CONFERENCE PROGRAMME

16th - 19th September

E-MRS 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

16 - 19 September

E·MRS

2024 Fall Meeting

Conference Chairpersons

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

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UCL

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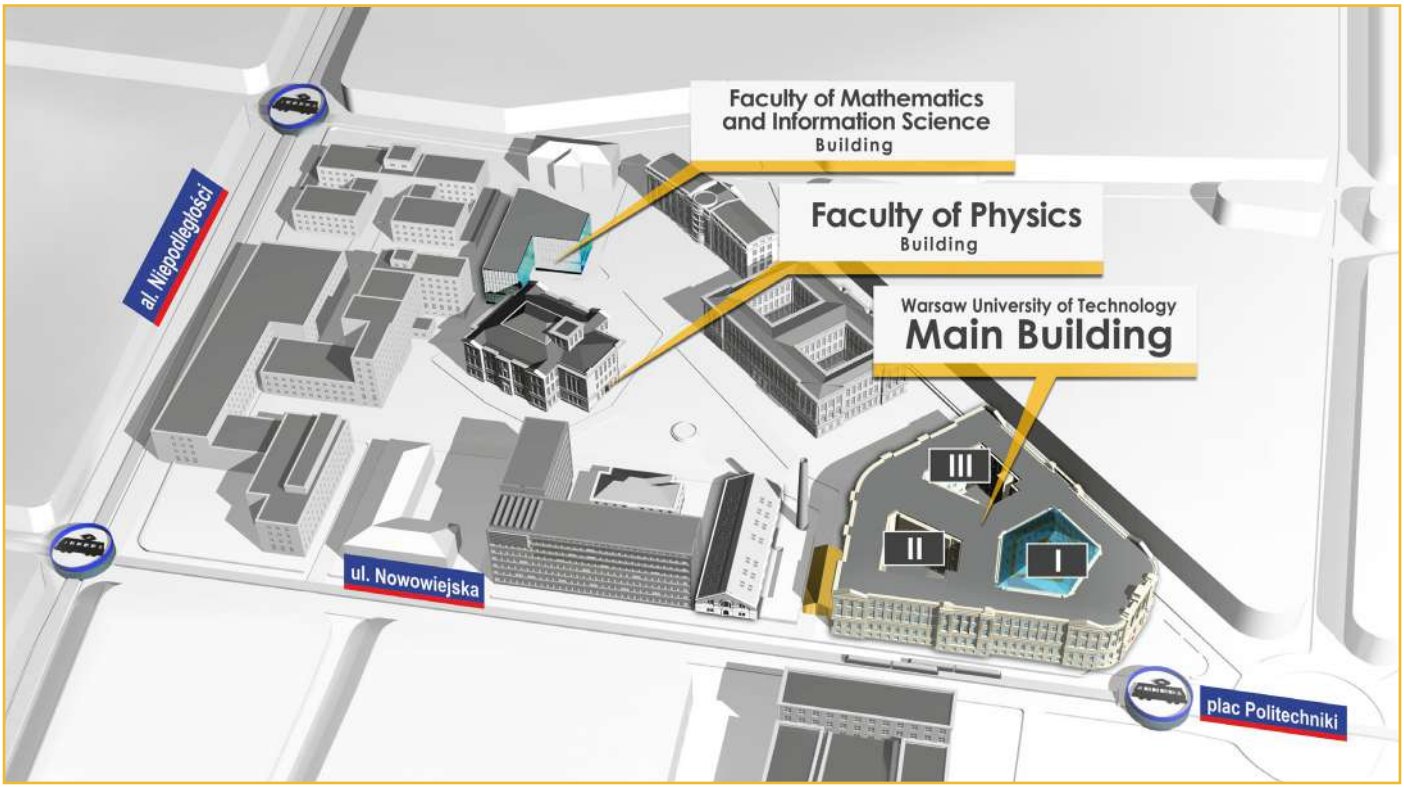
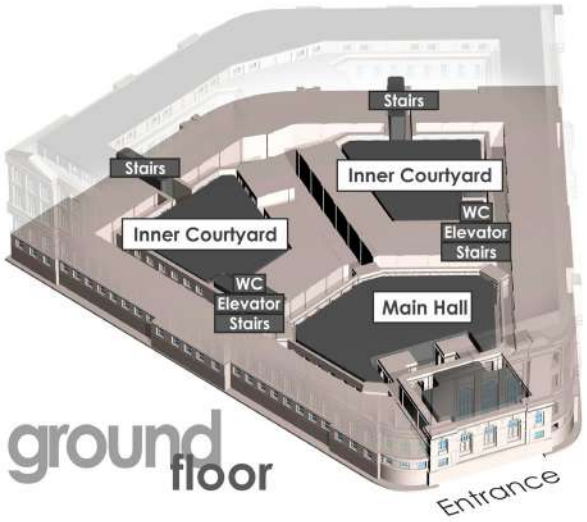
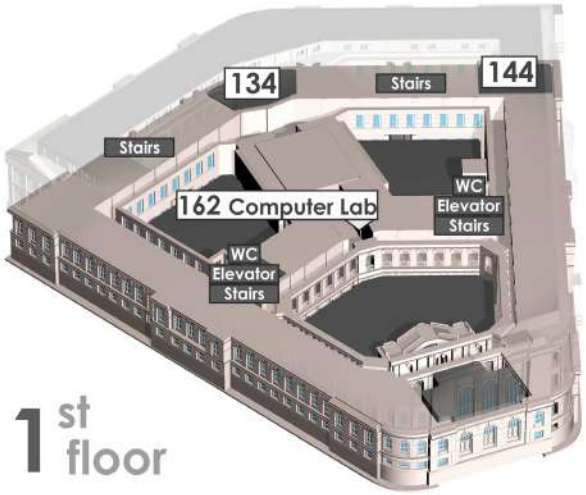
Conference Programme online

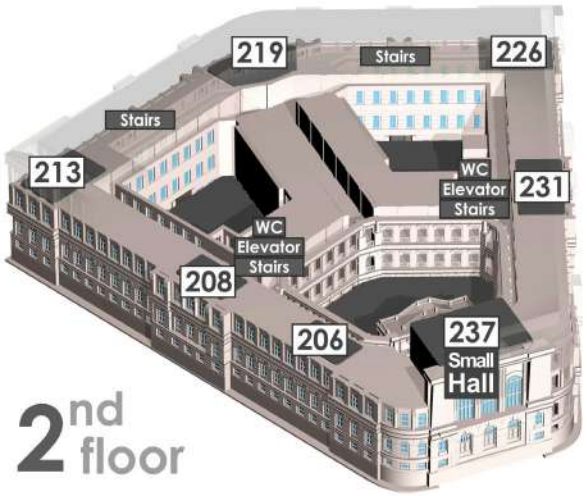
Conference Venue

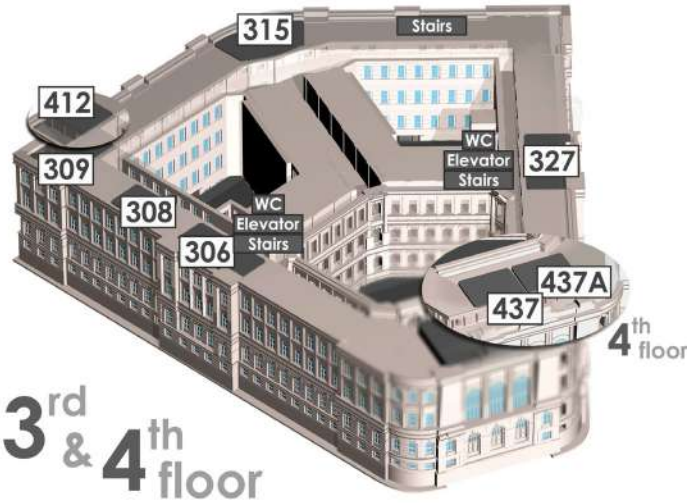


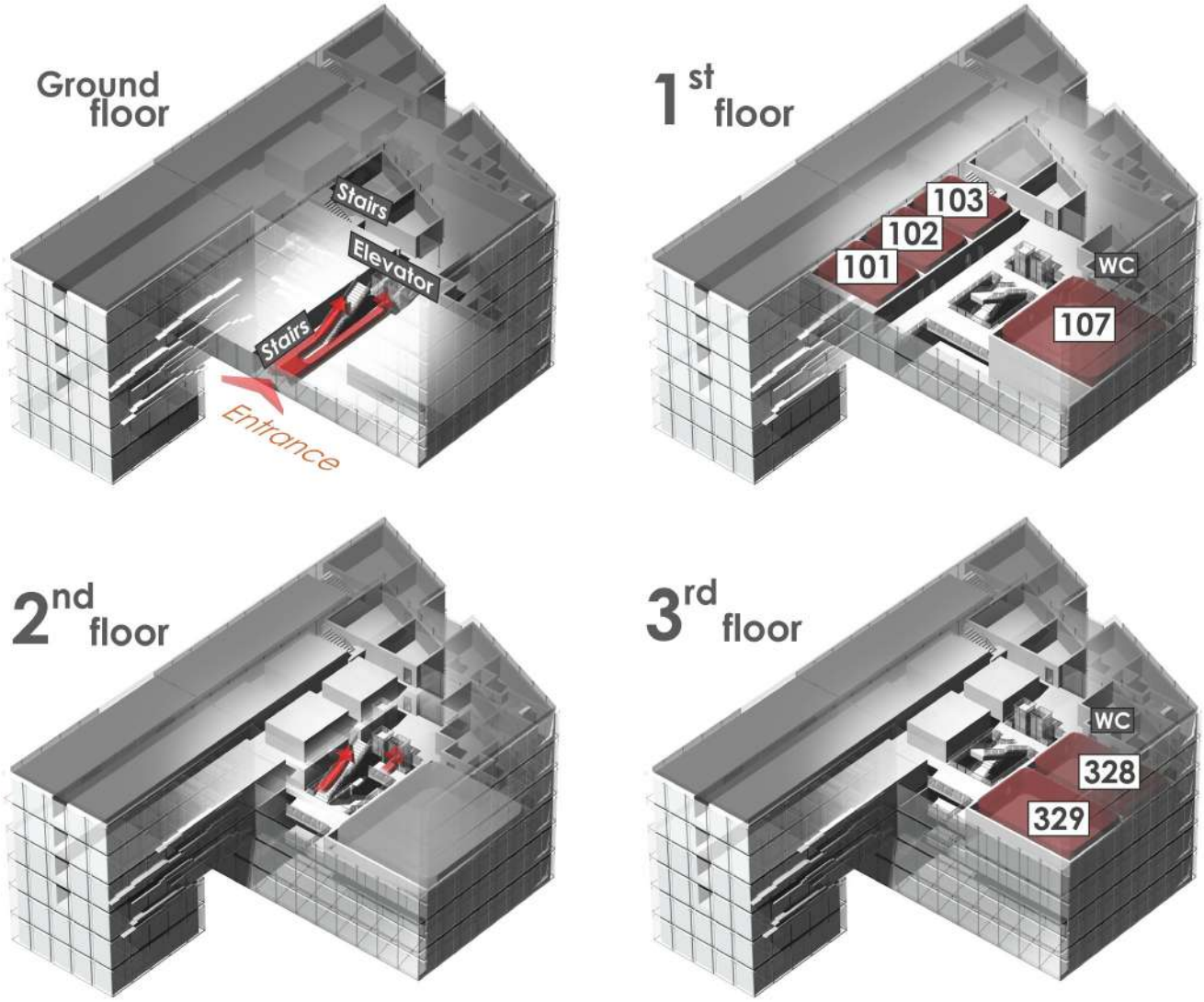
Main Building










Ground floor
Stairs
Elevator
Stairs
Entrance
1st floor
103
102
101
WC
107
2nd floor
3rd floor
WC
328
329

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 Czochralski Award to Prof. Daniel Loss

9:50 **Czochralski 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

Symposia

Energy Materials

- **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 CO2 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

General Timetable

Symposium symbol	Symposium location		Monday September 16th	Tuesday September 17th	Wednesday September 18th	Thursday September 19st
Symposium A	Main Building	231	09:00-17:30 (2)	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 (2)	09:00-17:30 (2)	14:00-17:30	09:00-16:00
Symposium D	Main Building	144	09:00-17:30 (2)	09:00-17:05 (2)	14:00-17:30	09:00-17:30
Symposium E	Main Building	226	09:00-17:30 (2)	09:00-17:30 (2)	14:00-17:30	09:00-11:00
Symposium F	Main Building	213	09:00-17:30 (2)	09:00-16:30		
Symposium G	Main Building	208	09:00-17:30 (2)	09:00-17:30 (2)	14:00-17:30	
Symposium H	Main Building	309	09:00-17:30 (2)	09:00-17:30	14:00-17:30	
Symposium I	Main Building	306	09:00-17:30 (2)	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 (2)	09:00-17:30 (2)	14:00-16:30	
Symposium L	Main Building	315	09:00-17:30 (2)	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 (1)	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 (1)	14:00-17:30	09:00-14:00
Symposium S	Main Building	437	09:00-17:30	09:00-17:30 (1)	14:00-16:00	
Symposium T	MINI Building	437a	14:00-17:30 (1)	09:00-17:30 (1)	14:00-17:30	
Poster Session Poster Session 17:30-19:00 but may vary depending on symposium timing	Main Building - 237 (Small Hall)		(1) 17:30-19:00	(1) 17:30-19:00		
	Physics Building - Aula		(2) 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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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.

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E-MRS 2024 Fall Meeting

16th - 19th September - Warsaw University of Technology - Poland

Symposium Sponsors

AVANCIS CNBM

Funded by the European Union

Hi-BITS

SITA Stable Inorganic TAndem solar cells

sunplugged

Symposium A

Sessions: Room 231 | Main Building

Poster Sessions: Aula | Physics Building

Energy Materials

Thin Film Chalcogenide Photovoltaic Materials - 2024

Symposium organizers:

Bart **VERMANG** – University of Hasselt

Oana **COJOCARU-MIREDIN** – University of Freiburg

Romain **CARRON (Main Organizer)** – EMPA

Monday, 16 September 2024

ANTIMONY CHALCOGENIDES I — A01

9:00	Progress in unleashing the potential of Sb2Se3 for a new era in thin-film solar technology **Giulia SPAGGIARI**	1197
9:30	Advancements in Solar Cell Absorber Materials: Tailoring Properties for Enhanced Performance **Jitendra KUMAR**	799
9:45	Towards all-inorganic antimony sulphide semi-transparent solar cells **Merike KRIISA**	585
10:00	Analysis of SnO2 buffer layer for Sb2Se3 thin film solar cells **Alessandro ROMEO**	704
10:15	Close-spaced sublimation of (Sb,Bi)2S3 thin films for photovoltaics applications: an in-depth study of chemical, structural and microstructural properties **Mykhailo KOLTSOV**	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)2 Solar Cells **Sunil SURESH**	58
11:15	Improving the grain size and charge carrier concentration of amine-thiol solution-based CIGS solar cells **Nada BENHADDOU**	598
11:30	Growth of Cu(In,Ga)Se2 micro solar cells on pre-structured substrates with Na barrier **Marina ALVES**	611
11:45	Cu(In,Ga)Se2 micro solar cells: Analysis of deposition methods and growth conditions **Maria GONZALEZ-JUAREZ**	786
12:00	Comparison of polycrystalline and epitaxial Cu(In,Ga)Se2 solar cells with high Ga contents **Jiro NISHINAGA**	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

14:00 High-Efficiency Kesterite Solar Cells with Solution-Processed Cation Substitution and Wide-Range Bandgap Tuning 1236
Yuancai GONG

14:30 Rational design of Cu2ZnSn(S,Se)4 thin film photovoltaics for adopting RF-sputtered Zn(O,S) as an environmental-benign buffer layer 667
Rachmat Adhi WIBOWO

14:45 An effective strategy of lithium treatment for CZTSSe based solar cells 862
O.K. SIMYA

15:00 Insights into the limitations of Cu2ZnSn(SxSe1-x)4 solar cells fabricated through aqueous spray coating 758
Ikram ANEFNAF

15:15 Manganese-containing quaternary chalcogenides: new earth-abundant semiconductors for solar energy conversion 678
Susan SCHORR

15:30 Coffee break

NEW CHALCOGENIDE MATERIALS A04

16:00 Symposium Opening Ceremony

16:15 Sulfurization of Binary Sulfides of Ba and their Impact in the Formation of BaZrS3 Perovskite Thin Films 319
Corrado COMPAROTTO

16:30 Phase stability of chalcogenide perovskite BaZrS3 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 562
Rokas KONDROTAS

POSTER SESSION I AP01

17:30 Photo-stimulated interaction of free and defect carriers in photojunction 01_1034
Bronislaw ORLOWSKI

17:30 Unveiling Transport Mechanisms in Thin Film Solar Cells: Towards an Automated System Based on Machine Learning Methods 02_1053
Pawel ZABIEROWSKI

17:30 The formation of a thin cadmium-free buffer layer for chalcogenide solar cells 03_1081
Asta BRONUSIENE

17:30 Photon transport through low index medium anti-reflective coating for improved efficiency in halide perovskite solar cells 04_1189
Gede ADHYAKSA

17:30 SnO2:F transparent conducting oxide thin film properties for CZTSSe solar cell 05_12
Abdesselam BOULOUFA

17:30 Efficient CZTS solar cells using gold nanoparticles and back grooves: FDTD-SCAPS numerical simulations 06_1536
Faycal DJEFFAL

17:30 Pulsed laser deposition and characterization of 2D MoS2 heterostructures with wide bandgap semiconductors 07_167
Marianna ŠPANKOVÁ

17:30 Characterization of Cu2SnS3 signle crystal grown by direct melting technique for thin film solar cells 08_246
Rania MAHDADI

17:30 Large area and high-performance broadband photodetector based on PtS2/MoS2 heterostructure 09_258
Gaurav BASSI

17:30 Degenerate top transparent electrode for soft thin film-based Photovoltaics 10_904
Ananta PAUL

17:30 Revealing the Essential Impact of Counter Anions on Performance Uniformity of Solution-Processed CZTSSe Solar Cells 11_982
Romain CARRON

Tuesday, 17 September 2024

ANTIMONY CHALCOGENIDES II A05

9:00	Precursor and interface engineering to enable efficient and stable, spin-coated Sb2S3 solar cells **Thomas STERGIOPOULOS**	1363
9:30	Sb2S3 solar cells with TiO2 electron transporting layers synthesized by ALD and USP methods **Tatjana DEDOVA**	956
9:45	Defect tolerance of grain boundaries in antimony triselenide **Anchal ANCHAL**	879
10:00	Electronic Band Structure and Defects' Characterisation in Bi- and Sb- Chalcogenides Using Energy-Resolved Electrochemical Impedance Spectroscopy **Daria MILIAIEVA**	1218
10:15	Photovoltaic Efficiency Enhancement through Highly Crystalline Antimony Selenide Interface Engineering **Udari WIJESINGHE**	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 **Daniel ABOU-RAS**	520
11:30	Urbach tails as Carrier Trap States in Cu(In,Ga)Se_ Solar Cells Evaluated by Transient Photocapacitance and Photocurrent Spectroscopy **Cheuk Kai Gary KWOK**	261
11:45	The effect of a band gap gradient on the radiative loss in the open circuit voltage of CIGSe solar cells **Sevan GHARABEIKI**	421
12:00	Analysis of Recombination Kinetics in CIGS Solar Cells **Secil GÜLER**	1079
12:15	Alkali post deposition treatments of CIGS absorber: impact of Na and absorber inhomogeneities **Jessica DE WILD**	452

12:30 Lunch

SPECIAL SESSION: [HI-BITS] PASSIVATED BACK CONTACTS A07

13:45 Optimizing ACIGS solar cells on ITO rear contacts and rear passivation boost 757
Marika EDOFF

14:15 Understanding is the Key; Tools are Diverse and Versatile 477
Gizem BIRANT

14:30 Hi-BITS: High efficiency bifacial thin film chalcogenide solar cells 924
Sascha SADEWASSER

14:45 Mitigating backside recombination: CGSe/Sputtered InOx hole selective layer for Backside Passivation in Submicron CIGSe Solar Cells 876
Saeed BAYAT

15:00 Ultrathin CIGSe Solar Cells: Enhanced Absorption by Nanotextured Functional Back Contacts 669
Merve DEMIR

15:15 Fill factor effects of a novel passivating back contact: the role of Na and Cu annealing 551
Francesco LODOLA

15:30 Coffee break

SPECIAL SESSION: [SITA] TRANSPARENT BACK CONTACTS AND WIDE-GAP CHALCOGENIDES A08

16:00 Bifacial semi-transparent ultra-thin Cu(In,Ga)Se2 solar cells 1370
Martina SCHMID

16:30 Aluminum Incorporation Effects and Photovoltaic Efficiency Enhancement of Wide-Gap Chalcopyrite CuGaSe_ Thin-Film Solar Cells 243
Shogo ISHIZUKA

16:45 Enhancing Photocurrent Collection in Wide-Gap CIGS Solar Cells 130
Matthias DIETHELM

17:00 Semitransparent wide-gap CIGS2 solar cells for tandem architecture 270
Kulwinder KAUR

17:15 Transparent wide bandgap Cu(In,Ga)S2 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 illumina-tion 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)Se2 solar cells with In2O3: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)Se2 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)Se2 deposition process 09_690
Dimitrios HARISKOS

17:30 Understanding the Cu(In,Ga)Se_ 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)Se2_based solar cells for space applications **Bruno Pocas FALCAO**	12_890
17:30	Optimisation of reflective back contacts for ultrathin CIGS solar cells **Loukiana KOZLOV**	13_969
17:30	Modelling and Optimization of Light Management Architectures in Ultrathin and Bifacial CIGS-based Solar Cells **António J. N. OLIVEIRA**	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 **Matteo CAGNONI**	537
14:15	Bulk photovoltaic effect in antimony chalcohalides: ab-initio simulations **Giuseppe CUONO**	738
14:30	Off-stoichiometry and ordered defect compounds in Cu(In,Ga)Se2 **Kostiantyn SOPIHA**	1540
14:45	Exploring thermodynamics and kinetics in (Ag,Cu)(In,Ga)Se_ solar cell absorbers with cluster expansion and machine learning methods **Delwin PERERA**	447
15:00	Visualizing chemical bonds in Cu(In,Ga)Se_ **Riccardo FRECCERO**	1369
15:15	Broadband Optical Solution for Bifacial Ultrathin ACIGS Solar Cells **André VIOLAS**	1040
15:30	Coffee break	

BEYOND PHOTOVOLTAICS A10

16:00 From solar cells to solar fuels: Can we use Cu(In,Ga)(S,Se)2 materials as photo-electrode for CO2 reduction? 664
Negar NAGHAVI

16:30 Chalcogenides in Direct Z-scheme junctions 487
Nithin Thomas JACOB

16:45 Rethinking chalcogenides solar cells architecture for solar fuel production 1006
Leo CHOUBRAC

17:00 Structural and Optoelectronic Properties of a Bismuth-based Chalcogenide Thin Film for Photo Electrochemistry 1217
Daniely REIS SANTOS

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

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 449
Aniela CZUDEK

9:15 Thermal Admittance Spectroscopy for the Investigation of Composition-Dependent Behaviours in Wide-Gap (Ag,Cu)(In,Ga)Se2 14
Patrick PEARSON

9:30 The grain boundary model for the interpretation of capacitance-based methods in CIGS solar cells 563
Aleksander URBANIAK

9:45 Reducing recombination losses at the p/n-junction of chalcopyrite thin film solar cells: A surface science perspective 385
Amala ELIZABETH

10:00 Conductive atomic force microscopy tomography on Cu(In,Ga)Se2 solar cell absorbers 923
Sascha SADEWASSER

10:15 Ultrafast terahertz spectroscopy of epitaxially grown Cu(In,Ga)Se2 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 CuGaSe2 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)Se2 solar cells with narrow bandgap fabricated on polyimide substrates 761
Yukiko KAMIKAWA

12:30 Symposium closing ceremony

12:45 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 HAMTAEI

14:45 Impact of absorber composition on performance of Cu(In,Ga)Se2 solar cells with sputtered In2S3: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)_ 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)Se2 absorbers 754
Oana COJOCARU-MIREDIN

16:45 Revealing the driving factors for bond length changes and tetragonal distortion in (Ag,Cu)(In,Ga)Se_ and other chalcopyrites 764
Claudia SCHNOHR

17:00 Three-dimensional structure models of real Cu(In,Ga)Se2 solar cells give insight into the silver effect 183
Chang-Yun SONG

17:15 Ag fluctuations, solubility and redistribution inside Cu(In,Ga)Se2 thin-film solar cells 701
Ava KARAMI

E-MRS 2024 Fall Meeting

16th - 19th September - Warsaw University of Technology - Poland

Symposium Sponsors

cicci research

Symposium B

Sessions: Room 206 | Main Building

Poster Sessions: Aula | Physics 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 Monich

POSTER SESSION I BP01

17:30	Energy harvesting via high-performance chemically functionalized triboelectric nanogenerators **Gulnur KALIMULDINA**	01_1176
17:30	Electrodeposited polyaniline modified graphite felt (PANI/GF) electrode enhances acetate production from CO2 in microbial electrosynthesis cell **Jung Rae KIM**	02_1342
17:30	Housing of electrosynthetic biofilms using a roll-up carbon veil electrode increases microbial electrosynthesis of CO2 **Jung Rae KIM**	03_1343
17:30	Composite salt in biomass derived highly porous carbon matrix for sustainable atmospheric water harvesting **Raveesh G**	04_1474
17:30	Multifunctional opportunities of the paper filled with luminescent oxide and carbon nanotubes **Olga YASHCHENKO**	05_1514
17:30	Novel-type diazole derivatives based Solar cells incorporated with nitrogen and selenium groups: A DFT study **Pulapa Venkata Kanaka RAO**	06_1555
17:30	Optimizing light harvesting efficiency with innovative novel linear carbon chain-based dyes: A computational investigation **Giuseppe FORTE**	07_586
17:30	Metal complex polymers as hole conductors for perovskite solar cells **Iacopo BENESPERI**	08_592
17:30	Ion channel inspired osmotic energy conversion device by using graphene oxide membranes **Heonseung CHAE**	09_638
17:30	Controlling the charge transport properties of halide perovskites and derivatives **Roc MATHEU**	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 1329
Nadav AMDURSKY

15:00 Self-assembled, sustainable Sugarcane Bagasse derived Carbon and MoS2 nanocomposite electrodes for solid-state supercapacitors 1312
Shivam TYAGI

15:15 Bio-based polymers towards multifaceted enhancement on performance and stability of rechargeable zinc-ion batteries 1512
Rongrong CHEACHAROEN

15:30 Coffee break

BIOPOLYMERS AND PHOTOVOLTAICS B02

16:00 Cellulose-based Optical Fibers 1415
Cordt ZOLLFRANK

16:30 Sustainable Luminescent Solar Concentrators 52
Andrea PUCCI

17:00 Photonics and Luminescence: Materials Driving Digital Innovation 1596
Rute FERREIRA

17:30 Cryo-EM imaging of oriented photosystem I on single layer graphene underlies the significantly improved photocatalytic performance of the biophotovoltaic nanodeviceses 454
Miriam IZZO

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

Thursday, 19 September 2024

LIGHTING AND BIOPROCESSES B03

9:00	Protein Design meets Phosphors for Light-Emitting Diodes **Horst LECHNER**	473
9:30	Understanding Isomerization Reactions - Insights from Hybrid QM/MM Simulations **Igor SCHAPIRO**	1597
10:00	Turning Biomass into Ultrabright Carbon Nano Onion through Microwave-Driven Pyrolysis in Seconds **Yunzi XIN**	920
10:15	Biomolecules for Sustainable Optoelectronics **Piotr HANCZYC**	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 **Giulio GHERSI**	262
11:30	Steam explosion of larch (Larix decidua Mill.) bark as a way to sustainable ethanol production **Aleksandra JEZO**	1030

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

E-MRS 2024 Fall Meeting

16th - 19th September - Warsaw University of Technology - Poland

Symposium Sponsors

Symposium C

Sessions: Room 134 | Main Building
Poster Sessions: Aula | Physics Building

Energy Materials

Sustainable materials for chemical and electrochemical energy storage II

Symposium organizers:

Arndt **REMHOF**	– EMPA
Erika Michela **DEMATTEIS**	– University of Turin
Michael **HEERE**	– Technische Universität Braunschweig
Paul **JERABEK (Main Organizer)**	– 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 **Dorthe Bomholdt RAVNSB_K**	1073
14:30	Influence of the local structure of solid electrolyte for all-solid-state battery on the ionic conductivity **Yohan BIECHER**	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 **Sasikumar RAGU**	433
15:00	Synthesis and electrochemical characterization of organic materials for solid-state batteries **Anne GUINDET**	1264
15:15	Fueling from the Electrochemistry of Halide Solid Catholytes - Impact of the composition **Branimir STAMENKOVIC**	1466
15:30	Coffee break	

BATTERY DEVELOPMENT C04

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

17:30	Investigation of the Eco-friendly Cathode Fabrication with Fluorine-free Binder **Je-Nam LEE**	01_1064
17:30	SnS deposited Silicon Nanowire Arrays as Promising Photocatalyst for Dye Degradation and Solar Hydrogen Generation **Pravesh NEGI**	02_1066
17:30	Investigation of the effect on the cutting process on the fabrication of dry process cathode electrode **Je-Nam LEE**	03_1075
17:30	Effect of Ru and Sn Doping on the Structural Stability of $Li_{1.2}[Ni_{0.1625}Co_{0.1625}Mn_{0.675}]_{0.8-x}Me_xO_2$ Cathode Materials **Jeom-Soo KIM**	04_1102
17:30	Environmentally Friendly Liquid-Phase Exfoliated Graphene Films for Li-ion Battery Anodes **Joao CUNHA**	06_1120
17:30	Electrochemical Formation of Quaternary Graphite Intercalation Compounds via Diglyme-Induced Co-intercalation **Youhyun SON**	07_1144
17:30	Development of Non-Fluorinated Water-Repellent Fabrics for Global Regulatory Compliance **Jooran KIM**	08_115
17:30	Stabilization of Na2Fe[Fe(CN)6] cathode by Mg doping for sodium-ion batteries **Ashwani TYAGI**	09_1154
17:30	Effect of Precursor Surface Modification on the Performance of LiNi_.__Co_.__Mn_.__O__ **Jeom-Soo KIM**	10_1157
17:30	Stabilization of Na2Fe[Fe(CN)6] cathode by Mg doping for sodium-ion batteries **Ashwani TYAGI**	11_1165
17:30	Cyanofluoroborate Anions: Organic Salts and Low-Melting Ionic Liquids for Supercapacitors **Merlin BOHN**	12_1174

17:30	Investigating the electrochemical behavior of silicon anodes for Li-ion batteries through single particle and electrode-level measurements **Gautam SREEDEVI JACOB**	13_1201
17:30	Sustainable Production of Graphene and MXenes for Spray-Coated Flexible Microsupercapacitors **Rodrigo ABREU**	14_1211
17:30	Study on the Co-precipitation Process Synthesizing Precursors for O3- NaNi___Fe___Mn___O_ Cathode Material **Jeom-Soo KIM**	15_1213
17:30	Electrochemical Characteristics of TiO_-Coated LiNi_.__Co_.__Mn_.__O_ for High Energy Cathode Material **Jeom-Soo KIM**	16_1230
17:30	Synthesis of NCM Precursors with Bi-modal Size Distribution via Co-precipitation Method **Jeom-Soo KIM**	17_1241
17:30	Preparation and phase relations of some oxides in La–(Fe,Mn)–O system for hydrogen electrode materials **Benedetta BERTOLOTTI**	18_1273
17:30	Emerging Bismuth-based Materials: From Fundamentals to Energy Applications **Ayat EL-SHAZLY**	19_1361
17:30	Two-dimensional manganese carbide for high energy-density asymmetric supercapacitor **Debabrata NANDI**	20_1382
17:30	Core-shell MOF-derived nanocomposite electrospun carbon nanofibers as freestanding cathode catalysts for advanced scalable Li-CO2Mars batteries **Ankit Kumar CHOURASIA**	21_1403
17:30	Thermo-responsive Hydrogel composites based on Biocompatible Cellulose and Application of Removing microplastics system driven by diurnal temperature variation **Jihye KIM**	22_1419
17:30	The influence of deposition parameters on the morphology of sputtered Mg84Al8Ti8 thin films and their potential for hydrogen storage **Stefan EDINGER**	23_1421
17:30	Enhancing solid polymer electrolyte performance for Li-ion batteries through ternary composite systems with active and passive fillers **Vera MACEDO**	24_1423

17:30 Hydrogen interactions with minerals: calcite, dolomite and quartz as case studies 25_1427
Erika Michela DEMATTEIS

17:30 1,3,5-Triethynylbenzene-based Conjugated Microporous Polymers: Green Mechanochemical Synthesis and Energy Storage Applications. 26_1451
Srinivasa Rao RAVULAKOLLU

17:30 Li2S/C/SnS2 Composite-Based Cathode Material for Lithium-Sulfur Batteries 27_1454
Irshad MOHAMMAD

17:30 High-voltage aqueous dual-ion batteries based on water-in-salt electrolytes 28_1505
Jirí CERVENKA

17:30 Carbon Nanowalls Grown Directly on Carbon Paper as Microporous Layers for Proton Exchange Membrane Fuel Cells 29_1521
Adriana-Elena BALAN

17:30 Paraffin-multilayer graphene compounds for thermal energy storage 30_1525
Adriana-Elena BALAN

17:30 Preparation and electrochemical activation of Co-Ni-Mn catalyst for efficient oxygen evolution reaction 31_1546
Ana Luisa SILVA

17:30 Multiscale Modelling of Silicon-Doped TiFe for Solid State Hydrogen Storage 32_1586
Lekshmi DINANCHANDRAN

17:30 Implementing Machine Learning in Nanocluster Global Optimisation 33_1587
Elouan HAY-FOURMOND

17:30 Maleic Anhydride Copolymer Aerogel with Photoluminescence Characteristics and Its Application in Phase Change Energy Storage 34_181
Yue RU

17:30 Novel bio-based proton exchange membranes for PEMFCs 35_205
Alba GONDA LAZKANO

17:30 Unlocking Pathways for Selective Separation of Light Rare Earth Elements: Integrated Oxidative Precipitation and Solvent Extraction Techniques 36_282
Hossein SALEHI

17:30 Dual Crosslinked Interpenetrating Polymer Network-based Porous Hydrogel Membrane for Solid-State Supercapacitor Applications 37_566
Aparajita PAL

17:30 Kubas interactions between H2 molecules and Ca-functionalized biphenylene monolayer: The effect of “d”-”s” level exchange 38_630
Vikram MAHAMIYA

17:30 Sustainable Synthesis Strategy & Environmental Impact Assessments of Activated Carbon from Waste Biomass Using Organic Salt for Energy Storage Applications 39_709
Muhammad ASHRAF

17:30 Zero-Gap Alkaline Electrolyzers for Sustainable Hydrogen Production 40_783
Jakub PAWLOWSKI

17:30 Tailoring Electrode Materials for Alkaline Electrolysers 42_885
Aleksandra MAKARUK

17:30 Pseudo capacitors using polymer electrolyte-added _-MnO2 Nanoflower electrodes for energy storage applications 43_931
Shrishti SHARMA

17:30 Ketene Derivatives for Carbon Materials Design 44_978
Elif Begum YILMAZ

Tuesday, 17 September 2024

CATHODES C05

9:00 Doping of NMC811 cathode material for Li-ion batteries 622
Mauro Francesco SGROI

9:15 A unique approach to control nitrogen doping in microporous carbon at ambient conditions for a stable reversible room-temperature sodium-sulfur battery 725
Sungjemmenla .

9:30 Novel Na0.7MnO2 cathode material with a sustainable water-based processing for sodium-ion batteries 728
Sergio RAMOS LOZANO

9:45 Vanadium-free glasses : potential positive electrode material for Li-ion and Na-ion batteries 480
Alexis DELANOE

10:00 Eco-Friendly Synthesis of LiFePO4 Cathodes Using Biomass-Derived Carbon Coating and Water-Based Electrodes 834
Maria CASTELLVÍ BARNÉS

10:15 Interesting ion intercalation mechanisms of Prussian blue analogues as the cathode materials of post lithium batteries 38
Yang XU

10:30 Coffee break

INSIGHTS FROM THEORY I C06

11:00 Design rules for the development of materials with high hydrogen-to-metal ratio 792
Vitalie STAVILA

11:30 Multi-Physics Modeling Metal-Hydride Hydrogenation Processes: The FeTi-H Case Study 777
Ebert ALVARES

11:45 Structural and electrical properties of Si-doped LiTa2PO8 ceramics 1146
Konrad KWATEK

12:00 Computational Analysis on the Mechanism for Suppression of Deterioration in Mg-doped Silicon Oxide as Negative Electrode Materials 428
Wataru SEKINE

Lunch

INSIGHTS FROM THEORY II C07

14:00 Tuning of the electrode/hydridoboride solid state electrolyte interface 221
Zbigniew LODZIANA

14:30 Computational Analysis of a Promising Earth Abundant, Stable, Lithium Solid Electrolyte 1376
Benjamin WILLIAMSON

14:45 Theoretical study on high entropy oxyfluoride cathodes for sodium-ion batteries 871
Khorsed ALAM

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 **Vijay SINGH**	1533
15:15	Atomistic Simulation of Protic Ionic Liquids as an electrolyte for mid-temperature fuel cells. **Federico PARISI**	1438
15:30	Coffee break	

ADVANCED BATTERY MATERIALS C08

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

POSTER SESSION II CP02

17:30	Surface stabilization of LiNi0.80Co0.10Mn0.10O2 cathode with LiTaO3 **Jeom-Soo KIM**	01_1044
17:30	Improving Interfacial Stability of LiNi_.__Co_.__Mn_.__O_ by Nb oxide coating for Sulfide-Based All-Solid-State Batteries **Jeom-Soo KIM**	02_1048

17:30	The Impact of Metal Oxide Band Gap Energy on the High-rate Performance of LiNi_.__Co_.__Mn_.__O_ Cathode Materials **Jeom-Soo KIM**	03_1051
17:30	Understanding the storage mechanism of Hard Carbon in Ether and Ester-based electrolytes for Sodium-ion batteries **Sanchita MANNA**	04_110
17:30	Phosphorus-Doped Nickel Oxide Micro-Supercapacitor: Unleashing the Power of Energy Storage for Miniaturized Electronic Devices **Shumile AHMED SIDDIQUI**	05_147
17:30	Sustainable Halide-Based Solid-State Electrolyte by Coprecipitation Strategy and Atmospheric-Dependent In-Situ Analysis **Mu-Huai FANG**	06_151
17:30	Enhaned potential window and high-performance supercapacitor based on Ti3C2Tx MXene **Aleyna AKILLI**	07_154
17:30	Anthraquinone-polydiacetylene and anthracene electrodes for high energy organic asymmetric supercapacitors **Sudipta BISWAS**	08_192
17:30	Redox mediated oxygen evolution mechanism in atomically dispersed Pt supported NiO: Defying the hydroxylated mechanism of NiO **Jatin NAMA**	09_204
17:30	Rotational Polyanion Correlated Li Ion Dynamics in Superionic Conductors **Juncao BIAN**	10_209
17:30	Aluminum Alloy Development to Improve Plating/Stripping in Aluminum Base-Batteries **Ghadir RAZAZ**	11_223
17:30	Vanadium-based cathodes for sustainable aqueous Na-ion batteries **Julie LAM CHEN**	14_265
17:30	Wetting interactions between porous carbon hosts and liquid alkali metals: Investigating forced wetting vs. spontaneous wetting with X-ray CT **Johannes BALLER**	15_301
17:30	Different Manganese Dioxide Polymorphs for Aqueous Rechargeable Zinc-ion Batteries **Yauhen ANISKEVICH**	16_318

17:30 Quasi-solid-state electrolytes based on polyimide paper and ionic liquid 17_327
Zhenni HE

17:30 Graphene-Intercalated P4Se3@CNF Hybrid Electrode for Sustainable Energy Storage Solution: Enabling High Energy Density and Ultra-long Cyclic Stability 18_348
Daya RANI

17:30 Battery research at ESRF ID26 19_350
Sami VASALA

17:30 Sustainable ion conducting oxides : an anisotropy study 20_391
Mathilde ARNAUD

17:30 The effect on performance 75Li2S_25P2S5 solid-state electrolyte system through doping Li2O 21_4
Chen MI

17:30 A Promising Anode Candidate For Rechargeable Nickel Metal Hydride Power Battery An Mg0.5Al0.25Ni0.25Fe0.25A0.25 (A=Cr,V) Alloys 22_41
Gülhan CAKMAK

17:30 Form-stable phase change materials from the composite of PEG and degradable polymeric materials 23_426
Yeojin HONG

17:30 N-allylthiourea as an electrolyte additive to modulate surface dendrite growth on Zn metal anodes 24_430
Sukeun YOON

17:30 Discarded Laboratory Tissue Derived Porous Carbon/UiO-66 Composite Electrode Material for Asymmetrical Supercapacitor Application 26_460
Prashant DUBEY

17:30 Unraveling the Spatial Asynchronous Activation Mechanism of Oxygen Redox-involved Cathode for High-voltage Solid-state Batteries 27_49
Shu Chih HAW

17:30 Understanding the diffusion behavior of Mg ion in Chevrel phase, Mo6S8 for rechargeable Mg batteries 28_504
Gazal GUPTA

17:30 Web-Like Silver Nanowire Networked Film for Highly Transparent Supercapacitor Electrodes 29_547
Sinil KIM

17:30 Effects of the electrolyte composition on the charge storage reversibility of organic sodium-ion battery materials 30_548
Ivan SALMERON SANCHEZ

17:30	Enabling an Inorganic_Rich Interface via Cationic Surfactant for High_Performance Lithium Metal Batteries **Zejun SUN**	31_553
17:30	Reversible electrochemical charge accumulation in polypyrrole thin films **Natallia KAREVA**	32_588
17:30	Study on acetamide-based additives to improve Zn-ion battery performance **Sukeun YOON**	33_636
17:30	Shedding Light on the Origin of Sodium Dendrite Growth to Build Better Sodium Metal Batteries **Chhail Bihari SONI**	34_642
17:30	Study of charge storage behaviour in a compost-based symmetric multi-functional device: effect of different composts, electrodes and electrolytes **Poonam YADAV**	35_682
17:30	Fundamentals of alkali-metal wetting and phase change phenomena towards high-performance alkali-metal batteries **Naiyu QI**	36_735
17:30	Hierarchical transition metal selenide nanostructures as a potential electrode for supercapacitors and thermo-electrochemical cells **Rupa Ranjani PALANISAMY**	37_747
17:30	Constructing a High-Performance Quasi-Solid-State Lithium ions Battery Using Dynamic Crosslinking Polyrotaxane-Based Ionogel and Competitive Coordination Principles **Shanshan YAN**	38_753
17:30	PCBM Functionalized WS2-MWCNT Hybrid Nanostructures: Towards Binder-Free Li-Ion Battery Anodes **Shahab AHMAD**	39_76
17:30	Influence of Electrolyte on the Electrochemical Performance of the Biomass-derived Hard Carbon for Potassium Ion Batteries **Ramaprabhu SUNDARA**	40_781
17:30	Investigation of Cyanofluoroborate-based Ionic Liquids as High Voltage Electrolytes for Supercapacitors **David MUELLER**	41_782
17:30	Cyanofluoroborate Anions: Organic Salts and Low-Melting Ionic Liquids for Supercapacitors **Merlin BOHN**	43_812

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

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

SUSTAINABLE ENERGY MATERIALS C10

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

17:30 Electrode-Electrolyte Reactivity trends at the Positive Electrodes in Li-ion Batteries 1294
Livia GIORDANO

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 1391
Brandon WOOD

9:30 Bio-sourced electrode materials for all-carbon supercapacitors 898
Elsun AZIZOV

9:45 Biochar from agrifood waste: a dual mechanism approach to hydrogen storage 1259
Alessia RINALDI

10:00 Coupled visual and acoustic water distribution investigation in PEM fuel cells for verification of sound-based flooding mitigation 492
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10:15 Pt-based PEMFC Nanocatalyst Layers by Sputtering onto Liquid Polyethylene Glycol 490
Björn LÖNN

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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. 740
Silvia BODOARDO

11:30 XPS, XAFS, XRD, and FTIR Operando Studies of a Vanadium-based (H2V3O8) Lithium-ion Battery 1497
Ignacio José VILLAR GARCÍA

11:45 Designing a passive hydrogen recirculation subsystem in a PEMFC system by applying CFD and Modelica simulation 866
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Nigel Willy VAN DE VELDE

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14:30 Ultrahigh-Rate Zn Stripping and Plating by Capacitive Interfacial Process Boosting High-rate Zn-ion Storage 576
Yurong ZHOU

14:45 Converting Industrial Polymer into Organic Cathode for Sustainable and Practical Aqueous Zinc-ion Batteries 819
Jesus SANTOS-PENA

15:00 Sustainable chemistry for highly efficient room-temperature Na-S batteries 367
Tim HORNER

15:30 Coffee break

E-MRS 2024 Fall Meeting

16th - 19th September - Warsaw University of Technology - Poland

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Poster Sessions: Aula | Physics 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

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9:50	Nitinol: A Promising PGM-free Catalyst for Hydrogen Evolution Reaction in Anion Exchange Membrane Water Electrolysis **Mengmeng LAO**	78
10:05	Ex situ and in operando characterization of Pt and Pt3Co catalyst degradation for proton-exchange membrane fuel cells **Marco BOGAR**	353
10:20	Metal Organic Chemical Vapour Deposition of cobalt oxide films and their application in electrochemical hydrogen production **Matteo BOMBACI**	1035
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11:00	Understanding Catalyst Nanoparticles for Energy Conversion by Advanced Electron Microscopy **Paulo FERREIRA**	1604
11:30	Rational Design of Photoelectrochemical Perovskite-BiVO4 Tandem Devices for Stable Fuel Production **Virgil ANDREI**	159
11:50	Photoelectrochemical tandem cell based on tungsten selenide and tungsten oxide for solar water splitting **Maxime CONTRERAS**	1250
12:05	Photoelectrochemical properties of anodic tungsten oxide-based materials **Karolina SYREK**	174

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12:30 Lunch

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14:00 Can We Drive Photoelectrochemical CO2 Reduction on Bare Semiconductor surface ? The curious case of CuInGaS2-Electrolyte Interface 1188
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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
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Rana Basit ALI

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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 1184
Piotr KOWALSKI

17:00 Enhanced Stability of HEA in Acidic Electrolytes for Hydrogen Evolution Reaction Using Zr and Cr Metals 238
Sitaramanjaneya THALLURI

17:15 Inverse Design of Promising Alloys for Electrocatalytic CO2 Reduction via Generative Graph Neural Networks Combined with Optimization Algorithm 9
Song ZHILONG

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Ravi Kumar BIROJU

17:30 Copper sulfide electrocatalyst for HER and CO2 reduction 04_1135
Roser FERNANDEZ CLIMENT

17:30 Synthesis and Applications of Bismuth-based MOFs for Water Splitting and Environmental Purification" 05_1148
Antonella CASTRO

17:30 Carbon Nitride Thin Films for Energy Conversion 06_1208
Paolo GIUSTO

17:30 Corrosion-resistant and Electrically Conductive Ti-Nb-O-Based Coatings for Metal Bipolar Plates in PEM Electrolyzers 07_1222
David KOLENATY

17:30 Development and Scale-Up of Hematite/PEM/CuO Tandem Cells for Enhanced Photovoltaic Performance and Water Splitting Efficiency 08_1244
Maxime CONTRERAS

17:30 Plasmon-Enhanced TiO2 Hybrids by Laser Ablation/Irradiation for Photocatalytic and Photoelectrochemical Applications 09_1252
Pooja RAVEENDRAN NAIR

17:30 Manufacturing Process of Raney-Ni Electrode via a Simple and Large-area Dip-Coating Method for Alkaline Water Electrolysis 10_1358
Hae In LEE

17:30	Two-dimensional Ni3TeO6 semiconductor as an efficient electrocatalyst for oxygen evolution reaction and Urea oxidation reaction in alkaline medium **Manisha SHARMA**	11_1367
17:30	Methane conversion into platform molecules over CIGS solar cells under ambient conditions **Andrei KHODAKOV**	12_1445
17:30	Gold nanoparticles deposited on semi-conducting materials for the production of H2 by photoreforming of carbohydrates **Gwladys POURCEAU**	22_1274
17:30	Iron Oxide Thin Film Deposited by mf-CVD Technique for Electrocatalytic Dinitrogen Fixation **Naina GOYAL**	13_1488
17:30	Structural and electrochemical properties of CuO/MoO3 based nanocomposites for dyes degradation and hydrogen production from water splitting **Hussein ALROBEI**	14_1492
17:30	Harnessing the Power of PM6:Y6 Photoanodes: Tandem OPEC/OPV Structures for Enhanced Solar Conversion with > 7 mA/cm2 at 0 VRHE **Carles ROS**	15_263
17:30	Utilizing the undesirable oxidation of Lead-free perovskite for photocatalytic C(sp3)_H activation: Unraveling the serendipity **Bhawna RAWAT**	16_540
17:30	Enhance energy and economic efficiency by coupling glycerol oxidation to carbon dioxide reduction reaction **Thi Hong Hanh LE**	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 **Alireza SHARIFIRAD**	18_810
17:30	RIANA: Research Infrastructure Access in Nanoscience & Nanotechnology **Marta LIPINSKA/CHWALEK**	19_811
17:30	Methanol assisted water electrooxidation on noble metal free perovskite: RRDE insight into the catalyst's behaviour **Shikha DHAKAR**	20_921
17:30	Advancing energy innovation through Structurally Engineered Perovskite Metal Oxides in The Electrochemical Oxidation Processes **Kritika SOOD**	21_99

Tuesday, 17 September 2024

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9:30	The status of materials development for Gigawatt scale production of low carbon hydrogen using (photo) electrochemical energy conversion. **Sonya CALNAN**	1393
9:50	Unearthing low overpotential of Platinum electro-grafted Ni-Co-S as efficient Hydrogen evolution electrocatalyst **Arushi ARORA**	236
10:05	Z-Scheme Formation Between Potassium Intercalated g-C_N_ and FePS_ Leading to Increased Hydrogen Evolution **Philipp BOOTZ**	542
10:20	Magnetic Effects in Electrocatalysis: Insights from EIS Studies on the Oxygen Reactions at CoFe_O_ Electrodes **Alfredo GINER REQUENA**	1202
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PHOTOELECTROCATALYSIS D06

11:00	Paired photoelectrochemical conversion of CO2/H2O and glycerol at high rate **Csaba JANAKY**	1603
11:30	Kesterite Cu2ZnSnS4-based photoelectrocehmical water reduction with high photocurrent density employing all-environmental benign materials **Rachmat Adhi WIBOWO**	679
11:45	High-throughput parallel testing of ten photoelectrochemical cells for water splitting: case study on the effects of temperature in hematite photoanodes **Roberto VALENZA**	613
12:00	Facile decoration of semitransparent titanium dioxide nanotubes using Successive Ionic Layer Adsorption and Reaction for photoelectrochemical applications **Katarzyna SIUZDAK**	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

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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_ Reduction on Cu(In,Ga)Se_ (CIGS) Based Photocathodes 746
Julian GUERRERO

14:55 Copper oxide-based photocathodes for solar fuels production 584
Javier LLORENTE-LÓPEZ

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Sebastian SZEWCZYK

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PHOTOELECTROCATALYSIS D08

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Salvador ESLAVA

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16:55 Development of Efficient Photocatalysts: Enhancing Hydrogen Production and CO2 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

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Subhradip GHOSH

17:30 Electronically Defective Tellurium-Doped TiO2 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 CO2 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 NiSe2 Nanooctahedron on Nickel Foam: An Efficient Bifunctional Electrocatalyst for Overall Water Splitting 06_201
Amit Kumar NAYAK

17:30 O2 dimerization and Lattice Instability in Perovskite Electrocatalysts 07_203
Andrew AKBASHEV

17:30 Role of Solvent Varied Synthesized Bi2MoO6 Electrocatalyst in Maximizing the Ammonia Yield and Faradaic Efficiency Through Nitrogen Reduction Reaction 08_206
Sthitapragyan PATNAIK

17:30 Manufacturing Cu/ZnO/Al2O3 catalysts via electroless plating 09_255
Yamato MORIOKA

17:30 Fabrication of Au-Pt alloy catalysts via electroplating 10_256
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17:30 Cu-Pt alloy preparation via Cu dendrite metamorphosis: A microparticle formation method 11_260
Tsubasa KEMMIZAKI

17:30 Exploring hydrogen evolution by unique synthesis approach of metal-carbon nanocomposites for enhanced activity by atomically unit dispersion of platinum 12_268
Ajay MOHAN

17:30 Efficient and stable electrocatalytic chlorine evolution reaction with atomically dispersed dinuclear iridium active sites 13_285
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17:30 Photoelectrochemical Sensor for Nitrite Determination based on the Etching of ZnCdS/BiOCl 14_424
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17:30 Demonstration of Highly Efficient Molybdenum-based Electrocatalysts for Electrocatalytic Hydrogen Production via Ru-mediation 15_425
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17:30 Visible Light Photodegradation of Azo Dyes Using Free Standing and spin coated Cu-Based Nanoparticles: Application in Solar Batteries 16_579
Edison Patricio PAREDES CARRANZA

17:30 Sintering of Fe2O3 thin films from natural micaceous hematite powders as photoanodes for photoelectrochemical water reduction 17_683
Rachmat Adhi WIBOWO

17:30 2D SnS2/g-C3N4 as type _ heterojunction photoanode for efficient oxygen evolution reaction 18_713
Sarita .

17:30 H2 generation in CuO/Cu2O thin films via plasmonic catalysis 19_870
Ashish Kumar RANJAN

Wednesday, 18 September 2024

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12:30 Lunch

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David TILLEY

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Just Pé JONASSE

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Alireza SHARIFIRAD

15:00 Nanoscale engineering of transition metal-based bifunctional electrocatalysts 1247
Vishal JOSE

15:15 AuPt Nanostructures with High Hydrogen Evolution Reaction Activity through a Halide-Mediated Microwave Assisted Route 843
Pablo GUARDIA

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16:00 Properties of Platinum, Palladium Gold and Copper Clusters on 2DMoS2 1549
Tamas OLLAR

16:20 Double perovskite oxides with reduced cobalt content as catalysts for alkaline water electrolysis 1612
Athanasios CHATZITAKIS

16:40 Synthesis and Advanced Characterization of Hybrid Systems Based on Conjugated Porous Polymers for Photoelectrochemical Solar Energy Conversion 1416
Mariam BARAWI MORAN

16:55 Unlocking the hidden gems of carbon nitride in photocatalytic energy conversion 706
Sonia ZOLTOWSKA

17:10 Exploring the Activity-Stability Landscape of Ni1-xFex-LDH (x = 0-0.33) for the Oxygen Evolution Reaction at Industrially Relevant Alkaline Electrolysis Conditions 1020
Sarmad IQBAL

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 19 September 2024

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Gianluca FARINOLA

9:30 Material challenges in integrated CO2 capture and electrochemical reduction using amine-based electrolytes 1593
Nina PLANKENSTEINER

9:50 Material Screening for Electrochemical Systems with Graded Catalyst Layers by Roll-to-Roll Slot Die Coating 101
George PÄTZOLD

10:05 Tailoring 2D Nanostructures: A Strategy for Enhanced Electrocatalytic Hydrogen Production 616
Nisha T PADMANABHAN

10:20 3D Electrode Surface Engineering by Atomic Layer Deposition of Nickel Oxide for Improved Water Oxidation Performance 437
Sina HAGHVERDI KHAMENE

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PHOTOCATALYSIS D12

11:00 Metal-free Photocatalytic Materials for Sustainable Solar Energy Conversion 1228
Demetra ACHILLEOS

11:20	Molecular engineering of the abiotic/biotic interface for efficient solar-converting biophotovoltaics **Margot JACQUET**	1025
11:35	Employing CSD routes towards tailored oxide photocathodes by meticulous synthetic control **Bjorn JOOS**	1140
11:50	Functionalization of Organic Molecules by Carbon Nitride Photocatalysts via Multiple Modes of Action **Oleksandr SAVATIEIEV**	483
12:05	Direct Photocatalytic Synthesis of Organic Acids from Methane over Titania-Heteropolyacid Nanocomposites **Andrei KHODAKOV**	1395
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BIOHYBRID AND AMMONIA D13

14:00	Semiartificial photosynthesis and biohybrids: an outlook **Massimo TROTTA**	1602
14:20	Hacking microbial metabolisms for living electronics **Ardemis A. BOGHOSSIAN**	1613
14:40	Electrocatalytic NH3 Production using a Vacancy-Rich SnO2 Quantum Dot Stabilized by Polyoxomolybdate in Water **Laxmikanta MALLICK**	752
15:10	Hydroxide Ion Conduction through Viologen-based Covalent Organic Frameworks (vCOFs): an Approach towards the Advancement **Pampa JHARIAT**	1449
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ELECTROCATALYSIS D14

16:00	Cost-Effective Production of 1T-MoS2 for Enhanced Hydrogen Evolution Reaction Performance via Mechanochemical Process **Zahra SHAYEGAN**	422

16:15 Engineering Sub-Nanometer Hafnia-Based Ferroelectrics to Break the Scaling Relation for High-Efficiency Piezocatalytic Water Splitting 6
Ying PAN

16:30 Transition metal hydroxide co-catalyst loading on hematite photoanodes 1162
Amin YOURDKHANI

16:45 Role of oxophilicity in the performance of transition metal sulfide electrocatalysts for the hydrogen evolution reaction 1065
Freddy E. OROPEZA

17:00 Engineering the Electronic Effect in Catalytic Materials towards Electrocatalysis 165
Chun-Hong KUO

17:15 Conductive Cu:Ni Based Metal-Organic Frameworks (MOFs) for Electrocatalytic Applications 1266
Manjeet GODARA

E-MRS 2024 Fall Meeting

16th - 19th September - Warsaw University of Technology - Poland

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Symposium E

Sessions: Room 226 | Main Building

Poster Session: Aula | Physics 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

SESSION I E01

9:00	Challenges for efficient hydrogen production in a sustainable economy driven by renewable energies. **Joan Ramón MORANTE**	157
9:25	Cu and Fe surface species onto ceramic supports: a platform for developing unconventional catalysts and electrocatalysts for sustainable energy applications **Massimiliano D'ARIENZO**	1138
9:50	Novel chalcogenide and phosphide electrocatalyst for Water Splitting **Daniel CHUA**	802
10:15	A photo-electrochemical cell with Cu2O-modified electrodes and aqueous KMnO4 electrolyte for charge production **Sadaf Alibhai JETHVA**	214
10:30	Coffee break	

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

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15:30 Coffee break

SESSION IV E04

17:30	NaNbO3 nanoparticles with high photocatalytic activity **Eduardo MOREIRA**	01_105
17:30	CaMoO4 mesocrystals: a new sonocatalyst for environmental remediation **Eduardo MOREIRA**	02_106
17:30	Synthesis of Pt/facet-controlled hydroxyapatite composite particles towards catalytic hydrolysis of ammonia borane **Haruto KAMIYA**	03_1232
17:30	Efficient Utilization of Solar Energy: Synthesis and Photoelectrochemical Properties of Transparent Titanium Oxides **Jarosław JUDEK**	04_1500
17:30	Comparing ceramic and ceria supported CaO catalysts for sustainable biodiesel production from waste fried cooking oil **Falguni SHUKLA**	05_431
17:30	Catalytic CO2 Methanation over Ru-Supported Nano-porous Geopolymer Derived from Natural Kaolin **Mukesh KUMAR**	06_772
17:30	Cu oxides as catalysts for the electrochemical reduction of CO_ **Falak SHAFIQ**	07_780
17:30	Nanostructured ZnO synthesized by polyol technique: structure, morphology, grain growth kinetics **Oleksandr DOBROZHAN**	09_91
17:30	Metal microfilter generation with solution purification effect via electrochemical method **Ryoma OKADA**	10_952
17:30	Revisiting the electrochemical properties of Zr0.9Sc0.6Y0.4O1.95 single crystal **António A.I. LABRINCHA**	11_973
17:30	Defect chemistry of cerium oxide doped with gadolinium: non-equilibrium situations **Eduarda GOMES**	12_976
17:30	Fabrication and Study of the Transport Properties of YBa2Cu3O7-x Step-Edge Josephson Junction on SrTiO3(100) Substrates **Rajni KANDARI**	13_999
15:15	Nano Engineered Solid State Ionic Metal Oxides for Near-Room Temperature Oxygen Conductivity **Baby DHANALAKSHMI R**	57

Tuesday, 17 September 2024

SESSION V E05

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

SESSION VI E06

11:00	p-Cu2O/n-ZnO junctions for photoconversion: area-selective deposition and integration of metal nanoparticles **David HORWAT**	414
11:25	Innovative Thin Film Photocatalysts for the Removal of Emerging Contaminants **Amir MIRZAEI**	222
11:50	Integrated photocatalytic-sorbent materials for environmental application **Barbara DI CREDICO**	163
12:15	Enhancing Visible Light Photocatalysis through Synergistic Plasmonic Effects and Electron Trapping on Au-loaded Se-doped Ta2O5 Heterostructures **Francisco Javier FERNÁNDEZ-ALONSO**	1518
12:30	Lunch	

SESSION VII E07

14:15	Defect and Morphology Engineering in Colored TiO2 Hollow Spheres Toward Efficient Photocatalysis **Letizia LICCARDO**	1582

14:30 Multi-functional HxMoO3-y–MoO2/carbon catalyst for near-infrared-driven water remediation 901
Kunihiko KATO

14:45 4H-SiC porous flakes for innovative photocatalytic applications in the energy and environmental fields 603
Vanessa SPANO

15:00 Innovative Electro Chemical Etching Fabrication of 4H-SiC Nanoparticles: Photocatalysts for Water Remediation with Enhanced Stability and Efficiency 601
Matteo BARCELLONA

15:15 Enhancing the Selectivity of Graphitic Carbon Nitride in the Photocatalytic Oxidation of Aromatic Alcohol with Single Copper Atoms: An Atomistic Understanding 401
Hanggara SUDRAJAT

15:30 Coffee break

SESSION VIII E08

16:00 Solvothermal synthesis of MoO2 nanocrystals and their water remediation properties 830
Mauro EPIFANI

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 1171
Suttipong WANNAPAIBOON

17:20 2D MOF coated Carbon Nanofiber Composite Membrane for Efficient Removal of Microplastics 11
Karishma JAIN

Wednesday, 18 September 2024

9:00 **PLENARY SESSION**

12:30 Lunch

SESSION IX E09

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

SESSION X E10

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

SESSION XI E11

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

E-MRS 2024 Fall Meeting

16th - 19th September - Warsaw University of Technology - Poland

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Organic Materials

Symposium F

Sessions: Room 213 | Main Building

Poster Sessions: Aula | Physics Building

Energy Materials

Photocharging Materials, Light Driven Ionics and their Applications in Energy Conversion & Storage

Symposium organizers:

Alina **SCHIMPF** – UC San Diego

Filip **PODJASKI (Main Organizer)** – Department of Chemistry, Imperial College London

Katherine **VILLA** – Institute of Chemical Research of Catalonia (ICIQ)

Oleksandr **SAVATEEV** – The Chinese University of Hong Kong

Monday, 16 September 2024

OPTOIONICS I — F01

9:00 Optoionics - More Than a Fashionable Slogan 1482
Joachim MAIER

9:30 Optoionics – A New Opportunity for Ionic Conduction-Based Radiation Detection 859
Thomas DEFFERRIERE

10:00 Modulating Light-Induced Ionic Conductivity in Protein-Based Nanocomposites via Structural Alterations 1503
Anna ZIELENIEWSKA

10:15 Spiropyran in light-driven energy devices, and renewable energy technologies 966
Zakir ULLAH

10:30 Coffee break

OPTOIONICS II — F02

11:00 Effect of mobile ions on perovskite solar cells 650
Wolfgang TRESS

11:30 Controlling Exciton Polarization in Plasmonic Semiconductor Nanocrystals 647
Pavle RADOVANOVIC

12:00 Separation of Second Harmonic Generation and Multiphoton Exicted Photo-Luminescence contribution in nanopowders 1286
Chawki AWADA

12:30 Lunch

PHOTOCHARGING I (OXIDES) — F03

14:00 Efficient charge separation in nano crystalline anatase TiO2 for self-rechargeable battery electrode 1523
Frédéric SAUVAGE

14:30	Light-accelerated fast charging batteries **Buddha DEKA BORUAH**	846
15:00	Free-standing WO3 electrode for efficient photo-rechargeable Li-ion batteries **Muhammad SAJJAD**	1538
15:15	Polyaniline and water pre-intercalated V2O5 cathodes for high-performance planar zinc-ion micro-batteries **Yijia ZHU**	296
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PHOTOCHARGING 2 (CATALYSIS & ORGANIC) F04

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

POSTER SESSION I FP01

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

17:30 Improving photovoltaic performance of Si/CuO heterojunction by incorporating Ta2O5 passivation layer and MXene as Transparent Electrode 05_148
Shumile AHMED SIDDIQUI

17:30 Investigation of the Tribo-Photovoltaic Effect in a Metal/n-type GaAs Triboelectric Nanogenerator for Energy harvesting Applications 06_213
Shailendra KUMAR

17:30 Investigation of the Effects of Post-Growth Annealing on n-ZnO/p-NiO Heterostructures Fabricated via the Spray Pyrolysis Method 07_230
Maksym YERMAKOV

17:30 Porous Carbon Coated on Cadmium Sulfide-Decorated Zinc Oxide Nanorod Photocathodes for Photo-accelerated Zinc Ion Capacitors 08_321
Xiaopeng LIU

17:30 Growth and thermal annealing effect of Zn2SnO4 nanoparticles and films prepared by nanoink printing 09_84
Oleksii KLYMOV

17:30 Organic photo-supercapacitor based on a photoacid generator as electrolyte 10_864
Shubhra Kanti BHAUMIK

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PHOTOBATTERIES I F05

9:00 Integrated light energy harvesting and storage; what is limiting photo-charge current? 629
Byung-Man KIM

9:30 Capacitive charging of doped metal oxide nanocrystal electrodes for photon energy storage 543
Andrea RUBINO

10:00 Light fostered capacitive enhancement in efficient bismuth ferrite perovskite oxide electrode material for solar supercapacitor 1406
Samtham MANOPRIYA

10:15 Innovative Strategies for Enhancing Energy Storage in Electric Vehicles through Solar-charged Integration: CIGS solar cells and Si/ LiFePO4 lithium batteries 438
Tseng HSUAN KAI

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-MoS2 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 TiO2 Aerogels on Surface Area and Charging Conditions 293
Anja HOFMANN

15:00 Synergistic Photocatalysis by _-MoO_3 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 LiTaO3: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 BaTiO3 and TiO2 nano- and microstructures 1215
Guillem VIVES OLLÉ

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9:00 **PLENARY SESSION**

12:30 Lunch

E-MRS 2024 Fall Meeting
16th - 19th September - Warsaw University of Technology - Poland

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El Sitio de la Química en España

Symposium G

Sessions: Room 208 | Main Building
Poster Sessions: Aula | Physics Building

Energy Materials

Exploring Emerging Photo and Electrochemical Systems for CO_2 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

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SESSION I G01

9:00	Electrochemical CO2 capture and valorization for the production of e-fuels and e-chemicals **Peter STRASSER**	501
9:30	Novel catalysts design for gas phase electrocatalytic CO2 reduction **Athanasios CHATZITAKIS**	621
9:45	Operando/In-situ Soft X-Ray Spectro-electrochemistry at the Diamond Light Source's B07 Beamline **Santosh KUMAR**	26
10:00	Mechanism of CO2 electrochemical reduction to form hydrocarbons and alcohols, C1 and C2 products **Hannes JÓNSSON**	1103
10:30	Coffee break	

SESSION II G02

11:00	Operando Investigations of the Cu Solid-Liquid Interface under Stationary and Pulsed CO2RR Conditions **Arno BERGMANN**	1205
11:30	Advanced X-ray spectroscopy in situ/operando characterization of catalysts **Pieter GLATZEL**	1453
11:45	Operando characterization techniques as advanced tools to investigate catalysts for CO2RR **Angelica CHIODONI**	1087
12:00	En operando Optical emission spectroscopy of discharge mechanism in varying hydroxide concentration **Wing Kiu YEUNG**	187
12:15	In-situ Phase Control of Indium-Oxide Clusters Under Potential-Driven Conditions for Regulating the C1 Product Selectivity in Electrochemical CO2 Reduction: An in-situ X-ray Absorption Study **Amisha BENIWAL**	406
12:30	Lunch	

SESSION III G03

14:30	Inhibiting salt precipitation on the Gas Diffusion Electrode surface using an acidic medium in the electroreduction of CO2 to formate in the gas phase. **Guillermo DÍAZ-SAINZ**	48
14:45	Reducing the Energy Consumption via the Co-electrolysis of CO2 and Ethylene Glycol Using Ni–Fe Layered Double Hydroxide Anodes **Jiefeng LIU**	266
15:00	Unveiling the Dynamic Evolution of Catalysts' Surfaces During Carbon Dioxide Electroreduction **Juqin ZENG**	173
15:15	Tailoring the gas diffusion layer and catalyst structure for ethylene electrosynthesis in CO2 alkaline flow cells **Marco ETZI**	233
15:30	Coffee break	

SESSION IV G04

16:00	Advancing water and CO2 electrolysis by environment manipulation **F. Pelayo GARCIA DE ARQUER**	1071
16:30	Development of new generation of HT-PEM fuel cells utilizing the Ion-PairTM Technology **Christos CHOCHOS**	1442
16:45	Rethinking chalcopyrite solar cells architecture for solar fuel production **Leo CHOUBRAC**	1067
17:00	Scientific Publishing in Energy and Sustainability at Wiley **Mara STAFFILANI**	1618

POSTER SESSION I GP01

17:30	Diels-Alder Polyphenylene Membranes Tethered with Different Cation Groups for CO2 Electrolysis **Carmelo PARATA**	01_108

17:30 Operando x-ray analysis of bimetallic electrocatalyst 02_1204
Alessia BARDAZZI

17:30 Multi-shell Copper Catalysts for Selective Electroreduction of CO2 to Multicarbon Chemicals 03_279
Yukun XIAO

17:30 Microwave-assisted synthesis of CuSn bimetallic catalyst for highly efficient formate generation from CO2 electroreduction 04_419
Lan HUANG

17:30 Development of Ni-Co foam-based anodes for enhanced electrochemical CO2 reduction coupled with glycerol oxidation 05_56
Guillermo DÍAZ-SAINZ

17:30 Functionalization of Zeolite 13X with Pyrazine Derivatives: Synthesis, Characterization, and CO2 Uptake Application 06_7
Brahim AISSA

17:30 Atomic Layer Deposition of Copper-Zinc Catalysts on Gas Diffusion Layers for the Electrochemical Reduction of CO2 07_707
Lovelle Rhoy MANPATILAN

17:30 Multiple Adsorption of CO Molecules on Single Atom Substituents in Copper Surfaces 08_762
Magnus CHRISTIANSEN

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SESSION V G05

9:00 Supported bismuth nanoparticles as highly selective and upscalable electrocatalyst for the conversion of CO2 into formate 1260
Paolo PESCARMONA

9:30 Advances in the application of Bi, Sn, and Sb based electrocatalysts for CO2 electroreduction to formate: from fundamental studies to practical devices 1248
José SOLLA-GULLÓN

9:45 Electrochemical CO2 Reduction on Bi-Sn Eutectic Mixture Electrodes: Transitioning from Formate to Formic Acid Production 1007
Avni GURUJI

10:00 The evolution of Bi-based electrocatalysts during CO2RR: Post-mortem and Operando investigations 519
Wenbo JU

10:30 Coffee break

SESSION VI G06

11:00 CO2 and CO electroreduction: structural sensitivity and electrolyte effects 797
Federico CALLE-VALLEJO

11:30 Reactive Carbon Capture: Optimizing Bicarbonate Electrolyzers for an Energy-Efficient Carbon Value Chain 1024
Alessio MEZZA

11:45 Correcting gas-phase errors in models of the electroreduction of carbon oxides 963
Ricardo URREGO-ORTIZ

12:00 Automated Workflow for Surface Coverage Analysis under Electrochemical Conditions 393
Alejandro ARCHE

12:15 Efficient mapping of CO adsorption on Cu1_xMx bimetallic alloys via machine learning 455
Mattia SALOMONE

12:30 Lunch

SESSION VII G07

14:00 Advancing Semiconductor-Based Photoelectrodes for Solar-Driven Fuel and Chemical Production in Photoelectrochemical Cells 1509
Francesca Maria TOMA

14:30 Growth-controlled gold nanoparticles on photoactive covalent organic frameworks: A hybrid material for CO2 photoreduction 182
Roberto GONZALEZ GOMEZ

14:45 Disentangling the Role of Ag-Based Nanocorals as Efficient Cocatalyst over CuBi2O4 Photocathodes Toward Hydrogen Evolution Reaction 475
Miguel GARCÍA-TECEDOR

15:00 Tailoring ligand-functionalized ZnSe quantum dots for enhanced light-driven CO2 reduction 1619
Max GARCIA MELCHOR

15:15 Coalescing solar-to-chemical and carbon circular economy: mediated by metal-free porous organic polymer under natural sunlight 98
Kamalakannan KAILASAM

15:30 Coffee break

SESSION VIII G08

16:00 Interface engineering for CO2 electroconversion in a MEA cell 1386
Damien VOIRY

16:30 Probabilistic techno-economic assessment of a medium-scale photo-electrochemical CO2 conversion plant 623
Hannah JOHNSON

16:45 Ethanol formation via CO2 electroreduction at low overvoltage over exposed (111) plane of CuO thin film 917
Shikha DHAKAR

17:00 High-Efficiency CO2 Electroreduction to Ethylene in Continuous Flow Systems with Cu2O-CeO2 based catalyst 983
Andreina ALARCÓN AVELLÁN

17:15 Electrocatalytic reduction of CO2 using CTAB modified Copper Molybdate nanomaterial 235
Guruprasad BHATTACHARYA

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 01_539
Wei WANG

17:30 Technoeconomic assessment of a Three-compartment Electrolyzer for CO2 Electroreduction to Formic Acid 02_624
Camilo PERALTA

17:30 Enhancing CO2 reduction reaction towards multi-carbon products with a bimetallic Cu-W tandem electrocatalyst. 03_666
Fatemeh SHAHBAZI FARAHANI

17:30 BiVO4-based photoanodes fabricated by electrodeposition for solar-driven CO2 photoelectroreduction to formate in gas-phase 04_817
Guillermo DÍAZ-SAINZ

17:30 Towards the complexity of CO2 electroreduction via Machine Learning potential-based molecular dynamics 05_826
Michele Giovanni BIANCHI

17:30 Computational design of ZnSe-quantum dots functionalized for CO2 reduction 06_840
Anna CIOTTI

17:30 Development of Bismuth-Matrimid based Electrocatalyst for Efficient CO2 Reduction 07_943
Sonal RAJPUT

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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 291
Adriano SACCO

14:30 Surface Engineering of Bimetallic Cu-based Catalysts for the Electrochemical CO_ Reduction into Selective C_ Products 329
Chrysanthi GKILI

14:45 Enhancing Cell Performance and Inhibiting Salt Precipitation through High-Pressure CO2 Electroreduction in Zero-Gap Electrolyzer 280
Xiongwei TIAN

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 217
Rahul KUMAR

15:15 Two-dimensional n-type pyrite with tuned hydrogen interstitials as a highly selective CO2 reduction catalyst 54
Samar FAWZY

15:30 Coffee break

16:00	Pure-water-fed electrocatalytic CO2 reduction to valuable chemicals **Shu Ping LAU**	1398
16:45	Synthesis of electro-fertilizers by CO_ and nitrate reduction coupling: a (U)REAlity Check **Michele FERRI**	387
17:00	Development of an Aqueous Zn-CO_ Flow System for Efficient CO_ Utilization and H_ Production **Pyo SEWON**	518
17:15	**WILEY POSTER AWARDS CEREMONY**	
18:00	**YOUNG RESEARCHER AWARDS CEREMONY**	
18:30	**SOCIAL EVENT**	

E-MRS 2024 Fall Meeting

16th - 19th September - Warsaw University of Technology - Poland

Symposium Sponsors

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Symposium H

Sessions: Room 309 | Main Building

Poster Session: Aula | Physics Building

Electronics, Photonics and Spintronics

Integration of Advanced Materials on Silicon: from Classical to Neuromorphic and Quantum Applications

Symposium organizers:

Andrea **DE IACOVO**	– Roma Tre University
Jacopo **FRIGERIO**	– Physics Department of Politecnico di Milano
Karoline **STOLZE**	– Leibniz-Institut für Kristallzüchtung
Katarzyna **HNIDA-GUT (Main Organizer)**	– 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 1460
Gerasimos KONSTANTATOS

9:30 Quantum Dots: Towards Inexpensive Devices for On-site Explosive Detection 354
Federica MITRI

9:45 Influence of composition and capping layers on the photoluminescence of SiGe and Ge quantum dots on Si Nanotips 778
Diana RYZHAK

10:00 Fabrication of Quadruple Quantum Dot Architectures on Strained GeSn Quantum Wells with TiN Gates 1472
Sinan BUGU

10:15 Germanium on Silicon dual-detector for solvent recognition 1131
Afonso DE CERDEIRA OLIVEIRA

10:30 Coffee break

COMPOUND SEMICONDUCTORS ON SI H02

11:00 Towards a III-V on Si platform for integrated quantum photonics 1145
Elizaveta SEMENOVA

11:30 Towards III/V-on-Si Co-Integration – growth, integration, application 856
Oliver SKIBITZKI

11:45 Optical characterization of InGaAs/Ge metamorphic buffer layers for high-efficiency multijunction photovoltaic cells 997
Jacopo PEDRINI

12:00 Ferromagnetic hybrid superconducting materials based on InAs-Al-EuS nanowires 1257
Yu LIU

12:15 Fabrication and Characterization of Flake-Based MoS2 Back-Gated FET Devices 1457
Sinan BUGU

12:30 Lunch

MATERIALS & TECHNOLOGIES FOR NEXT-GEN DEVICES I H03

14:30 Progress and prospects in acoustoplasmonic metamaterials: Control and characterization with Brillouin light scattering 1005
Thomas VASILEIADIS

14:45 Large-scale fabrication of near-field-coupled plasmonic titanium nitride nanotriangle arrays in a CMOS-compatible process 842
Jon SCHLIPF

15:00 A comparative study of low band gap SiGe and pure Si channels in advanced Schottky-barrier-tunneling FETs with high-k dielectric 1183
Christoph BEYER

15:15 Study of epitaxial regrowth on heavily-doped Ge-on-Si layers obtained by in-situ doping and pulsed laser melting 837
Davide IMPELLUSO

15:30 Coffee break

GESN H04

16:00 All around the thermo-opto-mechanical properties of GeSn optoelectronic devices 605
Costanza Lucia MANGANELLI

16:30 An assessment of the GeH4 + SnCl4 chemistry for the epitaxy of thin and thick GeSn layers 486
Jean-Michel HARTMANN

16:45 Epitaxial Growth using GeCl_ in an APCVD Batch Reactor 136
Ella Susann SUPIK

17:00 Toward Large Scale Production of III-VI 2D Materials and heterostructures by Pulsed MOCVD 620
Rémy BERNARDIN

17:15 Selective Ge – GeSn etching for high fidelity suspended nanowire structures 1023
Sheshank BIRADAR

POSTER SESSION HP01

17:30 Investigation of structural, optical properties of crystalline silicon thin film deposited by low pressure thermal CVD 01_1077
Monika DHIMAN

17:30 Scaling capability analysis of Fe-JLGAA MOSFET including the effects of ferroelectric and high-k materials 03_1529
Faycal DJEFFAL

17:30 Single photon detection with atomically flat materials 04_1552
Alessandro PALERMO

17:30 Implementation of Insulator Thickness-Dependent Negative Differential Transconductance Device and Photomemory Device based on Organic semicondcutor-Insulator-Organic semicondcutor-Insulator Sandwiched Structures 05_232
Dong Hyun LEE

17:30 Implementation of Logic Circuits in a Single Active Channel Using Split-Gate Architecture 06_244
Raksan KO

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 07_267
Fu-Hsiang CHEN

17:30 Zero-Power-Consumption CdO/Si Photodetectors: Europium Doping and Thermal Processing Effects 08_274
Igor PERLIKOWSKI

17:30 Revisiting the Small Biological Molecule Detection Techniques of Silicon Nanowire Field-Effect Transistors through an Ex-Situ Single-Molecule SPM 09_289
Ming-Pei LU

17:30 Coplanar Asymmetric Nanogap Patterns Obtained by Adhesion Lithography and their Applications to Versatile Materials-based Gate-Tunable Schottky Diodes 10_338
Minseo KIM

17:30 Near-field optical microscopy for unravelling light trapping mechanism in light funnel arrays decorated with deep subwavelength features 11_509
Ankit KUMAR

17:30 Planar Ionotronic OECTs: Memtransistor Performance and Energy-Efficient Neuromorphic Functionality 12_516
Muhammed SAHAD E

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
Mieczyslaw PIETRZYK

17:30 Novel applications from properties of quantum grade Silicon-28 14_887
David UEBEL

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
Michael JETTER

9:30 The effect of dislocation filtering layers on optical properties of InAs/InGaAlAs quantum dots grown on silicon substrates 476
Wojciech RUDNO-RUDZINSKI

9:45 High fidelity processing modes for Ge-based quantum devices 881
Nikolay PETKOV

10:00 Material challenges in isotopically enriched Ge quantum well heterostructures on strain-relaxed SiGe buffers 1405
Maximilian OEZKENT

10:15 Single-Ion Counting with an Ultra-Thin- Membrane Silicon Carbide Sensor for Quantum Applications 1091
Enrico SANGREGORIO

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 593
Ross MILLAR

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

PHOTONIC & ELECTRONIC DEVICES H07

14:00	Active photonic integrated circuits using transfer print technology **Brian CORBETT**	215
14:30	Compact NAND Logic Gate based on Nanogap-Split-Gate Transistors by means of Adhesion Lithography **Minseo KIM**	228
14:45	EHD-Jet printed Lead Sulfide Quantum Dots X-ray detectors **Marco RUGGIERI**	119
15:00	Wafer scale probing of low disorder and high mobility Si/SiGe heterostructures fabricated in 200 mm BiCMOS pilotline **Alberto MISTRONI**	769
15:15	Controlling the Properties of Hybrid Organic-Inorganic Negative Transconductance Field Effect Transistors for Advanced Electronics Applications **Juhyung SEO**	166
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 LiNbO3 thin films with silicon technology 1285
Ausrine BARTASYTE

14:30 From optical response to effective thermal properties of Xenes 322
Eleonora BONAVENTURA

14:45 Improved pulsed laser crystallisation of sputtered MoS2 by controlling deposited film thickness 481
Alessandro TONON

15:00 Dealing with delamination issues and the effect of back-gating on CVD-grown MoS2 Field Effect Transistors (FETs), with the variation of SiO2 thickness 555
Aashi GUPTA

15:15 Development of Physical Unclonable Functions with a Quinary Security Key Based on Monolayer Graphene Patterned with Irregular Microparticles 1340
Dong Hyun LEE

15:30 Optical and Electrical Properties of p-type WS2 Monolayer Modified by Ion Implantation and Flash Lamp Annealing 937
Yi LI

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 530
Iwan MOREELS

16:30 Ion beam technology for germanium alloys infrared photodetectors 1060
Shuyu WEN

16:45 A Mechanism of Resistance Switching in CNT Based Memory Devices 443
Alexander SHLUGER

17:00 TEM nanostructural characterization of both filament and matrix in NbOx-based resistive switching devices. 1282
Katarzyna BEJTKA

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: Aula | Physics Building

Electronics, Photonics and Spintronics

III-nitrides and their Use in Electronics and Optoelectronics

Symposium organizers:

Anna **KAFAR (Main Organizer)**	– Institute of High Pressure Physics PAS
Eva **MONROY**	– CEA Grenoble (INAC/SP2M)
Matteo **MENEGHINI**	– University of Padova
Takuya **MAEDA**	– University of Tokyo

Monday, 16 September 2024

VERTICAL GaN TECHNOLOGY I01

9:00	Recent progress on vertical GaN power transistors on foreign substrates **Max REIMER**	1251
9:30	Vertical GaN MOS transistor grown on SiC substrates **Kei May LAU**	1164
10:00	Trapping and reliability properties of Al2O3 gate dielectrics obtained with stacked ALD deposition **Matteo BUFFOLO**	1446
10:15	Impact of Substrate Quality on Vertical GaN-on-GaN Schottky and PiN Devices **Maroun DAGHER**	770
10:30	Coffee break	

LASER DIODES I02

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

NEW NITRIDE ALLOYS I03

14:00 Sputter Epitaxy of Transition Metal Nitrides on Nitride Semiconductors 634
Kobayashi ATSUSHI

14:30 Comparative evaluation of the structural and piezo-acoustic properties of ternary metal nitrides for applications in bulk acoustic wave devices 71
Oliver AMBACHER

15:15 Flexible III-Nitride MEMS Resonators Fabrication through Selective Area Van der Waals Epitaxy 302
Ali KASSEM

15:30 Coffee break

UV LEDS I04

16:00 Metalorganic vapor phase epitaxy of AlGaN-based UVC LEDs 1560
Tim WERNICKE

16:30 MBE growth of ultra-thin GaN/AlN quantum wells for cathodoluminescent UV lamps 731
Ettore COCCATO

16:45 Photonic Atom Probe analysis of AlGaN multilayer structures for UV lighting 1284
Samba NDIAYE

17:00 Modeling the optical degradation kinetics of UV-C LEDs 736
Nicola ROCCATO

POSTER SESSION I IP01

17:30 Investigation of Defect States in InAlGaN/GaN HEMT Structures 01_1268
Matej MATUS

17:30 Submicron embedded air/GaN diffraction gratings for distributed feedback lasers 02_1293
Oliwia GOLYGA

17:30 Relationship between the kink phenomenon and crystal defects in AlGaN/GaN HEMTs under high bias conditions 03_254
Sano SOICHI

17:30 Characteristics of crystal defects in AlGaN in AlGaN/GaN HEMTs regarding electric field effects 04_259
Junya TAKEDA

17:30 Nanostructuration of GaN: A Promising Route to Quantum Single-Photon Sources 05_531
Antouman SALLLAH

17:30 Varying of gallium nitride dislocation concentration due to non-thermal microwave treatment for HEMTs and sensors applications 06_716
Roman REDKO

Tuesday, 17 September 2024

MICRO-LEDS I05

9:00 Development of InGaN red micro-LEDs and toward their laser diodes 161
Kazuhiro OHKAWA

9:30 GaN-on-Si nanowire technology paves the way to high efficiency micro-LEDs for display applications 1276
Thomas SANNICOLO

10:00 InGaN-based multicolor micro-LED arrays via epitaxial integration 80
Yoshinobu MATSUDA

10:30 Coffee break

INGAN ALLOYS I06

11:00 Full InGaN-based red light-emitting diodes grown on ScAlMgO4 substrate 423
Mohammed NAJMI

11:15 InGaN/GaN Nanowires as Photoactivated Biosensors with Dual Readout 1281
Martin EICKHOFF

11:30	InGaN active regions grown on micropatterns **Adam BREJNAK**	1143
11:45	Impact of the design of InGaN/GaN quantum wells on carrier lifetime and diffusion length **Simon LITSCHGI**	1214
12:00	Correlative microscopic study of compositional, morphological and optical properties of photovoltaic devices based on InGaN quantum wells **Florant EXERTIER**	625
12:15	Impact of deposition temperature on InN/Si(100) solar cell device efficiency **Fernando NARANJO**	1309
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GaN RF Devices I07

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14:30	AlGaN/GaN RF Power HEMTs: The Workhorse Technology for 5G and 6G Base-Station Transmitters **Jose Carlos PEDRO**	153
15:00	Investigation on the Effect of Iron/Carbon-Doped Buffer Layer in AlGaN/GaN HEMT **Po-Hsuan CHANG**	1368
15:15	Application of low temperature MOCVD regrown ohmic contacts to RF InAlGaN HEMTs **Sébastien AROULANDA**	42
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Micro and Nanostructures I08

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16:30 Top-down fabrication of high-aspect-ratio tapered and cylindrical GaN nanowires 791
Elcin AKAR

16:45 Two step growth procedure for homogeneous GaN NW arrays on graphene 836
Dyhia TAMSAOUT

17:00 Oxide shells protecting GaN nanowires against photoadsorption, strain, and luminescence quenching 609
Radoslaw SZYMON

17:15 Anisotropy of emission diagrams in AlGaN alloys, quantum wells and quantum dots 835
Alexandra IBANEZ

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 64
Debdeep JENA

14:30 Analysis of Chapacitance-Frequency Characteristics of Si-doped AlN Schottky Junction 1351
Takuya MAEDA

14:45 Polarity-dependent structural and electronic properties of MBE grown NbN/GaN structures 914
Anand Kumar ITHEPALLI

15:00 Characterization of the interface states in Al2O3/AlGaN/GaN based MIS structures by means of photo assisted CV 796
Gabriele SEGUINI

15:15 Room Temperature Deposited Highly Conductive HfNx Films for High-Performance HfN/Si Junction Diodes 398
Amir Sohail KHAN

15:30 Coffee break

MICROSTRUCTURE, PROPERTIES AND MODELING OF GAN ELECTRONIC DEVICES I10

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Patrick DIEHLE

16:30 Modification of electrical properties of GaN by ion implantation and UHPA 464
Kacper SIERAKOWSKI

16:45 Advanced characterization of ion-implantation on GaN on GaN Schottky and p-n diodes for edge termination 607
Zakariae M'QADDEM

17:00 Modelling of trapping effects in GaN power transistors 121
Giovanni VERZELLESI

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 19 September 2024

DEFECTS AND CARRIER LOCALIZATION I11

9:00 Analyzing vacancy defects in GaN and AlN 569
Filip TUOMISTO

9:30 A New Insight into the Growth Kinetics of Mg-doped GaN Using Plasma-Assisted Molecular Beam Epitaxy 269
Elcin AKAR

10:00 Understanding the origin of carrier localisation in boron containing III-nitrides 218
Cara-Lena NIES

10:15 The application of Photonic Atom Probe to the study of a III-N tunnel junction 1292
Lorenzo RIGUTTI

10:30 Coffee break

GaN Electronics: Material and Device Properties I12

11:00 Demonstration of AlGaN-on-AlN p-n Diodes with Dopant-free Distributed Polarization Doping 411
Takeru KUMABE

11:30 GaN-based optically triggered thyristor with doping replaced by polarization-engineering 1558
Greg MUZIOL

11:45 High-frequency surface acoustic waves in (Sc,Al)N thin film grown on free-standing polycrystalline diamond by molecular beam epitaxy 1470
Mingyun YUAN

12:00 700V Breakdown Voltage with Optimized Device Processing on Pseudo-Vertical GaN-on-Si p-n Diode Grown by Localized Epitaxy 132
David Alejandro PLAZA ARGUELLO

12:15 Electrical characterization of pGaN/AlGaN/GaN heterojunction by sheet resistance hall measurements 1526
Anita PATELLI

12:30 Lunch

Bulk Nitrides I13

14:00 Status of Bulk GaN Substrates from the Perspective of Bragg Diffraction Imaging Analysis 526
Lutz KIRSTE

14:30 Exploring Gallium Nitride Bulk Crystal Growth 626
Tomasz SOCHACKI

14:45 Phase diagram of GaN towards closing the gap? 597
Jacek PIECHOTA

15:00 Elucidating the Mechanism of Aluminium Nitride High-Temperature Annealing by Ion Implantation 1242
Christoph MARGENFELD

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

NITRDE AND TERAHERTZ EMITTERS I14

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

E-MRS 2024 Fall Meeting
16th - 19th September - Warsaw University of Technology - Poland

Symposium J

Sessions: Room 219 | Main Building
Poster Session: Aula | Physics Building

Electronics, Photonics and Spintronics

Smart Materials for Advancing Electronics & Photonics

Symposium organizers:

Amrita **JAIN**	– Division of Advanced Composite Materials (PZMK)
Rosaria **PUGLISI**	– CNR - IMM
Vilko **MANDIC**	– University of Zagreb
Yogendra Kumar **MISHRA (Main Organizer)**	– Mads Clausen Institute, University of Southern Denmark

Monday, 16 September 2024

NANOELECTRONICS J01

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

PHOTOCATALYSIS J02

11:00	Strain-Driven Photocatalytic Processes in Hybrid Structures **Emerson COY**	1566
11:45	Anisotropic transport and Photothermoelectrics of a Ni-TiO2 hybrid material. **Harikrishnan GOPALAKRISHNAN**	1357

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

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 _-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 CsSnBr3 Halide Perovskite by DDAB-Assisted Post-passivation Surface Engineering 919
Anjana YADAV

17:45 Mn2+ Doping and Postpassivation Effects on Halide Perovskite Nanocrystals 818
Charu DUBEY

POSTER SESSION JP01

17:30 Investigating the effect of gamma radiation on vanadium dioxide: A study of structural and electrical transformations 01_1003
Sonika SINGH

17:30 Resistive switching of Lanthanum Titanium Oxide for Cross-Point Array Applications with Memristive Devices 02_1010
Jeongwoo LEE

17:30 Deposition of amorphous molybdenum silicide MoSi superconducting thin films via magnetron co-sputtering 03_1056
Luize DIPANE

17:30 Electrostatic influence on the formation and stability of One-dimensional (1-D) conductive microparticle chains 04_1104
Gunjan TIWARI

17:30 Recycled Newspaper cellulose for eco-desgined energy harvesting and pressure sensor technologies 05_1136
Guilherme MENDES FERREIRA

17:30 Impact of Zr Doping on Subthreshold Conduction in Polycrystalline ZnTe with Threshold Switching 06_1142
Wansun KIM

17:30 Colloidal Assemblies of Chiral Plasmonic Nanoparticles 07_1212
Pablo MARIANI

17:30 Implementation of a reservoir computing system using volatile Au/Ti/monolayer-MoS2/Au memristors 08_1237
Asmita THOOL

17:30 CN-based molecules as a flexible toolbox for synthesis of low-dimensional carbon nitrides structures 09_1291
Nataliya KALASHNYK

17:30 Electron Trapping Group Induced Enhancement in Photoresponses of Organic Field-Effect Transistors 10_1407
Sk SHAHARUKH

17:30	Funnel devices constructed using asymmetrically strained transition metal dichalcogenides **Kyung-Hwa YOO**	11_1410
17:30	PVDF/N-rGO nanofibers based Triboelectric Nanogenerator for self-powered IoT applications **Shilpa RANA**	12_1494
17:30	Surface-Enhanced Raman Scattering of a Randomly Distributed Single-Walled Carbon Nanotube Network decorated with Gold Nanoparticles **Ali ADNAN**	14_39
14:45	Microscopic study of local thermal, electrical and structural properties of ZnMgO thin films on different substrates **Anna KAZMIERCZAK-BALATA**	200
17:30	Viologen-based smart material for water detoxification **Marcin KULINSKI**	16_612
17:30	Compositional and Structural Influences on the Plasmonic Properties of Mo-based Janus Nano-Flakes **Marwan ALAM**	17_617
17:30	Soft and conductive polyacrylamide hydrogel-based flexible wearable sensors for electrocardiogram (ECG) monitoring **Saurabh SONI**	18_618
17:30	Photoresponse properties of green-assisted Fe3O4 nanoparticles supported activated carbon. **David IDISI**	19_69
17:30	Optimizing growth and topotactic transitions in vanadium oxide thin films for microbolometer application **Ujjwal CHITNIS**	20_698
17:30	Distinguishable Optical Signature in Bilayer AA and AB Stacked ReS2: A Comprehensive Investigation **Prahalad Kanti BARMAN**	21_705
17:30	Energy and exciton transfer in heterostructures with mixed dimensionality **Anna WROBLEWSKA**	22_708
17:30	Magnetic field effect on resonant properties of surface plasmon-polariton photodetectors **Sergii MAMYKIN**	23_727

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

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

10:00 3D printing of electroactive shape memory nanocomposites for liquid sensors 332
Xue WAN

10:15 Ultrasensitive Breast Cancer Diagnosis via Aptamer-Enabled Electroanalytical Detection of HER-2 with ZnO Tetrapod-K4PTC Nanocomposite 459
Reema RAWAT

10:30 Coffee break

HEALTHCARE MATERIALS J06

11:00 Microelectronic morphogenesis: From modular micro-origami robots to microelectronic life 1562
Oliver G. SCHMIDT

11:30 Atomic Structure Studies of MOCVD Graphene 1483
Rajveer Singh RAJURA

11:45 Piezoelectric peptide nanotube substrate sensors activated through sound wave energy. 1203
Allan J. FINLAY

12:00 Soft and conductive polyacrylamide hydrogel-based flexible wearable sensors for electrocardiogram (ECG) monitoring 756
Saurabh SONI

12:30 Lunch

SMART NANOSTRUCTURING J07

14:00 Laser-Processed Anodic Semitransparent Oxide Nanotubes Formed From a Ti-Au Co-Sputtered Alloy 1373
Katarzyna SIUZDAK

14:45 Automated dry synthesis and deposition of nanomaterials 171
Vincent MAZZOLA

15:00 Spin Selective Charge Transfer-SERS based Label-Free Enantioselective Discrimination of Chiral Molecules on Ag Nanoparticles Decorated Ni Nanorods Array 397
Lakshay BHARDWAJ

15:15 Tetrapods based Smart Materials for Advanced Technologies 451
Yogendra Kumar MISHRA

15:30 Coffee break

NANOSENSORS J08

16:00 Smart Nanomaterials for Chemical Sensors – Enabler for Consumer Electronic Applications 1607
Anton KÖCK

16:45 Strong Circularly Polarized Light Active Chiral 2D-Hybrid Transition Metal Perovskites 741
Anuja DATTA

17:15 Various techniques for Accurate Measurement of Noise current and Specific Detectivity for PbS Infrared Photodetectors 1115
Bhupesh BHARDWAJ

17:30 Reconfigurable Optoelectronic Logic Gates based on Bipolar Photo-responsive Dual-heterojunction Photodetectors 250
Taehyun PARK

17:45 Interface characterization of pure boron on silicon/germanium for broadband photodiodes 1207
Vinayak Vishwanath HASSAN

18:00 Development of fluorescent materials for the detection of phthalate vapors 197
Pablo LABRA-VÁZQUEZ

Wednesday, 18 September 2024

9:00 **PLENARY SESSION**

12:30 Lunch

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13:00 Biowaste-Derived Gold Nanoparticles Coated Reduced Graphene Oxide Nanoplatforms: An Electrochemical Immunosensor for The Detection of Dengue NS1 1409
Dr. Arpita Pandey TIWARI

13:30 Chiral Plasmonic Superlattices Based for Biosensing 297
Tsz Him CHOW

13:45 Plasmonic resonances in cylindrical and tapered silicon nanowires 489
Rizwan RAFIQUE

14:00 Controlling the helicity of light by electrical magnetization switching 687
Pambiang Abel DAINONE

14:15 Near-field optical microscopy for unravelling light trapping mechanism in light funnel arrays decorated with deep subwavelength features 1499
Ankit KUMAR

14:30 Silicon-based diffractive optics for structured light in nonparaxial terahertz imaging systems 847
Sergej ORLOV

14:45 Colloidal Assemblies of Chiral Plasmonic Nanoparticles 1105
Pablo MARIANI

15:00 Design and fabrication of microcavities exhibiting localised surface plasmons on stretchable transparent substrates 849
Miguel MANSO SILVÁN

15:30 Coffee break

PHOTONICS J10

16:00 Boosting SWIR photosensing of group IV-based nanocrystals by alloying and embedding matrix-induced effects 1584
Ana-Maria LEPADATU

16:30 On-chip Strain Tuning Module for Photonic Link of Diamond Spin Qubits 671
Tetsuro ISHIGURO

16:45 Bottom-up evolution of nonstoichiometric metal/metal oxide systems 1565
Vilko MANDIĆ

17:00 Tunable ESIPT molecules applied to novel temperature responsive systems and efficient downconversion thin films 839
Guillermo MARTÍNEZ-DENEGRI

Thursday, 19 September 2024

ACTIVE MATERIALS J11

10:15 Magnetron-Sputtered W-V-N alloy coatings: Unveiling Self-Lubricating Potential 1570
Akula UMAMAHESWARA RAO

10:30 Crystallization Mechanism of Soluble Acene in Polymer Blends under Residual Solvent Evaporation 932
Wi Hyoung LEE

10:30 Coffee break

2D MATERIALS J12

11:00 Polymer-2D materials based Triboelectric and Hybridized Systems for enabling next generation IoT applications 1498
Bharti SINGH

11:15 Tuneable physical properties of MoS_ for optoelectronic devices induced by strain via heat treatment 1394
Emanuele SANGIORGI

11:30 Enhancing the optical properties of 1L-MoS_ through thermal treatments 1231
Antonino MADONIA

11:45 Exploring Nanostructured Graphenes Elaborated via On-Surface Reactions 892
Nataliya KALASHNYK

12:00 MoxWx-1S2 nanotubes for field emission application 45
Bojana VIŠIC

12:15 Ruddlesden-Popper Perovskite-MoS2 Hybrid Heterojunctions for Stable and Efficient Self-powered Photodetectors 81
Rashid M. ANSARI

12:30 Lunch

NANOMATERIALS J13

14:00 Josephson Transport across T-shaped and Series-Configured Double Quantum Dots System at Infinite-U Limit 1390
Bhupendra KUMAR

14:15 Transfer of supramolecular arrangements from solution to surface: towards applications in device manufacturing through self-assembly 577
Melina VAVALI

14:30 Versatile cutting-edge materials engineered to meet the demanding requirements of modern electronics 1028
Aleksandra MOTYKA

15:00 Comparison of optical and luminescence properties of as prepared and annealed ZnO nanoparticles prepared using sol-gel method 1477
Francis DEJENE

15:15 Ultra-level detection of heavy metals using SERS substates developed by direct laser writing lithography 176
Anjika KUMARI

15:30 Coffee break

FUNCTIONAL MATERIALS J14

16:00 Functional Organic Materials For Energy 1001
Maria MONTRONE

16:15 Engineered exciton diffusion length enhances device efficiency in highly efficient small molecules photovoltaics 1550
Muhammad SAJJAD

16:45 Fabrication of semiconductor thin films by laser-assisted zone casting 880
Michal WYSKIEL

17:00 Pioneering Screen-Printed RF Electronics: Transparent and Flexible Antennas and Metamaterial Absorbers 340
Sungjoon LIM

17:15 Implementation of a Physically Unclonable Functions Capable of Generating Multiple Keys Using Small Molecules-based Heterostructure 225
Raksan KO

17:30 Phase behaviour and dynamics of organic cations in Formamidinium Lead Iodide (FAPI) using machine-learned potentials 868
Sangita DUTTA

17:45 Room-Temperature Laser Induced Water Release in a Spin-Crossover Metal-Organic Framework: a Structure-Properties Investigation 935
Sara GULLACE

E-MRS 2024 Fall Meeting
16th - 19th September - Warsaw University of Technology - Poland

Symposium Sponsors

Symposium K

Sessions: Room 327 | Main Building
Poster Session: Aula | Physics 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, CEALETI

Slawomir **PRUCNAL (Main Organizer)** – Institute of Ion Beam Physics and Materials Research

Monday, 16 September 2024

DOPING OF GROUP-IV MATERIALS I — K01

15:30 Coffee break

DOPING OF GROUP-IV MATERIALS II — K02

POSTER SESSION I — KP01

17:30	Solid-Phase Recrystallization of Phosphorus-Implanted Silicon by Nanosecond Laser Annealing **Sebastien KERDILES**	01_1359
17:30	Ultra-doped GeSn Photodetector Arrays on Silicon for Short-Wave Infrared Image Sensors **Po-Rei HUANG**	02_1365
17:30	Tuning Silicon superconductivity with nanosecond laser doping **Francesca CHIODI**	03_1413
17:30	Ultra-doped Silicon: effective mass, carriers and magnetoresistance **Francesca CHIODI**	04_1547
17:30	Ultradoped GeSn:Sb plasmonic antennas for plasmon-enhanced infrared photodetectors **Guillermo GODOY PEREZ**	05_194
17:30	Si1-x-yGeySnx alloy formation by Sn ion implantation and flash lamp annealing **Slawomir PRUCNAL**	06_277
17:30	Superconductivity in Ga-Doped SixGe1-x via Ion Implantation and flash lamp annealing **Yu CHENG**	07_724

Tuesday, 17 September 2024

GROUP IV NANOSTRUCTURES — K03

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

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

10:30 Coffee break

HYPERDOPING OF GROUP IV K04

11:00 Breakthroughs and Future Horizons in Hyperdoped Si and Ge Photodetectors 498
Eric GARCÍA-HEMME

11:30 Germanium alloys-based infrared photodetectors realized by ion beam technology 328
Shuyu WEN

11:45 Fabrication of supersaturated GeSn alloys on Ge and Ge-on-Si by nanosecond pulsed laser melting 768
Daris FONTANA

12:00 Ex-situ incorporation of Al in Ge by sputter deposition and pulsed laser melting: a new approach to fabricate hyper-doped Ge:Al alloys 1234
Enrico DI RUSSO

12:15 Hyperdoping germanium with titanium via femtosecond laser processing 1356
Xiaolong LIU

12:30 Lunch

2D MATERIALS AND BEYOND K05

14:00 Anisotropic physical properties of the layered magnetic crystals. 1392
Magdalena BIROWSKA

14:30 Phosphorous Doping in WS2 Monolayer by Ion Implantation and Flash Lamp Annealing 1116
Yi LI

14:45 Studies on Seebeck coefficient on highly dopped p-type transparent off-stoichiometric Cu based delafossite thin films 193
Petru LUNCA-POPA

15:00 Ruthenium for Future BEOL interconnections for CMOS: Electrical properties enhancement and Failure modes using Microsecond UV Laser Annealing 468
Richard DAUBRIAC

15:15 A laser annealing method for manufacturing CoSi_ source/drain with improved superconductivity 651
Paul DUMAS

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 565
Raul GAGO

16:30 Tellurium/Indium Gallium Zinc Oxide Heterostructures based Transistor Exhibiting a Negative, Zero, and Positive Transconductances 231
Dong Hyun LEE

16:45 Charge transport and charge trapping in polycrystalline highly-doped ZnO thin films 794
Alexei NAZAROV

17:00 _-Ga2O3 doped with Yb in the implantation process: studies on defects and optical properties 1314
Mahwish SARWAR

17:15 A comparative study of GaAs hyperdoped with Chromium processed by ArF+ excimer and Nd-YAG pulsed laser melting 1255
Sari ALGAIDY

POSTER SESSION II KP02

17:30 Al-delta-doped ZnO films for low emissivity coating 01_1027
Guoxiu ZHANG

17:30 Mid-infrared plasmonics in heavily doped GaAs 02_1068
Shengqiang ZHOU

17:30 Advancing Mid-Infrared Silicon Photonics with Si-Based Graded GeSn Waveguide Photodetectors 03_1306
Radhika BANSAL

17:30 The enhanced structural studies of _-Ga_O_ implanted with Yb 04_1396
Joanna MATULEWICZ

17:30 Doping of GaAs/AlGaAs core-shell nanowires by ion implantation 05_699
Yuxuan SUN

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 352
Maciej Oskar LIEDKE

14:30 Effect of soft annealing on the optoelectronic performance of Ti hyperdoped silicon photodiodes. 1097
Rafael BENÍTEZ FERNÁNDEZ

14:45 Spatial dispersion in doped semi-conductors: plasmons and beyond 1412
Antoine MOREAU

15:15 Influence of the nanocrystal size on the localized surface plasmon resonance in highly doped Si nanocrystals obtained in Si-rich SiO2/SiO2 multilayers 1112
Hervé RINNERT

15:30 Coffee break

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

E-MRS 2024 Fall Meeting

16th - 19th September - Warsaw University of Technology - Poland

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Symposium L

Sessions: Room 315 | Main Building

Poster Session: Aula | Physics 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 **David ROGERS**	1444
9:30	NiO equips Ga2O3 with bipolar conduction and avalanche capability **Jiandong YE**	208
10:00	Improved electrical properties of _-Ga_O_/Al_O_/Pt capacitors with modified Ga_O_ surface **Nabatame TOSHIHIDE**	224
10:15	Doping Effect and Thermal Stability of Electron Irradiation Induced Defects in ß-Ga2O3 and GaN Crystals **Marcin KONCZYKOWSKI**	561
10:30	Coffee break	

SESSION II — L02

11:00	Superior radiation tolerance of Ga2O3 **Andrej KUZNETSOV**	1467
11:30	Solution processable ultra-wide bandgap semiconductors-based DUV photodetectors and their emerging applications **Taehyun PARK**	249
11:45	Application of AlHfGaO film in ultraviolet-C photodetectors using vapor cooling condensation system **Ching-Ting LEE**	253
12:00	Trapped holes and defect generation in crystalline and amorphous Ga_O_ **Alexander SHLUGER**	445
12:15	Incorporating Ba as compensating acceptor into _-Ga_O_ by molecular beam epitaxy **Andrea ARDENGHI**	589
12:30	Lunch	

SESSION III L03

14:00 Key Research Topics in Ga2O3 Power Devices 1504
Man Hoi WONG

14:30 Effects of the Deposition Temperature in Atomic Layer Deposition of Ga_O_ thin films on Silicon and Sapphire Using a TEGa/O_ Chemistry 465
Andy SEGURET

14:45 Deep level traps in (010) _-Ga_O_ epilayers grown by MOCVD on native Sn-doped substrates 703
Christopher DAWE

15:00 NiO/(__and __) Ga2O3 p/n heterojunctions: Material growth and diode design 855
Abderrahim MOUMEN

15:15 Structural and optical studies of Yb-implanted _-Ga2O3 949
Mahwish SARWAR

15:30 Coffee break

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16:00 High-speed growth of thick high-purity _-Ga2O3 layers by low-pressure hot-wall metalorganic vapor phase epitaxy 953
Junya YOSHINAGA

16:30 Point defects in Ga2O3 as efficient UV-Vis light emission centers 1199
Elzbieta GUZIEWICZ

16:45 Relationship between doping and intrinsic defects in UWBG semiconductors The case of Zn doping in beta-Ga2O3 grown by MOCVD 1346
Georges BREMOND

17:00 Exploring tetravalent doping in _-Ga_O_ thin films grown by Pulsed Electron Deposition technique 1384
Francesco STANCARI

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17:30 The influence of anisotropy in wide-bandgap 4H-SiC on the thyristor breakdown voltage and its junction termination extension design — 01_1083
Kamil KOTRA

17:30 Photo-Gain Effect in Gallium Oxide UV-C Photoresistors Induced by Trapping of Photogenerated Holes — 02_146
Giovanni VERZELLESI

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 — 03_1489
Stefan EDINGER

17:30 Color Spectroscopy for Failure Analysis of Silicon Carbide Single Crystals using Energy Level Analysis — 04_20
Hyoungseuk CHOI

17:30 _-Ga2O3 films on (B)GaAs as novel intermediate bandgap solar cells: from material to device design — 05_216
Tarak HIDOURI

17:30 Fabrication of transparent conductive zinc oxide films by chemical bath deposition with a rotating flow reactor — 06_309
Hajime WAGATA

17:30 Stimulation Technology of Growing Ultra-Wide Bandgap Ga2O3 Semiconductor for Power Electronics. — 07_312
Zurab KUSHITASHVILI

17:30 Electron Irradiation of PLD-Grown __-Ga2O3 Thin Films — 08_718
Jun LIN

17:30 Fabrication of vertical and planar NiO/Ga2O3 diodes for optoelectronics applications — 09_861
Abderrahim MOUMEN

17:30 Anisotropic UV Photoluminescence from Bulk _-Ga2O3 Crystals — 10_962
Krzysztof KORONA

Tuesday, 17 September 2024

ALUMINIUM NITRIDE I — L05

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Yuan YE

9:30 Influence of alloy disorder effects on the anisotropy of emission diagrams in AlGaN alloys, quantum wells and quantum dots 820
Alexandra IBANEZ

10:00 Evaluation of Self-Heating Effects in AlGaN Channel Heterostructure field-effect Transistors grown on bulk AlN substrate 828
Jash MEHTA

10:15 Phase-selective growth of _- vs _ -Ga_O_ and (InxGa1-x)_O_ by In-mediated metal exchange catalysis in plasma-assisted molecular beam epitaxy 968
Andrea ARDENGHI

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11:00 AlN based devices on AlN native substrates 1606
Oliver HILT

11:30 Halide Vapor Phase Epitaxy of AlGaN: Perspectives for the development of novel nitride substrates 307
Arianna JAROSZYNSKA

11:45 New strategies for obtaining efficient red emission from Eu3+ ions in ZnMgO based quantum structures 1031
Juby Alphonsa MATHEW

12:15 Ultra-thin GaN channel in AlGaN/GaN/AlN double heterostructure HEMTs on AlN substrates by hot-wall MOCVD 1350
Minho KIM

12:30 Lunch

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14:00 How to improve epitaxially grown aluminum nitride layers on sapphire substrates 1441
Sylvia HAGEDORN

14:30 Optical and electrical characteristics of the FeGa defect in dilute AlxGa1-xN alloys 695
Lijie SUN

14:45 Probing n-ZnMgO/p-Si nanowire junctions: composition, strain, and defects revealed by Raman spectroscopy and electrical measurements 788
Eunika ZIELONY

15:00 Curvature Engineering of AlGaN Drift Layers for Vertical Power Devices 1420
Byeongchan SO

15:15 Study on AlxGa(1-x)2O3 with different aluminum contents by metal-organic chemical vapor deposition 1557
Chih-Yang HUANG

15:30 Coffee break

POSTER SESSION II LP02

17:30 Transparent conductive fluorine and titanium co-doped zinc oxide films vis aerosol assisted chemical vapour deposition 01_104
Iqra RAMZAN

17:30 Impact of chloride additive on the suppression of 2H/4H intermediate phase formation in wide-bandgap perovskite solar cells 02_1069
Saurabh SRIVASTAVA

17:30 Achieving Remarkable Enhancement in the Mobility of Organic Field Effect Transistors by Molecular Doping in Ambient Conditions 03_189
Ifra BIBI

17:30 Investigation on Energy Resolution of CsPbBr3 Single-Crystal Devices 04_472
Xin ZHANG

17:30 Investigation of exciton lifetime of 4H-SiC(0001) modified by thermal annealing at 400 °C in high pressure O_. 05_484
Gianmarco LAURELLA

17:30 Investigation of Anode contact on Charge Collection Efficiency Stability and Energy Resolution in Perovskite Radiation Detector 06_680
Yingying HAO

17:30 Microstructure evolution of CdZnTe crystal irradiated by heavy ions 07_760
Lu LIANG

Wednesday, 18 September 2024

9:00 **PLENARY SESSION**

12:30 Lunch

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14:00 Metal_Organic Chemical Vapor Deposition of Aluminum Yttrium Nitride and Aluminum Scandium Nitride for sustainable electronics 399
Isabel STREICHER

14:30 Performance Improvement of ZnGa2O4 based Phototransistor utilizing Neutral Ion Beam Etching Technology 351
Siddharth RANA

14:45 Persistent luminescence in Bi-doped LiYGeO4: new insights towards understanding the UV emission 1269
Joana RODRIGUES

15:00 Photonic Atom Probe Analysis of Quantum Well Heterostructures: Evaluating Laser-Induced Thermal Effects at Nanoscale 1290
Subodh K. GAUTAM

15:30 Coffee break

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16:00 ScAlN barrier HEMTs grown by ammonia source molecular beam epitaxy 372
Yvon CORDIER

16:45 Microstructural characterization of diamond epitaxial layers with variable boron doping, by X-ray Rocking Curve diffraction Imaging 1383
Rébecca DOWEK

17:00 Temperature dependent photoluminescence excitation spectroscopy on single crystal r-GeO_ 1426
Luca Sung-Min CHOI

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 19 September 2024

H_BN I — L11

9:00 Quantum sensing with h-BN — 210
Jesus ZUNIGA PEREZ

9:30 Efficient light-matter interaction in hexagonal boron nitride — 821
Guillaume CASSABOIS

10:00 Optoelectronic Logic, Hazard Monitoring, and Security: Novel Applications of Ultraviolet Wide Bandgap Photodetectors — 164
Hocheon YOO

10:15 The Electron-Phonon Coupling Strength in hBN UV Color Centers — 410
Nils BERNHARDT

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11:00 Photo-induced doping of hBN for UVC LEDs — 357
Jean Paul SALVESTRINI

11:30 Bulk growth of hexagonal BN via a lithium-based flux method — 886
Siddha PIMPUTKAR

12:00 Cubic BN optical gap and intragap optically active defects — 1180
Alberto ZOBELLI

12:15 Exploring Gate Metal Options for AlGaN/GaN HEMTs Technology — 1275
Muhammad ASAD

12:30 Lunch

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14:00 Exfoliated and MOCVD h-BN as an excellent substrate for the epitaxy of 2D materials 1608
Wojciech PACUSKI

14:30 Influence of boron precursor flow rate on structural properties of sp2 boron nitride grown by two stage MOVPE on sapphire substrates 1061
Mateusz TOKARCZYK

14:45 Optical Properties of MoSe2 in Heterostructures with MgSe/ZnSe Grown by Molecular Beam Epitaxy 1404
Adam SZCZERBA

15:00 4.1 eV defect luminescence as a tool to identify the polytype of sp2-BN 1110
Jakub IWANSKI

15:15 Impact of annealing in nitrogen atmosphere on defect-related photoluminescence in MOVPE-grown layered boron nitride 1272
Aleksandra DABROWSKA

15:30 Coffee break

E-MRS 2024 Fall Meeting
16th - 19th 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**	– Université Jean Monnet - SAINBIOSE U1059, INSERM
Fabio **CICOIRA**	– Polytechnique Montréal
Francesco **DECATALDO (Main Organizer)**	– University of Bologna
Ilaria **ABDEL-AZIZ**	– University of the Basque country (EHU/UPV)

Tuesday, 17 September 2024

SESSION I M01

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

SESSION II M02

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

SESSION III M03

14:00 Intelligent conducting polymer materials for cutting-edge bio-integrated electronics 295
Miryam CRIADO-GONZALEZ

14:30 Electrical Access to Bacteria by Redox Polymer-based Artificial Molecular Conduits 649
Gabor MEHES

14:45 Optoelectronic enhancement of photocurrent by cyanobacteria on sustainable AP-VPP-fabricated PEDOT electrodes 676
Pulmu ELORANTA

15:00 Towards Wearable Chemosensor for Metal Cations via Semiconducting Conjugated Polymer 715
Yun LIU

15:30 Coffee break

SESSION IV M04

16:00 Theranostic Chemistry 1283
Johannes BINTINGER

16:30 Light-Based 3D Printing PEDOT:PSS for Bioelectronics 500
Antonio DOMINGUEZ-ALFARO

17:00 Surface-grafted conjugated polymer brushes as robust conductive nanocoatings 878
Szczepan ZAPOTOCZNY

17:15 Biodegradable Piezoelectric Nerve Conduit for Enhanced Neural Differentiation: Synergistic Effects of Ultrasound-Driven Electrical Stimulation and Drug Release 1465
Vignesh KRISHNAMOORTHI KALIANNAGOUNDER

17:30 Implantable Nanosensors: Detecting, Communicating, and Ensuring Implant Success 180
Thomas WEBSTER

POSTER SESSION II MP01

17:30 Synthesis of electrospinable Poly (Glycerol-co-Sebacate) Acrylate (PGSA) for membrane fabrication 01_1226
Kamal ASADIPAKDEL

17:30	Smart Contact Lens for Visualizing Glucose Levels in Body Fluids Using Colorimetric Technology **Jumi KANG**	641
17:30	Hydrophilic Imidazolium-Based Photosensitizers: Enhancing Fluorescence and ROS Generation for Advanced Photodynamic Therapy and Bioimaging **Songyi LEE**	03_145
17:30	Synthesis and Characterization of Fluorophore-Decorated Sequence-Defined Oligomers **Anuj SHARMA**	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 **Yunzhu TAN**	05_436
17:30	Vibration tactile sensor inspired by Pacinian corpuscle mechanoreceptor **Jin-Yup KIM**	06_635
17:30	Fabrication and Characteristics Analysis of Composite Materials of Filter Paper and PDMS that can be used in various biochips **Yo Han CHOI**	07_710
17:30	Bicyclic Mechanophores in Polymers for Strain-Induced Unlocking of Stored Properties **Alexander Perez ROXAS**	08_990

Wednesday, 18 September 2024

9:00 **PLENARY SESSION**

12:30 Lunch

E-MRS 2024 Fall Meeting

16th - 19th 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)**	– University of Oxford
Krystian **ROLEDER**	– Institute of Physics | University of Silesia
Philippe **GHOSEZ**	– University of Liège - Theoretical Materials Physics
Rostyslav **VLOKH**	– Vlokh Institute of Physical Optics

Monday, 16 September 2024

DOMAINS I N01

9:00 Twisted Charged Interfaces in Ferroelectrics 369
Marty GREGG

9:30 Time-resolved photostriction and bulk photovoltaic effect in ferroelectrics 1385
Gustau CATALAN

10:00 Assessing the nature of nanoscale ferroelectric domain walls in lead titanate multilayers 315
Marios HADJIMICHAEL

10:30 Coffee break

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11:00 Exploring the asymmetric nanotribology and interactions with surface water of ferroelectric materials 991
Patrycja PARUCH

11:30 Exploring ferroelectrics and their response to external stimuli at the local scales by scanning transmission electron microscopy 276
Oana-Andreea CONDURACHE

12:00 Polar textures in ferroelectric superlattices 1127
Pavlo ZUBKO

12:30 Lunch

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14:00 Dynamic elastic studies of inhomogeneous nanostructures at ferroic phase transitions 79
Wilfried SCHRANZ

14:30 Applications of second harmonic generation microscopy on Ferroics 552
Hiroko YOKOTA

15:00 Domain rotation and domain wall mobility in piezoelectric single crystals 373
Nan ZHANG

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 470
Sabir HUSSAIN

16:15 Lattice-distortion couplings in antiferroelectric perovskite oxides: A comparative study between AgNbO3 and PbZrO3 413
Huazhang ZHANG

16:30 First order polarization process and anisotropic in-plane ferroelectricity in CaTiO_ thin films 494
Lukas KOROSEC

16:45 Vortices and Antivortices in Antiferroelectric PbZrO_ 774
Konstantin SHAPOVALOV

17:00 Local Ferroic Properties of Ferroelastic Domain Walls in CaMnO3 From First Principles 1263
Ida Cathrine SKOGVOLL

17:15 Polar superorders in BiFeO3-based superlattices 383
Francesco DELODOVICI

POSTER SESSION I NP01

17:30 Electric Field Dependent Thermal Transport in Functional Oxide 01_1000
Dominik M. KOCH

17:30 Perovskite material domain analysis towards enhanced functionality 02_1015
Ioan-Mihail GHITIU

17:30 Synthesis of boracites and many other borate phases... 03_1022
Charlotte COCHARD

17:30	Defect-induced electrocaloric effect in disordered lead-free heterovalent and isovalent ion substituted BaTiO3-based system **Yammala ELIYA**	04_1045
17:30	Hidden Topology of Translational Boundaries in up-up-down-down-type Ferroic Systems **Konstantin SHAPOVALOV**	05_1179
17:30	Ferroelectric nonlinear polycrystalline metal-oxide synthesized via chemical solution deposition **Virginia FALCONE**	06_1240
17:30	Investigating Ferroelectricity in Freestanding PbTiO3 Heterostructures **Sophia LINSSEN-PITSAROS**	07_1310
17:30	Mechanical properties of antiferroelectric lead hafnate **Julita PIECHA**	08_1476
17:30	Role of Chelating Agents on the Synthesis of Bismuth Ferrite Nanoparticles for Photocatalytic Degradation of Organic Pollutants **Kokkiligadda JHANSI**	09_1502
17:30	Performance assessment of nanoscale ferroelectric-JLGAA MOSFET using strained binary alloy channel material **Faycal DJEFFAL**	10_1531
17:30	Optimized Memristive and Synaptic Functionality via Oxygen-deficient ZrO2-x insertion **Turgun BOYNAZAROV**	11_170
17:30	Jahn-Teller effect and features of divalent copper ion behavior in multicomponent borate crystals **Andrey PROKHOROV**	12_21
17:30	Thermal conductivity of bulk BiFeO3 (single domain) and thin BiFeO3 films (multi-domain) determined by Raman thermometry **Cameliu HIMCINSCHI**	13_25
17:30	Magnetoelectric coupling in novel BaTiO3-CaMnO3 solid solution for multifunctional Dielectric Resonator Antenna application. **Maneesha PUTHIYOTH**	14_344
17:30	Mechanical stress-induced phase in PbHfO3 **Iwona LAZAR**	15_389

17:30 Pressure Tuning Properties of Spin Crossover Materials, Spin Transition as a Direction in Modern Electronics and Spintronics 16_448
Gerogiy LEVCHENKO

17:30 Novel Approaches in Magnetic Sensing: Utilizing Laser Ablated Iron Oxide Nanoparticles in Advanced Fluxgate Magnetometers 17_469
Regina Maria CHIECHIO

17:30 Synthesis and characterisation of TMCM-MnCl3 18_549
Chithra KANDAPPANTHODI

17:30 A contribution to understanding the nature of the intermediate IM phase in PbHf0.7Sn0.3O3 single crystal 19_627
Irena JANKOWSKA-SUMARA

17:30 Formation and Analysis of L21-ordered Full-Heusler Co2TiSn Thin Films for Spintronic Applications 20_776
Artem SHAMARDIN

17:30 Frequency and temperature dependent electrical conductivity and impedance studies of Sn doped BST ceramics 21_860
Anil KUMAR

17:30 Magnetoelectric coupling in novel BaTiO3-CaMnO3 solid solution for multifunctional Dielectric Resonator Antenna application 22_918
Maneesha PUTHIYOTH

Tuesday, 17 September 2024

SKYRMIONS AND MULTIFERROICS I — N05

9:00 Update on nonmagnetic antiskyrmions in barium titanate 1122
Jirí HLINKA

9:30 Analysis of pattern formation in topological phases in polar heterostructure 1270
Javier JUNQUERA

10:00 Brownian electric bubble quasiparticles 281
Hugo ARAMBERRI

10:30 Coffee break

SCYRMIONS AND MULTIFERROICS II — N06

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

SCYRMIONS AND MULTIFERROICS III — N07

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

SCYRMIONS AND MULTIFERROICS IV — N08

16:00	Phase evolution in Hf0.5Zr0.5O2 thin films deposited by off-axis magnetron sputtering **Yaqi LI**	1397
16:15	Characterization of hafnium oxide based multiferroic heterostructures for magnetoelectric spin-orbit devices **Maximilian LEDERER**	1224

16:30 Multiferroic metal with Huge polar distortion driven by spin ordering: monolayer Fe3GeTe2 1187
Jisoo NAM

16:45 High-quality _-BaFe2O4 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

SrTiO3 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 SrTiO3 1462
Mario MAGLIONE

15:00 Anomalous Photoelectric Effects SrTiO3 Single Crystals and Heterostructures 94
Marin ALEXE

15:30 Coffee break

BiFeO3 N10

16:00 Phase transitions and domain dynamics in PbTiO3/SrTiO3 superlattices 33
Fernando GÓMEZ-ORTIZ

16:30 Advanced Methods for Minimizing Substrate Contributions in Raman Spectroscopy of Thin Films: Example of BiFeO3 grown on SrTiO3. 325
Thomas PERRAULT

16:45 BiFeO_ nanoparticles using atomistic simulations 1078
Mauro António PEREIRA GONCALVES

17:00 Strong and Unexpected Piezocatalytic Behavior 648
Wafa AMDOUNI

17:15 Anti-magnetoelectricity, a hidden order probed by Dynamical Magnetic Charges 1072
Maxime BRAUN

17:30 Synthesis of polycrystalline LiNbO3 Thin Films Using a Novel Lithium–Niobium Heterobimetallic Precursor via solution approaches 960
Francesca LO PRESTI

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 19 September 2024

HYBRID COMPOUNDS I N11

9:30 Density-functional theory characterization of ferroelectric oxides at the nanoscale 1032
Oswaldo DIEGUEZ

10:00 Anharmonicity and Soft Mode Dynamics in Cs2AgBiBr6, a Lead-Free Double Perovskite 304
Peter GEHRING

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 1156
Anna GAGOR

11:30 The impact of the halogen exchange on the crystal structure and physical properties of organic-inorganic Sb(III)-based hybrids 714
Anna PIECHA-BISIOREK

17:00 The impact of measuring conditions on the electrocaloric effect in PZT ceramics 692
Magdalena KRUPSKA-KLIMCZAK

12:15 Anomalous mechanical polarization switching in negative piezoelectric CuInP2S6 2
Dawei ZHANG

12:30 Lunch

MISCELENOUS I N13

14:00 Investigating structure and electronic properties in ultrathin BaTiO3 films through advanced spectroscopy techniques 1510
Sara GONZALEZ

14:15 Exploring Antiferroelectric Alternatives: First-Order Polarization in Perovskite Structures 179
Louis BASTOGNE

14:30 Annealing induced transformation of thin layers of ferromagnetic MnAs to antiferromagnetic MnTe 1430
Janusz SADOWSKI

14:45 Self-Powered Pyro-Magneto-Electric Device: A Synergistic Approach to Energy Harvesting from Waste Thermal and Magnetic Energies 1335
Dalip SAINI

15:00 Unveiling Surface Properties of LaNiO3 Thin Films: A Plasmonic-Assisted Raman Spectroscopy Approach 1299
Mads C. WEBER

15:15 Investigation of the active role of organic compounds in stabilization of ferroelectric polarization switching, and enhancement of switching dynamics in BaTiO3 thin films 1233
Nona MIRZAMOHAMMADI

15:30 Coffee break

16:00	On-the-fly Machine-learned Potentials for MD Simulations of Ferroelectric Phase Transitions **Kristoffer EGGESTAD**	1167
16:15	Rare-Earth Ion Modulation of Magnon and Phonon Behavior in Orthoferrites **Sreelakshmi KUDILINGAL GOPI**	1139
16:30	Improper phase transition of boracites **Charlotte COCHARD**	1009
16:45	Sliding ferroelectricity in misfit layer compound (PbS)1.11VS2 **Tim VERHAGEN**	1186

E-MRS 2024 Fall Meeting
16th - 19th September - Warsaw University of Technology - Poland

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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 (Main Organizer)** – Warsaw University of Technology
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 **Yury GOGOTSI**	1571
9:30	Synthesis of two-dimensional goldene from Au-based MAX phases **Johanna ROSEN**	1579
10:00	MXene Chemistry and Applications **Vadym N. MOCHALIN**	1572
10:30	Coffee break	

SESSION II O02

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

SESSION III O03

14:00	Diverse Strategies for Pseudocapacitance in 2D Materials and beyond **Maria LUKATSKAYA**	790

14:30 Chemical scissor-mediated structural editing of layered transition metal carbides and Beyond 1574
Qing HUANG

14:45 MXene-TMDs based hybrids for Supercapacitor applications 129
Chandra Sekhar ROUT

15:00 Scalable Synthesis of 2D Transition Metal Carbo-Chalcogenides: Properties and Applications 1577
Michael NAGUIB

15:15 Exploring MBenes: Unraveling Structure, Etching, and Optical Properties 615
Madhurya CHANDEL

15:30 Coffee break

SESSION IV O04

16:00 MXene chemistry and topochemical reactions 199
Zdenek SOFER

16:30 Functional 2D Materials: From Smart Diapers to Cardiovascular Health Monitoring 1609
Artur CIESIELSKI

17:00 Excitonic Effects in MXenes 1522
Frantisek KARLICKY

17:15 Terahertz response of structural architectures of MXenes 149
Manas Ranjan PARIDA

POSTER SESSION II OP01

17:30 Mxene/1T-2H MoS2/Mxene self assembled sandwich like film with ultra high gravimetric capacitance for soild state supercapacitors 02_1113
Srishti AGARWAL

17:30 Role of Ultrathin Ti3C2Tx MXene layer for Developing Solution-Processed High-Performance Low Voltage Metal Oxide Transistor 03_120
Ankita RAWAT

17:30	Topochemical Conversion of MoAlB into Mo2AlB2 Single Crystals: Structure and Properties **Aditya SHARMA**	04_127
17:30	Laser scattering of gold nanoparticles-decorated Ti3C2 MXene for enhanced optical biosensing **Zaheer BABAR**	05_1333
17:30	Molten salt solid-state synthesis of MAX phase with purity >99% in ambient condition **Ekta CHOUDHARY**	06_1422
17:30	Towards sustainable fabrication of MXenes - electrochemically assisted etching performed in a natural deep eutectic solvents **Dujearic-Stephane KOUAO**	07_1447
17:30	Laser treatment of MXene towards its incorporation in titania nanotubes for improved light conversion **Dujearic-Stephane KOUAO**	08_316
17:30	Pursuing an environmentally friendly route to MXenes **Marta POSADZY**	09_541
17:30	Strategic intercalation of BaTiO3 nanoparticles in multilayers of Ti3C2Tx MXene for enhanced supercapacitor performance **Jitesh PANI**	10_639
17:30	MXene as a negative electrode material for all-solid-state batteries **Kosuke KAWAI**	11_655
17:30	Development of a Highly Efficient and Versatile MXene Hydrogel Composite for Enhanced Urea Adsorption **Zhihao YEN**	12_89
17:30	Role of surface passivation on the magnetic properties of iMXene (Cr\textsubscript{2/3}M'\textsubscript{1/3})\textsubscript{2}C **Himangshu SEKHAR SARMAH**	13_916

Wednesday, 18 September 2024

9:00 **PLENARY SESSION**

12:30 Lunch

14:00	Chemical Imaging of single Ti3C2Tx MXenes flakes by X-ray Spectromicroscopy **Tristan PETIT**	1573
14:30	Photo-activity of Two-Dimensional MXenes: Opportunities for Advanced Photo-Driven Applications **Agnieszka JASTRZEBSKA**	
14:45	Magnetic MXene Composites for Efficient Removal of Emerging Contaminants from Water **Haya ALYASI**	1610
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18:00	**YOUNG RESEARCHER AWARDS CEREMONY**	
18:30	**SOCIAL EVENT**	

E-MRS 2024 Fall Meeting
16th - 19th 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)**	– Cardinal Stefan Wyszynski University
Bernard **GIL**	– Centre National de la Recherche Scientifique
Izabella **GRZEGORY**	– Institute of High Pressure Physics PAS
James **HOWARD EDGAR**	– Kansas State University

Monday, 16 September 2024

DEFECTS I P01

9:00 Theory of defect emitters in hexagonal boron nitride 582
Adam GALI

9:30 Manipulation of carbon color centers in hexagonal boron nitride for efficient deep ultraviolet light emission 1
Young Duck KIM

10:00 Interaction of oxygen and quantum emitters in hexagonal boron nitride 1192
Rohit BABAR

10:15 Carbon chain tetramer as the blue quantum emitter (435 nm) in hexagonal boron nitride 1551
Marek MACIASZEK

10:30 Coffee break

GROWTH I (BULK) P02

11:00 Solution growth of BN crystals and their residual impurity and isotope control 1182
Takashi TANIGUCHI

11:30 BN crystal growth from ammonothermal solutions 884
Siddha PIMPUTKAR

12:00 Application of the traveling-solvent floating-zone technique to bulk h-BN growth 287
Eli ZOGHLIN

12:30 Comparative evaluation of h-BN crystals properties grown under high N_ pressure with pure Ni and Ni-Cr solvents via thermal gradient technique 928
Bohdan SADOVYI

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 1175
Alberto ZOBELLI

14:30 Influence of additional layers on properties of point defects in hexagonal boron nitride - a theoretical study 479
Tatiana KORONA

15:00 Thermal conductivity of amorphous boron nitride 68
Marianna SLEDZINSKA

15:15 A novel Luminescent and Photothermal Boron Nitride Quantum Dots Shows Anti-Oxidants and Anti-Inflammatory Protective Effects. 60
Salvatore PETRALIA

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 913
Kristie KOSKI

16:30 Flexoelectricity in two-dimensional materials from first principles 533
Miquel ROYO VALLS

17:00 Spectral manipulation of quantum emitters in hexagonal Boron Nitride 965
Nicola MELCHIONI

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

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9:00 Polytypism in hexagonal boron nitride: an optical study 823
Guillaume CASSABOIS

9:30 Cathodoluminescence studies of hexagonal BN polytypes and monolayer BN 503
Shigefusa CHICHIBU

10:00 Influence of Stacking Order on UV luminescence of epitaxial BN 505
Krzysztof KORONA

10:30 Coffee break

GROWTH II (CVD EPITAXY) P06

11:00 Current status and challenges in hBN growth by chemical vapor deposition 1339
Hyeon Suk SHIN

11:30 Growth of hexagonal boron nitrides by MOCVD and their applications 1417
Jong Kyu KIM

12:00 MOVPE growth of hexagonal boron nitride - scaling up and applications. 308
Suresh SUNDARAM

12:30 Homoepitaxy of boron nitride on exfoliated hexagonal boron nitride flakes 1245
Johannes BINDER

12:45 Lunch

DEFECTS II P07

14:00 Current state of BN research using positron annihilation spectroscopy 571
Filip TUOMISTO

14:30 Structure characterization of hBN defects 1327
Elisabeth MANSFIELD

14:45 Isotope substitution and polytype control for point defects identification: the case of the ultraviolet color center in hexagonal boron nitride 595
Juliette PLO

15:00 Carbon-related spin ensemble in boron nitride obtained by MOCVD 1126
Jakub IWANSKI

15:15 Carbon-contaminated topological defects in hexagonal boron nitride for quantum photonics 497
Rohit BABAR

15:30 Coffee break

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Jingyu LIN

16:30 Controlled Growth of Single-crystal Boron Nitride Based on Symmetry 587
Li WANG

17:00 Mechanochemical synthesis of alkali metal-containing B- and N-based precursors towards various boron nitride polytypes 1585
Samuel BERNARD

Wednesday, 18 September 2024

9:00 **PLENARY SESSION**

12:30 Lunch

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14:00 Doping and quantum defects in hexagonal and cubic BN 429
Chris VAN DE WALLE

14:30 Excitons in linear and nonlinear optical responses of two-dimensional hBN 628
Steven G. LOUIE

15:00 Exciton-phonon coupling in boron nitride systems: insights from theoretical spectroscopy 1317
Fulvio PALEARI

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GROWTH IV (MBE) & APPLICATIONS P10

16:00 Ion-beam-assisted MBE growth of cubic boron nitride 1364
Kazuyuki HIRAMA

16:30 Scanning Probe Microscopy of hBN Grown by High-Temperature Molecular Beam Epitaxy 906
Jonathan BRADFORD

17:00 5000 PPI vertical stack R/G/B micro-LED pixel architectures fabricated by advanced epitaxy on ultrathin 2d materials 1352
Young Joon HONG

17:30 Photo-curable Functionalized Boron Nitride Nanosheets Composites for Thermal Management 1341
Yixuan JIANG

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

E-MRS 2024 Fall Meeting
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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)**	– Gdańsk University of Technology
Mikhail **BRIK**	– University of Tartu
Nikolai **A. SOBOLEV**	– Universidade de Aveiro
Shengqiang **ZHOU**	– Helmholtz-Zentrum Dresden-Rossendorf

Monday, 16 September 2024

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

SESSION Q-MO2 Q02

11:00	Ion driven beta- to gamma-Ga2O3 phase transition and resulting defect microstructure **Maciej Oskar LIEDKE**	1378
11:15	Defect induced magnetic phase transition in CrSBr. **Fangchao LONG**	550
11:30	Analytical impact excitation of Er/O/B co-doped Si light emitting diodes **Yaping DAN**	1303
11:45	Defect-induced nano-engineering of polymorph heterostructures **Andrej KUZNETSOV**	1473
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SESSION Q-MO3 Q03

14:00	Emergence of Piezoelectric and Pyroelectric Effects in Centrosymmetric Oxides by Controlling Ionic Defects **Daesung PARK**	86
14:30	Tailoring dielectric permittivity of epitaxial Gd-doped CeO2_x films by ionic defects **Alessandro PALLIOTTO**	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 **Mari TAKAHASHI**	306
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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 **Paul KOENRAAD**	158
16:30	Highly sensitive spectroscopy tools for studying defects and charge transfer processes in novel semiconductors **Igal LEVINE**	72
16:45	Submicron Visualization and Quantification of Grain Boundary Thermal Resistance in Ceramics via Scanning Thermal Wave Microscopy **Alexander TSELEV**	394
17:00	Characterization of Anisotropic Thermal Diffusivity using Micro Four-Point Probe **Neetu LAMBA**	1307
17:15	First evidence of fluorine doping in barium stannate for transparent conducting applications **Sushobhita CHAWLA**	1338

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17:30	Mechanical Response of High Entropy FeNiCrCoAl Alloys: Bulk and Nanoparticle **Sergio Javier MEJÍA-ROSALES**	18_1614

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

17:30 A spin rate alteration as a tool for application-driven subtle tuning of sol-gel prepared alumina thin layer properties. 13_461
Aleksandra PRZYBYLA

17:30 Origin of persisting photoresponse of one-year aged two-dimensional lead halide perovskites stored in air under dark conditions 14_511
Mahesh ELEDATH CHANGARATH

17:30 Defect engineering in LiTaO3 for efficient ion slicing 15_559
Limin WAN

17:30 The n-ZnO/ZnCdO layers degradation after annealing - in-depth analysis of deep-level traps by DLTS technique. 16_608
Radoslaw SZYMON

17:30 Defect engineering in LiTaO3 for efficient ion slicing 17_657
Limin WAN

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9:00 The Band Gap Engineering of Perovskite Nanoparticles for Photostimulated Hydrogen Production 66
Jevgenijs KOTOMINS

9:45 Metal Halide Perovskite Nanoparticles: Synthesis, Compositional Optimizations and Insight into Defects 1353
Mohammed ASLAM

10:00 Disorder Induced Covalent organic Framework for the Efficient Removal of Toxic Oxo-anions from Water 1461
Mebin VARGHESE

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 1452
Arjun WARRIER

10:30 Coffee break

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11:00 An Interplay between Electronic and Ionic Processes in Oxide Resistive Switching Devices 444
Alexander SHLUGER

11:30 Switching phenomena in CdIn2S4 related to defects induced by spinel inversion 349
Jakub ZDZIEBLOWSKI

11:45 Circuit emulating neural response based on Ga2O3 photomemristor 899
Marina SPARVOLI

12:00 Accurate prediction of O-vacancy migration in PrMnO3 and CaMnO3 938
Amrita BHATTACHARYA

12:30 Lunch

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14:00 Fabrication of Devices Based on Nanocrystalline Multilayer Graphene and Graphene/Oxide Multilayer Structures 1589
Peter K. PETROV

14:30 Synthesis and characterization of lanthanides nickelates thin films 1086
Alex MISIAK

14:45 Energy level alignment consideration on the ZnO / CoPcF16 interface as a potential _hybrid _structure for optoelectronic devices 496
Sakineh AKBARI NIA

15:00 Precursor engineering and Liquid Inclusions in Solution-Grown CsPbBr3 Bulk Crystal for radiation Detection 324
Ruichen BAI

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Takeshi OHSHIMA

16:30 SHI irradiation effects on polymers and their applications in fabrication of novel nanostructures 659
Jinglai DUAN

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

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9:00 **PLENARY SESSION**

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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 SrTiO3 through Strain Engineering 574
Eric BRAND

15:30 Coffee break

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

16:30 InAs@ZnSe core@shell/MoS2 heterostructure for broad band photodetection. 1196
Sidharth KURIYIL

16:45 Augmented Haloperoxidase Functionality in Defect-Modified Bi2Te3 Nanosheets for Combatting Biofouling 326
Sagar KULKARNI

17:00 Reaching amorphous limit of thermal conductivity in defective 2D materials 63
Marianna SLEDZINSKA

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

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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**	– Saarland University
Raghvendra **Singh YADAV (Main Organizer)**	– Tomas Bata University in Zlin
Raquel **VERDEJO**	– The Institute of Polymer Science and Technology (ICTP)
Szczepan **ZAPOTOCZNY**	– Jagiellonian University
Yang **XU**	– University College London

Monday, 16 September 2024

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Nianjun YANG

9:30 Interfacial engineering of Z scheme based 2D transition metal dichalcogenide based heterostructures for hydrogen evolution reaction 1411
Himani SHARMA

9:45 Synthesis of Two-dimensional Transitional Metal Ditelluride 656
Ya DENG

10:00 Aqua Barrier: Nanocomposite Polypropylene-Modified Ni-SiC Superhydrophobic Nanostructure Coating for Enhancing Anti-Corrosion Efficiency of Copper 364
Himanshu Prasad MAMGAIN

10:15 Controlling the surface morphology and localized surface plasmon resonance of Au, Ag, and Pt, via solid state thermal dewetting process 40
Zekri ATEF

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Hua ZHANG

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Daeho LEE

11:45 Harnessing Biobased Molecules and Natural Extracts for Next-Generation Functional Nanomaterials Development 1315
Ricardo PINTO

12:00 Magnetron Sputtering as a Versatile Tool for Precise Synthesis of Hybrid Iron Oxide–Graphite Nanomaterial for Electrochemical Applications 347
Fee KÄUFER

12:15 Study the Impact of Processing Parameters on TiO2 Film Formation on Aluminium Balls Using Planetary Ball Milling 341
Haneen OMAR

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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

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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 631
Aliaa SALEM

17:15 Temperature-modulated Solution-based Synthesis of Copper Oxide Nanostructures for Glucose Sensing 114
Yujiang ZHU

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Melda ISLER BINAY

17:30 Phosphorus-Doped Graphitic Carbon Nitride/Graphene Aerogel: A Floating Photocatalyst for Efficient Degradation of Tetracycline 02_1018
Tajamul SHAFI

17:30 Characteristics of high entropy alloy thin films grown by pulsed laser deposition 03_1037
Valentin CRACIUN

17:30 Viologen-based smart material for water detoxification 04_1042
Marcin KULINSKI

17:30 Ferroelectric materials affect Polar Proteins in Tumor Treating Fields 05_1055
Juhyeong CHO

17:30 Emerging to emerged pollutants: Molecularly imprinted polymers to detect estrogens in wastewater 06_1063
Muhammad Faran TAHIR

17:30 Obtention of platinum nanoparticles deposited by surface layer plasma 07_1082
Marina SPARVOLI

17:30 Phase-resolved 3D imaging of graphene based heterostructures 08_1098
Artur DOBROWOLSKI

17:30 Bio-Inspired Soft Actuators Mimicking Sunflower's Light Tracking Behavior 09_113
Anas SAIFI

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Szabolcs CZENE

17:30	Mechanically induced solid solution alloy: microstructural and thermal properties of SnTe alloy **Abbas HAKEEM**	11_1137
17:30	Electronic structure and properties of ZnO thin films, doped with Ga and Al **Volodymyr KARBIVSKYY**	12_1152
17:30	Amino-termination of nanodiamonds and investigation their properties upon annealing **Szabolcs CZENE**	13_1153
17:30	Correlation between structural and optical properties of Eu3+-doped 13X luminescent zeolites **Anna SAFONOVA**	14_1155
17:30	Dual drug delivery system based on porous fibers grafted with MOFs **Jiwon BYUN**	15_117
17:30	Composites based on ZnO and calcium apatite **Volodymyr KARBIVSKYY**	16_1190
17:30	Synthesis and Characterization of Barium Titanate Coated Carbon Nanotube Core-shell Powders for Radar Absorption Application **Chung-Kwei LIN**	18_1216
17:30	High-throughput mechanically exfoliated van der Waals materials: a characterization by X-ray photoelectron spectroscopy **Nuria JIMENEZ-AREVALO**	19_1261
17:30	Transfer of 2D material flakes by blister-based laser-induced forward transfer on LIPSS-covered substrates **Yoann LEVY**	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 **Cisem KIRBIYIK KURUKAVAK**	21_128
17:30	Single-Walled Carbon Nanotubes as an Immune Material to the Radiation Applications **Marina SPARVOLI**	22_1300
17:30	Development of the cellulose microcrystalline as a potential carrier of biologics delivery **Chaiya PRASITTICHAI**	23_1313

17:30 Exploring manganese phthalocyanine-graphene based nanocomposite for the electrochemical synthesis of green ammonias 24_1318
Md Ashadul ADALDER

17:30 Aggregation induced emission of surface ligand controlled gold nanoclusters employing imidazolium surface active ionic liquid and pH sensitivity 25_1334
Nanigopal BERA

17:30 Allosteric peptide catalyst for _-lactam antibiotics degradation and filtration. 26_1337
Sisira MAMBRAM KUNNATH

17:30 Nanostructured poly-Si and poly-SiGe layers for enhanced energy harvesting applications 27_1371
Joumana EL-RIFAI

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Hyunwoo BARK

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 29_140
Han CHANGJOO

17:30 Morphology, optical, dielectric, and piezoelectric properties of the cellulose - (Ba/Sr)TiO_ composite materials 30_1418
Vitalii CHORNII

17:30 Investigation of Novel Mineral Trioxide Aggregates with Nano-sized Ta2O5 and Rapid Solidification Solutions 31_1450
Pei-Jung CHANG

17:30 Synthesis and Endodontic Application of Sol-gelled Nanocrystalline Barium Titanate Powder 32_1459
May-Show CHEN

17:30 Mechanochemical Synthesis and Raman Analysis of a 2D Superionic Conductor KAg3Se2 33_1468
Yidan WANG

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 34_1478
Anmol PANDEY

17:30 Investigation of functionalized nanocomposite membranes based on polybetaines for nanofiltration 35_1501
Munziya ABUTALIP

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Lokesh SONI

17:30 High-Entropy Alloy Coatings with Antimicrobial Functionalization for Mitigation of Microbiologically Influenced Corrosion 37_1563
Bogdan POSTOLNYI

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Ina HOLFELDER

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Ashok RAO

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17:30 Polycation clustering creates localized electrostatic attraction for swift removal of airborne bacteria 41_185
Yuanyuan ZHAO

17:30 Dentritic mesoporous silica nanoparticles as an efficient substrate for loading of Rosmarinic acid _DMSN-RA_ 42_271
Nadia ISMAIL

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Yuanyuan CHAI

17:30 Functionalisation of InP Quantum Dot Surfaces 44_294
Ashleigh CARTLIDGE

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Tarak HIDOURI

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Aparna GUCHAIT

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

17:30 Copper catalyzed carbon nanoforest grown on activated carbon microfibres for the efficient sequestration of aqueous Congo Red 61_677
Sourav HALDER

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Roman REDKO

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Marco Antonio GONZALEZ-ANGULO

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Reynald PONTE

17:30 Pioneering Carbon Capture: Synthesis, Characterization, and Sorption Studies of Modified UiO-66 MOFs 65_8
Brahim AISSA

17:30 Commercial Graphitic Ink Based Flexible Composites as Viable Conductive Base Layers in Disposable Electronic Devices 66_807
Vishal ASHOK

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Yuliy YUFEROV

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Pooja NEHRA

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Bruno Pocas FALCAO

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Palash DAS

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Satyaprakash PANDA

17:30 Visible light assisted photocatalytic degradation of sulfamethoxazole using 2D quasicrystals 73_941
Zahoor MANZOOR

17:30 Bioactivity and Antibacterial Performance of Porous Titanium with Zinc-doped Bioactive Glass Coating 74_946
Chi-Han CHENG

17:30 Durable strain sensor with negative Poisson's ratio using temperature-responsive cellulose 75_954
Hyeju PARK

17:30 Three dimensional self-supporting carbon nitride aerogel for visible light-driven photocatalytic degradation of psychoactive drug in aqueous phase. 76_957
Debanjali DEY

17:30 Wavelength selective transmission properties of polymer films having various polycyclic aromatic backbone 77_984
Nanami HANO

17:30 Modular Surface Engineering of Functional Nanocomposites (sEV-X) for Advanced Biomedical Applications 78_987
Juhee JANG

17:30 Investigation of carbonate ion substitution in calcium and lead apatites: structural nuances and the effect on the electronic structure 79_995
Ihor SUKHENKO

Tuesday, 17 September 2024

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Gil GONCALVES

9:45 Exploring the interactions between liquid metal-based nanodroplets and biological systems for biomedical applications 336
Chengchen ZHANG

10:00 Direct Assembly of Metal_Phenolic Network Nanoparticles for Biomedical Applications 37
Wanjun XU

10:15 PDMS Nanoparticles mediated siRNA delivery for breast cancer therapy 300
Sneha SINGH

11:00 Piezoelectric Nanocomposites of Poly(vinylidene fluoride) and Molybdenum Sulphide and Their Potential Applications 80_1616
Arup R. BHATTACHARYYA

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Lin XU

11:30 Synthesis and Characterization of a Novel Bimetallic Bismuth-Iron MOF for Supercapacitor Applications 1166
Luca PULVIRENTI

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Nitumoni DEKA

12:00 Synthesis and Characterization of Nickel Manganese Oxide/Thermally Exfoliated Graphite Oxide Nanocomposites as an Electrode Material for Lithium-ion Batteries 135
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Se Yeon PARK

12:30 Lunch

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Ma HO JIN

14:45 Engineering nanoceria-based multifunctional coatings for advanced surface protection 400
Erica GALVAGNO

15:00 Augmenting the Activity and Stability of Single Atoms: Nurturing the Local Synergy with Oxygen Vacancies for Electrocatalysis and CO2 Conversion 407
Dinesh BHALOTHIA

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16:45 Development of rGO-AgNP Based Chemiresistive Sensor For ppb Level Pb(II) Detection 766
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17:00 Development of bio-vitrimer/rGO framework for Anti-corrosion applications 908
Sravendra RANA

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Tainah Dorina MARFORIO

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17:30 Enhancing hemocompatibility of TiO2 nanotubes through property Modulation 02_1021
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17:30 Exploiting Glass and Plastic Waste Streams as Sustainable Precursors for Surface Modification of Low-alloy High Carbon Steels 03_1026
Sanjith UDAYAKUMAR

17:30 Catalysis in the Circular Economy: Fe-doped CeO2 As a Heterogeneous Catalyst for the Chemical Recycling of Low Density Polyethylene (LDPE) 04_1033
Rachel BREEN

17:30	Porosity-Based Silicon Nanowires for Optoelectronic Modulation **Tania ASSAF**	06_1054
17:30	Visible light-sensitive sustainable quantum dot crystals Co-doped hydroxyapatite nanoparticles with antimicrobial activity **Hossein MALEKI-GHALEH**	07_1062
17:30	Innovative Nanocomposite Polymer Films for Advanced Solar Heat Management in Architectural Glazing **Ryan VAN ZANDVOORT**	08_1085
17:30	Tailoring Epitaxial VO2 Thin Films with Tunable Properties for Enhanced Energy Applications via Spray Pyrolysis **Ardak AINABAYEV**	09_1093
17:30	Ultrafast Laser Synthesis of Silicalite-1 and Ti-Silicalite-1 **Mehdi HAGVERDIYEV**	10_1123
17:30	Starch and silicate nanoparticles modified with cinnamyl units: suitable precursors for the design of light-triggered composites **Sara Fernanda ORSINI**	11_1141
17:30	Enhancing Titanium Implants with Combined Graphene Oxide and Metal Organic Framework Coatings for Improved Biocompatibility and Antibacterial Properties **Vincenzo PARATORE**	12_1159
17:30	Nanoporous Zeolite A Synthesis via Femtosecond Laser Method **Meryem Merve DOGAN**	13_1170
17:30	Functionalized Carbon Nanotube/Phenyl doped g-C3N4 system for efficient visible photocatalytic applications **Sahar AGHAPOUR GHOURICHAY**	14_1194
17:30	Layered Molybdenum disulfide and Barium hexaferrite Nanocomposites for Electromagnetic Interference Shielding Application. **Nithiya Hanna WILSON**	15_1235
17:30	Potassium diffusion, intercalation and deintercalation in few-layer graphene studied by ultra-high vacuum Raman spectroscopy **Nuria JIMENEZ-AREVALO**	16_1253
17:30	Photocatalytic activity of TiO 2 /LaFeO 3 composites in the degradation of benzoic acid under UV-visible light irradiation. **Benedetta BERTOLOTTI**	17_1278

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17:30 Synergistic Enhancement of Visible Light Photocatalytic HER Using Exfoliated Phenyl-Modified CN/WS2 Hybrids 19_1298
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17:30 Supercritical hydrothermal reactions -Basics and Applications- 29_1400
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17:30 Aerosol-jet printed molecularly imprinted polymer-based sensors for monitoring of metabolites in sweat 30_1424
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17:30 Adherence of cubical MOF-5 on polypropylene for oil sorption application: A comparative study 37_1508
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Puspendu SARDAR

17:30 Improving performance of NO2 gas sensors using In2O3:Zn sensing membrane 43_251
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17:30 High resolution insights into structure and corrosion properties of Mg-Al-Ca composites 44_330
Marta LIPINSKA/CHWALEK

17:30	Electro-mechano responsive fusible alloy composites with unprecedented electromechanical properties **Shiyang TANG**	45_337
17:30	Designing Robust Oil/Water-Selective Dissolvable Metal Coatings on Aluminum Balls via Mechanical Coating Technique **Edreese ALSHARAEH**	46_342
17:30	Unlocking Titania's Nanomagnetism: Oxygen Vacancies Lead the Way **Vinod PAIDI**	47_359
17:30	Disclosing Nanozymes complexity and potential **Giulia MIRRA**	48_361
17:30	Enhanced piezo-catalytic performance of BaTiO3/MoS2 Nanocomposite utilizing ultrasonic energy for degradation of Organic dyes **Chandra Shekhar Pati TRIPATHI**	49_396
17:30	Tailoring Negative Dielectric Characteristics in La2NiO4 through Composition Adjustment: Advancements in Microwave Shielding and Inductive Material Engineering" **Tarun KATHERIYA**	50_403
17:30	Achieving Cost-Effective Microwave Shielding with LANiO3/SnO2 MetaComposites: Composition-Driven Permittivity Analysis **Tarun KATHERIYA**	51_404
17:30	Development of Hyaluronan-based Blend Polymersomes for Ocular Drug Delivery **Alp YETISGIN**	52_409
17:30	Environmentally Friendly Synthesis and Comprehensive Characterization of Cu-Co Ferrite Nanoparticles **Muhammad Danish ALI**	53_412
17:30	Graphene-based drug delivery system for treating MRSA infections **Jian ZHANG**	54_43
17:30	Covalent functionalization and cross-linking of 2H MoS2 and MXene **Shuwei WU**	55_457
17:30	Insigts of Phosphate Functionalization, Kinetics, and Mechanistic Aspects of Phosphorylated Sporopollenin as Sustainable Catalyst for Selective 5-Hydroxymethylfurfural Formation in water **Raina SHARMA**	56_467

17:30	Multiple Roles of HMTA Molecules in the Chemical Bath Deposition of ZnO Nanowires **Vincent CONSONNI**	57_478
17:30	Designing novel elastomer-based pyro and piezo-electric devices **Thulasinath RAMAN VENKATESAN**	58_482
17:30	Doping Dynamics: How Electron and Hole Doping Shape Graphene's Magnetism? **Vinod PAIDI**	59_508
17:30	Hydrogen Storage and Diffusion in Polymer-Encapsulated Framework Materials and Porous Liquids **Grace REDWINE**	60_510
17:30	Operando Investigation of WS2 Gas Sensors: Simultaneous APXPS and Electrical Characterization in Unveiling Sensing Mechanisms during Toxic Gas Exposure **Mattia SCARDAMAGLIA**	61_536
17:30	Development of Piezoelectric Composite of Poly(vinylidene fluoride) and Li-salt of Adipic Acid **Ananya AISHWARYA**	62_544
17:30	Simple, scalable, and sustainable nanocomposite anti-reflective coating for photovoltaic modules **Jefferson LAM**	63_59
17:30	Silicon nanowire aqueous dispersions for processing into macroscopic network materials **David TILVE MARTINEZ**	64_596
17:30	Synthesis and Characterization of Ti3AlC2 MAX phase for Microwave Absorption Application **Durgabatee ROUT**	65_604
17:30	Engineering Metal–Phenolic Materials via Supramolecular Assembly **Zhixing LIN**	66_67
17:30	High thermal conductivity phase-change composites for thermal management **Daniela PRICOP**	67_675
17:30	Are rare polytypes of silver present in nanoparticles created in the BANG method? **Jan Maurycy USZKO**	69_694

17:30	Dexter Energy Transfer from Quantum Dots to Closely-Bound Dye Molecules **Mariam KURASHVILI**	70_711
17:30	Tunable Intrusion-Extrusion Behavior of Water in ZIF-7-8: From Molecular Springs to Shock Absorbers **Davide CAPORALE**	71_733
17:30	Optical Gain Studies on Weakly Confined Spherical Halide Perovskite Quantum Dots **Anja BARFÜSSER**	72_759
17:30	Z-scheme Heterojunction for efficient Photocatalytic-driven Discharged waste Treatment **Sanjeev Kumar SHARMA**	73_765
17:30	Circular polarized Lasing of High Dissymmetric Factor Amplified by Randomly Distributed Silica Nanoparticles in Nanocellulose **Sunghwan JO**	75_787
17:30	OleoPlast: Bridging Functionality and Sustainability in Biodegradable Materials **Leonardo LAMANNA**	76_809
17:30	Adaptive Systems at the Air-Water Interface: Various Approaches to Stimuli-Responsive Langmuir Films **Rafal ZBONIKOWSKI**	77_814
17:30	Tailored SERS Substrate: Ag-WS2 Nanoflakes Grown by PLD for Highly Sensitive Chemical Sensing Applications **Arvind KAUSHIK**	78_831
17:30	Synthesis of Ceramic Functional Coating on Metallic Substrates through Plasma Oxidation of Metal in Molten Salts **Konstantin BORODIANSKIY**	79_848
17:30	Exploration of Cellular Uptake and Endocytosis Mechanisms for Doxorubicin-Loaded Poly (amino acid) Nanocarriers **Zaheer AHMAD**	80_865
17:30	Biodegradable calcium phosphate based nanocomposite structures for osteochondral regeneration **Aneela ANWAR**	81_867
17:30	Transparent liquid-repellent coatings from fluorine-free building blocks **Priya MANDAL**	82_907

17:30 Dual cross-linked cellulose-based functional hydrogels 83_911
Neethu THOMAS

17:30 Tea Ware Does Change the Flavor of Tea: Glaze-Induced Catalytic Degradation of Catechins 84_922
Yunzi XIN

17:30 Iron-Doped Porous Carbon Beads for the Removal of Methylene Blue Dye Molecules and Lead (II) Ions from Water 85_93
Anmol PANDEY

17:30 Diatom biosilica modified with Ce-Tb mixed oxide twinning nanoparticles and with polyphases quasi-crystalline Tb oxide nanoparticles 86_947
Weronika BRZOZOWSKA

17:30 Nanomaterial-coated glass to keep your window transmissive, super hydrophobic and completely germ-free 87_951
Deepika SINGH

17:30 Nickel ferrite nanoparticles embedded with conducting filler in TPU matrix for EMI shielding applications 88_961
Anju DESWAL

17:30 Joint Electropulsing and Low-Frequency Noise Measurements for Characterization of Transferred 2D Materials and Multilayer Stacks 89_972
Renan VILLARREAL

17:30 Preparation of polymer microspheres with dimpled surface and capturing of nano objects 90_979
Nanami HANO

Wednesday, 18 September 2024

9:00 **PLENARY SESSION**

12:30 Lunch

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14:00 Alloyed Arsenic_Phosphorus Nanoribbons with Small Band Gaps and High Hole Conductivities 292
Adam CLANCY

14:30 Improving the optoelectronic properties of HgTe colloidal quantum dots using plasmonic nanoantennas. 1519
Augustin CAILLAS

15:00 Large scale preparation of thermochromic solar control coatings for energy-efficient smart windows comprising VO2 nanoparticles 463
Cindy Po Keh YEUNG

15:15 Agglomeration and randomness of conductive filler networks in conductive metal-elastomeric composites 730
Dominik PERIUS

15:30 Coffee break

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16:15 Innovative Nanocomposites for Microwave Absorption and Electromagnetic Interference Shielding 335
Raghvendra Singh YADAV

16:30 Thermally conductive hexagonal boron nitride/polymer composites for efficient heat transfer 335
Chengning YAO

16:45 Edge-Activated WS2 on Fe2O3 nanoflakes: A dynamic duo for augmented photoelectrochemical water splitting 17_1209
Govinda Chandra BEHERA

17:30 3D-printed multilayer ionogels for wideband microwave absorption 68_686
Paul AL MALAK

17:15 Incorporation of CoFe2O4 Nanoparticles and Graphite Flakes in Cement Matrix and its Influence on Microwave Absorption Properties 832
Vanamoorthy MARIAPPAN

18:00 **YOUNG RESEARCHER AWARDS CEREMONY**

18:30 **SOCIAL EVENT**

Thursday, 19 September 2024

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9:00 Tetrapods based Smart Composite Materials for Advanced Technologies 534
Yogendra Kumar MISHRA

9:30 Optimizing ZnO Nanostructures for Transparent Photodetectors in Hybrid Liquid Crystal Systems 580
Jean-Francois BLACH

9:45 Photoresponse and figures of merit of ZnO nanorod-polymer based hybrid UV photodiodes 567
Keshav NAGPAL

10:00 Polymeric matrix coatings based on multimetallic nanoparticles 62
Abeer FAHES

10:15 ZnO nanopillars and liquid crystals for hybrid solar cells 535
Bator KHOL

10:30 Coffee break

ELECTRICAL PROPERTIES OF NANOCOMPOSITESTES R12

11:00 Sulfide Nanomaterials and Nanocomposites for Micro Energy Harvesting 825
Anuja DATTA

11:30 Exploring Dispersity in Carbon Nanotube Nanocomposites through Polarity Tuning of Conjugated Block Copolymers for Thermoelectric Thin Film Applications 109
Wu WEI-NI

11:45 Influence of the filler surface modification on the electrical and mechanical networks of conductive suspensions 1181
Sergio LAGO-GARRIDO

12:00 Mechanistic Insight into the Effect of Cu Doping on Thermoelectric Properties of Sintered Wet-Chemically Synthesised SnSe2 Nanosheets 288
Simon David MOORE

12:15 I-III-VI Quantum Dots: Increasing the Photoluminescence Quantum Yield of Free Carriers by Surface Passivation 1191
Sushant GHIMIRE

12:30 Lunch

E-MRS 2024 Fall Meeting
16th - 19th 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 722
Gour P. DAS

9:30 Excellent performance parameters of Janus MXenes, new Infra-red active photocatalysts for water splitting 1428
Subhradip GHOSH

10:00 Germanium-based Janus monolayers for thermo-electric applications: An ab initio study 1258
Shivani SAINI

10:15 Impact of Phonon Scattering Time and Group Velocity on the Thermal Conductivity of Strained Monolayer Silicene and Germanene 1265
Neelesh GUPTA

10:30 Coffee break

MAGNETISM AND SPINTRONICS S02

11:00 Emergent Phases in Two Dimensional Ferromagnets 763
Indra DASGUPTA

11:30 Staggered Dzyaloshinskii-Moriya vectors from rotational symmetries 1537
Carmine AUTIERI

12:15 Ab-Initio modeling of As-hBN van der Waals heterostructures for spintronics 1262
Atul SRIVASTAVA

12:30 Lunch

MATERIAL DESIGN AND SYNTHESIS S03

14:00 Unraveling the Rashba-Dresselhaus effect and spin switching in ferroelectric AIO3 (A=K, Rb, Cs, Tl) perovskites 944
Amrita BHATTACHARYA

14:30 Innovative green Synthesis of CsPbX_ Perovskites: a facile synthetic route to obtain CsPbBr_ Microcrystals 1111
Lorenzo SIRNA

14:45 Green Synthesis of Yttrium and Europium-Doped Metal-Organic Frameworks for Advanced Technological Applications 959
Francesca LO PRESTI

15:00 Predicting metal morphology from density functional theory for application-targeted design of advanced materials 219
Cara-Lena NIES

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 1328
Guglielmo Guido CONDORELLI

16:30 Reducing criticality through advanced materials 1151
Fernando COELHO

16:45 Sb Doping of ZnO Nanowires for Enhancing the Piezoelectric Response of Flexible Dynamic Strain Sensors 485
Vincent CONSONNI

17:00 Fabrication of 4H-SiC Porous Flakes and Nanoparticles by Electrochemical Etching as Novel Materials for Advanced Oxidation Processes 1484
Matteo BARCELLONA

Tuesday, 17 September 2024

SOLAR ENERGY MATERIALS S05

9:00	Tuning the Optoelectronic Properties of Inorganic and Carbon-Based Quantum Dots for Highly EfficientLuminescent Solar Concentrators **Alberto VOMIERO**	1332
9:30	Numerical simulation of MoO3 electron transport layers for silicon heterojunction solar cells **Ramakrishna MADAKA**	845
9:45	Characterization of CuS Nanostructured-based Counter Electrodes for Electrochemical Solar Energy Conversion: A Solution for Sustainable Energy Goals **Nitumoni DEKA**	1490
10:00	Innovative Photocatalytic Applications of 4H-SiC Porous Flakes for Energy and Environmental Purposes **Vanessa SPANO**	1545
10:30	Coffee break	

CATALYSIS, WATER SPLITTING, AND CO2 REDUCTION S06

11:00	Transition metal oxides and emerging 2D Materials towards CO2 Capture and Conversion: DFT Computations **Abhishek Kumar MISHRA**	1434
11:30	How to accelerate and control reactions of like-charged compounds in water by orders of magnitude? **Grzegorz BUBAK**	1553
11:45	Production, characterization and simulations of copper nanoparticles for plasmonic and sustainable hydrogen production **Cristiano LO PO**	852
12:00	Synthesis and Characterization of NiO-Fe Nanocatalysts Using Different Water Sources for Enhanced Electrolysis in Hydrogen Production **Soumia EL BOUMLASY**	994
12:15	MOCVD of nanostructured spinel ferrite films: fabrication, characterization and application for water splitting **Matteo BOMBACI**	1038

12:30 Lunch

ELECTROCHEMICAL AND BATTERY MATERIALS S07

14:00 High-Throughput Screening of Electrocatalysts 1432
Serhiy CHEREVKO

14:30 Modeling gas bubble cycles from nucleation to transport in electrochemical systems 186
Shinyoung KANG

14:45 Evaluation of the Polarization Resistance of Fuel Cells with Gaussian Processes 188
Baptiste PY

15:00 Accurate and flexible neural-network interatomic potential for understanding the electrochemical double layer at the water-zirconia interface 1448
Abhishek Kumar ADAK

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 23
Daniele PERILLI

16:15 Predicting the morphology of metals on 2D materials for applications in catalysis, sensors and electronics 198
Michael SWEETMAN

16:30 One-step solvothermal synthesis of MoS2-based composite nanostructures for nitrites detection 806
Federica FLORIO

16:45 Development of Optical DNA-Sensor based on emissive Gold-Nanoclusters on ITO-PET Substrates 471
Regina Maria CHIECHIO

17:30	Modeling of fluorine-terminated yttrium carbides **Talha KALSOOM**	01_1008
17:30	Multifaceted Non-Invasive Electrochemical Biosensor for Simultaneous Glucose and Lactate Monitoring in Sweat **Dr. Arpita Pandey TIWARI**	02_1100
17:30	Biomimetic sea squirt-inspired filter system in Washing Machines for Enhanced Microplastics Capture **Jaewoo SIM**	03_116
17:30	Stability of the perovskite-apatite interface **Nataliia KURGAN**	04_1172
17:30	An innovative Washing machine filter system equipped with a cyclone module to reduce microplastics **Jaewoo SIM**	05_118
17:30	Tuning local structure and electronic properties of photoferroic BaSnO3/BaTiO3/MAPI interfaces **Neculai PLUGARU**	06_1200
17:30	Performance assessment of nanoscale fe-JLGAA MOSFET using strained binary alloy channel material: analytical modeling and DFT calculations **Faycal DJEFFAL**	08_1534
17:30	DFT modelling of ZnO clusters on TiO_ surface to improve its properties **Elina NEILANDE**	09_275
17:30	Perspective protective layers for perovskite solar cells based on apatites **Volodymyr KARBIVSKYY**	10_564
17:30	Multi-ion Transport Analysis of Reverse Electrodialysis through Ion Exchange Membrane **Hyewon CHO**	11_645
17:30	Mechanical properties of refractory high-entropy alloys **Te-Hua FANG**	12_663
17:30	A simple approach to fluoride functional materials from novel multimetallic precursors **Claudia BARBAGALLO**	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 1559
Jasna JANKOVIC

14:30 In-situ Scanning Electron Microscopy analysis for Microstructural Evolution of Li-ion Batteries 816
Jiung CHO

15:00 Experimentally Informed Model Parameterization and Electrode Characterization for Multiscale Modelling of Li-ion Batteries at Low Temperatures 889
Joao CUNHA

15:15 Recycled copper nanocatalysts – graphene oxide composite for sustainable water splitting: fabrication and characterization 850
Cristiano LO PO

15:30 Coffee break

BIOMEDICAL MATERIALS AND APPLICATIONS S10

16:00 AI-Driven Techniques for Advanced Medical Imaging: Enhancing Diagnostic Accuracy and Efficiency 453
Daya SHANKAR

16:15 PEG and Fructose Modified Bismuth MOF for Smart Drug Delivery and Anticancer Therapy 1360
Vincenzo PARATORE

16:30 Crosslinked Biopolymeric Nanocarriers for Transporter Targeted Colon Drug Delivery 1435
Nidhi MISHRA

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**

E-MRS 2024 Fall Meeting
16th - 19th 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

EXCITED STATES T01

14:00 Excited electronic states calculated by converging on saddle points on the energy surface generated by a self-interaction corrected density functional 1296
Hannes JÓNSSON

14:30 Modelling charge-transfer states in phycobilisomes 334
Mamaru ALEM

14:45 Novel type Biphenyl ring-based liquid crystalline series (nXB) incorporated with donor and acceptor group: A DFT study 1530
Vijay SINGH

15:00 Grand Canonical Monte-Carlo Method for Modelling Discharging Reaction of Ramsdellite MnO2 Cathode in a Lithium-Ion Battery 1322
Woongkyu JEE

15:15 Controlling Propagation of Dendrites using Temperature Gradients 1345
Asghar ARYANFAR

15:30 Coffee break

METHODS T02

16:00 DFT Calculations combined with Machine Learning methods to Design Core Materials for Electrochemical Energy Storage and Conversion Reactions 305
Byungchan HAN

16:30 Delocalization Error and Custom Hybrid Activation Function for Band Gap Predictions of Double Perovskite Proton Conductors: A Frist Principles and Machine Learning Approach 155
Vignesh D

16:45 Unravelling the Potential of AI/ML in Photocatalysis: Towards Efficient Solar Energy Conversion 441
Beauty PANDEY

17:00 A New Representation of Crystal Systems and Space Groups based on the Variance of Atomic Positions (VAP): Case of 2D materials 1354
Romain BOTELLA

17:15 Doped GeSe glasses for improved OTS devices performances 439
Francesco TAVANTI

POSTER SESSION I TP01

17:30 NAMD simulations of photoinduced adsorption processes 01_1121
Inta ISAKOVICA

17:30 Ab initio simulations of CdS/CIGS-based interfaces for photovoltaic applications 02_1185
Sergei PISKUNOV

17:30 Boron-based molecular magnets studied by first-principles calculations 03_1348
Saira PERVEEN

17:30 NAMD simulations for photocatalyticaly driven adsorption processes 04_1528
Inta ISAKOVICA

17:30 Performance assessment of nanoscale ferroelectric-JLGAA MOSFET using strained binary alloy channel material: analytical modeling and DFT calculations 05_1532
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17:30 The trapping effect of transitional metals on oxygen in Mo from first-principles calculations 06_442
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9:30 Thermal conductivity of amorphous Silicon Nitride by approach to equilibrium molecular dynamics 290
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9:45 The effects of multi-doping on transport in Ga/Sc-doped Li_La_Zr_O__: atomistic and data-mining analysis 283
Henry Andres CORTES PAEZ

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10:15 Modelling of pure elongation behavior of electrorheological fluid: deep insights on wall-slip dynamics 150
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Konrad WILCZYNSKI

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

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

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Aurora GHERSON

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17:30 Computational Materials Modelling of Energy Materials: Out of the Box Approach 1439
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14:45 A multiscale approach for damage evolution in Plasma Facing Materials 900
Giorgio LO PRESTI

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Ahmad AYESH

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