ECO SMARTTECH
KENITRA 2026
CONFERENCE

جامعة ابن طفيل
Université Ibn Tofaïl
ⵜⴰⵙⴷⴰⵡⵉⵜ ⵙⵉ ⵄⵜⵜⴰⴼ

DETAILED SCIENTIFIC PROGRAM

18-20 JUNE

Faculty of Sciences,
Ibn Tofaïl University
Kénitra, Morocco

ECOSMARTTECH-2026

International Conference on

ECO SMART MATERIALS

for the Future Technologies

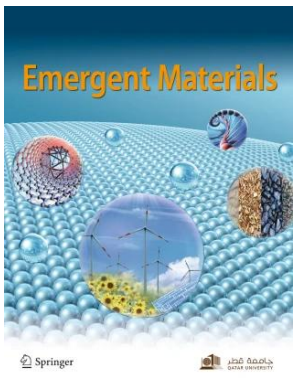
Detailed Scientific Program

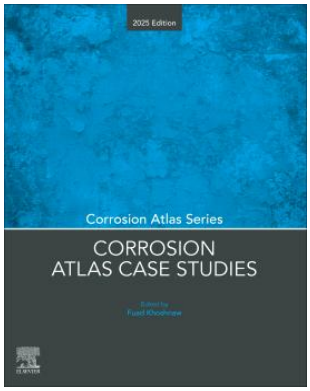
Participating Countries - Pays Participants - الدول المشاركة

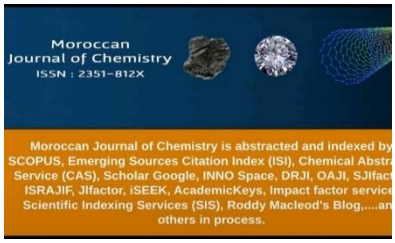
Indexed by:

Scopus

MATEC Web of Conferences







TOPICS AND GUIDELINES OF ECOSMARTTECH 2026

SESSIONS

A: ENERGY CONVERSION & STORAGE: NEW EMERGING MATERIALS FOR ENERGY CONVERSION AND STORAGE

B: PHOTONICS & ELECTRONICS: ADVANCED MATERIALS FOR PHOTONICS, ELECTRONICS, AND ENERGY CONVERSION

C: ENVIRONMENT & WATER: ADVANCED MATERIALS FOR SUSTAINABLE ENVIRONMENT AND WATER TECHNOLOGY

D: HEALTH CARE: ADVANCED MATERIALS FOR HEALTH CARE APPLICATIONS

E: BUILDING INDUSTRIES: ADVANCED MATERIALS FOR BUILDING INDUSTRIES

F: MODELLING & SIMULATION: COMPUTATIONAL APPROACHES AND SIMULATION METHODS

ACRONYM OF CONFERENCE THEMES AND PRESENTATION GUIDELINES

PC	**Plenary Conference**	**Max 30 min**	**Max 5 min for Q/As**
KS	**Keynote Speakers**	**Max 25 min**	
IS	**Invited Speakers**	**Max 20 min**	
OP	**Oral Presentation**	**Max 8 min**	**Max 5 min for Q/As**
PP	**Poster Presentation**	**Max 8 min**	

- All presentations are in English.
- Arrive 10 minutes before the session start time to upload your power point presentation. Please, start and end your presentation on time and keep the time schedule.
- For poster presentations, the posters should be displayed one hour before the beginning of the poster session and any explanation required should be provided to CHAIRS and visitors.

CONFERENCE SPEAKERS

Plenary Conference, Keynote Speakers and Invited Speakers

PLENARY CONFERENCE

PC01

Thursday, June 18, 2026

(10:05 – 10:35)

Nanowire exploration for Photoelectrochemical Solar Water Splitting

Prof. Thomas Hannappel

Institute of Physics, Technische Universität Ilmenau, Germany

thomas.hannappel@tu-ilmenau.de

Abstract

Can semiconductor nanostructures deliver high efficiency and long-term stability in solar fuel generation? Photoelectrochemical (PEC) water splitting offers a direct route to convert sunlight into chemical fuels such as hydrogen. In particular, III–V semiconductor systems have demonstrated record efficiencies, yet their practical implementation remains limited by instability and interfacial degradation under operating conditions. Semiconductor nanowires (NWs) provide an attractive platform to address these challenges. Their geometry enhances light absorption via optical antenna effects, enables efficient charge separation, and allows the integration of high-performance III–V materials on silicon. At the same time, their large surface area introduces a fundamental trade off: while it increases the density of active sites for electrochemical reactions, it also amplifies susceptibility to corrosion and defect-mediated degradation. This talk explores how nanowire geometry, defect density, and surface chemistry gov ern this trade-off. By focusing on interfacial processes and passivation strategies, including nitrogen-based layers, we discuss whether and how efficiency and stability could be reconciled in nanostructured semiconductor systems for solar water splitting.

Biography

Thomas Hannappel has been a Full Professor of Physics at Technische Universität Ilmenau since 2011 and currently serves as Director of the Institute of Physics, with research focusing on semiconductor materials and interfaces for photovoltaic and photoelectrochemical energy conversion. From 2011 to 2014, he was Scientific Director of the CIS Research Institute Erfurt. Previously, he served as Director of the Institute “Dynamics of Interfacial Reactions” at Helmholtz Zentrum Berlin for Materials and Energy (2009–2011) and headed a research department at the Hahn-Meitner-Institute Berlin, while also lecturing at Freie Universität Berlin. In 2003/2004, he conducted research on Si/III–V heterointerfaces at the National Renewable Energy Laboratory (NREL), USA. He received his PhD from the Fritz Haber Institute of the Max Planck Society in Berlin, where he studied photo-induced charge-carrier dynamics in the Department of Physical Chemistry (Prof. Gerhard Ertl). His research focuses on growth processes and interfacial physics of high-performance optoelectronic materials, contributing to record-efficiency solar cells and solar-fuel devices.

PC02

Thursday, June 18, 2026

(10:35 – 11:05)

Computational Design of 2D Materials for Hydrogen Energy Applications

Prof. Abdelilah Benyoussef

Hassan II Academy of Science and Technology, Rabat, Morocco

LaMCScI, Faculty of Sciences, Mohammed V University, Rabat, Morocco

a.benyoussef@academiesciences.ma, a.benyoussef@um5r.ac.ma, benyous.a@gmail.com

Abstract

Density Functional Theory (DFT) has become a key tool in computational materials science, enabling accurate prediction of material properties at the atomic scale. Combined with Molecular Dynamics (MD) and Monte Carlo (MC) techniques, it provides a multiscale framework for designing advanced nanomaterials and understanding their thermodynamic, electronic, and kinetic behavior. In this work, we investigate two-dimensional (2D) materials for hydrogen production and storage using first-principles calculations. Key properties such as adsorption energy, charge transfer, band structure, and reaction pathways are analyzed to evaluate catalytic activity and storage capacity. The integration of DFT with MD and Kinetic Monte Carlo (KMC) simulations further allows assessment of thermal stability, diffusion, and performance under realistic conditions. We focus on emerging 2D systems including phosphorene, BC7, BC3, AlC3, ZnC3, GeC3, and Ga2C6, which exhibit high surface reactivity, tunable electronic properties, and large surface areas. Comparative analysis reveals that slight variations in composition and structure strongly influence hydrogen binding and catalytic efficiency. Overall, this study highlights the role of DFT-guided approaches in accelerating the discovery and optimization of materials for efficient hydrogen production and storage, supporting the development of sustainable energy technologies

Biography

Abdelilah Benyoussef obtained his Doctorat d'État in Physics from the University of Paris-Sud, France, in 1983. He is a resident member of the Hassan II Academy of Science and Technology since 2006. He has coordinated the Moroccan Pole of Excellence in Condensed Matter and Systems Modeling. He also served as President of the Moroccan Society of Statistical Physics and Condensed Matter and chaired the editorial board of the Moroccan Journal of Condensed Matter. His research activities span several areas of theoretical and computational physics, including the modeling and simulation of advanced materials and nanomaterials for renewable energy applications, magnetism and phase transitions in condensed matter, statistical physics of complex systems, self-organized criticality, and ab initio calculations based on Density Functional Theory (DFT). His work has contributed to the development of novel functional materials for applications in energy conversion, spintronics, photocatalysis, and hydrogen storage. Abdelilah Benyoussef is the author or co-author of more than 850 indexed scientific publications and numerous chapters in international books. As an invited speaker at many international scientific events, he has contributed to the organization and chairing of several internationally recognized conferences and research schools. He is also the co-inventor of several patents and has supervised numerous doctoral theses in statistical physics, condensed matter physics, materials science, and computational modeling.

PC03
Thursday, June 18, 2026
(15:15 – 15:40)

Decades of Photovoltaic Research and Strategic Leadership: From Inkjet-Printed Thin Films and 2D vdW Structures to Soiling and Degradation Investigations

Prof. Ahmed Ennaoui

former research group head at Helmholtz-Zentrum Berlin (HZB) President of the scientific council of IRESEN; Founder of Virtual Learning University (VLU)

Abstract

Thin Film inkjet printing photovoltaic solar cells: We explore inkjet printing in combination with Roll-to-Roll processing for producing monolithically integrated flexible solar devices. We highlight the importance of formulating "printable inks" with optimized viscosity, wettability, and bandgap tuning. We present different deposition techniques for processing $Cu(In,Ga)Se2$ and its earth-abundant alternative, $Cu2(Zn,Sn)(S,Se)4$ [1]. 2D van der Waals (vdW) structures (referred as vdW reothaxy): We sucessfully prepared wo dimentional (2D) thin film dichalcogenides like WX2 (X = S, Se) for solar energy conversion. The major challenge with these 2D materials , when the growth occurs with two orientations (Type I and Type II textures) textures, and only Type II texture, (van der Waals planes), where the layers sit flat (parallel) on the substrate- presents a smooth, chemically inert surface (the basal plane) with almost no dangling bonds. The objective of this research is to find a way that favorise the growth of Type II texture [2]. Development of Cadmium free Chalcopyrite solar cells: We developed thin-film solar cells toxic-free and more efficient by eliminating cadmium. We achieved high-efficiency records for Cd-free CuInS2 (CIS) solar cells and collaborated with industry partners like AVANCIS to adapt our lab-scale processes to production scale CIGSS absorbers maintaining high performance [3]. Mechanisms of Performance Degradation in Photovoltaic Systems: We conducted R&D on the Solar Test Facility (STF) at the Qatar Science & Technology Park, operated by the Qatar Environment and Energy Research Institute (QEERI), exploring the accumulation of dust and particles (Soiling) which obviously degrade solar energy systems, particularly in desert environments. [4]

Biography

Prof. Ahmed Ennaoui is a world-renowned materials scientist recognized among the top 2% of researchers worldwide in matrial sciences and applied physics for solar energy conversion. His distinguished career spans over four decades, during which he served in Europe and Japan, then he leads large-scale solar energy initiatives in Qatar and Morocco. After earning his doctorate from the University of Bourgogne in France and completing his Habilitation at the Hahn-Meitner-Institute in Berlin, he served for many years as a Head of Research Group at Helmholtz-Zentrum Berlin (HZB). There, he pioneered eco-friendly chemical processing for thin-film solar modules, specializing in non-toxic materials and high-efficiency solar cell fabrication. Later, as a Research Director at the Qatar Environment and Energy Research Institute (QEERI) and joint professor at HBKU, Dr. Ennaoui led his group in adapting solar technology to harsh desert climates, specifically addressing the critical challenges of photovoltaic (PV) soiling and thermal degradation. Beyond his technical contributions —which include over 300 peer-reviewed papers and an h-index of 53—, he co-authored the book Simple Chemical Methods for Thin Film Deposition: Synthesis and Applications, reinforcing his status as a leading authority on low-cost fabrication. Dr. Ennaoui remains deeply committed to R&D strategy in his home country, serving as a professor at Université Mohammed V and chairing the Scientific Council of IRESEN in Morocco. He is also the founder of the Virtual Learning University, an open-access platform for global scientific education. A senior member of the IEEE, he currently serves on the permanent Editorial Board for the journal Solar Energy Materials and Solar Cells, guiding the next generation of renewable energy research.

PC04

Friday, June 19, 2026

(09:00 – 09:30)

Decoding Excited-State Energy Alignment Through Exciton Dynamics

Prof. Youichi Tsuchiya

Youichi Tsuchiya[1,*], Chihaya Adachi[1]

OPERA, OPHELIA, Kyushu University, Motooka744, Nishi-ku, Fukuoka, Japan

*Corresponding Author E-mail: tsuchiya@oprta.kyushu-u.ac.jp

Abstract

Thermally activated delayed fluorescence (TADF) materials have attracted considerable attention as key emitters for next-generation organic light-emitting devices (OLEDs). By minimizing the energy gap between the lowest singlet and triplet excited states (ΔEST), TADF materials enable efficient intersystem crossing (ISC) and reverse intersystem crossing (RISC) without relying on the heavy-atom effect of noble metals. Owing to these characteristics, the application field of TADF materials has expanded beyond OLEDs to bioimaging, sensing, and photocatalysis. Accurate understanding of the excited-state energy alignment is critically important for the rational design of TADF materials and for comparison with computational predictions. However, the actual excited-state configuration of TADF materials, particularly in the near-zero-ΔE_ST regime, remains difficult to determine experimentally. For example, the S1 and T1 energies estimated from the onset energies of fluorescence and phosphorescence spectra cannot directly provide the true ΔEST because the corresponding excited states are associated with different nuclear configurations. Likewise, kinetic analyses based on the activation energies of ISC and RISC are strongly influenced by assumptions in the kinetic model and Arrhenius treatment. Recently, we reported a comprehensive kinetic analysis based on a dynamic exciton model, which enables high-resolution characterization of excited-state energy alignment through exciton dynamics beyond the limitations of conventional approaches.[1] In this presentation, we demonstrate the analysis of two TADF materials exhibiting unconventional thermal behavior in the near-zero ΔEST regime.[1,2]

References:

[1] Y. Tsuchiya and C. Adachi et al., Nat. Commun. 16, 4815 (2025).

[2] H. Jung, Y. Tsuchiya and C. Adachi, et al., Appl. Phys. Express 19, 021008 (2026).

Biography:

Youichi Tsuchiya has his expertise in material science based on organic synthesis and supramolecular chemistry, and a passion for the development of TADF materials. His focus is based on the experimental analysis of TADF materials in the near-zero gap regime. He was awarded his PhD in 2004 from the Nara Institute of Science and Technology (NAIST), Japan. He published more than 100 papers. His H-index is 35 on Scopus. Youichi Tsuchiya has his expertise in material science based on organic synthesis and supramolecular chemistry, and a passion for the development of TADF materials. His focus is based on the experimental analysis of TADF materials in the near-zero gap regime. He was awarded his PhD in 2004 from the Nara Institute of Science and Technology (NAIST), Japan. He published more than 100 papers. His H-index is 35 on Scopus. Email : tsuchiya@opera.kyushu-u.ac.jp

PC05

Friday, June 19, 2026
(11:00 – 11:30)

Advanced Materials for Sensors and Biosensors

Prof. Aziz Amine

Hassan II University of Casablanca, Faculty of Sciences and Techniques, Morocco

Abstract

The transition toward sustainable and intelligent technologies requires the development of advanced materials that combine high sensing performance with eco-friendly design and scalable fabrication. In this context, this presentation addresses recent advances in functional materials for sensors and biosensors, highlighting their role in enabling eco-smart solutions for healthcare, environmental monitoring, and industrial applications. Our work focuses on the design of nanostructured and hybrid materials based on laser-induced graphene (LIG), a green and cost-effective platform obtained via direct laser writing. These three-dimensional porous architectures provide exceptional surface area, conductivity, and tunable surface chemistry. Through the integration of conductive polymers, metal oxides, and metallic nanostructures, LIG-based electrodes exhibit enhanced sensitivity, selectivity, and long-term stability. These platforms enable the ultrasensitive detection of biological and environmentally relevant analytes, including dopamine, glucose, paracetamol, and epinephrine, in complex matrices. A central aspect of this research is the implementation of sustainable fabrication strategies. In particular, a one-step laser-assisted approach enables the in situ synthesis of multifunctional nanozymes based on transition-metal-doped Fe_3O_4 embedded within graphene frameworks. These materials exhibit enzyme-mimicking catalytic activities and improved electrochemical performance due to synergistic effects at engineered interfaces. Such strategies minimize chemical waste, reduce energy consumption, and eliminate the need for binders or noble metals. Beyond biosensing, the versatility of these eco-smart materials is demonstrated in energy applications, including efficient electrocatalysis for hydrogen and oxygen evolution reactions, further supporting sustainable energy technologies. In general, this work highlights how advanced materials and green processing approaches can drive the next generation of high-performance, sustainable sensors and biosensors, contributing to the development of integrated, low-cost, and environmentally responsible smart systems.

Biography

Professor Amine's research over the past 35 years has focused on sensors and biosensors and their applications in analytical chemistry. He is the author of more than 200 scientific papers and has coordinated several national and international research projects. He currently serves as Editor of the Biosensors and Bioelectronics section of the International Journal, which has an impact factor of 10.5. He also chairs the International Workshop on Biosensors and the Congress on Analytical Sciences. According to Google Scholar (as of March 2026), his research indicators include an h-index of 67 and 15,100 citations. For the fifth consecutive year, he has been listed among the top 2% most-cited researchers in the world by Stanford University.

Keynote Speakers

KS01

Thursday, June 18, 2026

(11:40 – 12:05)

2D Materials for Green Hydrogen: Unlocking the Potential of MoS2 through Phase Engineering

Prof. Mustapha Jouiad

University of Picardie Jules Verne (UPJV), Amiens – France

Abstract

Green hydrogen is emerging as a cornerstone of the global energy transition, yet its large-scale deployment depends on the development of efficient, stable, and cost-effective catalysts. Two-dimensional materials, and in particular molybdenum disulfide (MoS2), offer a promising pathway due to their unique electronic properties and high surface activity. In this talk, I will present recent advances in tailoring MoS2 at the nanoscale to enhance its catalytic performance for hydrogen evolution. By engineering different polymorph phases within the same material, it becomes possible to simultaneously improve electrical conductivity, catalytic activity, and long-term stability. I will discuss scalable synthesis approaches that enable precise control over these properties, as well as the design of innovative nanostructures such as quantum dots and core–shell architectures. Beyond material design, I will highlight how these engineered 2D systems can be integrated into functional devices, including solar-driven platforms capable of directly converting sunlight into hydrogen. This approach opens new opportunities for decentralized and sustainable energy production.

Biography

Prof. Mustapha Jouiad obtained his PhD in Materials Science from the renowned French laboratory CEMES, and his master's degree in Solid-State Physics from University of Paul Sabatier, in 1996 and 1993, respectively. Before joining the Physics Department at University of Picardie Jules Verne as a professor, he served as Professor and Laboratory Director in the Materials Science program at Masdar Institute of Science and Technology (UAE), in close collaboration with Massachusetts Institute of Technology. Prof. Jouiad has also held research positions at prestigious institutions including University of Illinois at Urbana-Champaign, CNRS, and Lawrence Livermore National Laboratory. His research focuses on the development of low-dimensional materials with advanced optical, electrical, and catalytic properties for solar energy harvesting and conversion.

KS02

Thursday, June 18, 2026

(15:40 – 16:05)

Battery Materials for Lithium-Ion Batteries: From Fundamental Understanding to Future Challenges

Prof. Ismael Saadoune

College of Chemical Sciences and Engineering (CCSE), Applied Chemistry and Engineering Research Centre of Excellence (ACER CoE), Mohammed VI Polytechnic University (UM6P), Lot 660 - Hay Moulay Rachid, 43150 Ben Guerir, Morocco

*Corresponding Author E-mail: Ismael.SAADOUNE@um6p.ma

Abstract

Lithium-ion batteries (LIBs) have become the dominant energy storage technology for portable electronics, electric vehicles, drones and grid-scale applications due to their high energy density, long cycle life, and excellent efficiency. However, the rapid growth of electrification and renewable energy integration is driving the need for safer, more sustainable, higher-performance, and lower-cost battery systems. Addressing these challenges requires a deep understanding of battery materials and the fundamental mechanisms governing their electrochemical behavior. This presentation will provide an overview of the fundamental principles of lithium-ion battery operation, with a particular focus on the role of active materials in determining battery performance. The relationships between crystal structure, ion transport, electronic conductivity, interfacial reactions, and degradation mechanisms will be discussed to highlight how materials design directly impacts energy density, power capability, safety, and cycling stability.

Acknowledgements

We are thankful to OCP Foundation for the financial support through APPHOS, APRD and TechDev programs

Biography

Dr. Ismael Saadoune is a Full Professor at Mohammed VI Polytechnic University. He earned a PhD from the University of Bordeaux in 1992 and a second doctoral degree from Cadi Ayyad University (UCA), Marrakech, in 1996. His research has focused on the development of active materials for lithium- and sodium-ion batteries, contributing to advancements in electrochemical energy storage. In 2002, he founded the Laboratory of Materials and Environmental Chemistry, where he has supervised more than 100 graduate students and over 50 Master's students. He has also mentored more than 25 PhD candidates, all of whom have pursued careers in industry or research institutions. As principal investigator, Dr. Saadoune has led 19 national and 23 international research projects on battery materials, supported by organizations including OCP, the European Union, the African Union, IRESEN, and other Moroccan academic and industrial partners. He has also contributed to international academic programs, notably the ERASMUS MUNDUS Master's programs "Materials for Energy Storage and Conversion" and "Functionalized Advanced Materials and Engineering." He currently heads the "Electrochemical Energy Storage and Conversion" unit within ACER at UM6P.

KS03
Friday, June 19, 2026
(09:35 – 10:00)

Tunable Nonlinear Optical Properties of Engineered Organic, Organometallic, and NiO-Based Nanostructures for Advanced Photonic Applications

Prof. Bouchta Sahraoui

B. Sahraoui[1,*] Junhui Lang[1], D. Guichaoua[1], S. Taboukhat[1], A. Andrushchak[2] and A. Kityk

1,*University of Angers, LPhiA, SFR MATRIX, 2 Bd. Lavoisier, 49045 Angers, France

2 Lviv Polytechnic National University, 12 Bandery Street, 79013 Lviv, Ukraine

3 Czestochowa University of Technology, Armii Krajowej 17, Czestochowa, Poland

(*) e-mail : bouchta.sahraoui@univ-angers.fr

Abstract

The increasing demand for high-performance photonic and optoelectronic devices has stimulated the development of advanced nonlinear optical (NLO) materials for applications including all-optical switching, optical limiting, frequency conversion, and photonic signal processing. Among the most promising candidates, engineered organic, organometallic, and NiO-based nanostructures offer exceptional opportunities for tailoring optical properties through molecular design and nanoscale engineering. This presentation reports recent advances in the characterization and modulation of NLO responses in highly π-conjugated organic compounds, functionalized pyridinium–benzimidazole derivatives, BODIPY dyes, and hybrid organic–inorganic nanocomposites. Strong second- and third-order nonlinear optical responses were observed, highlighting the critical role of charge-transfer mechanisms, molecular architecture, and nanoscale confinement in enhancing optical nonlinearities. Particular attention is given to NiO ultrathin films and nanostructures, which combine optical transparency, chemical stability, and tunable nonlinear behavior, making them attractive for integrated photonic applications. Nonlinear optical properties were investigated using second-harmonic generation (SHG), third-harmonic generation (THG), and Z-scan techniques. The results demonstrate that molecular engineering and nanostructure design provide effective routes for optimizing NLO performance. These findings establish a versatile platform for developing multifunctional materials suitable for advanced photonic technologies, including optical communications, harmonic generation, laser systems, and integrated optoelectronic devices.

Biography

Bouchta SAHRAOUI, Distinguished full Professor at Angers University, is a member of the Photonics Laboratory and a Member of the Hassan II Academy of Science and Technology, Morocco. His research focuses on the development of innovative materials for advanced optoelectronic applications. As an expert in nonlinear optics, he explores the properties of materials to design high-performance photonic and electro-optical devices that meet today's technological challenges. He organized 25 prestigious conferences as a chair or co-chair, he published 460 peer-reviewed publications, with 11700 citations and his Hirsch-index is currently 63 according to Google scholar. He is a member of the editorial boards of 5 prestigious journals, guest editor of 12 special issues on energy and photonics applications. He supervised 22 PhD candidates. He presented more than 50 invited and plenary lectures. He conducted or is involved in 8 European collaborative projects and received 6 awards from the French Ministry of Research and Innovation for his outstanding contributions. Recently, the prestigious US University of Stanford ranked the distinguished Professor SAHRAOUI among the top 2% of the most cited scientists internationally and among the top 2% of scholars who had the greatest impact on the scientific community in 2019-2025. The Stanford classification is based on data from Scopus and Web of science.

KS04

Friday, June 19, 2026

(10:05 – 10:30)

Droplet Microfluidics and Optofluidics Platforms for Advanced Photonics and Plasmonics Materials

Prof. Abdel Illah El Abed

ENS Paris Saclay, LUMIN email: abdel.el-abed@ens-paris-saclay.fr

Abstract

The prospects offered by droplet-based microfluidics and optofluidics are numerous and concern many fundamental and industrial fields in biology, physics, chemistry, material science, etc. The combination of emulsion solvent evaporation technique and droplet-based microfluidics allows for the synthesis of well-define monodisperse microcapsules (hollow microspheres) with different types of nanoparticles used as building blocks, e. g. SiO2, ZnO, TiO2, etc. Monodisperse mesoporous hollow silica microcapsules present unique opportunities for advanced optical characterization due to their tunable nanostructure, high porosity and easy functionalization. A critical and challenging parameter in the optimization of these applications is the accurate determination of the effective refractive index, which governs light propagation and confinement within the nanostructured matrix of such mesoporous materials. We synthesized monodisperse mesoporous hollow silica microcapsules doped with Rhodamine B dye and analyzed them optically by exploiting whispering gallery mode (WGM) resonances, enabling non-destructive, single particle refractometry with nano-structural sensitivity. The measured value of the effective refractive index was cross-validated using Lorenz–Lorentz and Bruggeman effective medium models, both predicting porosity values that closely match independent BET nitrogen adsorption measurements. The excellent agreement between optical and adsorption-based porosity demonstrates that WGM spectroscopy combined with Fourier analysis is a powerful, label-free, and non-invasive technique for correlating nanoscale porosity with macroscopic optical properties. This approach is widely applicable to single-particle analyses of nanostructured dielectric materials and opens new possibilities for in situ optical metrology in the development of advanced photonic, catalytic, and biomedical platforms. ZnO and TiO2 microparticles may find very interesting applications as photocatalysts for different applications such as water depollution or artificial photosynthesis for H2 fuel production. To better exploit the visible light energy (50 % of the solar spectrum), a new generation of photocatalysts based on surface plasmon resonance (SPR) effect has been developed in recent years. The so-called plasmonic photocatalysts usually comprise semiconductor materials which are transparent in the visible range, such as TiO2, and plasmonic nanoparticles such as gold nanoparticles (Au NPs). It has been demonstrated recently by several groups, theoretically and experimentally, that the visible light activity of plasmonic photocatalysts could be increased significantly when whispering gallery mode resonances (WGMs) are induced in the semiconductor particles, due to total internal refection of the light along the curved surface of such particles. In such optical micro-resonators, light propagate in the form of WGMs because of the total internal reflection of light along the curved surface of microdroplets. To create hybrid whispering-gallery mode (WGM) and localized surface plasmon resonance (LSPR) structures, we combined gold (Au) nanoparticles incorporated within or on the surface of monodisperse TiO2 microspheres of tunable diameter using droplet-based microfluidic technology. We investigated the impact of the spatial organization of plasmonic nanoparticles on optical coupling. Due to the monodispersity of the TiO2 resonators, coupling between the WGM and the gold plasmonic nanoparticles measured across a statistical ensemble of particles occurs at discrete wavelengths, resulting in enhancements of plasmonic absorption by up to 40 times. These results demonstrate the importance of material composition and geometry in regulating light confinement, suggesting that these monodisperse microspheres hold great promise for advanced biosensing systems and photocatalytic applications.

Biography

Prof. Abdel Illah EL ABED is a physicist and an Outstanding Associate Professor at Paris Cité university and Ecole Normale Supérieure Paris Saclay. He is the leader of the droplet microfluidics group at LUMIn laboratory at ENS Paris Saclay. He received his PhD in Physics at Paris Descartes university in 1992, where he was awarded a year later a permanent position as an Associate Professor. He obtained his Habilitation to Direct Research (HDR) in 2005 and moved, in 2013, to the Ecole Normale Supérieure of Cachan and later (2019) Quantum and Molecular Photonics Laboratory (LPQM) and then to Light Matter and Interfaces Laboratory (Paris Saclay University). His recent

research interests cover mainly droplet microfluidics, optofluidics and photonics with target applications in (bio)sensing, micro-thermometry, plasmonics and photocatalysis. He co-authored more than 60 articles in international peer-reviewed journals and supervised 7 PhD thesis during last 10 years related to droplet microfluidics and optofluidics.

KS05

Friday, June 19, 2026

(11:30 – 11:55)

Water Desalination by Membrane Distillation: Experimental Investigations and Theoretical Modelling

Prof. Mohamed Khayet

Department of Structure of Matter, Thermal Physics and Electronics, Faculty of Physics, University Complutense of Madrid, Avda. Complutense S/n, 28040, Madrid, Spain

Madrid Institute for Advanced Studies of Water (IMDEA Water Institute), Avda. Punto Com no. 2, Alcalá de Henares, 28805, Madrid, Spain

National Center for Research and Studies on Water and Energy, Cadi Ayyad University, Marrakech, Morocco

E-mail: khayetm@fis.ucm.es

Abstract

Membrane distillation (MD) is a thermally driven membrane separation process that has emerged as a promising technology for addressing the water–energy–environment nexus. Unlike conventional desalination and separation processes, MD can be effectively powered by low-grade heat sources, including solar energy and industrial waste heat, while treating highly saline streams up to saturation. These unique capabilities enable the valorization of brines generated by water treatment facilities, supporting zero liquid discharge (ZLD) strategies, freshwater production, and the recovery of valuable mineral resources. Consequently, MD contributes to several United Nations Sustainable Development Goals (SDGs), particularly those related to clean water, affordable and clean energy, responsible consumption and production, climate action, and sustainable industrial innovation. Despite its significant potential, large-scale industrial implementation of MD remains limited, primarily due to the lack of commercially available membranes specifically engineered for MD applications. Most membranes currently employed in pilot-scale systems were originally developed for other membrane processes and often suffer from pore wetting, which compromises permeate quality and reduces membrane modules lifetime. Pore wetting is mainly associated with inadequate hydrophobicity, large pore sizes, and the occurrence of fouling and scaling under demanding operating conditions. Although substantial progress has been achieved in materials science, membrane engineering, and transport modeling, significant challenges remain regarding membrane scalability, long-term stability, durability, and resistance to harsh operating environments. A broad range of advanced materials has been investigated in MD membrane preparation and modification, including fluoropolymers, carbon-based nanomaterials, plasmonic and semiconductor nanoparticles, metal–organic frameworks (MOFs), MXenes, and surface-modifying macromolecules. These materials have enabled the development of membranes with tailored structures and functionalities, highlighting the need for application-specific membrane design according to the MD configuration and feed characteristics. This lecture presents a brief overview of the current state of MD technology and its membrane engineering through literature data analysis, bibliometric assessment and machine learning. Some case studies of surface modified MD membranes engineered with different materials, morphological structures (i.e., flat-sheet, hollow fiber and nanofibrous membranes), hydrophobic nature and characteristics will be discussed. Particular emphasis will be placed on mixed matrix, nanocomposite, surface modified, and solar-assisted or photothermally-heated membranes. Furthermore, theoretical models incorporating membrane structural characteristics, heat transfer mechanisms, and physical nature of mass transport through porous media will be presented to predict permeate flux, quantify temperature and concentration polarization effects, and assess the overall thermal efficiency of MD systems.

Biography

M. Khayet is the Director of the Research Group “Membranes and Renewable Energies (MER)” and Professor (Applied Physics Area) at the Faculty of Physical Sciences (University Complutense of Madrid, UCM). He is an associate researcher in Madrid Institute for Advanced Studies on Water (IMDEA Water). He got his Ph.D. in Physical Sciences, and he has carried out various research stays in recognized institutions in Canada, USA, UK, Singapore, etc. He got the Fulbright Grant (2019). He is a world-leading expert on membrane science, nanotechnology, and renewable energies. He published over 200 papers (H index=89), filed 6 Patents, published 6 books and various book chapters. He received the Prince Sultan Bin Abdulaziz International Prize for Water (PSIPW) in 2012. He acted as Editor of the Journal “Desalination” (2018-2022). He is the coordinator of the Spanish Research Network “MEMBRANET” Supported by the State Research Agency (AEI) and the Ministry of Science, Innovation and Universities.

KS 06
Friday, June 19, 2026
(12:15 – 12:40)

Advanced Plasma Etching Processes for the future Materials and Technologies

Prof. Ahmed Rhallabi

Institut des Matériaux de Nantes Jean Rouxel (IMN), Nantes Université, CNRS, 2 rue de la Houssinière, Nantes, France

Corresponding Author E-mail: ahmed.rhallabi@cnrs-imn.fr

Abstract

Since the 1970s, low-pressure plasma discharges have played a significant role in thin-film fabrication and in the material etching and pattern transfer. While initial research focused on the semiconductor industry, plasma processes are now involved in various applications and are essential steps in the manufacturing of devices such as those related to energy storage and power applications. The need for more anisotropic etching to transfer trenches, holes, and mesa structures with specific aspect ratios (etched depth/opening width) has led to the emergence of new etching processes based on alternating gas injection, such as Bosch, cryogenic etching and ALE (Atomic Layer Etching). In addition to its application in silicon etching for DRAM, the Bosch process is used in the deep etching of power diodes. Alternating between SF6 plasma-based etching pulses and C4F8 plasma-based deposition pulses to protect silicon side surfaces is a way to etch structures with aspect ratios that could exceed 100. ALE is considered a good process to etch materials at the atomic layer scale without degrading their electronic and opto-electronic properties. It is well adapted in the etching of materials such as GaN for power electronic devices. These devices are experiencing significant growth due to their applications in electric vehicles and wind turbines. In this context, we highlight the advantages of developing new-generation plasma etching processes through a detailed understanding of plasma–surface interaction mechanisms. This approach is illustrated through two representative case studies: silicon etching using the Bosch process and GaN etching using the Atomic Layer Etching (ALE) process. We demonstrate how key process parameters - including reactor power, operating pressure, and the duration of injected gas pulses - influence the spatio-temporal evolution of etched profiles as well as the resulting surface morphologies. Several optimization strategies will be presented, tailored to the targeted specifications and intended applications.

Biography

Ahmed Rhallabi Professeur à Nantes Université, titulaire d'un doctorat en Sciences des Matériaux spécialité Microélectronique en 1992 et d'une habilitation à diriger de la recherche en 2001. Depuis 35 ans, Mr Ahmed Rhallabi travaille dans le domaine des procédés plasmas froids pour le dépôt et la gravure des couches minces au sein de l'Institut des Matériaux de Nantes Jean Rouxel (IMN). Une grande partie de ses travaux a été réalisée dans le cadre de plusieurs contrats industriels et projets ANR ainsi que de collaborations avec des laboratoires européens et asiatiques. Il est responsable adjoint de l'équipe Plasmas et Couches Minces (PCM). De plus il dirige depuis 2017 le master Electronique Energie Electrique Automatique de Nantes Université avec ses trois parcours : Capteurs Intelligents et qualité des Systèmes Electroniques (CISE), Energie Electrique (EE) et Eletrpnic Technomogy and Artificial Intelligent (ETAI).Ahmed Rhallabi Professeur à Nantes Université, titulaire d'un doctorat en Sciences des Matériaux spécialité Microélectronique en 1992 et d'une habilitation à diriger de la recherche en 2001. Depuis 35 ans, Mr Ahmed Rhallabi travaille dans le domaine des procédés plasmas froids pour le dépôt et la gravure des couches minces au sein de l'Institut des Matériaux de Nantes Jean Rouxel (IMN). Il s'est intéressé au développement des approches de simulation multiéchelles des procédés de gravure et de dépôt par plasmas. Ces derniers jouent un rôle clé dans l'approche Top Down pour la fabrication des dispositifs électroniques pour différentes applications. Ces travaux ont fait l'objet de plus de 200 revues conférences et conférences invitées. Une grande partie de ses travaux a été réalisée dans le cadre de plusieurs contrats industriels et projets ANR ainsi que de collaborations avec des laboratoires européens et asiatiques. Il est responsable adjoint de l'équipe Plasmas et Couches Minces (PCM). De plus il dirige depuis 2017 le master Electronique Energie Electrique Automatique de Nantes Université avec ses trois parcours : Capteurs Intelligents et qualité des Systèmes Electroniques (CISE), Energie Electrique (EE) et Eletrpnic Technomogy and Artificial Intelligent (ETAI).

KS07

Friday, June 19, 2026

(15:05 – 15:30)

SORET Project: Biomimetic Silicones and Digital Manufacturing of Graduated Dermal Maturation Devices for Severely Burned ChildrenDr

Dr. Saïd Mabchour

Lyon University

E-mail : mabchour.sa@gmail.com

Abstract

According to the World Health Organization, some 180,000 deaths worldwide each year are linked to burns; nearly 70% of severe cases involve children and young adults, and more than 90% of the resulting mortality occurs in low- and middle-income countries. Residual hypertrophic scarring remains the central challenge faced by paediatric rehabilitation units, within a critical therapeutic window of four months after the injury. The standard treatment relies on pressure therapy delivered through custom-made compression garments and masks. The conventional method, which involves moulding plaster bandages directly onto the child's face, is invasive, distressing for the child, heavily operator-dependent and difficult to transfer beyond specialised centres. The Romans-Ferrari Paediatric Rehabilitation Centre (Miribel, Ain, France), a national reference facility that produces close to 3,000 compression devices on site each year, has replaced this method with a digital workflow that brings together 3D scanning, medical CAD, additive manufacturing by selective laser sintering (Formlabs Fuse 1) and automated thermoforming. The SORET project, led by the author, explores how biomimetic silicone elastomers reproducing the properties of human skin can be integrated into this workflow. The aim is to build on the standard treatment and to ease its spread to resource-limited countries, where the clinical need in children is particularly pressing. The talk will set out the epidemiological background, current clinical practice, the multidisciplinary scientific basis of the project, the technology transfer now under way and the prospects it opens for Franco-Moroccan scientific cooperation, organised around pilot sites, a shared international protocol and a training programme for paediatric rehabilitation centres.

Biography

Dr. Saïd Mabchour is a Doctor of Engineering Sciences and an international speaker specializing in biomechanics, biomaterials, digital manufacturing, and medical-device innovation. He is affiliated with Université Claude Bernard Lyon 1 and INSA Lyon, and is also associated with Mohammed VI Polytechnic University and Université de Sherbrooke.

His work focuses on biomimetic silicones, advanced polymer materials, 3D scanning, computer-aided design, and additive manufacturing for customized healthcare and rehabilitation devices. His research contributes to the development of innovative medico-technical solutions, particularly for personalized treatment and technology transfer in healthcare applications.

KS08

Friday, June 19, 2026

(15:30 – 15:55)

Tailoring Metal-Oxide Nanomaterials at the Atomic Scale: From Controlled Synthesis to Nanocatalysis

Prof. Ahmed Naitabdi

Sorbonne Université, Laboratoire de Chimie Physique – Matière et Rayonnement (LCPMR) 75005 Paris

ahmed.nait_abdi@sorbonne-universite.fr

https://lcpmr.cnrs.fr/content/ahmed-naitabdi

Abstract

The deliberate design of functional nanomaterials with tailored catalytic properties requires a profound, atomic-scale understanding of the relationship between a catalyst's morphology and its chemical reactivity. This talk highlights our recent strategies in fabricating and characterizing binary metal-oxide (MOx) systems—specifically ZnO-Pt and ZrO2-Cu—in two distinct dimensions: twodimensional (2D) ultrathin films serving as well-defined ultra-model catalysts, and their threedimensional (3D) nanoparticle analogues. By correlating physical and chemical synthesis methods with advanced surface science techniques (STM and XPS), we demonstrate that the structural and electronic properties of these low-dimensional systems differ fundamentally from their bulk counterparts. These unique, structurally rich properties were exploited to achieve enhanced catalytic activity and selectivity for critical environmental reactions, namely CO oxidation and CO2 reduction into valuable chemicals and fuels. Utilizing in situ and operando investigations—including Ambient Pressure X-ray Photoelectron Spectroscopy (AP-XPS) and in situ Raman spectroscopy under realistic reactive gas environments—we successfully monitored the dynamic evolution of the catalysts. These techniques enabled the direct identification of key surface intermediate species and the elucidation of reaction mechanisms as an explicit function of the catalyst's local structure. Complementary Density Functional Theory (DFT) calculations provide a solid theoretical framework, confirming the energetic pathways at play. Ultimately, by unveiling these precise morphology-reactivity relationships, this work establishes robust guidelines for the rational design of next-generation nanocatalysts with optimized performance.

Biography

Ahmed Naitabdi is a Full Professor of Physical Chemistry at Sorbonne University and Deputy Director of the Laboratoire de Chimie Physique – Matière et Rayonnement in Paris, France. He received his Bachelor's degree from the University de Haute-Alsace in 2000 and his Master's degree from the University de Strasbourg/the University de Haute-Alsace in 2001. He subsequently earned a Ph.D. in Condensed Matter Physics from the University de Strasbourg in 2004 under the supervision of Prof. Jean-Pierre BUCHER. Following his doctoral studies, he joined the Department of Physics at the University of Central Florida (Orlando, USA) in 2005 as a research fellow, where he worked in the group of Prof. Beatriz ROLDAN-CUENYA on the design and characterization of metallic and bimetallic nanoparticles for catalytic applications. Since joining Sorbonne University as an Assistant Professor in 2012, Prof. NAÏTABDI has focused his research on the synthesis and design of metal-oxide nanomaterials, including well-defined ultrathin films and size-controlled nanoparticles prepared through both physical and chemical approaches. These materials serve as model systems for investigating catalytic phenomena at the nanoscale. His research primarily addresses the catalytic hydrogenation of CO_2, with a particular emphasis on the development and application of advanced in situ characterization techniques to elucidate reaction mechanisms. By combining advanced synthesis methods, surface science, and atomic-scale characterization, his work seeks to uncover the fundamental principles governing catalytic processes and to guide the design of next-generation nanocatalysts for sustainable chemical transformations.

KS09

Friday, June 19, 2026

(15:55 – 16:20)

Monte Carlo simulation on magnetic nanoparticles assemblies: phase diagram and magnetic hyperthermia efficiency

Prof. Vincent Russier

V. Russier [1*], J.-G. Malherbe[1], J.J. Alonso[2], A. Morjane[1,3] and F. Vernay[3]

1 ICMPE, UMR 7182 CNRS and UPE, 2 rue Henri Dunant 94320 Thiais, France

2 Física Aplicada I, Universidad de Málaga, 29071 Málaga, Spain

3 PROMES, UPR 8521 CNRS, Université de Pepignan Via Domitia, Rambla de la thermodynamique, Tecnosud 66100 Perpignan, France

*Corresponding Author E-mail: vincent.russier@cnrs.fr

Abstract

Since the pioneering works of Néel and Brown, magnetic nanoparticles (MNP) assemblies still attract considerable interest both from a fundamental perspective and in terms of their potential applications. Particular attention must be paid to magnetic hyperthermia, in which magnetic nanoparticles (MNP) subjected to an alternating magnetic field experience energy loss that is dissipated in the surrounding medium, leading to a localized temperature increase. This can be exploited in new therapies against tumor cells. Concerning the theoretical modeling of such assemblies different levels of description can be considered from the microscopic scale at the NP level to the mesoscopic scale dealing with collective effects. Here we deal with the latter and present some aspects of the dipole-dipole interactions (DDI) effect between single domain spherical MNP through the simple model of dipolar hard spheres with anisotropy in the framework of Monte Carlo simulations. Despite its simplicity, this model allows the investigation of the DDI effects, including the related collective behavior, and the order/disorder competition due to either the random distribution of the MNP easy axes and the disordered structure and moreover rather large systems can be simulated. Two aspects will be discussed. On the first hand, we discuss the equilibrium magnetic phase diagram in terms of either the dipolar coupling for randomly distributed easy axes or in terms of the texturation of the easy axes distribution and we moreover discuss the effect of the structure anisotropy induced by the DDI. On the second hand we will present the way to optimize the hyperthermia efficiency through the local structure, including the MNP location and the easy axes distribution, in the framework of dynamic Monte Carlo simulations. Two numerical schemes are used for the Monte Carlo simulations depending on whether we focus on equilibrium phase diagram or dynamical hysteresis loops for hyperthermia.

Biography

Vincent Russier works at the Institute of Chemistry and Materials at Paris-Est, which is primarily devoted to materials science. He is a theorist in condensed matter and statistical physics, focusing primarily on numerical simulations of magnetic material properties using Monte Carlo simulations or micromagnetism. After working on modeling the electrochemical interface and the plasmonic properties of metallic nanoparticle assemblies, he began focusing on the condensed phases of magnetic nanoparticles. He mainly focuses on simple models of single-domain magnetic nanoparticles. Following his study of magnetic phase diagrams within the context of order/disorder competition, he is currently working on magnetic hyperthermia optimization via the dependence of dipolar interactions on the local structure.

KS10

Saturday, June 20, 2026

(09:30 – 09:55)

Supersonic Molecular Beam Dissociation and Graphene Formation: C2H4/Cu(410) and C2H4/Cu(111)

Prof. Wilson Agerico DIÑO

Takamasa MAKINO[1], Wilson Agerico DIÑO[2], Akitaka YOSHIGOE[3], Michio OKADA[1,4,*]

1. Department of Chemistry, The University of Osaka, Toyonaka, Osaka 560-0043, Japan

2. Department of Applied Physics, The University of Osaka, Suita, Osaka 565-0871, Japan

3. Materials Sciences Research Center, Japan Atomic Energy Agency, Sayo-gun. Hyogo 679-5148, Japan

4. Institute for Radiation Sciences, The University of Osaka, Toyonaka, Osaka 560-0043, Japan

*Corresponding Author E-mail: okada@chem.sci.osaka-u.ac.jp/wilson@dyn.ap.eng.osaka-u.ac.jp

Abstract

Gas-surface interactions induce changes in the chemical stability and reactivity of materials and surfaces. The ability to control such processes bears on the chemical/material economy. Unraveling the stereochemistry/stereodynamics of the processes involved would be imperative for understanding the mechanisms behind these interactions. The dynamics of reactant molecules (e.g., the orientation and the movement of molecules in 3D space) play an important role in reactions. The small rotational energy excitations involved (ca. less than a few meV) render the reactants susceptible to dynamical steering. This makes direct comparison with theory rather challenging. Here, we considered the dissociative adsorption of C2H2 on Cu(111) and Cu(410), and the conditions necessary to finally form single graphene layers on the corresponding surfaces. In general, it would involve the following steps: (1) C2H2 dissociation, (2) dehydrogenation (desorption of H species), and (3) graphene layer formation. We observe a high activation barrier that hinders C2H2 dissociation on Cu(111), as compared to Cu(410). But, once C2H2 has a translational energy high enough to overcome the activation barrier for dissociarion, we find no observable difference in the single graphene layers formed from Cu(111) and Cu(410). More details will be presented at the conference.

Biography

1999: Doctor of Engineering, Osaka University. 1999-2001: Japan Society for the Promotion of Science (JSPS) Special Invited Foreign Researcher Fellow. 2001-2002: Researcher, Institute Industrial Science, The University of Tokyo. 2002-2002: Academia-Industry Collaborative Researcher, Osaka University. 2002-2004: Advanced Computational Science and Technology-Japan Science and Technology Agency (ACT-JST) Researcher. 2004-pres.: Adjunct Prof., De La Salle University, Philippines. 2004-2005: Specially Appointed Research Asst., Osaka University Nano Center. 2005-2007: Specially Appointed Assoc. Prof., Osaka University Nano Center. 2007-2010: Assoc. Prof., Osaka University, Graduate School of Science. 2010-2023: Assoc. Prof., Osaka University, Center for Atomic and Molecular Technologies 2010-pres.: Assoc. Prof., The University of Osaka (since April 2025), Graduate School of Engineering.

KS11

Saturday, June 20, 2026
(09:55 – 10:20)

Pyridylidenes, an underexplored class of ligands and their related organometallic complexes for novel opportunities in various applications

Prof. Jamal Moussa

Sorbonne Université – Institut Parisien de Chimie Moléculaire UMR 8232 – Paris, France

E-mail: jamal.moussa@sorbonne-universite.fr

Abstract

Metal complexes of N-Heterocyclic carbenes (NHC) have found a plethora of applications in the last two decades following the seminal work of several groups. This contrasts with the underexplored pyridylidene category.1 Pyridylidenes exhibit a higher □-donor and □-acceptor character than imidazolylidenes, thus pyridylidenes are attractive ligands to promote organic transformations or light emission in the related transition metal complexes. Pyridylidenes remain scarcely investigated certainly due the absence of general methods for accessing pyridylidene-based metal complexes. Only few specific routes were reported to date. In this context our research investigations describe the development of several methods for the synthesis of organometallic compounds containing pyridylidene ligands with transition metals such as Ru(II), Os(II), Rh(III), Ir(III) and Pt(II).2-5 In particular, some of the complexes obtained exhibit strong phosphorescence in the solid state which makes them attractive candidates as doping materials in OLEDs to harvest the triplet excitons. Some of the non-metallated compounds exhibits TADF (Thermally Activated Delayed Fluorescence) which is of high interest in the third generation of OLED emitters. Moreover, our novel compounds also show interesting NLO,6 reactivity,7 catalytic, biological and properties that are investigatedin collaboration with several research groups. During this presentation, the development of new methodologies to obtain our novel materials as well as their photoluminescent properties will be presented.

Biography

Dr. Jamal Moussa obtained a PhD from Université Pierre et Marie Curie (UPMC), in Paris, France in 2007 working on the synthesis of luminescent transition metal complexes. He then moved to ETHZ for a two-year postdoctoral stay in the group of Antonio Togni working on the use of ferrocenyl based NHC ligands for asymmetric catalysis. He was then appointed an assistant professor position in 2009 at UPMC. In 2023 he defended the Habilitation to direct researches as associate professor at Sorbonne Université, Paris. He is currently leading his research in a reaserch group at Sorbonne Université involved in a strong CNRS-Kyushu University Japan with the group of Prof. C. Adachi in the frame of the IRP (International Research Project) LUX-ERIT with the aim to seek photonic applications such as OLEDs technology. Dr. Moussa has co-authored over 60 scientific publications and oral communications in addition to several invited lectures and visiting professor positions.

Invited Speakers

IS01

Thursday, June 18, 2026

(12:05 – 12:25)

Durability of Hydrogen Systems, Status and Bottlenecks. Where is the research heading?

Prof. Nadia Yousfi

Professor University Marie & Louis Pasteur, International University of Rabat

FEMTO-St laboratory

Abstract

Hydrogen and fuel cell systems are very promising solutions for the storage of intermittent energies and its utilization, either directly as green gas or as a direct (re)electrification into green and decentralized electricity, a major asset for the territories. While direct electrification alone cannot ensure the decarbonization of the economy, hydrogen as a decarbonized gas has a major role to play in decarbonizing other sectors such as industry and mobility, and more particularly heavy mobility. It is thus the link between three major sectors of the economy: mobility, industry, and energy. However, for a large-scale deployment of these technologies, it is necessary to bring to market reliable systems with competitive costs and lifespans. To this end, solutions to lower costs and extend durability such as fault tolerance and resistance to degradation must be put in place. This presentation will address part of the research for solutions of interest integrated into the system and based mainly on analytical redundancy. These AI-based solutions use the system's own resources reducing thus additional instrumentation costs and limiting the volume of embedded systems: Hence, the fuel cell is used as its own sensor. The different solutions developed include monitoring, diagnosis, prognosis, decision, and control. The developed system has the properties of resilient system.

Biography

Nadia Yousfi Steiner received a master's degree in mathematics and a master's degree in Fluidics and Energetics in 2006. She obtained a PhD in Engineering Science in collaboration between the University of Franche-Comté and the European Institute for Energy Research in Karlsruhe, Germany in 2009. From 2009 to 2014, she worked as R&D Project Manager in charge of collaborative projects on Hydrogen in Karlsruhe in Germany. Her research interest deals with fuel cell and electrolysers systems characterization diagnostics, prognostics, testing protocoles and Fault Tolerant Control. She is currently Full Professor at the University of Franche-Comté and held a 6-years research Chair of excellence within the Energy department in Belfort, France. She was the head of the Cursus Master of Engineering Hydrogen Energy and Energy efficiency H3E (First 5years education programme about hydrogen in France) between 2019 and 2023. This Master has been awarded by the "Trophée de l'Hydrogénie", best project in the category of "Sensibilisation, Formation et Education" in 2022. In 2021, she set an international master's programmes in electrical engineering and Hydrogen (Gradute School EUR EIPHI, Master ENERGY) that she directed until 2023. Since 2024, she is director of the master's programme and Hydrogen Energy at the International University of Rabat, Morocco. Nadia Yousfi Steiner has been recently awarded with the CNRS Bronze Medal (2019) for her research and the Blondel Medal for Research and Engineering activities (2023). Since August 2024, she has been appointed as an Adjunct Professor in the Michael W. Hall School of Mechanical Engineering at Mississippi State University, USA and since February 2025, she has been nominated as an associated member of the Moroccan Academy of Science & Technology.

IS02

Thursday, June 18, 2026

(12:25 – 12:45)

A co-doping strategy for improving the physicochemical properties of Ba1-xMxCe0.7Zr0.1Y0.1Yb0.1O3-d (BMCZY) samples as components of reversible ceramic proton conducting fuel cells where A = Sr, Mg; 0<x<0.1

Prof. Magdalena Dudek

Faculty of Energy and Fuels, AGH University of Krakow Av. Mickiewicza 30, 30-059 Kraków, Poland

*Corresponding Author E-mail: potoczek@agh.edu.pl

Abstract

Yttrium-doped BaZrO3 (BZY), yttrium-doped BaCeO3 (BCY), and yttrium-doped barium zirconate-cerate (BCZY) protonic ceramic conductors are still considered promising ceramic proton-conducting materials for use in electrochemical devices, such as ceramic fuel cells, ceramic solid electrolysers, electrochemical separators, and gas sensors for monitoring hydrogen concentration in gas mixtures and liquid metals. Proton ceramic fuel cells have been investigated as an option to lower the operating temperature of solid oxide fuel cells (SOFCs) to the 400–800°C range. Yttrium-doped barium zirconate-cerate (BCZY) protonic ceramic conductors are also analysed as components of solid oxide electrolysers. In this study, the results of a co-doping strategy at the A-site are presented as a means to improve the physicochemical properties (electrical conductivity and chemical stability in H2 gas containing CO2 of a series of samples: Ba1-xAxZr0.9Y0.1O3 and Ba1-xAxCe0.9Y0.1O3, where A = Sr or Mg and 0 < x < 0.1. The impact of fabrication methods, as well as the effects of sintering, hot-pressing, and ultrafast sintering conditions on the variation of electrical properties and chemical stability of samples in H2-gas mixtures containing CO2, will also be discussed. It was found that partial substitution of barium by magnesium or strontium in the samples Ba1-xMxCe0.7Zr0.1Y0.1Yb0.1O3-δ led to a slight improvement in electrolytic properties compared to the original composition BaCe0.7Zr0.1Y0.1Yb0.1O3-δ. The test consists of reversible fuel cells with Ba0.95Mg0.05Ce0.7Zr0.1Y0.1Yb0.1O3-δ (BMCZY) or Ba0.95Sr0.05Ce0.7Zr0.1Y0.1Yb0.1O3-δ (BSCZY) electrolytes operating in hydrogen fuel with some CO2 impurities. The possible operation of ceramic fuel cells with BSCZY or BMCZY electrolytes in electrolyser mode to produce H2 or syngas (CO-H2) will be presented and discussed.

Biography

Prof. Magdalena Dudek received both her Diploma and habilitation degree in Chemical Engineering from AGH University of Krakow. She joined the Department of Sustainable Energy Development in the Faculty of Energy and Fuels at AGH University of Krakow. She is engaged in teaching and research in the interdisciplinary fields of energy efficiency, integrated power sources involving renewable energy, hydrogen technologies, fuel cells, batteries and materials science. Prof. Dudek is the author or co-author of over 100 scientific and technical papers. She is included in the top 2% of research scientists on the Elsevier and Stanford University lists. She also holds ten patents in the area of hydrogen and fuel cells. With more than 20 years of experience in the energy and fuels market, particularly in the hydrogen economy and fuel cell technology, Prof. Dudek's contributions to industrial cooperation have been recognised with special awards at international and Polish exhibitions. Additionally, she has been involved in research programmes funded by the European Union, the European Institute of Technology, UNESCO and national research frameworks in Poland. Prof. Dudek is active in international scientific and educational collaborations in the field of fuel technology and energy transformation. She has served as a reviewer for numerous international journals, including those published by Elsevier, Wiley and Springer. She has also been a plenary speaker and invited speaker at international interdisciplinary conferences in areas such as fuels and energy, materials science, and electrochemistry.

IS03

Thursday, June 18, 2026

(14:50 – 15:10)

Hydrogen Storage and Applications: Materials Advances, Electrochemical Systems, and Infrastructure Challenges

Prof. Youssef Naimi

Ben M'Sick Faculty of Sciences, Hassan II University of Casablanca, Morocco

youssef.naimi@univh2c.ma

Abstract

Hydrogen is emerging as a cornerstone of the global clean energy transition, yet its widespread deployment hinges critically on solving the storage challenge. This contribution presents an integrated overview of hydrogen storage technologies — compressed gas, liquid hydrogen, metal hydrides, chemical carriers, and nanomaterial-based physisorption — contextualized against the most recent 2024–2025 advances in the field, and techno-economic validation of solid-state backup power systems. Applications are examined across four sectors: transportation (FCEVs, heavy-duty trucks, hydrogen aviation — FCEV market growing at 48% CAGR); industry (green steel via direct reduction, decarbonized ammonia synthesis); stationary and grid storage (seasonal underground H_2 reservoirs, metal hydride backup systems); and distributed cogeneration (PEMFC systems achieving >80% total efficiency through heat recovery). Three original experimental contributions are highlighted from our group. First, PA12/CNT composites achieving over 60% reduction in H_2 permeability, applicable to Type IV tank liners and pipeline barriers. Second, PEMFC thermal management and cogeneration modeling demonstrating system efficiencies above 80%. Third, earth-abundant OER electrocatalysts — Ni-Co bimetallic/conducting polymer composites — addressing the kinetic bottleneck of water electrolysis for green hydrogen production. Infrastructure durability is also addressed through fourteen published corrosion inhibition studies covering inorganic pyrophosphate coatings ($MgNiP_2O_7$, $MgCoP_2O_7$), triazole derivatives, and bio-sourced green inhibitors validated by DFT and molecular dynamics simulation for carbon steel and copper in acidic media — environments directly encountered in electrolyzers and H_2 pipeline systems. These contributions span the full hydrogen value chain and are aligned with Morocco's 4 GW electrolysis target by 2030.

Biography

Youssef Naimi is a full professor at Hassan II University of Casablanca. He is affiliated with the Faculty of Sciences Ben M'Sick, where his research is conducted within the "Materials, Renewable Energies and Intelligent Technologies" team of the Information Processing Laboratory (LTI). He holds a PhD in electrochemistry from Pierre and Marie Curie University (Paris VI, 1994) and a State Doctorate in electrochemistry from the Faculty of Sciences Ben M'Sick (2006). He also completed a postdoctoral fellowship at SORAPEC in France. He coordinates the Specialized Master's program in Renewable Energies and Materials and previously headed the Chemistry Department and the Laboratory of Physical Chemistry of Materials (LCPM). Trained as an electrochemist, his work focuses on PEM fuel cells, green hydrogen production through water electrolysis and photoelectrochemistry, electrochemical generators and batteries, corrosion and corrosion protection, and environmental chemistry. Author of over 45 scientific publications and two books, he has supervised numerous doctoral theses and regularly contributes to international scientific committees and conferences in the field of renewable energy.

IS04

Thursday, June 18, 2026

(16:05 – 16:25)

Bridging the Gap Between Efficiency and Stability in Perovskite Solar Cells

Prof. Amal Bouich

Physics Department, Laboratory of Advanced Materials and Process Engineering Faculty of Sciences, Ibn Tofail University, Kenitra 14000, Morocco

Email: bouich.amal@uit.ac.ma

Abstract

Improving the stability and efficiency of halide perovskite solar cells remains a critical challenge for their large-scale commercialization. Hybrid organic–inorganic halide perovskites have emerged as highly promising absorber materials for perovskite solar cells (PSCs) due to their remarkable power conversion efficiencies, simple fabrication methods, and cost-effective processing techniques. However, their susceptibility to moisture-induced degradation significantly affects their structural integrity and optoelectronic performance. This study provides a comprehensive investigation of perovskite degradation mechanisms and examines the influence of various cation dopants on the structural and stability properties of formamidinium lead iodide ($FAPbI_3$) and methylammonium lead iodide ($MAPbI_3$) perovskites. The incorporation of dopants enhances film morphology by improving surface coverage, increasing grain size, and stabilizing the desired perovskite phase. As a result, the doped films exhibit reduced pinhole density and larger crystalline grains compared with their undoped counterparts. In addition, both materials demonstrate a preferred crystallographic orientation along the (110) plane. Photoluminescence measurements reveal that the nature of the dopant plays a crucial role in surface passivation and charge-carrier dynamics within the deposited films. Experimental findings further elucidate the degradation pathways and stabilization processes governing perovskite performance. The investigation is also extended to mixed-halide perovskite compositions, which offer enhanced durability for photovoltaic applications. Solar cells based on mixed formamidinium– methylammonium lead iodide absorbers exhibit superior stability and improved power conversion efficiency. These results highlight the potential of compositional engineering as an effective strategy for developing reliable, high-performance, and scalable perovskite solar cell technologies suitable for future commercial deployment.

Biography

Prof. Dr. Amal Bouich is a professor of physics at Ibn Tofaïl University, specializing in semiconductor physics and photovoltaic materials. She obtained her Ph.D. (Cum Laude) from Universitat Politècnica de València, focusing on perovskites and CIGS thin films for solar cell applications. She has developed a strong international research background in optoelectronics and semiconductor materials. She previously worked as a postdoctoral researcher at Universidad València. She has published over 120 scientific papers, with an H-index of 31, and has presented her work at numerous international conferences. Her research has been recognized with awards, including at the European Materials Research Society. She is actively involved in teaching and supervising research, with a focus on developing next-generation solar cells.

IS05

Friday, June 19, 2026

(11:55 – 12:15)

Mesostructured SBA-15 Silica: A Platform for Catalysis and Water Purification

Prof. Abdelkrim El Kadib

Euromed University of Fes UEMF, Fes (Morocco)

Abstract

Since their emergence in the 1990s, ordered mesoporous silicas, particularly SBA-15, have become landmark materials for the design of highly porous solids combining large surface areas, uniform mesopore sizes, and excellent thermal stability. Their well-defined textural properties, together with the chemical reactivity of surface silanol groups, make them attractive platforms for catalysis, adsorption, energy conversion, drug delivery, and separation technologies. In spite of the tremendous progress reached in mesostructured silica synthesis and utilization, some persistent limitations continue to hinder its broader implementation, including catalytic site isolation and surfactant recycling. In this talk, we will present recent achievements from our group, related to surfactant recycling, domain-selective functionalization, and engineering growth of metal nanoparticles.[1-3] Performance in catalysis for fine chemical synthesis and dual adsorption-photocatalysis towards water cleaning and depollution technology will be moreover presented.

1. Phosphorylation of pluronic-filled silica mesostructure as a circular route for surfactant removal and recycling, M. El Kaddouri, D. Akmach, N. Katir, J. El Haskouri, S. Kaliaguine, A. El Kadib.* ChemCatChem, 17 (2025) e202500382.

2. Tunable dispersion of cobalt oxide nanoclusters grafted on mesoporous SBA-15 for efficient pharmaceutical removal from wastewater, H. Tallouzt, C. Nayral, J. El Haskouri, K. Anis, A. Kherbeche, A. El Kadib.* Phosphorylation of pluronic-filled silica mesostructure as a circular route for surfactant removal and recycling, RSC Adv., 16 (2026) 8356.

3. Bismuth-supported mesostructured silicas: ligand-directed growth of nanosheets for sustainable catalysis and iodine scavenging, H. Tallouzt, K. Bakkouche, M. Majdoub, N. Katir, K. Anis, A. Kherbeche, S. Royer, A. El Kadib,* Sustainability, 10 (2026) 5186..

Biography

Prof. Abdelkrim El Kadib earned his Ph.D. in 2004 from Université Paul Sabatier de Toulouse (LHFA), France. He then worked as a post-doctoral fellow at the Université de Pau et des Pays de l'Adour, Ecole Nationale Supérieure de Chimie de Montpellier and Total Petrochemical (Belgium). He next moved to Queen's University in Kingston (Canada), before joining iNANOTECH-MAScIR in Morocco as Associate Researcher. He is currently a Full Professor at the Euromed University of Fes (Morocco) and a corresponding member of the Hassan II Academy of Sciences and Technology. Research conducted on El Kadib's group (NanoMAT) bridges the gap between sustainable chemistry and materials science, focusing primarily on surface-functionalized mesoporous and nanostructured materials, as well as nanocomposites, particularly those derived from biomass and biowaste, to implement circularity in chemistry. These nanostructures are designed for applications in catalysis, energy storage and conversion, water purification, and biomedical devices. Prof. El Kadib was involved in the training and supervision of over 40 highly qualified scientists, including post-docs, PhD and post-graduate students. He has also authored nearly 150 publications in high impact chemistry journals (most with impact factors above 5) and holds 16 patents.

IS06

Saturday, June 20, 2026

(10:20 – 10:35)

Insights into the Nonlinear Optical Properties of Functionalized Molecular and Metal-Complex Systems

Prof. Said Taboukhat

Said Taboukhat,[1*], Junhui Lang[1]; Jamal Moussa,[2] Abdelkrim. El-Ghayoury,[3] Robert Wielgosz,4 and Bouchta Sahraoui[1]

1 Univ Angers, LPHIA, SFR MATRIX, F-49000 Angers, France

2 Sorbonne Université, CNRS, Institut Parisien de Chimie Moléculaire, IPCM, F-75005 Paris, France

3 Univ Angers, CNRS, MOLTECH-ANJOU, SFR MATRIX, F-49000 Angers, France

4 Energia Oze Sp. z o.o., Konopiska 42-274, Poland

*Corresponding Author E-mail: said.taboukhat@univ-angers.fr

Abstract

The development of high-performance nonlinear optical (NLO) materials is central to the advancement of next-generation photonic technologies. In this talk, a comprehensive perspective is presented on the molecular engineering of organic chromophores and their transition-metal complexes as versatile platforms for nonlinear photonics [1]. Particular attention is given to donor–acceptor molecular architectures and the role of transition-metal centers in modulating electronic structure, charge-transfer dynamics, polarization anisotropy, and electronic delocalization [2]. The incorporation of metals such as Cu, Hg, and Ir provides an additional level of tunability, enabling enhanced structure–property relationships and stronger light–matter interactions. Beyond isolated molecular systems, this work highlights the rational integration of organic and coordination-based frameworks into hybrid photonic materials exhibiting tailored nonlinear optical responses. This approach opens promising avenues for optical modulation, frequency conversion, ultrafast signal processing, and multifunctional photonic applications [3]. Overall, this contribution provides a unified molecular-to-materials framework for the design of advanced nonlinear optical systems, bridging molecular chemistry, coordination chemistry, and photonic materials science toward future light-based technologies.

Biography

Dr. Said Taboukhat obtained a PhD from the Université d'Angers (France) and Hassan II University of Casablanca (Morocco) in 2018. He is a physicist specializing in molecular engineering, materials science, nonlinear optics, and photonics, is a member of the Photonics Laboratory. His research focuses on the design and development of innovative multifunctional molecular and hybrid systems for advanced optical applications. He has particular expertise in nonlinear optical (NLO) materials, molecular photonics, and structure–property relationships governing light–matter interactions. His work involves the modeling and characterization of organic, inorganic, and metal-complex-based systems exhibiting enhanced second- and third-order nonlinear responses. He has extensive experience in nonlinear electro-optic effects, molecular hyperpolarizabilities, and macroscopic susceptibilities, with applications in frequency conversion, optical modulation, and ultrafast photonic technologies. Dr. Taboukhat's research bridges fundamental molecular physics and applied materials science, contributing to next-generation photonic and optoelectronic materials with tunable nonlinear optical functionalities. Email: said.taboukhat@univ-angers.fr

IS07

Saturday, June 20, 2026

(10:35 – 10:50)

Comparative Investigation of DoE and AI Techniques for Bandgap Energy Estimation in Distorted III–V Antimonides

Prof. Amal Tarbi

A. Tarbi[1,*], A. Marjanowska[2,3,4,] A. Zawadzka[2,3], H. Erguig[1], A. Migalska-Zalas[4], A. Kityk[5], A. Andrushchak[6], G. Myronchuk[7], Przemysław Płóciennik3,8; and B. Sahraoui9

*Email: amal_tarbi@yahoo.fr, amal.tarbi@uit.ac.ma

Abstract

The band anticrossing (BAC) model is extensively used to describe the bandgap energy of III–V antimonides. This framework accounts for two principal mechanisms: impurity–host interactions in antimony- and arsenic-rich alloys, and intraband coupling effects within the conduction and valence bands for intermediate compositions. In the present work, response surface methodology (RSM) was applied to previously reported data, while an artificial neural network (ANN) based on the Levenberg–Marquardt backpropagation algorithm was implemented to enhance the accuracy of bandgap energy predictions. The obtained results were validated against experimental measurements. Statistical indicators, including the coefficient of determination (R^2) and root mean square error (RMSE), demonstrated the superior predictive capability of the ANN model, achieving correlation coefficients of 99.28% and 97.42% for Ga- and In-based III–V antimonides, respectively. The predicted bandgap energies were further employed to analyze the effect of lattice mismatch on the optoelectronic properties of these materials. Owing to their tunable electronic characteristics, III–V antimonides are promising candidates for infrared photodetector applications, particularly in medical diagnostics, industrial thermal imaging, and defense technologies. As a future perspective, density functional theory (DFT) calculations combined with numerical modeling will be conducted to explore the strain-dependent electronic and mechanical properties of these materials. Such investigations will provide deeper insight into their behavior under external constraints and support their optimization for next-generation optoelectronic devices.

Biography

Dr. Amal Tarbi is an Assistant Professor of Physics at the School of Technology (EST), Ibn Tofail University in Kenitra, Morocco, and a member of the Materials Physics and Subatomic Laboratory at the same university. She earned her Ph.D. in 2018 in Condensed Matter Physics and Renewable Energy from the Faculty of Sciences and Techniques of Mohammedia, Hassan II University. Her research focuses on three main areas: (i) the optoelectronic analysis of materials deposited on various substrates, particularly the effects of lattice mismatch; (ii) the use of artificial intelligence and Design of Experiments (DoE) methods to model physical properties such as bandgap energy; and (iii) the simulation and optimization of solar cell performance using SCAPS-1D software and Density Functional Theory (DFT). Dr. Tarbi is the author of 23 Scopus-indexed publications, with over 227 citations and an h-index of 9. She contributes to the supervision of several Ph.D. students and collaborates with international research groups from Nicolaus Copernicus University (Poland), Jan Dlugosz University in Częstochowa (Poland), the State University of Trade and Economics (Ukraine), and the University of Angers (France).

IS08

Saturday, June 20, 2026

(11:20 – 11:35)

Ai Impact on Industrial Sustainability: The IFGICT Approach

Dr. Mohamed Kayyali

Dr. Mohamed Kayyali, CEO / CO-founder of Business Consulting 4DBC, Morocco

*E-mail: president@ifgict.org | customerservice@ifgict.org

Abstract

The integration of Artificial Intelligence (AI) into the industrial sector is a primary catalyst for sustainable development. Key drivers include machine learning-driven predictive maintenance, smart supply chain optimization, autonomous energy management, and real-time resource allocation. These elements directly mitigate environmental impact by minimizing carbon footprints, reducing industrial waste, and optimizing resource consumption. While AI offers unprecedented capabilities for decarbonization, achieving long-term environmental and economic sustainability requires a standardized framework to ensure computing infrastructure remains ecologically viable. The International Federation of Global & Green ICT (IFGICT) addresses this by providing a critical benchmark to balance industrial performance with green computing principles. By implementing IFGICT standards, industries can audit and optimize their AI infrastructure, ensuring digital transformation actively drives verifiable pathways toward net-zero targets.

Keywords: Artificial Intelligence, Industrial Sustainability, Green ICT, IFGICT, Machine Learning, Predictive Maintenance, Smart Industry, Net Zero, Energy Optimization.

Biography

Dr. Kayyali, Certified Innovation Management from Harvard Business School HBS, holds PhD from (WCU), he was a researcher visitor at the University of California- UCSB @ the image processing labs under US Defense funding R&D projects, he is IEEE Industrial Officer, and BCS (British Computer Society) Chartered Fellow and ELITE. He was awarded Chartered Scientist by the Queen Elizabeth in 2013, his biography listed in Who's Who in Science and Engineering, he has a patent theory in image processing and many published journals &conference papers, he has 5 indexed books in computer science, IoT & healthcare by the Library of Congress in USA. He is Int. key note speaker by U.N., IEEE & EU, he was adviser to many organizations in USA, GCC, LATAM, Arab League and invited adviser at ministries of investment and defense in many regions.

PLENARY CONFERENCE		
PC01	Prof. Thomas Hannappel	Nanowire exploration for Photoelectrochemical Solar Water Splitting
PC02	Prof. Abdelilah Benyoussef	Computational Design of 2D Materials for Hydrogen Energy Applications
PC03	Prof. Ahmed Ennaoui	Decades of Photovoltaic Research and Strategic Leadership: From Inkjet-Printed Thin Films and 2D vdW Structures to Soiling and Degradation Investigations
PC04	Prof. Youichi Tsuchiya	Decoding Excited-State Energy Alignment Through Exciton Dynamics
PC05	Prof. Aziz Amine	Advanced Materials for Sensors and Biosensors

KEYNOTE SPEAKERS		
KS01	Prof. Mustapha Jouiad	2D Materials for Green Hydrogen: Unlocking the Potential of MoS2 through Phase Engineering
KS02	Prof. Ismael Saadoune	Battery Materials for Lithium-Ion Batteries: From Fundamental Understanding to Future Challenges
KS03	Prof. Bouchta Sahraoui	Tunable Nonlinear Optical Properties of Engineered Organic, Organometallic, and NiO-Based Nanostructures for Advanced Photonic Applications
KS04	Prof. Abdel Illah El Abed	Droplet Microfluidics and Optofluidics Platforms for Advanced Photonics and Plasmonics Materials
KS05	Prof. Mohamed Khayet	Water Desalination by Membrane Distillation: Experimental Investigations and Theoretical Modelling
KS06	Prof. Ahmed Rhallabi	Advanced Plasma Etching Processes for the future Materials and Technologies
KS07	Dr. Saïd Mabchour	Biomimetic Silicones and Digital Manufacturing of Graduated Dermal Maturation Devices for Severely Burned Children
KS08	Prof. Ahmed Naitabdi	Tailoring Metal-Oxide Nanomaterials at the Atomic Scale: From Controlled Synthesis to Nanocatalysis
KS09	Prof. Vincent Russier	Monte Carlo simulation on magnetic nanoparticles assemblies: phase diagram and magnetic hyperthermia efficiency
KS10	Prof. Wilson Agerico DIÑO	Supersonic Molecular Beam Dissociation and Graphene Formation: C2H4/Cu(410) and C2H4/Cu(111)
KS11	Prof. Jamal Moussa	Pyridylidenes, an underexplored class of ligands and their related organometallic complexes for novel opportunities in various applications

INVITED SPEAKERS		
IS01	Prof. Nadia Yousfi	Durability of Hydrogen Systems, Status and Bottlenecks. Where is the research heading?
IS02	Prof. Magdalena Dudek	A co-doping strategy for improving the physicochemical properties of Ba1-xMxCe0.7Zr0.1Y0.1Yb0.1O3-d (BMCZY) samples as components of reversible ceramic proton conducting fuel cells where A = Sr, Mg; 0<x<0.1
IS03	Prof. Youssef Naimi	Hydrogen storage and applications
IS04	Prof. Amal Bouich	Bridging the Gap Between Efficiency and Stability in Perovskite Solar Cells
IS05	Prof. Abdelkrim El Kadib	Mesostructured SBA-15 Silica: A Platform for Catalysis and Water Purification
IS06	Prof. Said Taboukhat	Insights into the Nonlinear Optical Properties of Functionalized Molecular and Metal-Complex Systems
IS07	Prof. Amal Tarbi	Comparative Investigation of DoE and AI Techniques for Bandgap Energy Estimation in Distorted III–V Antimonides
IS08	Dr. Mohamed Kayyali	Ai Impact on Industrial Sustainability: The IFGICT Approach

Parallel Sessions

SESSION A: ENERGY CONVERSION & STORAGE: NEW EMERGING MATERIALS FOR ENERGY CONVERSION AND STORAGE			
Thursday, June 18, 2026 ROOM 1: (16:30 – 18:00)	**A01**	Kaboré Thierry Silvère	Engineering Spherical LiFePO4 Microparticles by Spray Drying for Enhanced Conductivity and Energy Density
	A02	Khalid Fareh	Discussion of Electrodeposited Sb_2O_3/FTO thin films for supercapacitor applications
	A03	Nadia Ben Amar	Optimization of ZnO Thickness in Spray-Pyrolyzed ZnO/Co_3O_4 Heterojunctions for Thin-Film Photovoltaic Applications
	A04	Zakia El Bachyry	Engineering ZnO thin films toward high-performance electrochemical energy storage electrodes
	A05	Zouhair Sadoune	Savonius vertical axis wind turbines: an overview of technological and energy advances
	A06	A. Elomari	Electrodeposited $AgCuO_2$ Thin Films for Efficient Water Splitting
	A07	Youness Benhenia	Enabling high performance by combining dual-site doping and a coating strategy in Na2FePO4F as a cathode for sodium-ion batteries: A Combined Theoretical and Experimental Approach.
	A08	R Jean Brice Sosten OUEDRAOGO	Enabling structural and interfacial stability of LiNi0.8Co0.1Mn0.1O2 up to 4.5 V through electrical and magnetic Fe2P surface decoration
	A09	Fadoua Mansouri	Experimental Validation and Numerical Optimization of Mn-Doped ZnS Buffer Layers for Enhanced Thin-Film Solar Cell Efficiency
	A10	A. Ahmed WAHAS	The effect of CoOx nanoparticles' size on the performance of TiO2 nanotube photoanode for enhanced hydrogen production
	A11	Hafsa Diyagh	Exploring the p-type to n-type transition in CuO thin films via Zn and Co Doping: insights from M-SILAR synthesis
	A12	Salma Daim	Passivation Strategies for Enhancing the Stability and Efficiency of Sn–Pb Perovskite Solar Cells
	A13	Nouhaila Ait-Zerraf	Ferroelectric High Entropy Oxide Nanomaterials for Next-Generation Photocatalysis and Piezo-photocatalysis
	A14	Lahbib Akabbouch	Enhanced charge storage in vanadium pentoxide thin films for Supercapacitor Applications.
	A15	H. El Alem	A modular MgH2 demonstration tank to store reversibly hydrogen
	A16	Oumayma NOUAIM	Experimental and DFT Study of Cs_2SnI_6 Perovskite for Renewable Energy Conversion
	A17	Fatima-Zahrae Ayadi	Design and Optimization of Reactively Sputtered MoOx Thin Films as Electrocatalysts: Oxygen-Driven Evolution of Structural, Surface, and Electrocatalytic Properties
	A18	M.Y. Zaki	Controlled Silver Incorporation in Electrodeposited Kesterite CZTS Thin Films for Photovoltaic Applications
	A19	Driss BOUGMOUM	A Multiphysics investigation of Thermomagnetic Convection of Fe_3O_4 Ferrofluids as a new solution for Heat dissipation in Lithium-Ion Batteries
	A20	O. Haddad	Experimental and DFT Study of Nd-Doped ZnO Nanorods for Photovoltaic Applications
Thursday, June 18, 2026 ROOM 2: (16:30 – 18:00)	**A21**	Elgridani Majda	Computational Investigation of Thiophene-Based Conjugated Polymers (P3AT, PQT and PBTTT) Doped with C20F2, a C20 Fullerene Derivative: Charge Transfer and Structural Organization
	A22	E. M. Rhiate	Design, Modeling, and Experimental Evaluation of a Piezoelectric Floor- Based Energy Harvesting System
	A23	M. boutamart	Transparent and Durable Superhydrophobic Sol–Gel Coatings for Photovoltaic Glass Applications
	A24	J. Zimou	Porous Zr-doped CeO2 nanostructures electrodes for high performance supercapacitors
	A25	Nabil Bouri	Impedance Spectroscopy Insights into Resistance Dynamics and Performance Optimization of LiMgI3- and NaMgI3-Based Lead-Free Perovskite Solar Cells
	A26	N. El Alami	Synergistic Effects of Sn and N codoping on the electronic and optical properties of $SrTiO_3$: A DFT study for photocatalytic hydrogen production
	A27	Lina Erramli	Charting Morocco's path as a green hydrogen powerhouse: A systematic review, LCOH benchmarking, and techno-legislative ecosystem analysis
	A28	Y. Nejmi	Structural, Optical, Photoelectrochemical, and Electronic Characterization of Co-Electrodeposited Tetragonal CuBi2O4 Thin Films: Experimental and DFT Insights
	A29	Mohamed Amine Mekaoui	Enhancing the Hydrogen Storage Properties of ZrH2 through Lithium Substitution and Triaxial Strain: A Density Functional Theory Study
	A30	Abed OUBARI	Intelligent Soiling Mitigation Strategy for Photovoltaic Systems Based on Experimental Analysis and Predictive Modeling

Thursday, June 18, 2026 ROOM 2: (16:30 – 18:00)	**A31**	Said ELMOUSSAOUI	Net-graphene: A Promising Platform for Solid-State Hydrogen Storage from First-Principles Calculations
	A32	Mohamed EL idrissi	DoE-Guided Hydrothermal Synthesis CuFeO2 Photocathodes for photoelectrochemical Hydrogen formation
	A33	Abderrahim. El bahri	Enhancing Hydrogen Storage Properties of Titanium Hydride TiH2 with Vacancy Defects and Uniaxial Strain: A First-Principles Study
	A34	OUMAYMA EDDAHMANI	Advanced first-principles investigation of structural, electronic, and hydrogen storage properties of X2InBiH6 (X =Na, Li, K) double perovskite hydrides for next-generation energy systems
	A35	Badr ER-RABYIY	AI-Driven Control and Optimization of Two-Stage Anaerobic Digestion for Biohydrogen and Biogas Production
	A36	Abdellah KEROINI	DFT Analysis of the Structural, Electronic, and Optical Properties of $CsSnCl_3$ Perovskite Coupled with SCAPS-1D Simulation for Photovoltaic Applications
	A37	E. Darkaoui	Comprehensive investigation into the stability, and optoelectronic properties of La-Based MXenes surface using DFT and AIMD simulations
	A38	Hakima Ouhenou	First-Principles Investigation of Hydrogen Storage in Li-Decorated MBene Monolayers
	A39	Salma HARIRI	Properties of Halide Perovskite Materials for Photovoltaic Applications
	A40	M.ZEMAMOU	Numerical Investigation of Novel Savonius Wind Turbine Blades Design Using Random Polynomial Curves
Friday, June 19, 2026 ROOM 1: (16:30 – 18:00)	**A41**	Samira SAADAOUI	Tailoring Structural and Optoelectronic Properties of Mixed-Halide Perovskites for High-Performance Solar Cells: A Synergistic SCAPS-1D and Experimental Approach
	A42	Rim SAYED	Experimental Investigation and SCAPS-1D Simulation of Cobalt-Doped ZnO Thin Films for Photovoltaic Applications
	A43	Itto EL-KABASSI	Investigation of Parameter Identification Methods for Lithium-Ion Batteries Under Dynamic Operating Conditions
	A44	Hicham IDRISSI EL OUDRHIRI	Multi-Parameter Optimization of Cu2NiSnS4 Structural Characteristics via DoE-Based RSM D-Optimal Design: Effects of pH and Electrodeposition Potential in Co-deposition Synthesis
	A45	Otmane Kharbouch	Coupled Methodological Approaches for Performance Optimization in Alkaline Water Electrolysis: Toward Efficient Green Hydrogen Production
	A46	N.Tahri	DFT-Based Investigation of Hydrogen Storage Material Properties
	A47	Chaimaa Aarab	Burst Pressure Analysis of Aerospace CFRP Composites for Type V Hydrogen Storage Tanks
	A48	K. Elasri	Propriétés thermoélectriques à haute performance, optiques, de stabilité et photovoltaïques des doubles pérovskites halogénées A2GaAsCl6 (A = K, Rb) pour les applications en énergie solaire.
	A49	ZOUINE Fatima	Optimisation de la Fiabilité Métrologique en physique Nucléaire : Approche par Contrôle Statistique des Processus pour la Conformité ISO 17025 :2017 en Analyse par Activation Neutronique
	A50	ELMASMARI INTISSAR	Numerical Investigation of Humidification Effects in PEM Fuel Cells
	A51	Fatima-ez-zahra Zadane	Effect of Temperature and Flow Rate on a 3D Single-Channel PEM Electrolyzer
	A52	Zakaria BENNIS	Comparative study of various converter topologies based on their functional descriptions
	A53	Fellahi Mohamed	SnS Thin Films by NSP : Role of Substrate Temperature on Structural, Optical an Electrical Properties for Solar Cells Application
	A54	Soufyane Naaim	Thermophysical and Optical Performance Enhancement of Parabolic Trough Collectors Using Al_2O_3, Cu, and Ag Nanoparticles in Therminol® VP-1: A MATLAB–SolTrace Comparative Study
	A55	F.Z. Kamli	Computational design of lead-free double halide perovskites for efficient solar cells
	A56	Fatiha Oubrik	High-Capacity Moroccan Biomass-Derived Hard Carbon with Excellent Cycling Stability for Lithium-Ion Energy Storage
	A57	Imane JIROU	Electronic and Optical Properties of CsSnX3 Perovskites for Solar Energy Applications: A First-Principles Study
	A58	Maria Hassouny	Thermally Engineered NiO Thin Films Enabling >30% Theoretical Efficiency in Perovskite Solar Cells
	A59	Houda Khattab	Heterostructure and Strain Engineering for Designing Materials for Future Sustainable Energy Applications
	A60	Safia Rasmi	Numerical Simulation of BeCu2Sn4 Thin-Film Solar Cell Using SCAPS-1D

Friday, June 19, 2026 ROOM 2: (16:30 – 18:00)	**A61**	Youssef Baddi	TD-DFT-Guided Molecular Engineering of Spiro-OMeTAD-Derived Hole- Transport Materials for Sustainable Solar Cells
	A62	Sabir HAJJAJI	Ln, As, Se, Ni, Zn, and Fe doping affect Sb_2S_3's electrical, optical, and thermoelectric properties
	A63	Akram El khalifi	Modeling the Green Hydrogen Production Chain: A Systematic Review of Renewable Energy Integration, Electrolyzer Technologies, and Future Research Directions
	A64	M. El Bouji	Influence of annealing temperature on the structural, morphological, and optical properties of the co-electrodeposited CuBi2O4 thin films
	A65	Hicham Zalrhi	Interfacial Engineering of NiSe2 Nanooctahedra–TiO2 Heterostructures for Enhanced Photocatalytic Hydrogen Evolution
	A66	Said Elghazi	Enhancing hydrogen storage performance of graphdiyne through high-vacancy defects and lithium functionalization: Density functional theory study
	A67	M. Aarab	Improving the supercapacitive quality of CuO by Sr doping for energy storage application
	A68	RADOUANE ASRI	Hydrogen Storage in Li-Decorated Carbon-Doped BN Analog of 8–16–4 Graphyne: A DFT-D3 and AIMD Study
	A69	A. Zaidi	Eco-Friendly Sugar-Based Inhibitors for Enhanced Performance of Aluminum–Air Batteries in Alkaline Media
	A70	Hajar Bouayad	Integration of Solar PV with Green Hydrogen Production and Pipeline Transport
	A71	H. Fatihi	Triaxial Strain Engineering Unlocks Superior Hydrogen Storage in Be2MnH6
	A72	Sanaa Ammari	Perovskite/Kesterite Tandems: From Material Optimization to 28% Efficiency Potential
	A73	Badre DAOUDI	Structural, Morphological, and Optical Characterization of CuS Thin Films Synthesized by Spray Pyrolysis
	A74	HASNAE CHFII	Opto-electric Investigation for Delafossite CuCoO2 Films by Spray Pyrolysis through the optimization of the Cu/Co ratio
	A75	TOURE SEKOU	Substitution of lead by tin in hybrid perovskites for environmentally friendly thin-film solar cells: structural, electronic and optical properties
	A76	ABOULAYE CAMARA	Bandgap Engineering in Hybrid Perovskite $MAPb_{1-x}Sr_xBr_3$: Effect of Sr^{2+} Substitution on Optoelectronic Properties and Film Morphology
	A77	Ichrak Gassoumi	Rare-Earth Ytterbium Incorporation in $MAPbCl_3$ Perovskites: A Route to Improved Stability and Efficiency
	A78	DAO PEYENA YACOUBA	Decoupling Lattice Incorporation and Grain Boundary Segregation of Heterovalent Bi3+ Doping in MAPbBr3 Perovskite Powders
	A79	Asbani bouchra	Novel Approaches in Supercapacitor Design and Energy Storage Performance
Poster Session	**A80**	Nabaoui Khalid	Neutron Irradiation Effects on Polyethylene: Experimental Characterization of Samples Irradiated in the TRIGA Mark II Reactor
	A81	Salah-eddine GLIG	Modeling, synthesis and characterization of CZTS thin films for sustainable photovoltaic applications
	A82	Ahmida Benchellal	Synthesis and Structural Characterization of Amorphous $FeCoPO_4$ Thin Films Deposited by the SILAR Technique
	A83	A. SBIBI	Electronic Band Structure and Optical Properties of Cu_2O Photocathodes: A DFT Study
	A84	ELFAKIR Zouhair	Theoretical Insights into Carbazole-Derived Hole Transport Materials for Advanced Perovskite Photovoltaic Devices
	A85	Ayyoub El-Bchiri	Synthesis of Spinel MgMn2O4 via Flash Lamp Annealing for High-Performance Aqueous Zinc-Ion Batteries
	A86	A. WAHAS	Green hydrogen production pathways: A brief comparison among three water splitting technologies
	A87	H. BOUSAKEN	Structural and Optical Characterization of α-MoO3 Thin Films Prepared by Spray Pyrolysis for Photocatalytic Applications
	A88	Mounia Achqraoui	Two-dimensional BC6Be: Reversible, high-capacity hydrogen molecule storage material predicted by first-principles calculations
	A89	Hafsa Diyagh	Exploring the p-type to n-type transition in CuO thin films via Zn and Co Doping: insights from M-SILAR synthesis
	A90	R. Haroudi	First-Principles Study of the Electronic Structure and Optical Response of 2D Nanomaterials
	A91	Amine bayoud	Using machine learning to study doped-ZnO films optical band gaps Eg

Poster Session	**A92**	Lahbib Akabbouch	Electrochemical Charge Storage Performance of Spin-Coated V2O5 Thin Films for Supercapacitor Applications.
	A93	Ibtissam EL BOUGHLALI	First-Principles Investigation of $Co3O4$ as an Anode Material for Lithium- Ion Batteries
	A94	Z. Barbouch	Synthesis and Optimization of Zn-Doped Co_3O_4 Thin Films for Photovoltaic Cells: Experimental and Simulation Study
	A95	K. Abazine	Impedance Spectral Analysis of Natural Phosphate–Reinforced Cross- Linked Polymer Composites
	A96	Asmae Hamraoui	Synergistic $Co_3O_4/CoFe_2O_4$ Composite for Efficient ORR/OER Electrocatalysis in Zinc–Air Batteries
	A97	D. RAZEN	Co-precipitation synthesis and study of Mn-Doped MgWO4 for Energy Storage
	A98	M. Ait Maskour	Riemannian manifolds of two-mode Gaussian states evolving under parametric conversion and amplification processes
	A99	M.RADI	Synthesis and characterization of SILAR-deposited ZnO thin films for photovoltaic applications
	A100	M. Y. Messous	Influence of Erbium doping on the structural and optical properties of $SrMnO_3$: Experimental and theoretical study
	A101	M. FARIS	La-Doped AlFeO3 Perovskites for Supercapacitor Applications: Synthesis and Physicochemical Investigation
	A102	M. Baraka	Cr-doped $MgFeO_3$ for photocatalytic and optoelectronic applications: A combined experimental and DFT study
	A103	Mohamed El Haddadi	Development and Taguchi-based Optimization of an Electromagnetically Triggered Phase Change Composite for Construction Applications
	A104	Z. SEYAGH	Effect of Co-Doping on the Thermodynamic Stability and Hydrogen Desorption Properties of LiH for Hydrogen Storage Applications
	A105	M.TABARANI	Enhancing photocatalytic properties of TiO_2 for hydrogen production by doping with metallic (Nb, Mo, V, W) and non-metallic atoms: A DFT+U study)
	A106	A. Mojahid	Effect of Doping on the Electronic and Optical Properties of Borophene
	A107	Walid Dakiri	Élaboration, caractérisation et simulation DFT de couches minces de Sb2S3 pour application photovoltaïque
	A108	LEBRINI NOUREDDINE	Tuning Sn Dopant Concentration in NiS_2 Thin Films via Spin Coating for Enhanced Supercapacitor Applications
	A109	Youssef Baddi	TD-DFT-Guided Molecular Engineering of Spiro-OMeTAD-Derived Hole- Transport Materials for Sustainable Solar Cells
	A110	Y. BOUNNAICHE	Effect of Sol pH and Annealing nature on the Properties of Electrodeposited Sb2S3 Thin Films for Photovoltaic Applications
	A111	Mihade EL AKKEL	Novel double hydride perovskites Li2TiF6-xHx as efficient materials for solid-state hydrogen storage: DFT Insights
	A112	M. El-Bassri	Structural, optical, and morphological properties of In-doped SnS_2 thin films prepared by spin coating for photovoltaic and photocatalytic applications
	A113	Salma BADAOUI	Ab-initio Investigation of the Physical Properties of LiBH3 Perovskite for Hydrogen Storage Applications
	A114	Salma Laa	Hydrogen Storage Potential and Physical Properties of XSiH3 (X = Bi, Ga) Perovskite Hydrides: A First-Principles Study
	A115	Haytham ELFARRI	Studying NiZn Materials and Their Roles as Alternative Batteries in AI Data Centers
	A116	R. BAKKALI	Unveiling Surface Effects on the Optoelectronic Behavior of Copper Antimony Sulfide ($CuSbS_2$) via First-Principles Calculations
	A117	Fatima-zahra BENABDELLAH	From Data to Design: Bibliometric Insights Guiding the Development of Earth-Abundant Electrocatalysts for Green Hydrogen Production
	A118	A.Brach	Theoretical Study of Electronic Structure and Photocatalytic Behavior in Perovskite Oxides
	A119	Rahman Nurković	SOLAR ENERGY TECHNOLOGY AND ITS IMPORTANCE IN SUSTAINABLE MODERN ECONOMIC DEVELOPMENT
	A120	Fadoua Mansouri	Experimental and Numerical Investigation of Al-Doped ZnS Buffer Layers for High-Efficiency Thin-Film Solar Cells
	A121	A.Achtouk	Next-generation materials: First principles studies and synthesis of GeSiC6 as an anode for lithium and sodium batteries
	A122	Ihsane El Asraoui	Exploring Solid-State materials for high performance hydrogen storage: A review

SESSION B: PHOTONICS & ELECTRONICS: ADVANCED MATERIALS FOR PHOTONICS, ELECTRONICS, AND ENERGY CONVERSION			
Thursday, June 18, 2026 ROOM 3: (16:30 – 18:00)	**B01**	Youssef Nouri	Preparation of copper-tin-sulphide Cu2SnS3 absorber thin films by spin coating method for solar applications
	B02	Hamza Hboub	First-principles investigation of ferroelectric $\mathbf{LiNbO3}$ properties for acoustic wave device applications
	B03	Younes LABLALI	Sputtering-Sulfurization Synthesis of Wide-Gap Barium Copper Sulfide Thin Films
	B04	Takamasa MAKINO	Supersonic Molecular Beam Dissociation and Graphene Formation: C2H4/Cu(410) and C2H4/Cu(111)
	B05	S. Tastift	First-Principles Investigation of Cu_2ZnSnS_4 and Device Modeling of CZTS Solar Cells Using SCAPS-1D
	B06	Mohammed Miri	Effect Pressure of Structural, Optoelectronic and Stability Enhancements in AlGeI3 for Photovoltaic Applications by DFT method
	B07	Hamza IMTKI	InAs gas sensor for toxic gas
	B08	Dimougna Palai	Self-Consistent Quantum Transport Simulation of Nanotransistors with Superlattice Channels
	B09	Fatima Zahra Lamssayah	Influence of Chemical Composition and Thermal Parameters on the Mechanical Properties and Corrosion Behavior of Duplex Stainless Steel 2507
	B10	EL OUAKILI Sokaina	Effect of ammonia addition, annealing temperature, and aluminum doping on the properties of SnO2 thin films deposited by sol-gel
	B11	H. Khechab	Electrical and Dielectric Properties of Ternary Polyester Composites Reinforced with CNTs and Graphite
	B12	El bouanounou Mohamed	A DFT-to-device workflow for industry-relevant photovoltaic metrics of X2Sb2I3(X = Sn, Ge, Pb)
	B13	Mohammed Hanine	Title (Frequency dependent dielectric and electrical conductivity studies of a polymer network stabilizing a ferroelectric smectic liquid crystal by impedance spectroscopy)
	B14	Yassine El Hasnaoui	Development of a novel cylindrical dielectric resonator antenna fed by microstrip line for millimeter-wave applications
Friday, June 19, 2026 ROOM 3: (16:30 – 18:00)	**B15**	Khadija Bougrine	Effect of B_2O_3 Addition on the Structural, Dielectric, and Electrical Properties of Borophosphate Glasses for Capacitor and Thermistor Applications
	B16	Kawtar JANAH	Intelligent AI Solutions for Real Time Embedded Image Processing on Drones
	B17	F. Ztak	Multiscale Electrical Conduction Processes in Sustainable Hybrid Biocomposites Based on Vinyl Resin/Microcrystalline Cellulose/Carbon Nanotubes
	B18	Abderrahim Elhamdaoui	Insight into the Optoelectronic and Photovoltaic Properties of $SrZrS_3$ Using DFT and SCAPS-1D Approach
	B19	Souad OURAHHOU	DFT-Based Investigation of Rb_2AgInF_6 and Rb_2AgIrF_6 for Optoelectronic Applications
	B20	Hafssa ZIYATI	Switching Dynamics in Perpendicular STT-MRAM Magnetic Tunnel Junctions: Micromagnetic Simulation for Next-Generation Memory and Spintronic Devices
	B21	A. Ahlane	Simultaneous Optical Trapping of Rayleigh Particles with Circular Beams
	B22	K. ELMEKKAOUI	Ab Initio Study of Structural, Electronic, and Optical Properties of $CuAlO_2$ for Photovoltaic Applications
	B23	Safia Rasmi	Numerical Simulation of BeCu2Sn4 Thin-Film Solar Cell Using SCAPS-1D
	B24	Nassima El Ouarie	Improving the Performance of Chalcopyrite Solar Cells via Nanostructure Integration
	B25	Khadija Bougrine	Effect of B_2O_3 Addition on the Structural, Dielectric, and Electrical Properties of Borophosphate Glasses for Capacitor and Thermistor Applications
	B26	O. Zahot	SCAPS-1D simulation and dielectric analysis of K1-xCsxNbO3 ceramic-based perovskites for photovoltaic applications
Poster Session	**B27**	ETTOBI Malad-Chadi	Simultaneous Sb/Na Co-alloying of Cs2AgBiBr6 Lead-Free Double Perovskite for Enhanced Optoelectronic Properties
	B28	S. MCHICHOU	Effect of Magnetic Field Annealing on Excitation Spectra and Magnetization in Co/Si Superlattices
	B29	JARIRI Noura	CNN Deployment on FPGA: A Hardware Feasibility Analysis
	B30	Louardi Chaymae	Structural and optical properties of (Co, Fe, Al, In, and Ni)-doped SnO2 thin films prepared by spin coating technique
	B31	Hafsa Diyagh	Exploring the p-type to n-type transition in CuO thin films via Zn and Co Doping: insights from M-SILAR synthesis

Poster Session	**B32**	Mohamed Manoua	Impact of CuO Thickness on Photovoltaic Performance of ZnO/MAPbI3/CuO Perovskite Solar Cells via Numerical Simulation
	B33	El Fengouchi	Structural and optical properties of a novel pentafunctional epoxy resin reinforced with graphite and multiwalled carbon nanotubes
	B34	Abdelmajid El Maaroufi	Improving phase sensitivity of SU(1,1) interferometer using even and odd coherent states
	B35	O. AITMELLAL	Optical and Physical Tuning in Ni-Doped SnO2 Nanomaterials for UV Optoelectronic Applications
	B36	D. EL BOUJI	Enhanced Visible-Light Photocatalytic Properties of Cr3+-Doped MgAl2O4 Spinel: Experimental and DFT Insights
	B37	R. BAKKALI	Unveiling Surface Effects on the Optoelectronic Behavior of Copper Antimony Sulfide ($CuSbS_2$) via First-Principles Calculations

	SESSION C: ENVIRONMENT & WATER: ADVANCED MATERIALS FOR SUSTAINABLE ENVIRONMENT AND WATER TECHNOLOGY		
Thursday, June 18, 2026 ROOM 4: (16:30 – 18:00)	**C01**	Atmane ourmiche	Valorization of recycled cardboard fiber as filler in urea-formaldehyde resin for plywood manufacturing.
	C02	R. Lachhab	Influence of α-brass composition on corrosion behavior in drinking water: a study by potentiodynamic polarization and electrochemical impedance spectroscopy
	C03	Assia Kabbourat	Economic Growth, Renewable Energy, and Environmental Quality in Morocco: An ARDL Analysis (1990–2024)
	C04	Rachida Doukali	Effect of extraction method and solvent polarity on phenolic composition and antioxidant activities in vitro of Globularia alypum L. leaf and flower extracts
	CO5	Abdellatif Khaldouni	Turning hazardous waste into useful materials to protect water and reduce environmental risks
	CO6	Rim Lahrache	Handling Missing Data in Physico-Chemical Time Series for Improved Water Quality Monitoring and Management: Sebou River Case Study
	CO7	Hasna MAZID	Corrosion Inhibition Performance of Novel Chitosan Analogs: Synthesis, Characterization, and Theoretical Analysis
	CO8	Y. Kherazi	Valorisation of Moroccan Natural Phosphate in a $50Na_2O–50P_2O_5$ Glass System: Structural, Thermal, and Optical Properties
	CO9	Ghizlane Doumane	Sustainable Corrosion Inhibition of C38 Steel Using Natural Seed Extracts
	C10	Najwa Kaibous	Sodium-Activated Clay for Efficient Removal of Cationic Dyes: Experimental Investigation and RSM-BBD Optimization
	C11	Hafsa Ifrah	Adsorption of Rhodamine B Using Tea Waste and Polymer-Based Supports: Isotherm Modeling and Thermodynamic Analysis
	C12	A. Benzaydan	Electrochemical and Adsorption Behavior of Quinoline Inhibitors on Mild Steel in Hydrochloric Acid
Friday, June 19, 2026 ROOM 4: (16:30 – 18:00)	**C13**	khadija Bazhar	Sodium Alginate/Natural Clay Composite Beads for Co(II), Cu(II), anZn(II) Removal: Adsorption Kinetics and Isotherm Analysis
	C14	Ouafa Zinoun	Valorisation of liquid waste from the ceramics industry
	C15	Ferraa Soumya	Evolution of the physicochemical and photocatalytic properties of BaO embedded in bismuth phosphovanadates glasses
	C16	Imane Houmia	Comparison of Heavy Metal Adsorption Using Ceramic Waste Before and After Alginate Modification
	C17	Safia DASSALLEM	Development of a novel sensor using silver nanostructures for effective nitrate sensing.
	C18	Brahim Abbou	Adsorption of Safranine Dye from Aqueous Solutions Using Magnetite- Modified Moroccan Clay: Experimental approaches and modeling
	C19	Noura Azzi	Investigation of magnetization mechanisms in saline water: Impact on ionic dynamics and molecular structuring for desalination optimization
	C20	M. KHATTABI	Corrosion inhibition performance of novel inorganic Yavapaiite phosphate compounds $Ba(Sb_{0.5}Ga_{0.5})(PO_4)_2$ and $Ba(Sb_{0.5}In_{0.5})(PO_4)_2$ for mild steel in hydrochloric acid medium
	C21	Tarik Boutadghart	Mechanistic Study of the Steric Effect of Lewis Acids $AlCl_3$ and $TiBr_4$ on the Asynchronous [4+2] Cycloaddition Reaction of Isoprene with Aryl Acid: MEDT Study

Friday, June 19, 2026 ROOM 4: (16:30 – 18:00)	**C22**	ZYANI Khadija	Adaptive PASP super-absorbant materials for climate-resilient water management systems
	C23	F.E. Belharcha	Corrosion and Biocorrosion Inhibition in Waterlogged Archaeological Wood–Steel Composites: A New PEG-200-Based Impregnation Strategy
	C24	Fatima Ezzahraa HASSOUNE	Impact of the reducing agent concentration on the size and shape of silver nanoparticles and its influence on the light adsorption of ZnO for hydrogen production
	C25	Morid Chaimae	Seawater Desalination in Arid Regions: Integrating Renewable Energy for Sustainable Water Supply
	C26	Mohamed SBANE	Design of a Multifunctional Cellulose-Based Hybrid Catalyst for Sustainable Water Remediation and Green Synthesis
	C27	Otmane Mqadmi	Assessment of Geopolymer Foam as a High-Performance Adsorbent for the Removal Heavy Metal from Aqueous Solution: Isotherm, Kinetic, and Thermodynamic Analyses
	C28	Nizar Smahi BOUZIANE	Renewable Energy-Driven Desalination Technologies: Advances, Energy Performance, and Sustainability Challenges
	C29	Mohamed AOULAD BELAYACHI	Corrosion inhibition of mild steel in HCl by pyrazole derivatives: electrochemical investigation and surface characterization (SEM/EDX)
	C30	Hicham En-nkhili	Modeling Evaporation in Sidi Boughaba Lake Through Artificial Neural Networks
	C31	Marouane El-alouani	Performance improvement of aluminum-air batteries via beta-Gentiobiose additive
	C32	Rajaa Mariouch	Physicochemical Characterization of Moroccan Natural Clays with Perspectives on Gamma Irradiation and AI for Heavy Metal Removal
	C33	Sanaa El Aggadi	Smart materials and AI for efficient electrochemical treatment of wastewater and livestock effluents
	C34	Chafik Aouifi,	Simulation of the energy and environmental performance of public buildings from a sustainability and HQE certification perspective
	C35	Abdeslam Lachhab	IoT-Based Monitoring and Machine Learning Reconstruction of Indoor PM2.5 in a Primary School in Kenitra, Morocco
	C36	A. Benzaydan	corrosion Inhibition of Mild Steel in Hydrochloric Acid by 8-hydroxyquinoline Inhibitors: Electrochemical and Adsorption Studies
Poster Session	**C37**	Ouigua Rochdi	Anisaldehyde-Derived Schiff Base as an Efficient Corrosion Inhibitor for Mild Steel in 1 M HCl: Electrochemical and Morphological Analyses
	C38	Omar Belhadj	Evaluation of Ammi visnaga extract as an eco-friendly inhibitor for mild steel corrosion in H2SO4 medium
	C39	EL ALIOUI Sadik	Synthesis and characterization of bismuth vanadate thin films for photocatalysis application
	C40	Safia DASSALLEM	Synthesis of Nanostructured Materials with Controlled Morphologies for Electrochemical Applications.
	C41	Zineb El kerdoudi	Adsorption of Methylene Blue on Quartz Clay from Morocco: An Overview Based on Kinetics, Isotherms, and Surface Characterization
	C42	M. Laassiri	Relationship Between Mineralization and Natural Radioactivity in Moroccan Bottled Mineral Waters Using Principal Component Analysis
	C43	M. boutamart	Hydrophobic coatings based on sol-gel derived hybrid materials for self- cleaning applications
	C44	A.Elomari	Electrodeposited $AgCuO_2$ Thin Films for Efficient Water Splitting
	C45	Bouchra ABBI	Advanced Grey Wolf Optimization based empirical fouling modeling for high prediction of flux decline in nanofiltration and reverse osmosis water treatment technologies
	C46	Azzeddin TOUAZIT	Integrated analytical–heuristic modeling of saltwater intrusion and salinity gradient energy potential in the Sebou river estuary (Morocco)
	C47	Abdeslam El amri	Electrochemical behavior and adsorption mechanism of an epoxy-derived organic layer on aluminum alloys for enhanced corrosion protection
	C48	Rania El Amri	Exploring Structural, Morphological, and Magnetic Properties of $CoFe_2O_4$ Nanoparticles: From Sol-Gel Synthesis to Theoretical Insights
	C49	Mouhcine OURBAA	Nitrogen-annealing-induced interfacial diffusion in RF sputtered $SnO_2/Cu/SnO_2$ multilayers toward improved photocatalytic performance
	C50	Morid Chaimae	Seawater Desalination in Arid Regions: Integrating Renewable Energy for Sustainable Water Supply
	C51	Iman ELOUARDI	Modification of cellulose to acetate: characterization and applications in Knoevenagel catalysis and water treatment

	C52	BARKI Abdellah	Optimization of the desalination process by freezing coupled with an electromagnetic field
	C53	Mehdi Aadjour	Electrochemical behaviours of 2024 aluminium alloy in a saline environment
	C54	Mouna Azogagh	Synthesis and Anticorrosive Performance of Vanillin-Based Epoxy Thermoset Coatings for Mild Steel in 3 wt.% NaCl Solution

	SESSION D: HEALTH CARE: ADVANCED MATERIALS FOR HEALTH CARE APPLICATIONS		
Thursday, June 18, 2026 ROOM 4 : (16:30 – 18:00)	**D01**	A. Rouifi	Evaluation of Origanum majorana Essential Oil and Hydroethanolic Extract as Eco-Friendly acid Corrosion Inhibitors for Mild Steel
	D02	Aicha ACHAARI	Eco-Compatible Synthesis and Sustainable Industrial Valorization of 1,3,4-Oxadiazole Derivatives: From Green Chemistry to Smart Corrosion Inhibition
	D03	Issam Saber	Impact of Ga2O3 Addition on the Structural, Thermal, Optical, and Radiation Shielding Performance of Li2O-WO3-Sb2O3 Glass Systems for Advanced Photonic and Gamma-Ray Protection Applications.
	D04	O. FARKAD	First principal study of strontium intercalation in bilayer graphene
	D05	Omar Drissi	Comparative Structure–Property Analysis of Cellulose Nanocrystals Derived from Argan Residues
Poster Session	**D06**	S. Ourad	Characterization of a LYSO:Ce Scintillator for Medical Imagining and Gamma-Ray spectrometry: MCNPX6.2 Simulation and Experimental Study
	D07	Fatima Hamouche	Bioactive Glass Coatings Functionalized with Tantalum for Advanced Implant Protection
	D08	Kawtar OUMALK	Recent Advances in the Synthesis and Functional Applications of Triazole- Thione Derivatives

SESSION E: BUILDING INDUSTRIES: ADVANCED MATERIALS FOR BUILDING INDUSTRIES			
Thursday, June 18, 2026 ROOM 4 : (16:30 – 18:00)	**E01**	Yassine Karrou	Durability of Construction Materials in Aggressive Environments: Experimental Characterization and Perspectives in the Moroccan Context
	E02	Osman Adiguzel	Memory Characteristics and Crystallographic Transformations Governing Thermoelasticity and Superelasticity in Shape Memory Alloys
	E03	Saïd HRA	Incorporation des fibres de palmier dattier dans les composites cimentaires : état de l'art, performances mécaniques et contribution à la construction durable
	E04	Meziane Safae	Effect of FDM Processing Parameters and Architecture on the Thermo- Responsive Performance of PLA and TPU Shape Memory Polymers
	E05	Meryem Boubouchea	Numerical Investigation and Thermal Optimization of External Building Wall Performance under Real Climatic Conditions
	E06	JABRANE Mohsine	High-Performance Anticorrosive Epoxy Coating Incorporating a Cr(III)–HOBt Complex: Electrochemical and Process Engineering Investigation
	E07	Yassir El Kaftaoui	Enhancing the Thermal Performance of Building Envelopes Using Natural Fiber-Reinforced Clay Eco-Composites: An Experimental Study
	E08	Chakir Afaf	Effect of Thermal and Chemical Treatment of Date Palm Waste Fibers on the Mechanical Properties of Polypropylene Random
	E09	Hind Malki	Investigation of Quinazolinone Derivatives as Corrosion Inhibitors for Mild Steel in Acidic Media: Combined Electrochemical and Theoretical Study
Poster Session	**E10**	Atmane Ourmiche	The Use of Cedar Wood Flour as a Bio-Based Filler in Urea-Formaldehyde Adhesives for Interior Plywood Manufacturing
	E11	Nora Salama	Cardboard Fiber as an Eco-friendly Filler in Melamine-Urea-Formaldehyde Adhesive for Plywood Manufacturing
	E12	Driss LEMBARKI	Optimisation and 2d Numerical Simulation of Heat Transfers in an Industrial Prototype Furnace
	E13	Mohamed El Haddadi	Development and parametric optimization, using the Taguchi method, of an innovative phase change material under electromagnetic field activation

SESSION F: MODELLING & SIMULATION: COMPUTATIONAL APPROACHES AND SIMULATION METHODS			
Thursday, June 18, 2026 ROOM 5 : (16:30 – 18:00)	**F01**	Faheem Ahmed	PV-OptiTool: A Cross-Material Transfer Learning Framework with Universal SHAP-Derived Design Rules for Lead-Free Chalcogenide- Perovskite and Kesterite Thin-Film Solar Cells
	F02	Khurshid Alam	Inverse Multi-Objective Machine-Learning Design of Lead-Free $CaZrSe_3$ Perovskite Solar Cells with Manufacturing-Tolerant High-Temperature Energy Yield
	F03	Nidal Mansouri	Selecting and Prioritising Improvement Initiatives Using Fuzzy Logic: A Mining Company Case Study
	F04	Moussa Ouakki	Experimental, Mathematical modelling and Simulation of Corrosion Inhibition of Mild Steel in Pickling bath process
	F05	Y. MIKDAM	Comparative Analytical and Numerical Study of the Burst Pressure of a Corroded Pipeline and the Influence of Thickness Reduction
	F06	Khalid Mrigua	Aerodynamic study and numerical performance evaluation of a group of Savonius turbines with modified geometry
	F07	Yassir AADIL	The Impact of Digitalization on Governance in Moroccan Higher Education: A Pre- and Post-COVID-19 Comparative Analysis
	F08	Safae Tourougui	Strain-engineered performance enhancement in CsSiBr3 solar cells through DFT and SCAPS simulations
	F09	Amine Bayoud	Machine Learning for MgH_2 Property Prediction Using DFT Data
	F10	SOUFIANE YAMLAHI ALAMI	Patient-Specific In-Silico Simulation Pipeline for Predictive Biomechanical Biomarkers in Precision Cardiovascular Medicine
	F11	Aassrhoum Manar	Thermal Performance Enhancement of an FDM Extruder Heat Block through Geometric Optimization
	F12	ABOUSEIR Zineb	Predictive Maintenance in Energy Sector
	F13	Soukaina Khaouti	Mixed-Metal Metal-Organic Frameworks for Enhanced Visible-Light Hydrogen Evolution Reaction
	F14	ZIRRI MOHAMED	Contribution of Artificial Intelligence Algorithms to the Development of Autonomous Decision-Making in UAVs
	F15	HACHIMI ALAOUI SALMA	AI-Driven Private Network Architecture for Intelligent Detection and Prediction Systems in Critical Environments
	F16	V. Russier	Monte Carlo simulation on magnetic nanoparticles assemblies: phase diagram and magnetic hyperthermia efficiency.
	F17	H. Jebari	Triaxial strain effects on the physical properties of Iron-sillenite Bi25FeO40 for photodegradation and photocatalysis properties: First principale calculation
	F18	A. Gridbi	Performance Enhancement of Sb_2S_3 Solar Cells via Incorporation of a p^+ Layer: Insights from SCAPS-1D Modeling and Impedance Spectroscopy
	F19	A. BENCHELLAL	Ab initio study of oxygen adsorption on FeCrNi composition spread alloy films: Insights into dry corrosion resistance mechanisms
	F20	A. Lemnawar	First-principles study on phase stability and physical properties of B-site ordered Sm2CrFeO6 double perovskite
	F21	Mustapha Madi	First-Principles Insights into Structural, Electronic, and Optical Enhancement of Bi-Doped Sb_2S_3 for Photovoltaic Applications
	F22	Mohamed Louzazni	Dust and Soiling in Photovoltaic Systems: A Review of Deposition Mechanisms and Performance Degradation
	F23	EL BADI MOHAMED	Modeling and Simulation of a Grid-Connected PV System with Battery Storage for Microgrid Applications
Poster Session	**F24**	Fatima WARDI	Finding the parameters of a single-diode solar cell model using a simple Laguerre optimization method
	F25	Abdelali Staoui	Benzodithiophene-based molecules as Hole Transporting Materials for efficient perovskite solar cells and organic solar cells.
	F26	Hicham El-assib	Electron extraction layer-driven performance enhancement in CaHfSe3 photovoltaics
	F27	Oumayma Qassimi	Comparative Investigation of Photon Attenuation, Secondary Electron Production, and Energy Deposition in Heterogeneous Human Tissue Phantoms Using PHITS, MCNP, XCOM and Phy-X
	F28	Brahim Echbani	DFT-based first-principles study of structural, electronic, optical, and photocatalytic properties of oxygen-doped SnSe

	F29	BELBARAKA Ayoub	Mise en Œuvre de Solutions Intelligentes basées sur l'IA pour la Prédiction et la Gestion des Risques d'Incendies de Forêt
	F30	BAYA Chaymae	Une Plateforme Intelligente Multi-Sources pour la Détection et la Prédiction des Feux de Forêt par IA, Télédétection et IoT
	F31	Moussa SIMASSA	Combined DFT & SCAPS-1D Study of SnS: From Fundamental Properties to Optimized Cd-Free Thin-Film Solar Cells
	F32	Mouad MICHRAF	Smart Grid and Power System Cybersecurity
	F33	Rabi TAKASSA	AI-Assisted Discovery and Optimization of Catalysts for Sustainable Hydrogen Production
	F34	Mohamed Ait oufakir	Machine Learning Powers Next-Gen CsSnI3/Si Tandem Cells
	F35	Issam El Bakkali	First-principles investigation of VCu3X4 (X =S, Se, Te) chalcogenides for high-performance optoelectronic and thermoelectric devices
	F36	Mohammed Amine El Kaissi	Balancing Enregy Efficency and Occupant Comfort: A review of Machine Learnig in Smart Building
	F37	Oumaima Daoudi	Automation in the Radiotherapy Workflow: A Systematic Review