



European Materials Research Society

# 2025 Spring Meeting

May 26 – 30 | Strasbourg Convention Centre

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## SYMPOSIUM T

Eco-sustainable designing of thin films, nanostructures, nanohybrids and hydrogels for high-added value materials

Oral sessions : AMSTERDAM – GROUND FLOOR

Poster sessions : ETOILE – FIRST FLOOR

Symposium Organizers:

Brigitte VIGOLO', Institut Jean Lamour, Université de Lorraine – CNRS, France

Eloisa SARDELLA (Main organizer), CNR – NANOTEC, Institute of Nanotechnology, Italy

Maida A. COSTA DE OLIVEIRA, Trinity College Dublin, School of Chemistry, Ireland

Sandra CARVALHO, Faculty of Sciences and Technology – University of Coimbra, Portugal

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Monday May 26

T01 Thin film growth, structure and properties 1

Chairperson(s): E. SARDELLA

J.F. PIERSON

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08:30	818	Influence of the Molecular Structure of Organosilicon Compounds on the Corrosion Resistance Properties of Atmospheric Plasma Deposited Thin Films <b>ABESSOLO ONDO Dominique</b>
08:45	122	Why and How: PVD Coating on Foams <b>HAYE Emile (Invited)</b>
09:15	1075	Advanced strategies for tailoring transparency window in Correlated Transparent Conductors <b>CHEIKH Aïmane</b>
09:30	1392	CoCrFeNi-based High Entropy Nitride coatings via High Power Impulse Magntron Sputtering technology <b>DEAMBROSIS Silvia Maria</b>
09:45	1654	Novel high throughput and high performance nanocomposite growth process for energy applications <b>TORRES Carla</b>

Monday May 26

T02 Thin film growth, structure and properties 2

Chairperson(s): E. SARDELLA

J.F. PIERSON

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10:30	1692	Unravelling solid self-lubrication mechanisms of B <sub>2</sub> O <sub>3</sub> in TiB <sub>2</sub> ±z based thin films <b>PÖLZLBERGER Daniel</b>
10:45	147	Ion-assisted magnetron sputter deposition and characterization of Transition metal nitride and boride-based hard thin films <b>GHAFOOR Naureen (Invited)</b>
11:15	2313	Temperature Dependence of the Optical Band Gap of Copper Iodide thin Films: Insights into Stability and performance <b>KHAN Saraf</b>
11:30	2480	Reducing the detrimental effect of negative oxygen ions for aluminium-doped zinc-oxide thin films deposited by rotatable RF magnetron sputtering <b>VILLIBORD Luc</b>
11:45	2565	Plasma-based synthesis of Ba chalcogenide thin films for photovoltaic applications <b>ITZHAK Anat</b>

Monday May 26

T03 Micro and nano-structured materials and nanocomposites

Chairperson(s): GHAFOOR Naureen

HAYE Emile

IBUPOTO Zafar hussain

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14:00	3070	Improving the long-term stability of new-generation perovskite-based TCO using binary and ternary oxides capping layers <b>MEZHOUD Moussa</b>
14:15	2852	Functional properties of high entropy nitrides thin films <b>PIERSON Jean-François (Invited)</b>
14:45	95	Specially architected thin films for sensing applications <b>VAZ Filipe</b>
15:00	897	Mechanical and Thermal Stability of Nanocrystalline Ni-0.8%Sn <b>JANGID Alka</b>
15:15	1194	An investigation on the Fracture Toughness of Industrially Deposited TiZrN Coatings: The Effect of Nitrogen Partial Pressure <b>BEHRANGI Sahand</b>
15:30	1164	Passive Radiative Cooling: Multilayer Structures for Energy-Efficient Temperature Management <b>BENAIT Hassan</b>

Monday May 26

TP01 Poster Session

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16:30	01_1170	Design and Characterization of Multilayer Structures for Enhanced Thermal Emission in Radiative Cooling Applications <b>BENAIT Hassan</b>
16:30	02_1338	Comparative surface chemistry of InCp and InCp <sub>3</sub> on OH-terminated HfO <sub>2</sub> (111) plane using ab-initio thermodynamics <b>THAPA Saukinta</b>
16:30	04_1952	Initial surface reaction of Mo(CO) <sub>6</sub> on SiO <sub>2</sub> (111) surface and its vapor pressure using DFT and ab-initio thermodynamics <b>KIM Ha-Neul</b>
16:30	05_2297	Life Cycle Assessment of TiO <sub>2</sub> /Al <sub>2</sub> O <sub>3</sub> coatings deposited by Metal Organic Chemical Vapor Deposition <b>VISENTIN Francesca</b>

16:30	06_2316	Al-doped ZnO nanolayers for display applications <b>BOGOEVA Stefani</b>
16:30	07_768	Zinc oxide (ZnO) thin film growth mechanism using a novel deposition method, "Electrostatic Spray Deposition (ESD)" and low-cost, high-performing sensing applications to solar cell <b>ABBAS Md Fysol Ibna</b>
16:30	03_2318	Antibacterial activity of ZnO and Al doped ZnO nanocoatings <b>STEFANOVA Maria</b>

**Tuesday May 27**

**T04 Micro and nano-structured materials and nanocomposites**

Chairperson(s): B. VIGOLO

MARTIN DANEK

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08:45	1253	Plasticity of Hard HFN/HFAIN Nanostructured Superlattice Thin Films <b>LORENTZON Marcus</b>
09:00	1866	Water as a porogen agent for macro mesoporous silica monoliths produced by ice-templating <b>BUYS Sebastien</b>
09:15	2041	Atomic layer deposition of alumina on macroscopic porous r-GO for enhanced dye adsorption: in-depth structural characterization <b>MOHD FIRDAUS ACHUTAN Rabita</b>
09:30	3153	Corrosion behaviour of nanodesigned titanium thin films: the use of glancing angle geometry to tailor the films response <b>MIRZA-ROSCA Julia Claudia</b>

**Tuesday May 27**

**T05 Micro and nano-structured materials and nanocomposites**

Chairperson(s): MARTIN DANEK

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10:30	2616	High performing nanomaterials-based electrodes for organic oxidation reaction in hybrid electrolysis <b>COSTA DE OLIVEIRA Maida Aysla</b>
10:45	2422	Carbon and metal@carbon heterostructured thin-film electrodes as platform architectures for understanding interfacial reactivity for energy conversion <b>COLAVITA Paula (Invited)</b>
11:15	2126	Conventional reactive magnetron sputtering for synthesizing porous nickel nitride thin films for water-splitting <b>VIGOLO Brigitte</b>

11:30	594	Properties of nickel-copper hydroxide films synthesized by electrochemical deposition <b>Abe Koji</b>
11:45	586	Low Tantalum-Usage Ta <sub>3</sub> N <sub>5</sub> Photoanodes Derived from Bixbyite-Type Ta <sub>2</sub> N <sub>3</sub> <b>JIANG Chang-Ming</b>

**Tuesday May 27**

**T06 Micro and nano-structured materials and nanocomposites**

Chairperson(s): M. COSTA DE OLIVEIRA

P. COLAVITA

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13:45	592	Enhancing boiling heat transfer performance of superhydrophilic Cu films with electrodeposited dendritic structure <b>LIU En-Chia</b>
14:00	2851	Innovative HiPIMS-Based PVD Coatings: Sustainable Substitution of Hard Chromium with Tungsten-Chromium Systems for Industrial Applications <b>DANEK Martin (Invited)</b>
14:30	2436	MoO <sub>3</sub> -nanobelts active for energy applications synthesized starting from industrial waste <b>DI MAURO Angelo</b>
14:45	455	Functionalized carbon honeycomb membranes for reverse osmosis water desalination <b>VORONIN Aleksandr S.</b>
15:00	1109	Solution-Derived Epitaxial BiVO <sub>4</sub> Films for Photoelectrochemical Applications: Synthesis, Characterization, and Catalytic Performance <b>TU Guan-Zhu</b>
15:15	2968	Application of different oxidation state metal-ion redox couples as reducing agents in electroless metal deposition processes <b>NORKUS Eugenijus</b>
15:30	701	Seasonally Adaptive Smart Windows with Solar Transmittance Modulation and Emissivity Regulation Responsive to Incident Angle and Temperature <b>RYU Keunhyuk</b>

Tuesday May 27

TP02 Poster session

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16:30	01_1214	Towards a green and well-controlled approach to prepare binder-free and self-supported carbon-cobalt nitride hybrid electrodes <b>BOUZROUD Imane</b>
16:30	02_1385	Development of Dual-Responsive Liquid Crystalline Elastomers with Controllable Deformation Direction <b>AMANUMA Ryoma</b>
16:30	03_1403	General synthetic method for polythiodicarbamates as high-refractive-index films. <b>RUAN Pengfei</b>
16:30	04_1569	Environmentally friendly MWCNT/polypyrrole/laponite hybrid nanocomposites for toxic volatile compounds and disease markers sensing <b>DAVYDENKO Nataliia</b>
16:30	05_1926	Tailoring the properties of low-dimensional Tellurium thin film for electronic application by high energy ion irradiation <b>BORDOLOI Upasana</b>
16:30	06_1949	Effect of surface wettability on the dewetting of thin polymer films via immersion in solvent non solvent mixture <b>M G Anu</b>
16:30	07_2680	Boosted Electrochromic Performance in Energy-Efficient Smart Window using Carbon Nitride and Tungsten Oxide Hybrid Materials <b>NATH Himanshu</b>
16:30	08_2931	Transition-Metal Cation Driven Functional Hexaniobate-Complexed Tin-Oxide Nanocrystal Assemblies <b>JOSHI Arti</b>
16:30	09_3069	A Transient and Sustainable MXene-Alginate Capacitor for Green Electronics and Energy Storage using an Alginate-Zn <sup>2+</sup> Gel Polymer Electrolyte <b>Ulusay Servin Cagil</b>
16:30	10_3150	Carbon thin film electrodes and nanomaterials for correlative Spectro/microscopy and single-entity electrochemistry of Vanadyl oxidation <b>COSTA DE OLIVEIRA Maida Aysla</b>
16:30	11_77	An Evaluation of Carboxylate Nitrile Butadiene Rubber Composites Reinforced with Sisal Fiber <b>DAS Souvik</b>
16:30	12_816	Maskless reactive ion configured polymer surfaces for single molecule sensing, chromic, and bactericidal applications <b>KUMAR Abishek</b>

16:30	13_899	Strain rate dependent deformation in nanotwinned copper at high temperature <b>PARWEEN Gulnaz</b>
16:30	14_937	Metallic interface reactions between Ga-based liquid metal and Cu current collector for energy devices <b>MING Yong</b>
16:30	15_994	Synthesis of Colloidal InSb Quantum Dots and Their Application in 1500 nm Short Wavelength Infrared Photodetectors <b>HWANG Hyojin</b>
16:30	16_1827	High-quality β-Ga2O3 thin films grown in non-reactive ambient for advanced energy and optoelectronic devices <b>LA MANNA Salvatore</b>

Wednesday May 28

T07 Approaches for eco-sustainability

Chairperson(s): CARVALHO Maria

F. VAZ

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08:30	2640	Iron acquisition and mineral transformation by cyanobacteria living in extreme environments <b>KISAILUS David</b>
08:45	1510	Cost-effective and Sustainable Hybrid Materials for Clean Environmental, Energy Conversion and Storage Applications <b>IBUPOTO Zafar Hussain</b>
09:00	2875	Surface engineering of photocatalytic thin films by CVD processes for water remediation <b>MILELLA Antonella (Invited)</b>
09:30	1300	A water-based reversible conducting adhesive <b>ALJOHANI Bassam</b>
09:45	202	Thermal barrier coatings (TBCs) with enhanced thermal radiation blocking and thermal insulation efficiency <b>ZHANG Liuchao</b>

Wednesday May 28 <b>T10 Approaches for eco-sustainability</b> Chairperson(s): CARVALHO Maria SANTORO Carlo		
<a href="#">View session abstracts</a>		
10:45	1641	Electrical characterization of new construction composites based on silk protein for structural health monitoring applications <b>Triana-Camacho Daniel A.</b>
11:00	1526	Functional polymer thin films by PECVD: eco-efficient adhesion primers for composite-elastomer assemblies <b>EZZEHAR Mariame</b>
11:15	2057	Eco-Friendly Amphiphobic Surface Treatments for Textiles: Exploring the Potential of Surface Activation <b>JEBALI Syrine</b>
11:30	2114	Formation of Ru catalytic nanoparticles onto polyethylene glycol by plasma sputtering <b>DIOP Aïssatou</b>
11:45	2204	Bio-derived Hierarchically Porous Graphitic Aerogel for Mitigating Drought Stress in Plants <b>WANI M. Shaharyar</b>

Wednesday May 28 <b>T09 Approaches for eco-sustainability</b> Chairperson(s): A. COCLITE A.MILELLA		
<a href="#">View session abstracts</a>		
13:45	181	Sustainable Conversion of Diverse Waste Plastics to Energy and Oxygen Harvesting Nanomaterials and Their Diverse Applications <b>GAUTAM Ujjal K</b>
14:00	2393	Organic Anode Coating for Improving the Performance of Rechargeable Zinc-air Batteries <b>ERIK Kasim Erdem</b>
14:15	2956	Designing sustainable thin films for high temperature applications <b>Cavaleiro Albano (Invited)</b>
14:45	3205	Synergistic Upcycling of Greenhouse Gases into Value-added Products via Hybrid Chem-Bio Routes <b>FEI Qiang</b>

15:00	2690	Scalable Fabric Electrodes for Sustainable Carbon-based Catalyst Preparation <b>KIM Seok-Jin</b>
15:15	2692	Boric Acid-Free Electrodeposition of Ni-P Alloy Coatings: A Safer and Sustainable Alternative <b>DEVESA Susana</b>
15:30	2167	Green light-weight Flame-Resistant Aerogel with Superior EMI Shielding and Joule effect from Seaweed-derived Residues <b>DE LA VEGA Jimena</b>
15:45	1163	Sustainable and effective coloration of biopolymer composites based on MOF-pigment hybrids. <b>CLEMENTI Catia</b>

Thursday May 29 <b>T10 Bio-derived products, bio-inspired materials and bio-assisted processes 1</b> Chairperson(s): SARDELLA Eloisa WEBSTER Thomas		
<a href="#">View session abstracts</a>		
08:30	1678	Sustainable Production of Viticulture-Waste Derived Graphene <b>DICORATO Stefano</b>
08:45	1122	Biogenic Synthesis of Graphene Dots Using Electroactive Bacteria <b>BEHAN James A.</b>
09:00	620	Oxygen Reduction Reaction electrocatalysis in neutral electrolytes using biotic and abiotic electrocatalysts <b>SANTORO Carlo (Invited)</b>
09:30	823	Cerium oxide nanoparticles integration in microbial electrochemical systems for reactive oxygen species scavenging <b>MATTEUCCI Rosa Maria</b>
09:45	793	An innovative heparinization strategy for blood-contacting biomaterials: Alternating current electrophoretic deposition for enhanced hemocompatibility and antibacterial properties <b>ZGÜZAR Hatice Ferda</b>

Thursday May 29

T11 Bio-derived products, bio-inspired materials and bio-assisted processes 2

Chairperson(s): CARVALHO Maria

COSTA DE OLIVEIRA Maida aysla

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10:30	407	Robust pH-responsive Janus Hydrogel Film Prepared via Self Assembly of Superhydrophobic Silica Nanoparticles for Antifouling Medical Devices <b>KUMAR Amit</b>
10:45	868	Chemical vapor deposition of carbohydrate-based polymers: a proof-of-concept study <b>COCLITE Anna Maria</b>
11:00	875	On the use of atmospheric pressure plasma for the deposition of coatings embedding bacterial spores in agriculture application <b>ROGGIO Marianna</b>
11:15	1524	Designing morphological features with a bio-sourced plasma polymer <b>COVIN Paul</b>
11:30	3158	Plasma-Treated Hydrogels: A Novel Frontier in Plasma Medicine for Targeted Therapies <b>Canal Cristina (Invited)</b>

Thursday May 29

T12 Bio-derived products and bio-inspired materials 3

Chairperson(s): C. CANAL

E. SARDELLA

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13:45	2443	Enhancing the Potential of Bioprinted Chitosan Hydrogel Scaffolds by Plasma Treatment at Atmospheric Pressure <b>ZAJICKOVA Lenka</b>
14:00	755	Biodegradable metallic glass for advanced biomedical applications <b>BAE Jae-Young</b>
14:15	388	Implantable Sensors: Eliminating Medical Device Failure in Humans <b>WEBSTER Thomas (Invited)</b>
14:45	1711	Nanocrystalline cellulose from tunicates:a valuable nanocellulose precursor <b>FAMENGO Alessia</b>
15:00	2125	Bioinspired smart bricks: from silk extraction to graphitic pyroproteins for piezoresistive construction composites <b>MALASPINA Rocco</b>

15:15	2784	Eco-Sustainable Hybrid Systems for Non-Invasive Optical Biosensing in Biological Systems <b>IUELE Helena</b>
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Thursday May 29

TP04 Poster session

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16:30	01_1266	Thermoresponsive Pluronic F127®-based hydrogels as novel biomaterials for drug delivery in plasma medicine <b>PIGNATELLI Angela</b>
16:30	02_1929	Enzyme-mediated green synthesis of GQDs and its application for dye degradation <b>DUTTA Swagata</b>
16:30	03_1957	Development of a Bioinspired Filter for Microplastic Capture <b>SIM Jaewoo</b>
16:30	04_1960	Development of Non-Fluorinated Water-Repellent Fabrics for Global Regulatory Compliance <b>KIM Juran</b>
16:30	05_2404	A Copper Metal-Organic Gel as a Recyclable Catalyst in the Click Reaction <b>SAHAW Anannya</b>
16:30	06_2413	A Dynamic Rod-Shaped Low Molecular Weight Cu-Metallogel: A Precatalyst for Green Energy Efficient CO <sub>2</sub> Epoxides Cycloaddition Under Mild Conditions. <b>Samanta Mahesh</b>
16:30	07_2424	A Multi Responsive Zinc Metallohydrogel for Catalytic Carbon Dioxide Fixation with Epoxides and for an Anionic Dye Adsorption. <b>PRADHAN Koshis</b>
16:30	08_2474	Plasma modification of nanofibrous mats supports permanent immobilization of lignin nano/microparticles <b>ZAJICKOVA Lenka</b>
16:30	09_2551	Sustainable and eco-friendly bioactivated cellulose scaffolds: Advancing bone tissue engineering with extrusion-based 3D printing <b>MISHRA Suman</b>
16:30	10_2753	Dioxygen activation by polyoxometalate-complexed CeO <sub>2</sub> nanocrystals <b>BISHOYI Nisarani</b>
16:30	11_3204	High Strength and Toughness Waterborne Polyurethane with Dynamic Biphase <b>Chen Fei</b>
16:30	12_322	Study on the Recovery and Recycling of High-GWP Alternative Gases for Semiconductor Processes Using Temperature-Controlled Adsorption Module Technology <b>Kim Kyongnam</b>

16:30	13_618	Waste-to-energy utilization by using PVDF-based flexible piezoelectric nanogenerator for efficient energy harvesting applications. <b>SENGUPTA Nil Lohit</b>
16:30	14_623	Rapid and green synthesis of responsive eutectogel composites by frontal polymerization method <b>KAR Sayantika</b>
16:30	15_76	Development and performance evaluation of chitosan hydrogel based ZnO/CuO antibacterial and antialgal nanocoating for the control of biofouling in cultural heritage stones <b>MANDAL Sanhita</b>

<div> <div>Friday May 30</div> <div>T13 Nanomaterials and characterization 1</div> <div>Chairperson(s): LENKA ZAJICKOVA</div> <div>M. COSTA DE OLIVEIRA</div> </div>		
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08:30	1685	Eco-friendly technologies to fabricate metallic nanowire based advanced functional nanocomposites: A brief review <b>BELLET Daniel</b>
08:45	2844	Unveiling the Optical Properties of Cadmium-Free InP/ZnS and ZCIS/ZnS Quantum Dots: From Colloidal Suspensions to Solid-State Matrices <b>GREBEN Michael</b>
09:00	2130	The role of temperature on the crystallization of Eu <sup>3+</sup> -doped YPO <sub>4</sub> nanophosphors prepared by a MW-assisted hydrothermal process for anti-counterfeiting applications <b>MORTALÒ Cecilia</b>
09:15	112	Contact angle analysis for evaluating surface treatments: From detection of self-assembled monolayers (SAMs) to ISO-compliant assessment of polymer films <b>SCHLOUPT Véronique</b>
09:30	1372	Characterisation of the surface forces on smooth hydrophobic plasma polymer films <b>SOUTHAM Astrid</b>
09:45	55	Nanocomposite and Hybrid Membranes via ALD and MLD for Enhanced Water Desalination Performance <b>EDRI Eran</b>

<div> <div>Friday May 30</div> <div>T14 Nanomaterials and characterization 2</div> <div>Chairperson(s): LENKA ZAJICKOVA</div> <div>LENKA ZAJICKOVA</div> </div>		
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10:30	3206	Zhussupbekova-Probing local bonding structure, electronic and optical band gaps in zinc tin oxide <b>Zhussupbekova Ainur</b>
10:45	1287	Mechanistic Insights into the Nucleation and Growth of Bimetallic Gold Nano-Stars <b>DOBRYNIN Daniela</b>
11:00	1639	Ordered Orientation of the Droplets of a Spin-dewetted Polymeric Thin Film on a Patterned Substrate with Variable Surface Energy <b>RITANJALI Sushree Ritu</b>
11:15	187	Ecofriendly Transfer Printing for Biodegradable Electronics <b>KANG Seung-Kyun</b>
11:30	3088	Ligno-cellulosic materials for electrodes and electrolyte in energy storage devices <b>PEREIRA Luis</b>