

International Conference on Frontiers in Electrocatalytic Transformations (INTERECT)

València, Spain · 22nd, 23rd November, 2021

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International Conference on Frontiers in Electrocatalytic Transformations (INTERECT)

València, Spain, 2021 November 22nd - 23rd

Conference organizers: Elena Mas Marzá, Ward van der Stam and Núria López

Conference Program

November 22 nd - Day 1 (Monday) 1	
08:00 - 08:45	Registration
08:45 - 08:50	Announcement of the day
08:50 - 09:00	Opening Organisers
Electrode surface characterization and mechanistic studies through in situ (micro)spectroscopy Chair: Ward van der Stam	
09:00 - 09:30 (micro)spectroscopy-I1	<u>Nejc Hodnik</u> (<i>Department of Materials Chemistry, National Institute of Chemistry, Hajdrihova 19, 1000 Ljubljana, Slovenia</i>), Ana Rebeka Kamšek, Francisco Ruiz-Zepeda, Andraž Pavlišič, Armin Hrnjič Restructuring of Electrocatalysts and our Electron Microscopy Approach
09:30 - 09:45 (micro)spectroscopy-T1	<u>Laura C. Pardo Perez</u> (<i>Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Hahn-Meitner-Platz 1, 14109 Berlin, Germany.</i>), Zora Chalkley, Alvaro Diaz Duque, Matthew T. Mayer A Versatile Synthetic Method for Screening Bimetallic Catalysts for CO ₂ Electroreduction
09:45 - 10:15 (micro)spectroscopy-I2	<u>Ludmilla Steier</u> (<i>Department of Chemistry, University of Oxford, UK</i>) Insights into material design for solar fuel production
10:15 - 10:45	Coffee Break
10:45 - 11:15 (micro)spectroscopy-I3	Laura C. Pardo Perez, Sasho Stojkovikj, Alexander Arndt, Ibbi Y. Ahmet, Joshua T. Arens, Federico Dattila, Núria López, <u>Matthew Mayer</u> (<i>Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany</i>) Applications of X-ray Spectroscopy for in situ Study of CO ₂ Conversion Electrocatalysts
11:15 - 11:30 (micro)spectroscopy-T2	<u>Stefan Popovic</u> (<i>Department of Materials Chemistry, National Institute of Chemistry, Hajdrihova 19, 1000 Ljubljana, Slovenia</i>), Nejc Hodnik, Marjan Bele Reconstruction of Copper Nanoparticles at Electrochemical CO ₂ Reduction Conditions: Identical Location Scanning Electron Microscopy (IL-SEM) Study
11:30 - 11:45 (micro)spectroscopy-T3	Pranit Iyengar, <u>Manuel Kolb</u> (<i>University of Barcelona</i>), Federico Calle-Vallejo, Raffaella Buonsanti Size Dependent Product Selectivity for Shape-Controlled Ag/Cu Tandem Catalysts
11:45 - 14:00	Lunch Break
Building Bridges between experiments and theory in photoelectrocatalysis Chair: Núria López	
14:00 - 14:30 photoelectrocatalysis-I1	<u>Federico Calle-Vallejo</u> (<i>University of Barcelona</i>) Towards Predictive and Affordable Computational Models for CO ₂ Electroreduction
14:30 - 14:45 photoelectrocatalysis-T1	<u>Jesus Barrio</u> (<i>Department of Materials, Imperial College London</i>), Angus Pedersen, Jingyu Feng, Maria-Magdalena Titirici, Ifan E.L. Stephens Targeted Synthesis of Metal Dual Atom Electrocatalysts
14:45 - 15:15 photoelectrocatalysis-I2	<u>Nongnuch Artrith</u> (<i>Debye Institute for Nanomaterials Science, Utrecht University</i>) Learning What Makes Catalysts Good
15:15 - 15:45	Coffee Break

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15:45 - 16:00	<u>Idan Hod</u> (<i>Ben-Gurion University of the Negev, Israel</i>)
photoelectrocatalysis-T2	A MOF-Based Membrane that Provides Molecular-Level Control Over Heterogeneous CO ₂ RR
16:00 - 16:30	<u>Menny Shalom</u> (<i>Department of Chemistry, Ben Gurion University, Beer sheva, Israel</i>)
photoelectrocatalysis-I3	Photo- and electro-catalyst development: carbon nitride and NiFe-oxide for catalytic oxidation of organic molecules to value-added chemicals
16:30 - 17:00	<u>Jan Rossmeisl</u> (<i>Department of Chemistry, Center for High Entropy Alloy Catalysis, University of Copenhagen</i>)
photoelectrocatalysis-I4	electrocatalysis on high entropy alloys
17:00 - 18:30	Poster Session
20:00 - 22:00	Social Dinner

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November 23rd - Day 2 (Tuesday) 2

08:55 - 09:00 **Announcement of the day**

Novel photo- and electrocatalytic processes for the synthesis of added value chemicals

Chair: Elena Mas Marzá

09:00 - 09:30 María Escudero-Escribano (*University of Copenhagen*)

chemicals-I1 Tailored interfaces for the production of renewable fuels and chemicals

09:30 - 09:45 Sergio Gonell Gómez (*Institute of Chemical Research of Catalonia (ICIQ), The Barcelona Institute of Science and Technology, 43007 Tarragona, Spain*), Julio Lloret-Fillol, Alexander J. M. Miller

chemicals-T1 Mechanistic comparisons on Ru and Fe carbene-supported complexes for electrocatalytic CO₂ reduction

09:45 - 10:00 Josep Albero (*Max Planck Institute of Colloids and Interfaces, Research Campus Golm, D-14424 Potsdam, Germany; University of Potsdam, D-14424 Potsdam, Germany*), Enrico Lepre, Julian Heske, Michal

chemicals-T2 Nowakowski, Ernesto Scoppola, Ivo Zizak Zizak, Tobias Heil Heil, Thomas D. Kühne, Markus Antonietti, Nieves López-Salas

Ni-Based Electrocatalysts for Unconventional CO₂ Reduction Reaction to Formic Acid

10:00 - 10:30 **Coffee Break**

10:30 - 11:00 Laia Francàs Forcada (*Department of Chemistry, Universitat Autònoma de Barcelona, Cerdanyola del Vallès, Barcelona 08193, Spain*)

chemicals-I2 Alcohol oxidation using α -Fe₂O₃ and BiVO₄: mechanistic and kinetic insides

11:00 - 11:15 Marcelo Chavez (*Catalonia Institute for Energy Research-IREC*), Sebastian Murcia, Joan Ramon Morante

chemicals-T3 Generation of Ammonia by High Concentrated Nitrate Electrolyte Electroreduction

11:15 - 11:30 Andrés F. Gualdrón-Reyes (*Institute of Advanced Materials (INAM), Universitat Jaume I, 12071 Castelló de la Plana, Spain*)

chemicals-T4 Photo(electro)catalytic properties of high-quality halide perovskite nanocrystals

11:30 - 12:00 Ifan Stephens (*Imperial College London, Department of Chemistry*)

chemicals-I3 Is lithium unique for nitrogen electroreduction?

12:00 - 12:15 **Closing Remarks**

15:30 - 16:30 **Guided Tour**

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Poster Contribution

007	<u>Udit Tiwari</u> (<i>University of Central Lancashire</i>), Karen Syres, Andrew Thomas, Mark Jackman, Alexander Generalov, David Lewis, Michael Wagstaffe A Comparison of Thermal Stabilities of Methylammonium Lead Iodide and Methylammonium Lead Bromide Perovskites Using X-Ray Photoelectron Spectroscopy.
009	<u>Sara GOBERNA</u> (<i>Instituto Universitario de Tecnología Química (CSIC-UPV), Universitat Politècnica de Valencia, Av. De los Naranjos s/n, 46022 Valencia, Spain.</i>), Hermenegildo GARCIA Atomically precise metal nanoclusters for electrochemical CO ₂ RR
011	<u>Federico Dattila</u> (<i>Institute of Chemical Research of Catalonia (ICIQ), Barcelona Institute of Science and Technology (BIST)</i>), Mariana Monteiro, Rodrigo García-Muelas, Bellenod Hagedoorn, Marc Koper, Núria López Modeling the Electrochemical Interface with Cations and Electric Field
012	<u>Laura Montañés</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I (UJI)</i>), Camilo A. Mesa, Ana Gutiérrez-Blanco, Christian Robles, Beatriz Julián-López, Sixto Giménez Facile Surfactant-Assisted Synthesis of BiVO ₄ Nanoparticulate Films for Solar Water Splitting
013	<u>Jim de Ruiter</u> (<i>Debye Institute for Nanomaterials Science, Utrecht University</i>), Ward van der Stam Probing the Dynamics of CO ₂ Electroreduction with Time-Resolved SERS
014	<u>Camilo A. Mesa</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I (UJI)</i>), Ramón Arcas, Sacha Corby, Francisco Fabregat-Santiago, James R. Durrant, Elena Mas-Marzá, Sixto Giménez The effect of oxygen vacancies in the photoelectrochemical performance of metal oxide photoanodes
019	<u>V S R K Tandava</u> (<i>Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930, Sant Adrià de Besòs, Spain</i>), Sebastián Murcia-López, Maria Chiara Spadaro, Jordi Arbiol, Joan Ramon Morante Tailored Catalyst Layer Compositions over Gas Diffusion Electrodes. Impact on Electrocatalytic CO ₂ reduction.
022	<u>Carvajal David</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I (UJI)</i>), Arcas Ramón, Mesa Camilo, Giménez Sixto, Mas Elena, Fabregat Francisco STUDY OF THE ELECTROCHEMICAL HYDROGENATION OF NITROBENZENE IN Cu AND CuPd ELECTRODES.
025	<u>Roser Fernández-Climent</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I (UJI)</i>), Camilo A. Mesa, Sixto Giménez, Miguel García-Tecedor Superstable Copper Sulfide Electrodes for Hydrogen Evolution
027	<u>Sixto Giménez</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I (UJI)</i>), Camilo Arturo Mesa, Andrés F. Gualdrón-Reyes, Roser Fernández-Climent, Laura Montañés, Iván Mora-Seró, Elena Más-Marzá, Beatriz Julián-López (Photo)Electrochemical Production of Fuels and High Added-Value Chemicals. Materials, Components and Devices
028	<u>Bianca Ligt</u> (<i>Department of Chemical Engineering and Chemistry, Eindhoven University of Technology (TU/e)</i>), Marta Costa Figueiredo, Emiel Hensen Flame Spray Pyrolysis Derived CuO Nanoparticles for the Electrochemical Reduction of CO ₂ to C ₂ + Products
029	<u>Rodrigo García-Muelas</u> (<i>Institute of Chemical Research of Catalonia (ICIQ), Barcelona Institute of Science and Technology (BIST)</i>), Sergio Pablo-García, Louisa R L Ting, Florentine L P Veenstra, Antonio J Martin, Jason Boon Siang Yeo, Javier Pérez-Ramírez, Núria López Mechanistic Routes toward C ₃ -C ₄ products in Copper-Catalysed CO ₂ Electroreduction
031	<u>Jose Solera Rojas</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I, ES12006 Castelló, Spain</i>), Antonio Guerrero, Elena Mas-Marzá Electrochemical Reduction of Dicarboxylic Acids
032	<u>Nihal El Guenani Mir</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I, 12006 Castelló, Spain.</i>), David Carvajal, Andrés Mollar Cuni, José Antonio Mata, Antonio Guerrero, Elena Más Marzá Electro-oxidation of amines to nitriles with Ti-Ni electrodes.

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| 033 | <u>Ramón Arcas</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I, 12006 Castelló, Spain</i>), Yuuki Koshino, Elena Mas Marzá, Ryuki Tsuji, Hideaki Masutani, Eri Miura Fujiwara, Yuichi Haruyama, Seiji Nakashima, Seigo Ito, Francisco Fabregat Santiago
Pencil graphite rods decorated with nickel and nickel–iron as low-cost oxygen evolution reaction electrodes |
| 035 | <u>Laura Mallón</u> (<i>Universitat Autònoma de Barcelona (UAB), Campus UAB, 08193, Bellaterra, Barcelona, Catalonia, Spain</i>), Heting Hou, Álvaro Lozano, Ignacio Álvarez, Jordi Creus, Jonathan De Tovar, Roger Bofill, Karine Philippot, Jordi García-Antón, Xavier Sala
Tunable Surface-Functionalized Nanocatalysts for Artificial Photosynthesis |
| 036 | Marina Peña-Díaz, John F. Vélez, Weronica Linpé, Gary S. Harlow, Edvin Lundgren, Celia Rogero, <u>Sara Barja</u> (<i>Centro de Física de Materiales CFM/MPC (UPV/EHU-CSIC), Donostia-San Sebastián 20018, Spain</i>)
Au(111) electro-oxidation: A surface science approach |