



European Materials Research Society

# 2026 Spring Meeting

May 25 - 29  
Strasbourg Convention Centre

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## SYMPOSIUM K

Photo and electrochemical systems for value added synthesis

Oral sessions : MADRID 1 - GROUND FLOOR

Poster sessions : ETOILE - FIRST FLOOR

*Symposium Organizers:*

Alba GARZON MANJON, Catalan Institute of Nanoscience and Nanotechnology (ICN2), Spain

David TILLEY, University of Zurich, Switzerland

Elena MAS MARZA (Main organizer), Institute of Advanced Materials, Universitat Jaume I, Spain

*Symposium Sponsor:*



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**Tuesday May 26**  
**K05 Biomass valorization**  
 Chairperson(s): MAS-MARZÁ Elena  
 FRANCISCO FABREGAT SANTIAGO

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|       |      |   |
|-------|------|---|
| 08:30 | 1873 | Formate electrooxidation at a nickel-based electrode<br><b>COUTANCEAU Christophe (Invited)</b>  |
| 09:00 | 1946 | Enhancing Selective HMF Electrooxidation to FDCA Using Mixed Ni-Based Hydroxide Catalysts<br><b>VERNOUX Philippe (Invited)</b>                                    |
| 09:30 | 2577 | Electrochemical Oxidation of Biomass-Derived 5-Hydroxymethylfurfural into the 2,5-Furandicarboxylic Acid using Sustainable Biochar Electrode<br><b>ÜNLÜ Ümran</b> |
| 09:45 | 680  | Electrochemical transformation of 5-Hydroxymethylfurfural into Value-Added Chemicals<br><b>MEJUTO Carmen</b>  |

**Tuesday May 26**  
**K06 Computational & modelling**  
 Chairperson(s): FEDERICO CALLE-VALLEJO  
 GEORG KASTLUNGER

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|       |      |   |
|-------|------|---|
| 10:30 | 1743 | Non-Nernstian effects and kinetics-informed descriptors in electrocatalysis<br><b>KASTLUNGER Georg (Invited)</b>  |
| 11:00 | 1571 | Accelerating Constant-Potential DFT Workflows for Screening Biomass Oxidation Electrocatalysts<br><b>BRENNAN-POLLAK Conor</b>   |
| 11:15 | 1569 | Studying Electrochemical Solid/Liquid Interfaces via Thermopotentiostat Simulations<br><b>KRETSCHMER Andreas</b>  |
| 11:30 | 1300 | Finite-Temperature Simulation of Polarons and Charged Defects at the BiVO <sub>4</sub> -Water interface<br><b>BERGER Ethan</b>  |
| 11:45 | 1585 | Intermittent voltage operation in 3D microstructured (photo)electrodes for improved electrochemical conversion: a theory-guided assessment<br><b>TORRALBA Encarnacion</b> |

**Tuesday May 26**  
**K07 Characterization**

Chairperson(s): GARZON MANJON Alba  
 SARA BARJA

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|       |      |  |
|-------|------|--|
| 13:30 | 1275 | From single catalyst nanoparticles to networks – what can we learn from advanced aberration corrected scanning transmission microscopy and atom probe tomography<br><b>SCHEU Christina (Invited)</b> |
| 14:00 | 1925 | Quasi-in Situ Surface Science for Photo- and Electrocatalysis: Insights from Model Systems<br><b>BARJA Sara (Invited)</b>  |
| 14:30 | 1520 | The “Ironing” Effect: Ultra-Crystalline ZrO <sub>2</sub> Active Supports for Electrochemical Synthesis of Aminoacids<br><b>ARNAU Marc</b>  |
| 14:45 | 2551 | ZnO nanostructured layers on CIGS based solar cells for Photoelectrochemical CO <sub>2</sub> reduction<br><b>LE Ngoc Diep</b>  |
| 15:00 | 1822 | Enhancing the Stability of Metal Nanoparticle Catalysts on Silicon for Solar-Assisted CO <sub>2</sub> Reduction<br><b>ILIC Nikola</b>  |
| 15:15 | 220  | Selective and Low Overpotential Electrochemical CO <sub>2</sub> Reduction to Formate on CuS Decorated CuO Heterostructure<br><b>KAHSAY Amaha Woldu</b>   |
| 15:30 | 2968 | Graphdiyne and its analogues as emerging 2D materials for photocatalytic hydrogen generation<br><b>GHAZZAL Mohamed (Invited)</b>   |

**Tuesday May 26**  
**K08 Added value synthesis**

Chairperson(s): CAMEN MEJUTO  
 MAS-MARZÁ Elena

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|       |      |  |
|-------|------|--|
| 16:30 | 1985 | Plasmonic Cu-based Electrocatalysts for CO <sub>2</sub> Electroreduction<br><b>BARANOVA Elena (Invited)</b>  |
| 17:00 | 2061 | Quantum Chemical Characterization of Selectivity Control in Sustainable Transformations<br><b>DERELI Busra</b>   |
| 17:15 | 2719 | Photoelectrochemical reforming of Biomass Intermediates Catalyzed by In-Situ Fabricated C <sub>3</sub> N <sub>3</sub> Electrode on Cu<br><b>ASHRAF Muhammad</b>        |
| 17:30 | 904  | Photoelectrocatalytic-microbial biohybrid for succinic acid synthesis<br><b>ZHOU Xue</b>   |
| 17:45 | 1089 | Bias-Free and Stable Photoelectrochemical Cells for Carbon-Free Energy<br><b>KWON Tae-Hyuk</b>   |
| 18:00 | 1995 | Unifying Activity and Selectivity Descriptors for Electrochemical Urea Synthesis<br><b>KARAMAD Mohammadreza</b>  |
| 18:15 | 1364 | Efficient solar-driven hydrogen peroxide production enabled by a perovskite electrochemical device integrated with a cobalt-based chiral catalyst<br><b>MOON Subin</b> |

Wednesday May 27

## K09 Computational & modelling

Chairperson(s): MAX GARCÍA MELCHOR  
NURIA LÓPEZ

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- 09:00 2976 A Wolf in Sheep's Clothing: Surface Bubble Stabilisation Limits Tetraalkylammonium-Enhanced Hydrogen Evolution  
**VANNOY Kathryn (Invited)**
- 09:30 161 Switchable Catalysts: Using Ferroelectric Polarization to Tune Water Oxidation Chemistry  
**ABDULMUTALIB Sheriff Naziru**
- 09:45 828 Post Treatment of Co-doped ZnIn<sub>2</sub>S<sub>4</sub> Photocatalyst for Simultaneous Hydrogen Production and Furfuryl Alcohol Oxidation  
**WU Jih-Jen**

Wednesday May 27

## K10 Computational & modelling

Chairperson(s): FEDERICO CALLE-VALLEJO  
MAX GARCÍA MELCHOR

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- 10:30 1085 DFT errors in gases and adsorbates  
**CALLE-VALLEJO Federico (Invited)**
- 11:00 2008 Substituent Position Effect on Electrochemical CO<sub>2</sub> Reduction Activity of Pb-S-Based Coordination Polymers  
**IWAMOTO Shunta**
- 11:15 589 Hopping and Dissociation of Self-trapped excitons in Bismuth Vanadate  
**MOESLINGER Tobias**
- 11:30 2710 Modelling the impact of Pt nanoparticle coverage on charge separation and collection in Pt/p-Si photocathodes for efficient HER  
**LE Hanh Vi**
- 11:45 1529 Local Photoelectrochemistry and Data Modeling for Properties Extraction of Photoelectrodes  
**COTTINEAU Thomas**

Wednesday May 27

## KPO3 Poster session 3

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- 13:45 01\_1076 Photoelectrocatalytic chemical transformation in dye-sensitized photoelectrochemical cells for lignin valorization  
**LEE Jeong Kyeong**
- 13:45 02\_1086 Interfacial Design of Li|LiCoO<sub>2</sub> Cathodes for Stable Cycling at High-Temperature and High-Voltage  
**HEO Seokha**

- 13:45 03\_1142 Silane-Based Interfacial Engineering of Cathode and Anode Materials for Enhanced Electrochemical Kinetics  
**SEO Jihye**
- 13:45 04\_1222 Guanidinium incorporation stabilizes perovskite photocathodes for 13-day solar hydrogen evolution  
**KIM Sarang**
- 13:45 05\_1375 Synergistic Effect of Lewis Acid and Base Dual-Doped Graphene on N<sub>2</sub> Reduction and Urea Production  
**Kim Sungtae**
- 13:45 06\_1387 Synthesis and Characterization of LATP Solid Electrolytes Using Mixed-Phase TiO<sub>2</sub> Precursors  
**PARK Jihyun**
- 13:45 07\_1414 Fabrication and Optimization of PVDF-HFP/LAGP Composite Solid Electrolytes for Electrochemical Systems  
**SON Yejin**
- 13:45 08\_1451 A Portable Smartphone-Based Electrochemical Sensor for On-Site Monitoring of Chloramphenicol  
**DOGRA Priyanka**
- 13:45 09\_1515 Effect of Controlled Growth Conditions on the Structural and Electrochemical Characteristics of Nickel Oxide Nanoparticles  
**DATTA Brateen**
- 13:45 10\_1521 Multiscale characterization to elucidate structure-property relationships in Battery materials  
**SONG Kyung**
- 13:45 11\_1723 Atomic precision Interface-Engineering of Ni Nanocluster/NiO Nanosheet Heterostructures for Superior Water Splitting  
**GAZI Tapu Raihan**
- 13:45 12\_1783 Comprehensive Life-Cycle Assessment of Lithium-Ion Battery Materials for Sustainable Recycling Strategies  
**FERNANDES Carolina**
- 13:45 13\_1823 Modelling of electrocatalysts towards long-term sustainable hydrogen storage  
**DEMPSEY Eliza K.**
- 13:45 14\_1846 Cellulose Nanocrystal / Co-Doped ZIF-8 Derived Nanocarbon for Highly Efficient Oxygen catalysis  
**Siyu Chen**
- 13:45 15\_1871 Selective Dinitrogen Electroreduction to Ammonia on Zn<sub>2</sub>V<sub>2</sub>O<sub>7</sub> Pyrochlore  
**GOYAL Naina**
- 13:45 18\_3427 Atomic-Level Insight into Multi-Carbon Product Formation via CO<sub>2</sub>RR on Chiral Catalysts  
**GARZON MANJON Alba**
- 13:45 19\_24 Halogen-Free Carboxylate Solvation Chemistry in Aqueous Zn-Ion Electrolytes For High-performance Zinc storage  
**ZHOU Yurong**
- 13:45 20\_2590 Electrochemical and Photochemical Hydrogen Evolution Mediated by Molybdenum Sulfide Nanomaterials  
**SORRIBES Iván**
- 13:45 21\_2759 Electrochemical applications of 2D MXenes from the nano to the macroscale  
**HENDERSON Lua**
- 13:45 22\_2842 Breaking Current Limits in CO<sub>2</sub> Electrolysis via Silica-Hydroxide Cycling Strategy  
**OH Hyung-Suk**

|       |        |   |
|-------|--------|---|
| 13:45 | 23_40  | Visible-Light-Driven CO <sub>2</sub> Conversion on Group-10 Metal-Supported Janus Sc <sub>2</sub> CO <sub>5</sub> MXene with Enhanced Solar-to-Hydrogen Efficiency<br><b>SHAW Swati</b> |
| 13:45 | 24_439 | Coupling Electrochemical Hydrogen Storage and Biomass Valorization<br><b>BACHMANN Cristian</b>  |
| 13:45 | 25_609 | Syntheses and characterizations of tungsten oxide-related compounds for photoelectrochemical water splitting<br><b>PRUD'HOMME Mattéo</b>  |
| 13:45 | 26_924 | A model-free electrochemical impedance spectroscopy approach for real-time identification of degradation in lithium-ion batteries<br><b>REIS Carleane</b>                               |

**Thursday May 28**  
**K12 Added value synthesis**

Chairperson(s): **CARMEN MEJUTO**  
**FRANCISCO FABREGAT SANTIAGO**

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|       |      |  |
|-------|------|--|
| 08:30 | 2288 | Scaling-up solar fuel technologies – from scientific creativity to innovation<br><b>FABER Carina (Invited)</b>   |
| 09:00 | 2583 | Green Electrochemical Conversion of Ammonia to Nitrogen Using Earth-Abundant Titanium Catalysts<br><b>GONZÁLEZ-GIL Rosa Maria</b>                              |
| 09:15 | 1868 | Advanced Transition Metal Oxide Catalysts for Efficient Aqueous Electrochemical Nitrogen Reduction Reaction<br><b>GOYAL Naina</b>                              |
| 09:30 | 1154 | An Ammonia Electrolyzer Enabled by Coupling Electrocatalytic Nitrate Reduction with Formaldehyde Oxidation over a Cu–Ru Catalyst<br><b>GIMENEZ LOPEZ Maria</b> |
| 09:45 | 1141 | Metal-Modified Vanadium Electrocatalysts: A Pathway to Sustainable Ammonia Synthesis via ENRR<br><b>CHERUKUTHOTA Sri Vidya</b>                                 |

**Thursday May 28**  
**K13 Sustainable Hydrogen production and storage**

Chairperson(s): **MAS-MARZÁ Elena**  
**JOSE A. MATA**

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|       |      |  |
|-------|------|--|
| 10:30 | 2598 | Electrocatalytic synthesis of high value chemicals<br><b>COSTA FIGUEIREDO Marta Catarina (Invited)</b>   |
| 11:00 | 1616 | Preliminary Sustainability Assessment of Green Hydrogen Production via Integrated LOHC Storage and Biomass Oxidation<br><b>VIDAL Rosario (Invited)</b> |
| 11:30 | 1311 | Thermally Oxidized Cuprous Oxide Photocathodes for Selective LOHC Reduction<br><b>GERKE Jason</b>  |

**Thursday May 28**  
**K14 Sustainable Hydrogen production and storage**

Chairperson(s): **DAVID TILLEY**  
**JOSE A. MATA**

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|       |      |   |
|-------|------|---|
| 13:45 | 431  | Amine/Nitrile as liquid organic Hydrogen carriers (LOHCs) : a thermal-, Photo- and Electro-Catalytic Approach<br><b>MATA Jose A. (Invited)</b>                          |
| 14:15 | 238  | Continuous-Flow Production of Fine Chemicals by Single Atom Catalysis<br><b>CHEN Zhongxin</b>   |
| 14:30 | 1351 | Kinetic Control of Metal Oxide Polymorphism via Flash Photonic Heating: Accessing Enhanced Photoelectrode Materials for Solar Fuel Production<br><b>GOTTESMAN Ronen</b> |
| 14:45 | 271  | Thermo-electrochemical solar hydrogen production based on ceria<br><b>ALFONSO-GONZÁLEZ Elena</b>  |
| 15:00 | 184  | Defect engineering in BiVO <sub>4</sub> photoanodes: the synergistic role of nitrogen doping and oxygen vacancy for oxygen evolution reaction<br><b>LIANG Qihua</b>     |
| 15:15 | 1365 | Understanding and Overcoming the Stability Challenges of Perovskite-based Water Splitting Cells<br><b>JEONG Wooyong</b>   |
| 15:30 | 2268 | Chlorine Resisted Seawater Electrolysis via a Lattice-Distorted High-Entropy Sulfide<br><b>KIM Sangheon</b>   |
| 15:45 | 2809 | Ni-functionalized GaAs photoelectrodes for solar-driven water splitting<br><b>MERHI Fatima</b>  |

**Thursday May 28**  
**K15 Photocatalysis**  
Chairperson(s): **DAVID TILLEY**  
**FRANCISCO FABREGAT SANTIAGO**

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|       |      |   |
|-------|------|---|
| 16:45 | 1410 | Extending TiO <sub>2</sub> Photocatalysis into the Near-Infrared Region via D-π-A Sensitization for Hydrogen Production<br><b>SHEN Xiaofeng</b> |
| 17:00 | 2148 | Nanodiamonds as highly reductive catalysts: efficient photo-hydrodehalogenation of arenes using visible light<br><b>Rodriguez Rocio Belen</b>   |
| 17:15 | 1519 | Tailoring Zn–Al LDH composites with MAX Phases and MXenes for solar-driven hydrogen production.<br><b>CALANTROPO Luca</b>                       |
| 17:30 | 2885 | Improving Solar Hydrogen Production Using Heterostructured Photocatalyst Systems<br><b>NURAJE Nurxat</b>  |

|       |      |   |
|-------|------|---|
| 17:45 | 48   | Fueling the Future: Advancing Photocatalysis for Biomass Valorization in Synergism with Solar Fuel Production towards a Circular Bioeconomy<br><b>DHINGRA Shivali</b> |
| 18:00 | 3137 | Selective Photocatalytic Valorization of Lignocellulosic Biomass using Semiconductor Nanocrystals<br><b>RICO Elio</b>   |
| 18:15 | 940  | Controlling charge carrier dynamics in transition metal oxide photocatalysis<br><b>MIZRAHI Simon Gwénaël</b>  |