

Materials for Sustainable Development Conference (MAT-SUS) (NFM22)

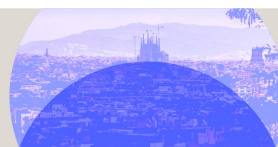
#Suschem- Materials and electrochemistry for sustainable fuels and chemicals

Barcelona, Spain, 2022 October 24th - 27th

Conference Chairs: Marta Costa Figueiredo and Raffaella Buonsanti

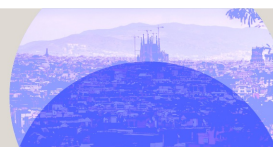
Conference Program

October 24th - Day 1 (Monday)	
08:55 - 09:00	Room A2+A3 - Chair Introduction
	Session 1.1 Chair: Raffaella Buonsanti
09:00 - 09:30	<u>Victor Mougel</u> (<i>ETH - Swiss Federal Institute of Technology Zurich, Department of Chemistry and Applied Biosciences</i>)
1.1-I1	Homogeneous and Heterogeneous Bio-inspired strategies for CO ₂ reduction
09:30 - 10:00	<u>Ana Sofia Varela</u> (<i>National Autonomous University of Mexico</i>)
1.1-I2	Effect of the proton concentration on the CO ₂ electrochemical reduction
10:00 - 10:30	<u>Nikolay Kornienko</u> (<i>University of Montreal, Department of Chemistry</i>)
1.1-I3	CO ₂ as a building block for electrosynthetic coupling to N- and S- based reactants
10:30 - 11:15	Coffee Break
	Session 1.2 Chair: Victor Mougel
11:15 - 11:30	<u>Idan Hod</u> (<i>Ben-Gurion University of the Negev, Israel</i>), Ran Shimoni, Subhabrata Mukhopadhyay
1.2-T1	Molecular Manipulation of Heterogeneous Electrocatalytic CO ₂ Reduction Using Metal-Organic Frameworks
11:30 - 11:45	<u>Maryam Abdinejad</u> (<i>Department of Chemical Engineering, Delft University of Technology (TU Delft), The Netherlands</i>), Thomas Burdyny
1.2-T2	Rationally Designed Highly Selective, Efficient, and Stable 3-Dimensional MXene-based Aerogels for Electroreduction of CO ₂
11:45 - 12:00	<u>Bianca Ligt</u> (<i>Department of Chemical Engineering and Chemistry, Eindhoven University of Technology.</i>), Michelle Ho, Marta Figueiredo, Emiel Hensen
1.2-T3	Shape-controlled Cu ₂ O Nanocrystals for Electrochemical Reduction of CO ₂
12:00 - 12:15	<u>Elena Plaza-Mayoral</u> (<i>Department of Chemistry, Center for High Entropy Alloy Catalysis, University of Copenhagen</i>), Kim Nicole Dalby, Inês Jordão Pereira, Kim Degn Jensen, Ib Chorkendorff, Hanne Falsig, Paula Sebastian-Pascual, Maria Escudero-Escribano
1.2-T4	Green preparation of high surface area bimetallic nanostructures for electrocatalytic reactions
12:15 - 12:30	<u>Roser Fernandez-Climent</u> (<i>Institute of Advanced Materials (INAM), University Jaume I, Av. Vicent Sos Baynat, s/n, 12071, Castellón de la Plana, Spain.</i>), Camilo A. Mesa, Sixto Gimenez, Claudio Ampelli, Jordi Arbiol, Sara Barja
1.2-T5	Copper-derived electrocatalyst for high efficient Hydrogen evolution and carbon dioxide reduction to Formic Acid
12:30 - 12:45	<u>Oriol Gutierrez-Sanchez</u> (<i>Flemish Institute for Technological Research (VITO)</i>), Bert De Mot, Deepak Pant, Tom Breugelmanns, Metin Bulut
1.2-T6	Direct Air Capture and Electrochemical Conversion of CO ₂
12:45 - 13:00	<u>Erdem Irtem</u> (<i>Materials for Energy Conversion and Storage, Department of Chemical Engineering, Delft University of Technology</i>), Daniela Galliani, Hugo Pieter Iglesias van Montfort, Anna Testolin, Mengran Li, Thomas Burdyny
1.2-T7	Understanding gas diffusion electrode failure at high current CO ₂ electrolysis using operando and post-mortem methods
13:00 - 15:25	Lunch
15:25 - 15:30	Room A2+A3 Chair Introduction
	Session 1.3 Chair: Nikolay Kornienko
15:30 - 16:00	<u>Attila Kormányos</u> (<i>Department of Physical Chemistry and Materials Science, Interdisciplinary Excellence Centre, University of Szeged</i>),
1.3-I1	Ádám Vass, Balázs Endrődi, Zsófia Kószó, Gergely Samu, Ádám Balog, Serhiy Cherevko, Csaba Janáky Anode Catalysts in CO ₂ Electrolysis: Challenges and Emerging Research Directions
16:00 - 16:30	<u>Paula Sebastián-Pascual</u> (<i>Department of Chemistry, Center for High Entropy Alloy Catalysis, University of Copenhagen</i>), María Escudero-Escribano, Alexander Bagger, Jan Rossmeisl, Francisco J. Sarabia, Víctor Climent, Juan M. Felio, Amanda Schramm Petersen
1.3-I2	Experimental assessment of the interfacial properties of well-defined Cu single crystalline electrodes.



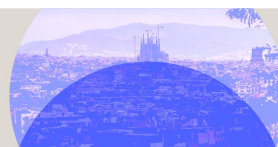
October 25th - Day 2 (Tuesday)

08:55 - 09:00	Room A2+A3 - Chair Introduction
	Session 2.1 Chair: Ana Sofia Varela
09:00 - 09:15 2.1-T1	<u>Oleksandr Astakhov</u> (<i>Forschungszentrum Jülich GmbH, Institute of Energy and Climate Research (IEK-5-Photovoltaik)</i>), Vladimir Smirnov, Uwe Rau, Tsvetelina Merdzhanova Predicting solar-to-molecule efficiency potential from electrolyzer polarization curves
09:15 - 09:30 2.1-T2	<u>Sidney Palardonio</u> (<i>ICFO - Institut de Ciències Fòniques, The Barcelona Institute of Science and Technology</i>), Adrian Pinilla, Jordi Martorell, Carles Ros Electrochemical and photocatalytic hydrogen storage on graphene oxide
09:30 - 09:45 2.1-T3	<u>José A. Mata</u> (<i>Institute of Advanced Materials (INAM), University Jaume I, Av. Vicent Sos Baynat, s/n, 12071, Castellón de la Plana, Spain.</i>), Elena Mas-Marzá, Antonio Guerrero, Francisco Fabregat-Santiago, Carmen Mejuto, Andrés Mollar, Nihal El Guenani, David Carvajal Electrocatalytic Applications for Hydrogen Storage in the Form of Liquid Organic Hydrogen Carriers (LOHCs)
09:45 - 10:00 2.1-T4	<u>Freja Bech Holde</u> (<i>Department of Chemistry, Center for High Entropy Alloy Catalysis, University of Copenhagen</i>), Kim Nicole Dalby, Hanne Falsig, Paula Sebastián-Pascual, María Escudero-Escribano Preparation of IrOx catalysts for the oxygen evolution reaction by galvanic displacement of Co and Ni deposited in deep eutectic solvents
10:00 - 10:15 2.1-T5	<u>Soren B. Scott</u> (<i>Department of Materials Imperial College London</i>), Reshma R. Rao, Caiwu Liang, Ifan E. L. Stephens Water oxidation in acid: Insights from RuO ₂ , and new rutile electrocatalysts
10:15 - 10:30 2.1-T6	<u>Shir Abramovich</u> (<i>The chemistry department, Ben Gurion University</i>), Maya Bar-Sadan Ternary compounds of NiSe and CoSe as efficient electrochemical & photothermal catalysts for water splitting reactions
10:30 - 11:15	Coffee Break
	Session 2.2 Chair: Marta Hatzell
11:15 - 11:30 2.2-T1	<u>Romain Tort</u> (<i>Department of Chemical Engineering Imperial College London</i>), Olivia Westhead, Matthew Spry, Daisy Thornton, Bethan Davies, Mary P. Ryan, Maria-Magdalena Titirici, Ifan E. L. Stephens Upgrading Li-Mediated Ammonia Synthesis Electrochemical Characterisation – A Battery-Inspired Cell Design
11:30 - 11:45 2.2-T2	Nihal Guenani, David Carvajal, Andrés Mollar-Cuni, José Antonio Mata, Elena Mas-Marzá, <u>Antonio Guerrero</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I, Avda. V. Sos Baynat s/n, 12006 Castellón de la Plana, Spain.</i>) Electrochemical oxidation of amines to nitriles using nickel-based electrodes
11:45 - 12:00 2.2-T3	<u>Margot Olde Nordkamp</u> (<i>Photocatalytic Synthesis (PCS) Group, Faculty of Science and Technology, MESA+ Institute for Nanotechnology, University of Twente</i>), Bastian Mei, Robbie Venderbosch, Guido Mul Kolbe Electrolysis of Acetic Acid for Bio-oil Upgrading Applications: Revealing the Influence of Electrolyte Composition
12:00 - 12:15 2.2-T4	<u>Elena Mas-Marzá</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I, Av. Sos Baynat s/n, 12071 Castelló, Spain</i>), Francisco Fabregat-Santiago, David Carvajal, Ramón Arcas, Laxman Gouda VALORIZATION of HMF by ELECTROCHEMICAL METHODS
12:15 - 12:30 2.2-T5	<u>Anku Guha</u> (<i>Tata Institute of Fundamental research Hyderabad</i>), Tharangattu N. Narayanan 'Water-in-Salt' Electrolytes based Ambient Electrochemical Nitrogen Reduction
12:30 - 12:45 2.2-T6	<u>Maya Bar Sadan</u> (<i>Department of Chemistry, Ben Gurion University, Beer sheva, Israel</i>) Complex ternary phosphides as catalysts
12:45 - 15:25	Lunch
15:25 - 15:30	Room A2+A3 Chair Introduction
	Session S2.3 Chair: Marta Costa Figueiredo
15:30 - 16:00 S2.3-I1	<u>Ifan Stephens</u> (<i>Department of Materials, Imperial College London</i>) Unravelling the factors controlling nitrogen reduction on solid surfaces
16:00 - 16:30 S2.3-I2	<u>Amanda Garcia</u> (<i>Van't Hoff Institute for Molecular Science - University of Amsterdam</i>) Electrocatalytic synthesis of high-value products
16:30 - 17:00 S2.3-I3	<u>Marta Hatzell</u> (<i>School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, US</i>), JeongHoon Lim Design and Examination of Structure Electrocatalyst for Nitrate and Nitrite Conversion
17:15 - 20:00	Poster Session



October 26th - Day 3 (Wednesday)

08:55 - 09:00	Room A2+A3 - Chair Introduction
	Session 3.1 Chair: Ifan Stephens
09:00 - 09:30	<u>Núria López</u> (<i>Institute of Chemical Research of Catalonia (ICIQ), Barcelona Institute of Science and Technology (BIST), ES</i>) Materials and electrochemistry for sustainable fuels and chemicals
3.1-11	
09:30 - 10:00	<u>Federico Calle-Vallejo</u> (<i>University of the Basque Country</i>) Impact of gas-phase errors on computational electrocatalysis models
3.1-12	
10:00 - 10:30	<u>Rosa M. Arán-Ais</u> (<i>Institute of Electrochemistry, University of Alicante</i>), Gabriel Melle, Pepe Jordá-Faus, Fabian Scholten, Beatriz Roldan-Cuenya, Juan M. Feliu, Enrique Herrero Electrochemistry of Platinum-Palladium Bulk Alloy Single Crystal Electrodes: Preparation, Characterization and Electrocatalytic Studies
3.1-13	
10:30 - 11:15	Coffee Break
	Session 3.2 Chair: Federico Calle-Vallejo
11:15 - 11:30	<u>Alexander Bagger</u> (<i>Department of Chemical Engineering, Imperial College London, SW7 2AZ, UK</i>) Product Selectivity in Reduction Reactions versus Hydrogen
3.2-T1	
11:30 - 11:45	<u>Mohammadreza Karamad</u> (<i>Department of Physics and Astronomy, University of Calgary</i>), Amir Barati Farimani, Rishikesh Magar, Samira Siahrostami, Ian Gates Density Functional Theory Screening of Transition Metal Nitrides for CO Electrochemical Reduction
3.2-T2	
11:45 - 12:00	<u>Jonathan Tzadikov</u> (<i>Department of Chemistry and Ilse Katz Institute for Nanoscale Science and Technology, Ben-Gurion University of the Negev, Beer-Sheva, 8410501, Israel.</i>), Menny Shalom Heteroatom Incorporated Carbon Materials
3.2-T3	
12:00 - 12:05	Symposium Closing
19:30 - 22:00	Social Dinner



October 27th - Day 4 (Thursday)

17:15 - 17:30

General Closing

Poster Contribution

130	Teresa Andreu, Maria Mallafré, <u>Martí Molera</u> (IN2UB, Universitat de Barcelona), Maria Sarret, Roger Oriol, Ignasi Sires Role of thermal treatment on nickel cobalt hydroxides for glycerol oxidation.
265	<u>Sven Brückner</u> (The Electrochemical Energy, Catalysis, and Materials Science Laboratory, Department of Chemistry, Chemical Engineering Division, Technical University Berlin, Berlin, Germany), Wen Ju, Peter Strasser A New Mass Transfer Diagnostic Tool for AEM CO ₂ Reduction
280	<u>Suthasinee Watmanee</u> (Chulalongkorn University), Joongjai Panpranot Formation and growth characteristics of nanostructured carbon films on nascent Ag clusters during room-temperature electrochemical CO ₂ reduction
281	<u>Piriya Pinthong</u> (Center of Excellence on Catalysis and Catalytic Reaction Engineering, Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok 10330, Thailand), Phongsathon Klongklaew, Piyasan Praserttham, Joongjai Panpranot Effect of the Nanostructured Zn/Cu Electrocatalyst Morphology on the Electrochemical Reduction of CO ₂ to Value-Added Chemicals
283	<u>Nattaphon Hongrutai</u> (Center of Excellence on Catalysis and Catalytic Reaction Engineering, Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok 10330 Thailand), Magdalena Titirici, Joongjai Panpranot Nanodiamond formation under ambient conditions by the in-situ electrochemical reduction of acetic acid
284	<u>Margot Olde Nordkamp</u> (Photocatalytic Synthesis (PCS) Group, Faculty of Science and Technology, MESA+ Institute for Nanotechnology, University of Twente), Tim van der Weerd, Robbie Venderbosch, Guido Mul, Bastian Mei Platinized titanium and nickel anodes: An alternative cost-effective anode for Kolbe electrolysis of acetic acid?
286	<u>Weerachon Tolek</u> (Center of Excellence on Catalysis and Catalytic Reaction Engineering, Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok 10330, Thailand), Natdanai Nanthasanti, Boontida Pongthawornsakun, Piyasan Praserttham, Joongjai Panpranot Effects of TiO ₂ structure and Co addition as a second metal on Ru-based catalysts supported on TiO ₂ for selective hydrogenation of furfural to FA
297	<u>José Solera-Rojas</u> (Institute of Advanced Materials (INAM), Universitat Jaume I, Av. Sos Baynat, s/n, 12071 Castelló, Spain), David E. Carvajal, Antonio Guerrero, Elena Mas-Marzá Electrocatalytic Conversion of 5-(hydroxymethyl)furfural (HMF) on Cu and Au Electrodes in Acid Conditions
298	<u>Eva Ng</u> (Institute of Advanced Materials (INAM), Universitat Jaume I, 12006 Castelló, Spain), Camilo Mesa, Sixto Giménez, Elena Mas-Marzá Glycerol Electrooxidation for Value-Added Products
300	<u>Nihal El Guenani Mir</u> (Institute of Advanced Materials (INAM), Universitat Jaume I, 12006 Castelló, Spain.), Antonio Guerrero Castillejo, Elena Mas Marzá, David Eduardo Carvajal Guayapero, José Antonio Mata, Andrés Mollar Cuni ELECTRO-OXIDATION OF AMINES TO NITRILES WITH NICKEL BASED ELECTRODES.
302	<u>Gerard Martí Balaquer</u> (Department of Chemistry, Universitat Autònoma de Barcelona, Cerdanyola del Vallès, Barcelona 08193, Spain), Pol Gorrea Acín, Jordi García-Antón Aviñó, Xavier Sala Román Photosensitizer-decorated Ru nanoparticles for photocatalytic hydrogen evolution
303	<u>Federico Franco</u> (Institute of Chemical Research of Catalonia (ICIQ), The Barcelona Institute of Science and Technology (BIST), and University Rovira i Virgili (URV)), Joan Marc Bondia Pedra, Beatriu Domingo-Tafalla, Carlos Puerto, Tamal Chatterjee, Emilio Palomares-Gil Well-defined hybrid Copper-based nanoreactors for electrocatalytic CO ₂ reduction
307	<u>Shahar Binyamin</u> (Department of Chemistry and Ilse Katz Institute for Nanoscale Science and Technology, Ben-Gurion University of the Negev, Beer-Sheva, 8410501, Israel.), Idan Hod Nickel Iron Modified 2D MOF as a Precatalyst for Highly Efficient Water Oxidation Reaction
308	<u>Itamar Liberman</u> (Department of Chemistry and Ilse Katz Institute for Nanoscale Science and Technology, Ben-Gurion University of the Negev, Beer-Sheva, 8410501, Israel.), Idan Hod LOCALIZED SYNTHESIS AND IN-SITU CATALYTIC CHARACTERIZATION OF MOF-BASED MATERIALS USING SECM
319	<u>NANNAN LIANG</u> (School of Energy Engineering, Kyungpook National University), Hyunwoong Park Membraneless seawater splitting with a ternary PtRuTi anode and MnOx cathode pair
320	<u>Guangxia Piao</u> (School of Energy Engineering, Kyungpook National University), Hyunwoong Park Selective hydrogenation of 5-Hydroxymethylfurfural to 2,5-Bis(hydroxymethyl)furan using porous BiSn dendrite electrocatalysts
327	<u>Pedro Mazaira Couce</u> (Department of Chemistry, Center for High Entropy Alloy Catalysis, University of Copenhagen), Paula Sebastián Pascual, Ward van der Stam, María Escudero Escribano Use of lead underpotential deposition for the characterization of electrochemically nanostructured copper surfaces
334	<u>Radeva Vasquez</u> (Universitat Jaume I, Institute of Advanced Materials (INAM) - Spain), Camilo Mesa, Sixto Gimenez Electrocatalytic Study of Hydrogen Peroxide (H ₂ O ₂) synthesis by two-electron water oxidation reaction (2e-WOR) on BiVO ₄ photoanodes.
338	<u>Paz Stein</u> (The chemistry department, Ben Gurion University) Cu-Ni Nitrides As Catalysts For Energy Related Applications
347	<u>Marcileia Zanatta</u> (Institute of Advanced Materials (INAM), Universitat Jaume I, Avda Sos Baynat s/n, 12071, Castellón, Spain), Victor Sans, Diego Iglesias Oxidative carboxylation of olefins with CO ₂ in continuous-flow
365	<u>Francisco Fabregat-Santiago</u> (Universitat Jaume I, Institute of Advanced Materials (INAM) - Spain), David Carvajal, Ramón Arcas, Elena Más-Marzá The importance of adding value to electrochemical reactions