M&Ns

Materials & Nanomaterials

An International Conference

Scientific Program

Sciknowledge™

European Education Scientific Conferences

Welcoming Message

Dear Colleagues,

The **3rd International Congress on Materials and Nanomaterials (M&Ns-24)** is organized by academics and researchers belonging to different scientific areas of the University of Rome "Niccolò Cusano" di Roma, Universidad Carlos III de Madrid, Universidad de Extremadura, Ecole Nationale Supérieure d'Arts et Métiers de París, Liverpool Centre for Materials Technology, Firat University of Turkey, Universidade Tecnica de Lisboa, University of Las Palmas de Gran Canaria and Instituto Superior de Engenharia de Lisboa with the technical support of **Sciknowledge Education**. The **Portuguese Chemical Society (SPQ)** and the **Spanish Adsorption Society (SEAd)** are preferent partners of this conference.

The 3rd International Congress on Materials and Nanomaterials (M&Ns-24) will include the participation of renowned keynote speakers, oral presentations, poster sessions, technical conferences related to the topics dealt with in the Scientific Program, and an attractive social and cultural program.

All accepted papers will be published in the Abstract E-book of the Conference (registered with ISBN). Those communications considered to have enough quality by authors can be further considered for publication in the International Conference Journals associated with the Conference. This Special Call for papers presented at the Congress, and for different Journals, will be sent at the end of the month of September. At the authors' choice, those works not suitable for publication in any of the congress journals could be published in the Extended Abstracts E-book of the Congress (with ISSN reference).

On behalf of the Organizing Committee, I would like to wish all the participants who attend the conference to share their knowledge and establish new research-fruit relationships.

Looking forward to welcoming you in Lisbon!

Prof. Ilaria Cacciotti Ph.D.
MNs-24 Chairman
Full Professor
Engineering Department
University of Rome "Niccolò Cusano", Italy

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M&Ns-24 MEETING
(Provisional AGENDA)
A three-day event

Important Note:
Conference attendees have accepted the terms and conditions of their registration. Their presentation will take place on any day and hour of the schedule established by the Conference Organization.
The day and order of presentation assigned by the Organization to the speakers and poster-type presenters may not be altered by particular requests. Changes will only be accepted for reasons of **delay in the visa or flight**, which must always be **previously accredited documentary.**
Presenters who are not in their place in the assigned time slot will lose the right to present the work and obtain their certificate.

M&Ns-24
Oral communications

(12 minutes for presentation + 3 minutes for questions)

Monday, 29 July 2024 (morning)

SCHEDULE	MAIN ROOM 1 (ground floor)
8:45-9:45	Documentation delivery Only MNS attendees (Reception desk)
09:45-10:00	**Opening session**
10:00-10:45	**Plenary talk 1**
10:45 – 11:30	**MATERIALS FOR ENVIRONMENT** **Elongated titanate nanoparticles: a versatile building block to design photocatalytic nanomaterials for sustainable applications** Olinda C. Monteiro F. Ciências.ID Portugal **Degradation of methylene blue dye in wastewater by cerium-doped Ferric oxide nanoparticles** Abeer Yousef Alyami Najran University Saudi Arabia

	A novel composite based on carboxylated β-cyclodextrin copolymer and chitosan as an adsorbent for the removal of organic dyes Jakub Lagiewka Jan Dlugosz University in Czestochowa Poland
11:30-12:00	**POSTER SESSION** **M&Ns-1** **COFFEE BREAK**
12:00 -13:30	**MATERIALS FOR ENVIRONMENT** **Comparison of the usefulness of advanced sorbents in passive samplers for monitoring water pollution: carbon nanotubes vs. metal-organic frameworks** Klaudia Godlewska University of Gdansk Poland **Catalysing Change: Multi Metallic Nanoceramics for Sustainable Energy and Environmental Solutions** Cristina Giordano Queen Mary University of London United Kingdom **Tuning Selectivity of Designed Cu-based Electrocatalysts towards the CO2 Reduction Reaction: A Structure vs Performances Study** Nivetha Jeyachandran Queen Mary University of London United Kingdom **Ir/Ir-Oxide nanoparticles supported on ceramic supports: Highly active and durable electrocatalysts for acidic water electrolyzers** Raghunandan Sharma University of Southern Denmark Denmark
13.30-15.00	**LUNCH**

M&Ns-24

Tuesday, 30 July 2024 (morning)

SCHEDULE	MAIN ROOM 1 (Ground Floor)	ROOM 2 (First Floor)
08:45-09:30	**Plenary Talk 2** **Carbon Molecular Sieve Membranes: an emerging and highly promising technology for the energy decarbonization** Gabriel Bernardo Faculdade de Engenharia da Universidade do Porto Portugal	
09:30 – 11:30	**MATERIALS FOR INDUSTRY** **Encapsulation of vegetal and essential oils in hollow silica particles** Filipa Oliveira Gomes CeNTI - Centre for Nanotechnology and Smart Materials Portugal **Investigation of ZnO antibacterial surface treatment of shoe lining materials** Darina Zheleva University of Chemical Technology and Metallurgy Bulgaria **The challenging world of Nanozymes: a guide to clarify some aspects of their catalytic activity** Giulia Mirra Italian Institute of Technology Italy **Forging Insight: Unlocking the potential of photonic crystal surface modification for sensing applications.** Weronika Zajac University od Wrocław Poland **Production of Standardized Concentrates from Cardoon (Cynara cardunculus L.) Flower Extracts by Cellulose Acetate Ultrafiltration Membranes** Luis Miguel Minhalma CEFeMA Portugal	**ENVIRONMENTAL TECHNOLOGY** **Application of Semiconducting Nanomaterials as Photocatalysts in Environmental Remediation** Victoria Ferreira FCiências.ID Portugal **Multitasking Box-Jenkins moving average-based cheminformatic modelling to characterize the aquatic toxicity of Per- and poly-fluoroalkyl substances** Amit Kumar Halder LAQV-REQUIMTE Portugal **Synergistic effect between reactive carbon support and cobalt active phase in the oxygen evolution reaction** Termeh Darvishzad Jagiellonian University Poland **Very efficient post-reverse osmosis (RO) adsorbent for home RO systems to remove As(III) from drinking water** Vishwesh Dutt Awasthi IIT Bombay India **Exploring MIL-53 (Al) as a Novel Adsorbent for Ciprofloxacin Removal: Synthesis, Characterization, and Adsorption Behavior** Duygu Yanarda Kola Konya Technical University Turkey

	MATERIALS FOR ENERGY **High-entropy ferrites synthesized via mechanochemical/thermal treatment, their structure and potential use as components in Li-ion batteries** Martin Fabian Institute of Geotechnics Slovakia	**Fabrication of bismuth-based coordination polymer-derived material for the electrochemical reduction of N2 to ammonia** Deep Lata Singh Indian Institute of Technology Madras India
11:30-12:00	**POSTER SESSION** **MNS-2** **GEET-2** **COFFEE BREAK**	
12:00 – 14:00	**MATERIALS FOR ENERGY** **Solar thermal absorber obtained from electrophoretic deposition of Fe3O4 nanorods** Al Amouri Hiba Institut de Chimie Separative de Marcoule France **NEW MATERIALS DESIGN** **Bimetallic Catalysts with Tuneable Selectivity for Furfural Hydrogenation** Ilaha Hasanova Queen Mary University London United Kingdom **The design of a bifunctional monolithic catalyst for tandem deacetalizaton-condensation reaction** Agnieszka Ciemięga Institute of Chemical Engineering Polish Academy of Sciences Poland **Silica-zirconia monoliths promising materials for catalytic processes** Katarzyna Maresz Institute of Chemical Engineering Poland **Influence of cobalt loading on carbonized ZIF-67 ORR behaviour** Nemanja Gavrilov University of Belgrade-Faculty of Physical Chemistry Serbia	**ENVIRONMENTAL TECHNOLOGIES** **Enhanced Photoelectrochemical activity of TiO2 Nanotube Arrays grown on Ti-6Al-4V alloy: Impact of Annealing Atmosphere** Harikrishna Rajubhadran Indian Institute of Technology Madras India **Remediation of diesel-polluted soil by the combined thermal desorption and thermal plasma methods** Dovile Gimzauskaite Lithuanian Energy Institute Lithuania **RECYCLING AND VALORISATION** **Graphene Oxide from Waste Dry Cells: A Novel Approach for Precious Metal Extraction from E-Waste** Saira Arif COMSATS University Pakistan **Biomass transformation in bio monomers using heterogeneous catalysts** Jesus M Requies University of the Basque Country Spain **(V)** **Utilizing Rapeseed Stalk as Supercapacitor Electrode Material** Anil Yilmaz İTÜ Bilimsel Araştırma Projeleri Birimi Turkey

	X-Ray diffraction and high-pressure spectroscopy on noble metal nanoclusters Khadijetou Ahmed Ethmane University of Geneva Switzerland	**Biopolymers-based materials for pollutants detection and removal** Irene Vassalini University of Brescia Italy **Hydrogen production from plastic waste** Cristina Ruiz Garcia Universidad Autonoma de Madrid Spain
14:00-15:30	**LUNCH**	
21:00-22:30	**AFTERNOON LISBON TOUR, all together (ask for MEETING POINT at the Registration Desk)**	

M&Ns-24

Wednesday, 31 July 2024 (morning)

SCHEDULE	MAIN ROOM 1 (Ground Floor)	ROOM 2 (First Floor)
08:45-11:30	**MATERIALS FOR ENVIRONMENT** **Preparation and Characterization of Cellulose Acetate/SiO2/UiO-66(Zr) Ultrafiltration Membranes for the Removal of Uremic Toxins in Hemodialysis** Luis Miguel Minhalma Instituto Superior de Engenharia de Lisboa and CEFeMA Portugal **(V)** **Carrier Transport and Behaviour of Hybrid Photovoltaic Solar Cell Inorganic and Organic Nanocrystals Devices** Islam Aynul University of Glasgow United Kingdom **NEW MATERIALS DESIGN** **The effects of unit cell on the compressive properties of selective laser melted Al-8.3Fe-1.3V-1.8Si alloy lattice** Ming-Wei Wu National Taipei University of Technology Taiwan	**RECYCLING AND VALORISATION** **Exploring solutions for glass waste transformation into valuable resources** Daniel Silva Instituto de Soldadura e Qualidade Portugal **Industrial alkaline battery recycling waste as secondary raw material for LECAs: Experimental and Environmental Assessment** Raquel Casasola Fernandez Postdoctoral Researcher Spain **Resource Circulation of Waste Incineration Fly Ash for Zeolite Synthesis and Applications in Pollutant Removals** Jyh-Cherng Chen Feng Chia University Taiwan **Production of Biogas from Distillery Waste: A Cost-Effective Biofuel** Poulami Chatterjee Tomas Bata University in Zlin Czech Republic

	Machine-Learning approach and melting point profile on the 3D-structural configuration of 2,4-dichloro phenoxy acetic acid Gonçalo V. S. M. Carrera NOVA ID Portugal **Noncovalent interactions involving Cu, Ag and Au nanoparticles and aromatic systems: Introducing Regium bonds** Antonio Bauza Universitat de les Illes Balears Spain **Development of controlled-release core-shell hydrogel matrices.** Florian JURIN Institut UTINAM Morocco **Spectroscopic ellipsometry in the study of optical properties of graphene and graphite-like layers** Janusz Jaglarz Cracow University of Technology Spain	**ENERGY AND ENGINEERING** **Carbon Molecular Sieve Membranes: an emerging and highly promising technology for the energy decarbonization** Gabriel Bernardo Faculdade de Engenharia Portugal **Implementing occupant voting systems to collect occupant comfort feedback in buildings to improve HVAC management strategies** Cindy UMANA-LOPEZ ARMINES / CMA France **Investigating the spatial and temporal patterns of drought in Jordan** Zeyad Tarawneh The Hashemite University Jordan **Factors Affecting Public Attitudes Toward Renewable Energy: who is ready to go renewable during the energy crisis and why?** Jan Hunady Mateja Bela University Slovakia
11:30-12:00	**POSTER SESSION** **MNS-3** **GEET-3** **COFFEE BREAK**	
12:00 – 14:00	**NEW MATERIALS DESIGN** **MXene-Based Ceramic Nanocomposites Enabled by SPS** Maxim Sokol Tel Aviv University Israel **(V)** **The interface of MOF and bioactive glass toward the design of functional biomaterials** Marzena Fandzloch Institute of Low Temperature and Structure Research, Polish Academy of Sciences Poland	**ENERGY AND ENGINEERING** **Guiding the Design of Greener Efficient Solutions: Machine Learning Predictions for Deep Eutectic Solvents' Heat Capacity** M Natalia DS Cordeiro LAQV-REQUIMTE Portugal **Optimisation software framework for advanced floating offshore wind farm operations, and logistics** Yaseen Adnan Ahmed University of Strathclyde United Kingdom **A novel transferable framework for clustering Local Climate Zones for a practical analysis of Surface Urban Heat Islands :A Case of Cape Town, South Africa** Tshilidzi Manyanya Katholieke Universiteit Leuven Belgium

	MATERIALS FOR INDUSTRY **A functionalized 3D-printed Polylactic Acid support for beverage clarification** Erika Lunetta University of Rome Niccolo Cusano Italy (V) **Effect of Mold Internal Chill Usage on the Mechanical Properties in the Manufacturing of Austenitic Stainless Steel Material by Casting Method** Aykut Ucar Sakarya University Of Applied Sciences Graduate Education Institute Turkiye **Water pollutants monitoring using hydrophobic paper-based SERS sensors** Natercia Martins University of Aveiro Portugal	**Future Cost Dynamics of Hydrogen Production in Prospective Green Hydrogen Exporters** Aleksandra Komorowska Institute of the Polish Academy of Sciences Poland **Transient Modeling of Solar Water Heating System Performance for the Central Asian Region** Yerzhan Belyayev Al-Farabi Kazakh National University Kazakhstan (V) **Green Hydrogen revolution: bibliometric review** Pablo Fernandez Arias Catholic University of Avila Spain
14:00-15:30	**CLOSING COCKTAIL** **and** **MUSIC CHAMBER CONCERT** ***Flute and Piano Duet***	

POSTER SESSIONS
M&Ns-1
Monday, 29 July 2024 (morning) 11:30-12:00

TOPIC 1: Materials for Energy
TOPIC 2: Materials for Industry
TOPIC 3: Materials for Environment
TOPIC 4: New materials design

Title	Name	ID	Topic
Improved Hydrocarbon Fractionation Using Novel Magnetic Hybrid Nanoparticles	Jeroni Morey Salva	152	2
The prototype glassy fertilizers for safe agriculture	Magdalena Szumera	102	2
Optically Active nanostructured thin films of Cellulose Nanocrystals	Rachel Yerushalmi Rozen	9	2
Hybrid antimicrobial biopolymers for antiviral and antibacterial pads	Sabina Weronika Jaros	10	2
Effect of decarburizing temperature on the resistance to corrosion-assisted hydrogen absorption behaviors of ultrastrong steel with a tensile strength of 2.4 GPa	Sung Jin Kim	80	2

Photoelectrochemical Nitrogen-to-Ammonia Reduction by gC3N4@MoS2 Heterosystem Enhanced with Plasmon-Coupling system	Denis Zabelin	104	2
Ratiometric-based electrochemical probe for detection of creatinine based on ferrocene and copper-metal organic frameworks	Yahya Alqahtani	73	2
Assessment of the possibility of using waste from wind turbine blades as ballasts for water navigation signs	Ewelina Kostecka	84	2
Studies on accelerated UV aging of polypropylene-basalt composites used in water navigation signs	Piotr Brozek	24	2
Effect of fiber attrition and interfacial adhesion on the properties of natural fiber reinforced polypropylene composites	Pregi Emese	85	2
Optimized Ammonia Synthesis through Nitrogen Photoelectrochemical Reduction on TiB2 Surface with Enhanced Plasmon Coupling	Anna Zabelina	83	2
Synthesis of poly(butylene itaconate) a potential photo-curable resin for bioprinting	Magdalena Mietus	59	2

POSTER SESSIONS
M&Ns-2
Tuesday, 30 July 2024 (morning) 11:30-12:00

TOPIC 1: Materials for Energy
TOPIC 2: Materials for Industry
TOPIC 3: Materials for Environment
TOPIC 4: New materials design

Title	Name	ID	Topic
Preparation and Characterization of Natural Dye-Doped TiO2 Nanoparticles: Applications for Green Photonics Devices	Maha Al-Hamadani	2	4
Influence of cerium (IV) oxide for reversible oxygen activity in Li2RuO3 and Li3RuO4	Martin Nedyalkov	34	4
Polyesters of azelaic acid and selected short-chain dihydroxy alcohols for the preparation of cell scaffolds	Aleksandra Bandzerewicz	58	4
Preliminary thermal characterization of selected rigid (RPU) and flexible polyurethane (FPU) adhesives	Magdalena Szumera	66	4
Synthesis of Long- and Uniform-length, and High-density Hair-like Carbon Nanotubes on Sub-micron-sized Spherical Catalyst Supports	Kazuya Kobiro	80	4
Synthesis and characterization of augite ceramics produced from spent vanadium catalyst	Rositsa Titorenkova	87	4
Thermal effects on the structural and magnetic properties of Co71Fe4Si10B15 amorphous alloy ribbons	SOLTANI MOHAMED LARBI	97	4
Synthesis and characterization of augite ceramics produced from spent vanadium catalyst	Tsvetan Ivanov Dimitrov	117	4
A computational model for prediction the homogenized viscozity of polymeric nanocomposites with nanoinclusions	Oana Tatiana Nedelcu	124	4
Simulation of bilayer nanothermopiezomagnetic / piezoelectric using finite element method	Faliniaina rasoanoavy	121 & 122	4
Magnetic anisotropy induced by surface effect in thin film ferromagnetic layer using monte carlo ising model	Faliniaina rasoanoavy	122	4
Web Crawling in Cognitive Production Planning of Materials	Andreas Kneissler	115	4

POSTER SESSIONS
GEET-2
Tuesday, 30 July 2024 (morning) 11:30-12:00

TOPIC 1: Environmental Technologies
TOPIC 2: Recycling and Valorisation
TOPIC 3: Energy and Engineering

Bioethanol production capacity from Canary Island banana residue and impact on its carbon footprint	Juan Carlos Lozano Medina	4	1
Degradation of Azole Fungicides in WWTP Effluents by Intensified Advanced Oxidation Processes	Joaquin R Dominguez Vargas	24	1
Application of Boxe Behnken design in optimization of coupled advanced oxidation processes for azole degradation in water	Joaquin R Dominguez Vargas	25	1
Selenium removal from oil refinery wastewater using nanoscale zero-valent iron particles (nZVI) with/without electrochemical peroxidation	Henrik Hansen	9	1
Advancements and Challenges of Shipboard Carbon Capture Technologies: A Comparative Assessment	Yaseen Adnan Ahmed	70	1
Composite materials based on WO3 nanoparticles and glass fibers towards pollutants removal	Virginia Ferreira	76	1
Sustainable oxygen evolution reaction with Al-substituted ZnFe2O4 spinel catalyst	Hojun Moon	90	1
Approach of Specific Fluorescent Peak in Synchrous Fluorescent to Measure TPH Content Contaminated by Diesel	WEN-LIANG LAI	52	1

POSTER SESSIONS
M&Ns-3
Wednesday, 31 July 2024 (morning) 11:30-12:00

TOPIC 1: Materials for Energy
TOPIC 2: Materials for Industry
TOPIC 3: Materials for Environment
TOPIC 4: New materials design

Title	Name	ID	Topic
Raman Spectroscopy and Optoelectronic Properties of Green Dye Doped Nanoparticles Embedded Polymer for Sensing Applications	Haitham Al-Tameemi	1	3
Advanced composite materials for microplastics removal from water	Adina-Elena Segneanu	12	3
Utilization of Hybrid Magnetic Nanoparticles for capture of VOCs based on halogen bonding	M. Nieves Pinya	18	3
Doped carbons derived from ZIF-67 for adsorption and electro-oxidative removal of dyes	Maja Milojevic-Rakic	51	3
Air dissolution and bubble growth in perfluorohexane (PP1) solutions	Rumyana Stanimirova	112	3
Recycling of Multilayer Soft Plastic Waste: Mechanical Properties and Viability	Vardai Robert	84	3
Effect of Ce modification on the electrochemical properties of NaFexPO4 as an electrode material for sodium-ion batteries	Violeta Koleva	29	1

The role of Carbon-black in Composite Electrodes for Lithium and Sodium Ion Batteries	Silva Stanchovska	32	1
Reduced Graphene Oxide as an Important Component in Thermoelectric devices and Sodium-ion batteries	Sonya Harizanova	33	1
Surface modification of a silicon-carbon composite for lithium battery application	Chien-Hsiang Chang	40	1
Au9 Nanocluster Embedded in UiO-66-NH2 Metal-Organic Framework for Electrocatalytic Hydrogen Evolution Reaction	Aparna Ravari Kandy	46	1
Electrochemical performance of NaFeVPO4(SO4)2 decorated with rGO at room and elevated temperature as promising electrode material for sodium-ion batteries	Trajche Tushev	31	1

POSTER SESSIONS
GEET-3
Wednesday, 31 July 2024 (morning) 11:30-12:00

TOPIC 1: Environmental Technologies
TOPIC 2: Recycling and Valorisation
TOPIC 3: Energy and Engineering

The impact of different PV panel technologies on the environment	Iva Batic	39	3
Integrating Thermal Energy Storage for Sustainable Forest Industry Energy Hubs: A Multi-faceted Analysis Covering Cost, Thermodynamic Efficiency, and Availability	Behnam Talebjedi	36	3
Study on Adjustment Strategies for Taiwan's Power Structure under Different Environmental Goals	Shu-Kuang Ning	49	3
PV pile foundation design by cone penetration testing	Adrian Priceputu	88	3
Improving Durability by Structural Stabilization of Optimally Synthesized NiFe LDH with Carbon Shielding	Hyunsub Shin	92	3
Economic Impact Assessment of Renewable Energy Projects in Ecuador	Juan Manuel Roldan Fernandez	97	3
Thermal Performance Simulation of Latent Heat Thermal Energy Storage Device Using Multi-Stage Cascaded PCMs	Yerzhan Belyayev	100	3
Unlocking High-Efficiency Lithium-Ion Batteries: Sucrose-Derived Carbon Coating on Nickel-Rich NCM811 Cathodes	Myeong Seok Goh	91	3
Optimal Current Management Techniques in Interconnected Power Converter Arrays	Khalid Javed	27	3