance of Nanocomposite Ceramics in Semiconductor Manufacturing Process<br><b>Ma HO JIN</b>  | 73  |
| 14:45 | Engineering nanoceria-based multifunctional coatings for advanced surface protection<br><b>Erica GALVAGNO</b>   | 400 |
| 15:00 | Augmenting the Activity and Stability of Single Atoms: Nurturing the Local Synergy with Oxygen Vacancies for Electrocatalysis and CO <sub>2</sub> Conversion<br><b>Dinesh BHALOTHIA</b> | 407 |

15:30 Coffee break

## FUNCTIONAL NANOCOMPOSITES II

R08

- |       |  |      |
|-------|--|------|
| 16:00 | Colloidal nanoparticles with polycyclic aromatic polymer backbone and their functions<br><b>Makoto TAKAFUJI</b>                                    | 893  |
| 16:30 | Sustainable Epoxy-Functionalized Vanillic Acid-Siloxane Nanocomposite Adhesive for Fine-Pitch Solder Bump Interconnection<br><b>Gwang-Mun CHOI</b> | 684  |
| 16:45 | Development of rGO-AgNP Based Chemiresistive Sensor For ppb Level Pb(II) Detection<br><b>Madhurima DEB</b>   | 766  |
| 17:00 | Development of bio-vitrimer/rGO framework for Anti-corrosion applications<br><b>Sravendra RANA</b>   | 908  |
| 17:15 | Designing functional GO-modified nanosheets for water remediation applications<br><b>Tainah Dorina MARFORIO</b>                                    | 1130 |

## POSTER SESSION II

RP02

- |       |  |         |
|-------|--|---------|
| 17:30 | Nanoparticles of selected wide band gap oxides synthesized via microwave-assisted hydrothermal method for embryotoxicity and organogenesis impact studies.<br><b>Julita ROSOWSKA</b> | 01_1012 |
| 17:30 | Enhancing hemocompatibility of TiO <sub>2</sub> nanotubes through property Modulation<br><b>Subhashree MISHRA</b>  | 02_1021 |
| 17:30 | Exploiting Glass and Plastic Waste Streams as Sustainable Precursors for Surface Modification of Low-alloy High Carbon Steels<br><b>Sanjith UDAYAKUMAR</b>                           | 03_1026 |
| 17:30 | Catalysis in the Circular Economy: Fe-doped CeO <sub>2</sub> As a Heterogeneous Catalyst for the Chemical Recycling of Low Density Polyethylene (LDPE)<br><b>Rachel BREEN</b>        | 04_1033 |
| 17:30 | A Superhydrophilic Biomimicked Ceramic-Reinforced-Polymer Nanocomposite for Enhanced Slip Resistance and Adhesion<br><b>Vipin RICHHARIYA</b>   | 05_1052 |

- |       |  |         |
|-------|--|---------|
| 17:30 | Porosity-Based Silicon Nanowires for Optoelectronic Modulation<br><b>Tania ASSAF</b>   | 06_1054 |
| 17:30 | Visible light-sensitive sustainable quantum dot crystals Co-doped hydroxyapatite nanoparticles with antimicrobial activity<br><b>Hossein MALEKI-GHALEH</b>                           | 07_1062 |
| 17:30 | Innovative Nanocomposite Polymer Films for Advanced Solar Heat Management in Architectural Glazing<br><b>Ryan VAN ZANDVOORT</b>  | 08_1085 |
| 17:30 | Tailoring Epitaxial VO <sub>2</sub> Thin Films with Tunable Properties for Enhanced Energy Applications via Spray Pyrolysis<br><b>Ardak AINABAYEV</b>                                | 09_1093 |
| 17:30 | Ultrafast Laser Synthesis of Silicalite-1 and Ti-Silicalite-1<br><b>Mehdi HAGVERDIYEV</b>  | 10_1123 |
| 17:30 | Starch and silicate nanoparticles modified with cinnamyl units: suitable precursors for the design of light-triggered composites<br><b>Sara Fernanda ORSINI</b>                      | 11_1141 |
| 17:30 | Enhancing Titanium Implants with Combined Graphene Oxide and Metal Organic Framework Coatings for Improved Biocompatibility and Antibacterial Properties<br><b>Vincenzo PARATORE</b> | 12_1159 |
| 17:30 | Nanoporous Zeolite A Synthesis via Femtosecond Laser Method<br><b>Meryem Merve DOGAN</b>   | 13_1170 |
| 17:30 | Functionalized Carbon Nanotube/Phenyl doped g-C <sub>3</sub> N <sub>4</sub> system for efficient visible photocatalytic applications<br><b>Sahar AGHAPOUR GHOURICHAY</b>             | 14_1194 |
| 17:30 | Layered Molybdenum disulfide and Barium hexaferrite Nanocomposites for Electromagnetic Interference Shielding Application.<br><b>Nithiya Hanna WILSON</b>                            | 15_1235 |
| 17:30 | Potassium diffusion, intercalation and deintercalation in few-layer graphene studied by ultra-high vacuum Raman spectroscopy<br><b>Nuria JIMENEZ-AREVALO</b>                         | 16_1253 |
| 17:30 | Photocatalytic activity of TiO <sub>2</sub> /LaFeO <sub>3</sub> composites in the degradation of benzoic acid under UV-visible light irradiation.<br><b>Benedetta BERTOLOTTI</b>     | 17_1278 |



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|-------|--|---------|
| 17:30 | Influence of heat surface treatment of NiTi on corrosion behavior and electrodeposition hydroxyapatite/PEG-PCL hybrid layer as effective substrate for drug delivery system<br><b>Robert MROCZKA</b> | 18_1297 |
| 17:30 | Synergistic Enhancement of Visible Light Photocatalytic HER Using Exfoliated Phenyl-Modified CN/WS <sub>2</sub> Hybrids<br><b>Moulika HAZRA</b>  | 19_1298 |
| 17:30 | Formation of nano-eutectic structure in a rapidly solidified Fe-based alloy<br><b>Kiyotaka MATSUURA</b>  | 20_13   |
| 17:30 | Evaluation of Novel nanohybrids as Mimics of Biological Synapse<br><b>Chitra GURNANI</b>   | 21_1321 |
| 17:30 | Tailored chelating polysaccharide nanoparticles for enhanced antitumoral activity<br><b>Roberta PANEBIANCO</b>   | 23_1326 |
| 17:30 | Allosteric peptide catalyst for $\beta$ -lactam antibiotics degradation and filtration.<br><b>Sisira MAMBRAM KUNNATH</b>   | 24_1336 |
| 17:30 | Light-driven micro/nanomotors for environmental remediation and cargo transportation<br><b>Katherine VILLA</b>   | 25_1366 |
| 17:30 | Functional graphenic materials as osteoinductive materials for bone regeneration<br><b>Stefanie SYDLIK</b>   | 26_1372 |
| 17:30 | Self-healable and stretchable perovskite-elastomer gas-solid triboelectric nanogenerator for multifunctional sensing<br><b>Feng JIANG</b>  | 27_1374 |
| 17:30 | Evolution of Preferred Orientation of Pulsed Bias Cathodic Arc Deposited Ti <sub>1-x</sub> Al <sub>x</sub> N Coatings<br><b>Nataliia PINCHUK</b>   | 28_1399 |
| 17:30 | Supercritical hydrothermal reactions -Basics and Applications-<br><b>Tadafumi ADSCHIRI</b>   | 29_1400 |
| 17:30 | Aerosol-jet printed molecularly imprinted polymer-based sensors for monitoring of metabolites in sweat<br><b>Thiyagarajan NATARAJAN</b>  | 30_1424 |

17:30	Bio-synthesized Graphitic Carbon Nitride Doped with ZnO as Nano-photocatalyst and Their Prospective Environmental Applications <b>Priyanka PANCHAL</b>	31_1436
17:30	Crosslinked Biopolymeric Nanocarriers for Transporter Targeted Colon Drug Delivery <b>Nidhi MISHRA</b>	32_1437
17:30	Immobilization of Nitrogen Doped TiO <sub>2</sub> on Cylindrical Surface for Continuous Photocatalytic Degradation of Pharmaceuticals <b>Rahul BINJHADE</b>	33_1443
17:30	Innovative Multifunctional Implants with Enhanced Biomechanical Stiffness, Osteoconductivity, and Antibacterial Properties <b>Eder Socrates Najar LOPES</b>	34_1455
17:30	Adherence of cubical MOF-5 on polypropylene for oil sorption application: A comparative study <b>Charu DWIVEDI</b>	37_1508
17:30	Anti-cancer Potential of Cerium Nanoparticles Synthesized with Seaweed-Associated Bacteria: A Comparative Study of Coating Strategies <b>Farzana MOHAMED</b>	38_1539
17:30	Demonstration of deposition control in plasma-assisted vapour thermal deposition to produce distributed Bragg reflectors <b>Jaroslav KOUSAL</b>	39_1542
17:30	Novel compositionally complex alloys for wear resistant applications <b>Deepak SHARMA</b>	40_202
17:30	Exploring hydrogen evolution by unique synthesis approach of metal-carbon nanocomposites for enhanced activity by atomically unit dispersion of platinum <b>Ajay MOHAN</b>	41_220
17:30	Enhanced CO <sub>2</sub> adsorption efficiency through aminoethylethanolamine functionalized porous Z-8 nanoparticles: Experimental investigations, Isotherm and RSM modeling <b>Puspendu SARDAR</b>	42_234
17:30	Improving performance of NO <sub>2</sub> gas sensors using In <sub>2</sub> O <sub>3</sub> :Zn sensing membrane <b>Mu-Ju WU</b>	43_251
17:30	High resolution insights into structure and corrosion properties of Mg-Al-Ca composites <b>Marta LIPINSKA/CHWALEK</b>	44_330

17:30	Electro-mechano responsive fusible alloy composites with unprecedented electromechanical properties <b>Shiyang TANG</b>	45_337
17:30	Designing Robust Oil/Water-Selective Dissolvable Metal Coatings on Aluminum Balls via Mechanical Coating Technique <b>Edreese ALSHARAEH</b>	46_342
17:30	Unlocking Titania's Nanomagnetism: Oxygen Vacancies Lead the Way <b>Vinod PAIDI</b>	47_359
17:30	Disclosing Nanozymes complexity and potential <b>Giulia MIRRA</b>	48_361
17:30	Enhanced piezo-catalytic performance of BaTiO <sub>3</sub> /MoS <sub>2</sub> Nanocomposite utilizing ultrasonic energy for degradation of Organic dyes <b>Chandra Shekhar Pati TRIPATHI</b>	49_396
17:30	Tailoring Negative Dielectric Characteristics in La <sub>2</sub> NiO <sub>4</sub> through Composition Adjustment: Advancements in Microwave Shielding and Inductive Material Engineering" <b>Tarun KATHERIYA</b>	50_403
17:30	Achieving Cost-Effective Microwave Shielding with LANiO <sub>3</sub> /SnO <sub>2</sub> MetaComposites: Composition-Driven Permittivity Analysis <b>Tarun KATHERIYA</b>	51_404
17:30	Development of Hyaluronan-based Blend Polymersomes for Ocular Drug Delivery <b>Alp YETISGIN</b>	52_409
17:30	Environmentally Friendly Synthesis and Comprehensive Characterization of Cu-Co Ferrite Nanoparticles <b>Muhammad Danish ALI</b>	53_412
17:30	Graphene-based drug delivery system for treating MRSA infections <b>Jian ZHANG</b>	54_43
17:30	Covalent functionalization and cross-linking of 2H MoS <sub>2</sub> and MXene <b>Shuwei WU</b>	55_457
17:30	Insights of Phosphate Functionalization, Kinetics, and Mechanistic Aspects of Phosphorylated Sporopollenin as Sustainable Catalyst for Selective 5-Hydroxymethylfurfural Formation in water <b>Raina SHARMA</b>	56_467

17:30	Multiple Roles of HMTA Molecules in the Chemical Bath Deposition of ZnO Nanowires <b>Vincent CONSONNI</b>	57_478
17:30	Designing novel elastomer-based pyro and piezo-electric devices <b>Thulasinath RAMAN VENKATESAN</b>	58_482
17:30	Doping Dynamics: How Electron and Hole Doping Shape Graphene's Magnetism? <b>Vinod PAIDI</b>	59_508
17:30	Hydrogen Storage and Diffusion in Polymer-Encapsulated Framework Materials and Porous Liquids <b>Grace REDWINE</b>	60_510
17:30	Operando Investigation of WS <sub>2</sub> Gas Sensors: Simultaneous APXPS and Electrical Characterization in Unveiling Sensing Mechanisms during Toxic Gas Exposure <b>Mattia SCARDAMAGLIA</b>	61_536
17:30	Development of Piezoelectric Composite of Poly(vinylidene fluoride) and Li-salt of Adipic Acid <b>Ananya AISHWARYA</b>	62_544
17:30	Simple, scalable, and sustainable nanocomposite anti-reflective coating for photovoltaic modules <b>Jefferson LAM</b>	63_59
17:30	Silicon nanowire aqueous dispersions for processing into macroscopic network materials <b>David TILVE MARTINEZ</b>	64_596
17:30	Synthesis and Characterization of Ti <sub>3</sub> AlC <sub>2</sub> MAX phase for Microwave Absorption Application <b>Durgabatee ROUT</b>	65_604
17:30	Engineering Metal-Phenolic Materials via Supramolecular Assembly <b>Zhixing LIN</b>	66_67
17:30	High thermal conductivity phase-change composites for thermal management <b>Daniela PRICOP</b>	67_675
17:30	3D-printed multilayer ionogels for wideband microwave absorption <b>Paul AL MALAK</b>	68_686
17:30	Are rare polytypes of silver present in nanoparticles created in the BANG method? <b>Jan Maurycy USZKO</b>	69_694

17:30	Dexter Energy Transfer from Quantum Dots to Closely-Bound Dye Molecules <b>Mariam KURASHVILI</b>	70_711
17:30	Tunable Intrusion-Extrusion Behavior of Water in ZIF-7-8: From Molecular Springs to Shock Absorbers <b>Davide CAPORALE</b>	71_733
17:30	Optical Gain Studies on Weakly Confined Spherical Halide Perovskite Quantum Dots <b>Anja BARFÜSSER</b>	72_759
17:30	Z-scheme Heterojunction for efficient Photocatalytic-driven Discharged waste Treatment <b>Sanjeev Kumar SHARMA</b>	73_765
17:30	Circular polarized Lasing of High Dissymmetric Factor Amplified by Randomly Distributed Silica Nanoparticles in Nanocellulose <b>Sunghwan JO</b>	75_787
17:30	OleoPlast: Bridging Functionality and Sustainability in Biodegradable Materials <b>Leonardo LAMANNA</b>	76_809
17:30	Adaptive Systems at the Air-Water Interface: Various Approaches to Stimuli-Responsive Langmuir Films <b>Rafal ZBONIKOWSKI</b>	77_814
17:30	Tailored SERS Substrate: Ag-WS <sub>2</sub> Nanoflakes Grown by PLD for Highly Sensitive Chemical Sensing Applications <b>Arvind KAUSHIK</b>	78_831
17:30	Synthesis of Ceramic Functional Coating on Metallic Substrates through Plasma Oxidation of Metal in Molten Salts <b>Konstantin BORODIANSKIY</b>	79_848
17:30	Exploration of Cellular Uptake and Endocytosis Mechanisms for Doxorubicin-Loaded Poly (amino acid) Nanocarriers <b>Zaheer AHMAD</b>	80_865
17:30	Biodegradable calcium phosphate based nanocomposite structures for osteochondral regeneration <b>Aneela ANWAR</b>	81_867
17:30	Transparent liquid-repellent coatings from fluorine-free building blocks <b>Priya MANDAL</b>	82_907

17:30	Dual cross-linked cellulose-based functional hydrogels <b>Neethu THOMAS</b>	83_911
17:30	Tea Ware Does Change the Flavor of Tea: Glaze-Induced Catalytic Degradation of Catechins <b>Yunzi XIN</b>	84_922
17:30	Iron-Doped Porous Carbon Beads for the Removal of Methylene Blue Dye Molecules and Lead (II) Ions from Water <b>Anmol PANDEY</b>	85_93
17:30	Diatom biosilica modified with Ce-Tb mixed oxide twinning nanoparticles and with polyphases quasi-crystalline Tb oxide nanoparticles <b>Weronika BRZOZOWSKA</b>	86_947
17:30	Nanomaterial-coated glass to keep your window transmissive, super hydrophobic and completely germ-free <b>Deepika SINGH</b>	87_951
17:30	Nickel ferrite nanoparticles embedded with conducting filler in TPU matrix for EMI shielding applications <b>Anju DESWAL</b>	88_961
17:30	Joint Electropulsing and Low-Frequency Noise Measurements for Characterization of Transferred 2D Materials and Multilayer Stacks <b>Renan VILLARREAL</b>	89_972
17:30	Preparation of polymer microspheres with dimpled surface and capturing of nano objects <b>Nanami HANO</b>	90_979

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch

**ADVANCED NANOCOMPOSITES FOR ELECTRONICS I**

**R09**

14:00	Alloyed Arsenic_Phosphorus Nanoribbons with Small Band Gaps and High Hole Conductivities <b>Adam CLANCY</b>	292
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- |       |  |      |
|-------|--|------|
| 14:30 | Improving the optoelectronic properties of HgTe colloidal quantum dots using plasmonic nanoantennas.<br><b>Augustin CAILLAS</b>  | 1519 |
| 15:00 | Large scale preparation of thermochromic solar control coatings for energy-efficient smart windows comprising VO <sub>2</sub> nanoparticles<br><b>Cindy Po Keh YEUNG</b> | 463  |
| 15:15 | Agglomeration and randomness of conductive filler networks in conductive metal-elastomeric composites<br><b>Dominik PERIUS</b>   | 730  |
| 15:30 | Coffee break   |      |

## ADVANCED NANOCOMPOSITES FOR ELECTRONICS II R10

- |       |   |         |
|-------|---|---------|
| 16:00 | Nanocomposite Thermoelectric Materials with Attuned Electronic Structure and Mismatched Phonon Structure (AES-MPS)<br><b>Krzysztof WOJCIECHOWSKI</b>                                      | 873     |
| 16:30 | Thermally conductive hexagonal boron nitride/polymer composites for efficient heat transfer<br><b>Chengning YAO</b>   | 335     |
| 16:45 | Edge-Activated WS <sub>2</sub> on Fe <sub>2</sub> O <sub>3</sub> nanoflakes: A dynamic duo for augmented photoelectrochemical water splitting<br><b>Govinda Chandra BEHERA</b>            | 17_1209 |
| 17:15 | Incorporation of CoFe <sub>2</sub> O <sub>4</sub> Nanoparticles and Graphite Flakes in Cement Matrix and its Influence on Microwave Absorption Properties<br><b>Vanamoorthy MARIAPPAN</b> | 832     |
| 18:00 | <b>YOUNG RESEARCHER AWARDS CEREMONY</b>   |         |
| 18:30 | <b>SOCIAL EVENT</b>   |         |

Thursday, 19 September 2024

## OPTICAL PROPERTIES OF NANOCOMPOSITES R11

- |      |   |     |
|------|---|-----|
| 9:00 | Tetrapods based Smart Composite Materials for Advanced Technologies<br><b>Yogendra Kumar MISHRA</b> | 534 |
|------|---|-----|

9:30	Optimizing ZnO Nanostructures for Transparent Photodetectors in Hybrid Liquid Crystal Systems <b>Jean-Francois BLACH</b>	580
9:45	Photoresponse and figures of merit of ZnO nanorod-polymer based hybrid UV photodiodes <b>Keshav NAGPAL</b>	567
10:00	Polymeric matrix coatings based on multimetallic nanoparticles <b>Abeer FAHES</b>	62
10:15	ZnO nanopillars and liquid crystals for hybrid solar cells <b>Bator KHOL</b>	535
10:30	Coffee break	

## ELECTRICAL PROPERTIES OF NANOCOMPOSITESTES

**R12**

11:00	Sulfide Nanomaterials and Nanocomposites for Micro Energy Harvesting <b>Anuja DATTA</b>	825
11:30	Exploring Dispersity in Carbon Nanotube Nanocomposites through Polarity Tuning of Conjugated Block Copolymers for Thermoelectric Thin Film Applications <b>Wu WEI-NI</b>	109
11:45	Influence of the filler surface modification on the electrical and mechanical networks of conductive suspensions <b>Sergio LAGO-GARRIDO</b>	1181
12:00	Mechanistic Insight into the Effect of Cu Doping on Thermoelectric Properties of Sintered Wet-Chemically Synthesised SnSe <sub>2</sub> Nanosheets <b>Simon David MOORE</b>	288
12:15	I-III-VI Quantum Dots: Increasing the Photoluminescence Quantum Yield of Free Carriers by Surface Passivation <b>Sushant GHIMIRE</b>	1191
12:30	Lunch	





EMRS

2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

## Symposium S

Sessions: Room 437 | Main Building

Poster Sessions: 237 (Small Hall) | Main Building

MODELLING

## ADVANCED MODELING AND CHARACTERIZATION FOR SUSTAINABLE ENERGY AND HEALTH SOLUTIONS

Symposium organizers:

Biplab SANYAL

- Uppsala University

Graziella MALANDRINO

- Università degli Studi di Catania

Jost ADAM  
(Main Organizer)

- University of Kassel

Piotr M. KOWALSKI

- Institute of Energy and Climate Research

Monday, 16 September 2024

**2D MATERIALS**
**S01**

9:00	Role of four-phonon scattering or accurate estimation of thermoelectric performance : a case study of monolayer MoS2 system <b>Gour P. DAS</b>	722
9:30	Excellent performance parameters of Janus MXenes, new Infra-red active photocatalysts for water splitting <b>Subhradip GHOSH</b>	1428
10:00	Germanium-based Janus monolayers for thermo-electric applications: An ab initio study <b>Shivani SAINI</b>	1258
10:15	Impact of Phonon Scattering Time and Group Velocity on the Thermal Conductivity of Strained Monolayer Silicene and Germanene <b>Neelesh GUPTA</b>	1265
10:30	Coffee break	

**MAGNETISM AND SPINTRONICS**
**S02**

11:00	Emergent Phases in Two Dimensional Ferromagnets <b>Indra DASGUPTA</b>	763
11:30	Staggered Dzyaloshinskii-Moriya vectors from rotational symmetries <b>Carmine AUTIERI</b>	1537
12:00	Unveiling the Diverse Electronic, Magnetic, and Optical Properties of Zr- and Mn-based MXenes: A Theoretical Exploration <b>Jiri KALMAR</b>	955
12:15	Ab-Initio modeling of As-hBN van der Waals heterostructures for spintronics <b>Atul SRIVASTAVA</b>	1262
12:30	Lunch	

**MATERIAL DESIGN AND SYNTHESIS**

**S03**

- |       |  |      |
|-------|--|------|
| 14:00 | Unraveling the Rashba-Dresselhaus effect and spin switching in ferroelectric AIO <sub>3</sub> (A=K, Rb, Cs, Tl) perovskites<br><b>Amrita BHATTACHARYA</b>  | 944  |
| 14:30 | Innovative green Synthesis of CsPbX <sub>n</sub> Perovskites: a facile synthetic route to obtain CsPbBr <sub>n</sub> Microcrystals<br><b>Lorenzo SIRNA</b> | 1111 |
| 14:45 | Green Synthesis of Yttrium and Europium-Doped Metal-Organic Frameworks for Advanced Technological Applications<br><b>Francesca LO PRESTI</b>               | 959  |
| 15:00 | Predicting metal morphology from density functional theory for application-targeted design of advanced materials<br><b>Cara-Lena NIES</b>                  | 219  |
| 15:30 | Coffee break   |      |

**ENERGY MATERIALS AND CRITICAL MATERIALS**

**S04**

- |       |   |      |
|-------|---|------|
| 16:00 | Synthesis, Characterization, and DFT Modeling of Novel Bismuth-Based Layered MOFs as Versatile Materials for Environmental Control and Energy Production<br><b>Guglielmo Guido CONDORELLI</b> | 1328 |
| 16:30 | Reducing criticality through advanced materials<br><b>Fernando COELHO</b>   | 1151 |
| 16:45 | Sb Doping of ZnO Nanowires for Enhancing the Piezoelectric Response of Flexible Dynamic Strain Sensors<br><b>Vincent CONSONNI</b>   | 485  |
| 17:00 | Fabrication of 4H-SiC Porous Flakes and Nanoparticles by Electrochemical Etching as Novel Materials for Advanced Oxidation Processes<br><b>Matteo BARCELLONA</b>                              | 1484 |

Tuesday, 17 September 2024

## SOLAR ENERGY MATERIALS

S05

9:00	Tuning the Optoelectronic Properties of Inorganic and Carbon-Based Quantum Dots for Highly Efficient Luminescent Solar Concentrators <b>Alberto VOMIERO</b>	1332
9:30	Numerical simulation of MoO <sub>3</sub> electron transport layers for silicon heterojunction solar cells <b>Ramakrishna MADAKA</b>	845
9:45	Characterization of CuS Nanostructured-based Counter Electrodes for Electrochemical Solar Energy Conversion: A Solution for Sustainable Energy Goals <b>Nitumoni DEKA</b>	1490
10:00	Innovative Photocatalytic Applications of 4H-SiC Porous Flakes for Energy and Environmental Purposes <b>Vanessa SPANO</b>	1545
10:15	Composite low bandgap semiconductors as high-efficiency selective solar absorbers for solar water desalination <b>Anastasiia TARANOVA</b>	1580
10:30	Coffee break	

## CATALYSIS, WATER SPLITTING, AND CO<sub>2</sub> REDUCTION

S06

11:00	Transition metal oxides and emerging 2D Materials towards CO <sub>2</sub> Capture and Conversion: DFT Computations <b>Abhishek Kumar MISHRA</b>	1434
11:30	How to accelerate and control reactions of like-charged compounds in water by orders of magnitude? <b>Grzegorz BUBAK</b>	1553
11:45	Production, characterization and simulations of copper nanoparticles for plasmonic and sustainable hydrogen production <b>Cristiano LO PO</b>	852
12:00	Synthesis and Characterization of NiO-Fe Nanocatalysts Using Different Water Sources for Enhanced Electrolysis in Hydrogen Production <b>Soumia EL BOUMLASY</b>	994
12:15	MOCVD of nanostructured spinel ferrite films: fabrication, characterization and application for water splitting <b>Matteo BOMBACI</b>	1038

12:30 Lunch

## ELECTROCHEMICAL AND BATTERY MATERIALS

S07

- |       |   |      |
|-------|---|------|
| 14:00 | High-Throughput Screening of Electrocatalysts<br><b>Serhiy CHEREVKO</b>   | 1432 |
| 14:30 | Modeling gas bubble cycles from nucleation to transport in electrochemical systems<br><b>Shinyoung KANG</b>   | 186  |
| 14:45 | Evaluation of the Polarization Resistance of Fuel Cells with Gaussian Processes<br><b>Baptiste PY</b>   | 188  |
| 15:00 | Accurate and flexible neural-network interatomic potential for understanding the electrochemical double layer at the water-zirconia interface<br><b>Abhishek Kumar ADAK</b> | 1448 |
| 15:30 | Coffee break  |      |

## ADVANCED SENSING MATERIALS

S08

- |       |   |     |
|-------|---|-----|
| 16:00 | Design of novel graphene-based gas sensors by non-covalent functionalization: from first-principles modelling to proof-of-concept experiments<br><b>Daniele PERILLI</b> | 23  |
| 16:15 | Predicting the morphology of metals on 2D materials for applications in catalysis, sensors and electronics<br><b>Michael SWEETMAN</b>                                   | 198 |
| 16:30 | One-step solvothermal synthesis of MoS <sub>2</sub> -based composite nanostructures for nitrites detection<br><b>Federica FLORIO</b>                                    | 806 |
| 16:45 | Development of Optical DNA-Sensor based on emissive Gold-Nanoclusters on ITO-PET Substrates<br><b>Regina Maria CHIECHIO</b>   | 471 |

**POSTER SESSION II SP01**

17:30	Modeling of fluorine-terminated yttrium carbides <b>Talha KALSOOM</b>	01_1008
17:30	Multifaceted Non-Invasive Electrochemical Biosensor for Simultaneous Glucose and Lactate Monitoring in Sweat <b>Dr. Arpita Pandey TIWARI</b>	02_1100
17:30	Biomimetic sea squirt-inspired filter system in Washing Machines for Enhanced Microplastics Capture <b>Jaewoo SIM</b>	03_116
17:30	Stability of the perovskite-apatite interface <b>Nataliia KURGAN</b>	04_1172
17:30	An innovative Washing machine filter system equipped with a cyclone module to reduce microplastics <b>Jaewoo SIM</b>	05_118
17:30	Tuning local structure and electronic properties of photoferroic BaSnO <sub>3</sub> /BaTiO <sub>3</sub> /MAPi interfaces <b>Neculai PLUGARU</b>	06_1200
17:30	Performance assessment of nanoscale fe-JLGAA MOSFET using strained binary alloy channel material: analytical modeling and DFT calculations <b>Faycal DJEFFAL</b>	08_1534
17:30	DFT modelling of ZnO clusters on TiO <sub>2</sub> surface to improve its properties <b>Elina NEILANDE</b>	09_275
17:30	Perspective protective layers for perovskite solar cells based on apatites <b>Volodymyr KARBIVSKYY</b>	10_564
17:30	Multi-ion Transport Analysis of Reverse Electrodialysis through Ion Exchange Membrane <b>Hyewon CHO</b>	11_645
17:30	Mechanical properties of refractory high-entropy alloys <b>Te-Hua FANG</b>	12_663
17:30	A simple approach to fluoride functional materials from novel multimetallic precursors <b>Claudia BARBAGALLO</b>	13_974

Wednesday, 18 September 2024

9:00 PLENARY SESSION

12:30 Lunch

## ADVANCED CHARACTERIZATION S09

- |       |   |      |
|-------|---|------|
| 14:00 | Cutting-edge characterization techniques for morphological, structural, and compositional properties of fuel cells and electrolyzers<br><b>Jasna JANKOVIC</b>       | 1559 |
| 14:30 | In-situ Scanning Electron Microscopy analysis for Microstructural Evolution of Li-ion Batteries<br><b>Jiung CHO</b>   | 816  |
| 15:00 | Experimentally Informed Model Parameterization and Electrode Characterization for Multiscale Modelling of Li-ion Batteries at Low Temperatures<br><b>Joao CUNHA</b> | 889  |
| 15:15 | Recycled copper nanocatalysts – graphene oxide composite for sustainable water splitting: fabrication and characterization<br><b>Cristiano LO PO</b>                | 850  |
| 15:30 | Coffee break  |      |

## BIOMEDICAL MATERIALS AND APPLICATIONS S10

- |       |  |      |
|-------|--|------|
| 16:00 | AI-Driven Techniques for Advanced Medical Imaging: Enhancing Diagnostic Accuracy and Efficiency<br><b>Daya SHANKAR</b> | 453  |
| 16:15 | PEG and Fructose Modified Bismuth MOF for Smart Drug Delivery and Anticancer Therapy<br><b>Vincenzo PARATORE</b>       | 1360 |
| 16:30 | Crosslinked Biopolymeric Nanocarriers for Transporter Targeted Colon Drug Delivery<br><b>Nidhi MISHRA</b>              | 1435 |

- 16:45 Magnetic nanoparticles synthesized through a rapid microwave plasma hydrogenation process for biomedical applications 1507  
**Francisco Javier FERNÁNDEZ-ALONSO**
- 18:00 **YOUNG RESEARCHER AWARDS CEREMONY**
- 18:30 **SOCIAL EVENT**





EMRS

2024 Fall Meeting

16<sup>th</sup> - 19<sup>th</sup> September - Warsaw University of Technology - Poland

## Symposium T

Sessions: Room 437a | Main Building

Poster Sessions: 237 (Small Hall) | Main Building

MODELLING

## ADVANCED COMPUTATIONAL METHODS FOR MATERIALS DESIGN

### Symposium organizers:

Carlo MASSOBRIO

- ICube/ MATISEN Team - AdynMat Consortium

Guido ORI

- Institut de Physique et Chimie des Matériaux de  
Strasbourg

Michał HERMANOWICZ  
(Main Organizer)

- University of Warsaw

Yannick J. DAPPE

- Service de Physique de l'Etat Condensé (SPEC - CNRS  
- CEA Saclay)

**Monday, 16 September 2024**

		<b>EXCITED STATES</b>	<b>T01</b>
14:00	Excited electronic states calculated by converging on saddle points on the energy surface generated by a self-interaction corrected density functional <b>Hannes JÓNSSON</b>		1296
14:30	Modelling charge-transfer states in phycobilisomes <b>Mamaru ALEM</b>		334
14:45	Novel type Biphenyl ring-based liquid crystalline series (nXB) incorporated with donor and acceptor group: A DFT study <b>Vijay SINGH</b>		1530
15:00	Grand Canonical Monte-Carlo Method for Modelling Discharging Reaction of Ramsdellite MnO <sub>2</sub> Cathode in a Lithium-Ion Battery <b>Woongkyu JEE</b>		1322
15:15	Controlling Propagation of Dendrites using Temperature Gradients <b>Asgar ARYANFAR</b>		1345
15:30	Coffee break		

		<b>METHODS</b>	<b>T02</b>
16:00	DFT Calculations combined with Machine Learning methods to Design Core Materials for Electrochemical Energy Storage and Conversion Reactions <b>Byungchan HAN</b>		305
16:30	Delocalization Error and Custom Hybrid Activation Function for Band Gap Predictions of Double Perovskite Proton Conductors: A First Principles and Machine Learning Approach <b>Vignesh D</b>		155
16:45	Unravelling the Potential of AI/ML in Photocatalysis: Towards Efficient Solar Energy Conversion <b>Beauty PANDEY</b>		441
17:00	A New Representation of Crystal Systems and Space Groups based on the Variance of Atomic Positions (VAP): Case of 2D materials <b>Romain BOTELLA</b>		1354
17:15	Doped GeSe glasses for improved OTS devices performances <b>Francesco TAVANTI</b>		439

**POSTER SESSION I TP01**

17:30	NAMD simulations of photoinduced adsorption processes <b>Inta ISAKOVICA</b>	01_1121
17:30	Ab initio simulations of CdS/CIGS-based interfaces for photovoltaic applications <b>Sergei PISKUNOV</b>	02_1185
17:30	Boron-based molecular magnets studied by first-principles calculations <b>Saira PERVEEN</b>	03_1348
17:30	NAMD simulations for photocatalytically driven adsorption processes <b>Inta ISAKOVICA</b>	04_1528
17:30	Performance assessment of nanoscale ferroelectric-JLGAA MOSFET using strained binary alloy channel material: analytical modeling and DFT calculations <b>Faycal DJEFFAL</b>	05_1532
17:30	The trapping effect of transitional metals on oxygen in Mo from first-principles calculations <b>Jinli CAO</b>	06_442

**Tuesday, 17 September 2024**
**THERMAL CONDUCTIVITY T03**

9:00	Thermal conduction by approach-to-equilibrium molecular dynamics <b>Evelyne MARTIN</b>	388
9:30	Thermal conductivity of amorphous Silicon Nitride by approach to equilibrium molecular dynamics <b>Achille LAMBRECHT</b>	290
9:45	The effects of multi-doping on transport in Ga/Sc-doped Li <sub>1-x</sub> La <sub>x</sub> ZrO <sub>3</sub> : atomistic and data-mining analysis <b>Henry Andres CORTES PAEZ</b>	283
10:00	A modelling strategy to investigate the internal dynamics of supramolecular polymers: the case study of ureido-pyrimidinone (UPy)-based polymers. <b>Annalisa CARDELLINI</b>	1149

10:15 Modelling of pure elongation behavior of electrorheological fluid: deep insights on wall-slip dynamics 150  
**Ishu CHAUDHARY**

10:30 Coffee break

2D MATERIALS

T04

11:00 Impact of Substrate-induced Strains and Interlayer Interaction on Phonon Anharmonicity in MoS<sub>2</sub>- and WS<sub>2</sub>-based Heterostructures: a DFT Study 1041

**Konrad WILCZYNSKI**

11:30 Optical and Excitonic Properties in 2D Materials Using Many-Body Methods 1058

**Frantisek KARLICKY**

11:45 Assessing the Accuracy of G0W0@PBE in Predicting Band Gaps of Chromium MXenes 967

**Miroslav KOLOS**

12:00 Robust wear performance of graphene-reinforced high entropy alloy composites 363

**Wenting YE**

12:15 Systematic DFT investigation of 2D transition metal dichalcogenide heterostructures for tunnel field-Effect transistor applications 311

**Qihua LIANG**

12:30 Lunch

MATERIALS

T05

14:00 A Real BandAid: Incorporating Artificial Intelligence (RI) into Biomaterials 578

**Thomas WEBSTER**

14:30 Designing nano-sized theranostic platforms for cancer treatment by in silico approaches 1117

**Tainah Dorina MARFORIO**

14:45 New materials for batteries through graph neural networks 1408

**Marco CATILLO**

15:00	Modelling Gallium Phosphide Using Different Methods <b>Aurora GHERSON</b>	1458
15:15	Programming Self-Assembly of Colloidal Gyroids for Advanced Materials <b>Dwaipayan CHAKRABARTI</b>	1256
15:30	Coffee break	

**MATERIALS T06**

16:00	Screeener and Enumerator with Force-Field Optimization (SEFFO): algorithm for searching adsorption sites and configurations on 2D materials <b>Leran LU</b>	964
16:30	Emergence of localized Majorana states in exotic magnet-superconductor hybrid system <b>Arnob MUKHERJEE</b>	1481
16:45	Elastic-plastic buckling of gold thin films into straight-sided blisters and bubbles <b>Kimheng MENG</b>	24
17:00	Two-variable nucleation theory on investigating the liquid-liquid phase transition <b>Yijian WU</b>	665
17:15	First principles molecular dynamics study of polymer matrix filled with carbon nanotubes <b>Icare MORROT-WOISARD</b>	958

**POSTER SESSION II TP02**

17:30	Self-Healing Behaviour at W <sub>110</sub> /W <sub>112</sub> Grain Boundaries in the Presence of Coexisting Point Defects Using a Specialized Machine Learning Interatomic Potential <b>Jorge SUÁREZ-RECIO</b>	1019
17:30	Computational Materials Modelling of Energy Materials: Out of the Box Approach <b>Federico PARISI</b>	1439
17:30	ARES: Real-space Methods & Software for Realistic System Material Simulation <b>Zheng XIANGYU</b>	156

17:30	Quantum-Chemical Calculation and Analysis on Heavy-Element NMR Chemical Shifts of Pt, W, and Hg in Metal Complexes <b>Masahiko HADA</b>	405
17:30	Benchmarking Gaussian Basis Sets in Quantum-Chemical Calculations of Photoabsorption Spectra of Light Atomic Clusters <b>Vikram MAHAMIYA</b>	632
17:30	Developing a Machine Learning Framework to Predict Material Properties of Chitosan using Molecular Dynamics Simulations <b>Chaitanya JOSHI</b>	986

**Wednesday, 18 September 2024**

9:00 **PLENARY SESSION**

12:30 Lunch

**DEFECTS & ALLOYS**
**T07**

14:00	polyBERT: a Large Language Model to Make Ultrafast Predictions of Polymers <b>Christopher KÜNNETH</b>	313
14:30	DefChem – Defect chemistry toolbox for defect chemistry analysis <b>Joao ABRANTES</b>	512
14:45	A multiscale approach for damage evolution in Plasma Facing Materials <b>Giorgio LO PRESTI</b>	900
15:00	Investigation of half-metallic dichalcogenide alloy for highly selective gas adsorption <b>Ahmad AYESH</b>	377
15:15	Theoretical Investigations on Point Defects in Energy Materials Using a Mott-Littleton Method <b>Zhe XU</b>	1219
15:30	Coffee break	