13thESEE - Scientific Program

Monday June 26th 2023

Registrations - Coffee

Opening introduction Théo Tzedakis

plenary conference 1: Electrochemical interphases at metal anodes in ultra- and fast-charge batteries
Lynden A. Archer,
Chemical & Biomolecular Engineering, Cornell University, Ithaca NY

Section Mo-A1, Topic 3: Energy conversion and storage
Chair Proposed: Lynden A. Archer

#ID629: Development of an Organic Flow Battery Based on a New Hydroxylated Tetracyanate Viologen. Luca Fumagalli Arrione, Carlo Casimiro, Raul Stikkelis, Thomas Tosch.

#ID7267: Towards zero-solid organic redox flow batteries: material screening, electrochemical performance, and reactor design optimization. Bernardo Zabiliski, Angel Alfonso Villanueva, Nicolas Cruz-de-la-Rosa, Nathanael Danielli, Jessica Rosenkranz, Simone Dinelli, Marinella Tedesco.

#ID7609: Long-cycling of a monosubstituted dihydroxybenzoquinone in aqueous redox flow batteries: role of the cut-off voltage on the degradation products. Gustavo Fonseca, Gerard Gordy, Francisco Jose Aldaz, Arthur Hugheth Barbosa, Gary Hawkins Wilson, Oscar Gabriel Gustavo, Guido Ben Yehuda, Olivier Hibbs, Abby Jane Bleeke.

#ID8141: Electrochemistry of Al^{3+} catechol complexes. Caroline Vilmar, Yagin Mikhail, Kristar Divyamana, Crispin Xavier.

Section Mo-P1, Topic 4: Electrochemical treatment of wastes/ pollution abatement
Chair Proposed: Boris Ignatev

#ID8144: CO poisoning of silver gas diffusion electrodes in CO_2 electroreduction. Jose Gimenez, Marcos Lobeiras, Thomas Tosch.

#ID8186: Influence of Cuprous Dopants and Inter-electrode Distance on the Electro-oxidation of Pharmaceutical Pollutants in Wastewater with the subsequent CO2 Electro-reduction into Valuable Compounds. Eric Saad, Pierre Marie Rolle, Mouaouia Zoubaeidi.

#ID7630: Selective degradation of pharmaceuticals in hospital effluents using gaseous ozone electrochemical cells. Ana Sofia Santos, Ana Sofia Santos, Vitor Vasconcelos, Vitor Pereira, Eduardo Lemos, Rafael Lafuente, Manuel Rodrigo, Cristina Sáez.

#ID8251: CO_2 electrolysis with impure CO_2 feeds: impact of NO_x, SO_x and O_2. Tom Broughton, Sam Van Daele, Barbara Hulsen, Steven Fletcher, Sonia Rodriguez.

Section Mo-C1, Topic 8: Design, modelling and simulation of electrochemical devices
Chair Proposed: Maria Pavlin

Marcin Pavlac INVITED
#ID124. Prediction of Gas Distribution in PEM Fuel Cell Flow Fields. Marcin Pavlac, Monika Bodzenta, Karol Borcek, Marcin Pavlac

#ID6936: Modeling of transport in alkaline electrolyzers using open-source computational fluid dynamics. Andreas Jacobsen, Patricia Fernandez, Hans Mathiesen Lamas, Rafael Lafuente, Manuel Rodrigo, Cristina Sáez.

#ID8146: Mathematical modelling analysis of parasitic current in the stack of hydrogen fuel cells with liquid electrolyte. Zaijun Michal, Roman Kudrjov, Martin Pavlac, Karel Borcek.

Posters

Lunch Break

Section Mo-A2, Topic 3: Energy conversion and storage
Chair Proposed: Mouldi Chaabi

#ID6140: Impact of Electrode Surface Modification Techniques on the Performance of Aqueous Organic Redox Flow Batteries. Francesco Jose Marco Fajardo Calderon, Rita Rodrigo Lemati Alemany, Andrea Mas Cabrera, Jesus Rubio, Rogelio Ortega, Lorena Alemany, Andrea Mas Cabrera.

#ID7426: A Variable Channel Width Microbatteries Bulkless Flow Through Water Electrolyzer. Pierrena Jolmer, Dorian G., Hamilton J.M.

#ID7731: Influence of Anion-selective Material on Performance and Stability of Alkaline Water Electrolysis. Michaela Plevova, Jan Zitka, Jaroslav Hnat, Jan Bednarik, Martin Paidar, Karel Bouzek, Jan Vrana.

#ID7340: Effect of Electrolyte Flow on The Performance of Pilloxel Electrodes for Hydrogen Gas Evolution. Sagar Parmanar, Tonhoco Michele, Kombo Philipp, Kamelco Robertson.

#ID6796: Additive Manufacturing: An Innovative Tool to 3D Print Shape-Conformable Batteries. Manuel Alonso, Maximo Ana, Cardenas Jorge, Cecilo Adam, Manhanelli Eric.

#ID6935: 3D printing NMC 111 electrodes and Na-based gel polymer electrolytes via wet photo-polymerization. Maximo Ana, Manuel Alonso, Gregory Schiffer, Simon Gallagher, Vincent Lees, Mahmud Catherine, Mahmudul Eric.

Sivris Ignasi INVITED
#ID7722: Contributions of n-methyl- and Bi-ethyl-Dcyclo in Electrochemical Advanced Water Treatment in the Context of Sustainable Wastewater Regeneration.

#ID7233: Imidazolium-Modified Copper Electrodes: A Novel Approach for Enhancing Nitrate Removal from Contaminated Waters. Sanza Adjoy, Carlos Sanchez Sanchez, Jaidi Zouhair, Ahmad Ali Ali.

#ID5951: Degradation of the Antibiotic Ciprofloxacin by Photoelectro-Fenton Process at Neutral pH employing an BCE Reactor for Greener H2O2 Electrosynthesis. Oscar Cornejo, Paola Ferro, Martin Dirolle, José Ponce, Ignasi Sirés.

#ID8164 - Water Treatment at Near-Neutral pH in a Solar Photoelectro-Fenton Reactor Operated in Continuous Mode. Martin F. Montiel, Paola Ferro, Pere L. Cabot, Ignasi Sirés.

#ID7486 - Degradation of Metoprolol made by Active Chlorine-Based Photoelectro-Fenton-Like Process in a Flow Cell with a TiO2-Ru-Ir-oxides Anode. Juan Rodriguez, Jesus Rubio, Ignasi Sirés, José Ponce.

Section Mo-C2, Topic 8: Design, modelling and simulation of electrochemical devices
Chair Proposed: Karel Bouzek

#ID7070: The optimal electrode gap-size and flow channel thickness in microfluidic fuel cells, electrolyzers, and flow batteries. F.M. Hassanien, A. Bhatta

#ID4731: Inverse modelling for the determination of transport and thermodynamic characteristics: Polymer electrolyte (PEO-LiTFSI) for solid-state batteries. Sunanna Tai Ali, Manuel Dominguez, Gonzalo Gonzalez, Pablo Ocampo, Daniel Dominguez, Francisco Gonzalez.

#ID7919: Heat Transfer in Membrane Electrode Assemblies for the Electrochemical Reduction of CO2 in Hot Triple. Jan-Willem Embrechts, David Vermaas.

#ID6261: Computational study of the acetic oxidation process: kinetic, mechanism and modeling of the physicochemical phenomena. Guillermo Orquera, Laura Langer, Karina Gonzalez Serrano, Karina Gonzalez, Thandiwe Tsoabola.

#ID7026: A new mass transfer coefficient relation including bubble size-to-mixing and natural convection near gas-evolving electrodes. J.M. Hutchison, N. Gallo

#ID7664: Multiphase Simulation of Zero-gap Alkaline Water Electrolyzers. J.M. Hutchison, N. Gallo, M.A. Sanchez Dues.

Posters+Coffee break

Section Mo-A3, Topic 3: Energy conversion and storage
Chair Proposed: Anna Hankin

Anna Hankin INVITED
#ID7600: Up-scaling solar to fuel devices: important considerations

#ID5205: Performance Evaluation of Coated Metallic Bipolar Plates in PEM Fuel Cells. Yaja Wilcoxon, Prabag Mcarty, Hanna Robinson Jones, Morgan Kahn, Jonathan Lora, Pablo Martin, Brandi Karol.

#ID5207: Hydrogen production enantiomeric model of alkaline water electrolysis powered by renewable sources of energy. Jacob Karol, Pablo Martin, Omar Jaramit, Brandi Karol.

#ID6126: In situ Mapping of Gas Distributions in an Alkaline Electrolyzer Cell by Neutron Imaging. Joseph Johnson Marcus, Jonathan Jonathan Francis, Gilmore Bob Jonas, Gaji Isaac, Tobi Paul, Sendil Mathew, Herb Nielsen Lars.

#ID5274: Designing suspension-electrodes for electrochemical CO_2 reduction. Ligthart Sarah, Pure Angel Cornell, Fahlking Adam, Vermaas David.

Section Mo-P2, Topic 4: Electrochemical treatment of wastes/ pollution abatement
Chair Proposed: Michele Mascia

#ID365: Bio-based PPAN-Free Tubular Gas Diffusion Electrodes with Incorporated Fe Sn Microparticles Prepared via Heterogeneous Electro-Fenton. Sergio Ibáñez Rodríguez, Eduardo Domínguez, Cely Dos Lang, Miguel Vera, Robert Keller, Matthias Wessling.

#ID8766 - Continuous electro-oxidation reactor for removal of organic pollutants hydrodynamics, ozone transport and reactivity. Kristian Gibson Vina, Vivian Pedroso, Nilton OTERO, Tilde Ingham, Laurent Garcon, Mehmet Ali Oturan, Clément Trellu.

#ID1513: Application of electrical power pulses in anode oxidation for the removal of organic pollutants. Fanny Zoumaro, Didier Floner, Florence Fourcade.

#ID4732: Towards simultaneous oxidation of multiple organic micropollutants (OMPs) Fulvic acids, chlorotoxicities and application of visible light-driven BiOX/TiO2-GO photocatalyst for the removal of OMPs. Agata Jaroszewska, Vincent Vivier, Marie Spasojevic, Jean-Marc Chovelon, Jean-Marc Brigaudeau.

#ID4489: Effect of nanostructure on the electrocatalytic activity of SnO2-based anodes for paracetamol oxidation. Loreto Pelaez, Raul Berenguer, Emilia Morallon.

#ID6352: Anodic oxidation of hypoxidil using different electrode materials. Noemi de Carvalho, Raul Berenguer, Emilia Morallon.

Section Mo-C3, Topic 8: Design, modelling and simulation of electrochemical devices
Chair Proposed: Hermann Wilkes

#ID6779: Investigating gas cross-over phenomena in redox-carbonate electrolyzers cells for enhanced performance and safety: a 2D modelling approach. Nicola Gray, Maria Anna Mcintosh, Massimiliano Della Pietra, Francesca Soavini, Maria Cristina Annesini.

#ID4871: Dynamic Modeling and Optimal Power Sharing Control of a Fuel Cell Hybrid Electric Vehicle. Ruel Omar, Samar Amin, Dorin Sarl.

#ID6638: Validation of advanced polymeric membranes for PEM FuelCells using multiphysics modelling. Elisa Rossello, Alessandro Bertarenghi.

#ID7900: A new analytical model for Flow-Between Capacitive Deionization. J.w. Zuurbier, R. Sandoval, C.J. Kalking, J.W. Blair.

#ID3668: Low to More: Variable Catalyst Loading for Improved CO2 Electroreduction. Joseph W. Blair, C.J. Kalking, J.W. Zuurbier.

#ID4203: Decoupled Supercapacitor Electrolyzer for Membraneless Water Splitting. Esteban Toledo-Carrillo, Marie Garcia-Rodriguez, Lorena Sánchez-Moreno, Jaydeep Dutta (On line presentation)

13thESEE - Scientific Program

Tuesday June 27th 2023

plenary conference 2: WPEE lifetime achievement award in electrochemical engineering. (A. Savall)

Section To-A1, Topic 3: Energy conversion and storage
Chair Proposed: Ana Maria Sarmento

#ID7578: New interstitial Pt-Co based catalysts for usage in high-temperature proton-exchange membrane fuel cells. Jan Thomas Reinhard, Fabian Hyzyma, Karel Bouzek, Martin Prokop, Ney Dufiek, Marijo Gatalo, Luka Pavlin.

#ID7756: Pt-based Bimetallic Electrocatalysts for Oxygen Reduction Reaction in Alkaline Medium. Georgia Ramopoy, Antonmitri Harmonis, Symeon Bebelis.

#ID4203: Electrodeposited NiCoP Cathode Catalyst for Alkaline Electrolysis of Water. Marcos Dorsch, Jeanne Hoek, Karel Bouzek.

#ID7399: Influence of Biomass Nature in the Electrochemical Production of H2O2 from Valorised Wastes. Alvaro Ramirez, Marcelo Mallico, Enar Lopez, Francisco Jesus Fernández, Javier Garcia.

Section To-B1, Topic 4: Electrochemical treatment of wastes/ pollution abatement
Chair Proposed: Gader Sylvain

Section To-C1, Topic 7: Electrodeposition-Electrochemistry
Chair Proposed: Pierre Chamelot

Seland-Frode Invited
Anode processes in zinc electrowinning: Deposition and removal of manganese oxide at noble metal surfaces

#ID4745: Effects of glycine and polyethylene glycol additives on zinc and zinc-nickel alloy electrodeposition mechanism in acid electrolytes. Charles Poix, Mouaouia Dhilmen, Alexandre Antonin, Nicolas Nyby, Clotilde Boulanger.

#ID4746: A parameter study of gold recovery from electronic waste by electrocoinning in a continuous flow module. Hannelore Andrien, Michiel De Bilp, Jonas Hendrigo, Yves Bonaplatzeno.

Coffee break + Posters

Section To-A2, Topic 3: Energy conversion and storage
Chair Proposed: Gildas Mulhea

#ID8083: Bifunctional catalyst for enhancing the efficiency of the reversible alkaline fuel cell. Dina Bessarabova, Jeanette Hosk, Karel Bouzek.

#ID8609: Feasibility of Chronoamperometric and Electrochemical Quartz Crystal Microbalance Coupled Measurements. Ivan Tabrizio, Felix Leroy, Matthias Schlueter.

#ID8791: Dependence of Ni-cathode and anode kinetic activity on electrolyte concentration and temperature. Karolina Hrudnova, Jaroslav Hnat, Karel Bouzek.

#ID8919: Proof of concept of different microbial fuel cells designed by 3D printing and using hydrogelyte separator. Consolata Gustavo, Isabel Rodriguez-Gomez, Alberto Fernandez Fernandez, Rafael Fernández-Fernández, Ester Vázquez-Rodríguez, Manuel Andrés, Desiderio Kharbachi, Carmen Maria.

Section To-B2, Topic 4: Electrochemical treatment of wastes/ pollution abatement
Chair Proposed: Asmaa Lazrak

#ID2811: Efficient removal of Benzene using an integrated unit of electrocoagulation/ 3D printing. Electrocoagulation/ 3D printing. Fernando Hernández Ramírez, Sara Gallego, Manuel A. Rodrigo.

#6753c: Simultaneous arsenic, fluoride, and hydrated silica removal from groundwater by electrocoagulation using Al and Fe anodes (Al, Fe, and Al-Fe). Consolata Lourdes, Nana Ami

Mascia Michele, Keynote, #ID8856
Model-based design of cost-oriented fuel cell for simultaneous wastewater-and hydrogen-by generation. Michele Mascia, Chiara Pusceddu, Laura Mais, Benedetta Vacca

Section To-C2, Topic 7: Electrodeposition-Electrochemistry
Electrochemical machining and electrochemical deburring of the raw metals: nanowires, urban mining, surfaces treat-ment/modification. ...
Chair Proposed: Pierre Chamelot

#8d679: High-performing Ni-foam based bifunctional electrocatalysts for industrial alkaline electrolysis. Alvaro A. Fernández, Luis F. Velasco, Andrés Romero

#7187: Copper Electrodeposition from Green Ammonia. Sudipta Roy, C. Tantia

#6783: Electrochemical separation and recovery of valuable materials from end-of-life lithium-ion batteries. Kaustra Nix, Cyril Kolaiti, Anna Pantto

Posters
Lunch Break

plenary conference 3: presentation of the Carl Wagner Medal winner
Davide Clematis, ISTEC Electrochemistry for Energy and Environment Università degli Studi di Genova, Italy

Section To-A3, Topic 3: Energy conversion and storage
Chair Proposed: Davide Clematis

#ID4880: Prediction of Electrical Conductivity of Ceramic Composites Using Monte Carlo 3D Equivalent Circuit Network Model. Daniel Bedia, Virginia Milos, Mabel Conde, Marcos Pinho, Karel Bouzek.

#7661i: Chemically-dealloyed PtPdPb-based ternary anode nanocatalyst for application in direct dimethyl ether fuel cells. Jonathan Calzonetti-Cruz, Primanayan Subramanian, Pier Bilsky, Jorge Pineau, Sarah Inez, Rosenkranz Mueller, Jim Wilson, Maya Kleinsmann, Alex Mushaw.

#6796ii: Performance of Silicon anodes and LiNi0.5-xMn1.5+xO4 cathodes in Ionic Liquid Electrolytes. Daniel Pergaud, Inga-Emma Nylund, Mike Sevan Mathew, Robert Ellestrom Langli, Ann-Karl Furtmann.

Section To-B3, Topic 6: Electroorganics-Electrosynthesis, Electrochemical Wastewater-cous pharmaceu, Electroregulators-Biocidation, capacitive demonstration, ...
Chair Proposed: Michele Tedesco

#7746h: Why efficient utilization of CO2 and water in electrolysis study matters. Vermaas, David

#8138h: Study of electrodialysis for the extraction of biologically produced organic acids from CO2. Robin CASTERMANE, Hélène Bouvier-Hamann, Sylvain Galier

#6856i: Process engineering for electrochemically switchable adsorption of carbon monoxide. Christel Kongsten, David Vermaas, Jelce Albertsen, Monique van der Veen.

Section To-C3, Topic 7: New materials for electro-chemical reactors and peripherals.
Chair Proposed: Lassaad Mansour

#8245: New Setup for Applying Screening Methods in Electrolysis Research. Reinhard Herzber, Denis Dragan, Andreas Müller, Guido Wiesenschaff, Hermann Tempel, Rüdiger-A. Eichel

#8189: Development of cathodic electrodes using carbon nanotube foam series coupled to electrochemically produce H2O2. Martin Muñoz-Morales, Alvaro Ramirez, Sonia Llanos, Concha Arias

#6339i: 65.M 3D-printed industrial electrodes for alkaline water splitting. Tsuneesa Jeoffrey, Presta Lois, Paul-Stéphane, Huber Bruno.

Posters+Coffee break

Section To-A4, Topic 3: Energy conversion and storage
Chair Proposed: Kaidong A. Archer

Section To-B4, Topic 6: Electroorganics-Electrosynthesis, Electrochemical Wastewater-cous pharmaceu, Electroregulators-Biocidation, capacitive demonstration, ...
Chair Proposed: Gilbrun de Balmann

Section To-C4, Topic 7: New materials for electro-chemical reactors and peripherals.
Chair Proposed: Vermaas, David

Section To-C5, Topic 10: Corrosion and Microwave-engineering.
Chair Proposed: Vermaas, David

#6773: Electrocatalysis on conducting polymers. Yagin Mikhail

Michele Tedesco Invited
#7427B: Ion exchange and bipolar membranes: key tools towards sustainable energy and chemicals.

#6737: Stability of Proton Exchange Membranes in Liquid Water at Elevated Temperature and Pressure. Tatsuya Ruedaharara, Kyana Pudaya, Tomoki Ryoman, Dipesh Pamika, Yarlee Polanoy, Karel Bouzek.

#6767i: The Development of Neutral Membrane Electrolyzer Cells for Solar-Driven Water Splitting: New Responsibility Techniques. Michael Carey, Chris Tricker, Daniel Bodle, Martin Paidar, Karel Bouzek.

#5387: Towards real-time monitoring and diagnostics of lithium-ion batteries with fiber optic sensors. Steven T. Boles, Julian Rosenkranz, Sean Clearlighter.

#8869: Significant boron removal via chemical- and membrane-free capacitive deionization. Justin H. Warren, Ryan Gwayd, Andre P. Kylberg, Matthew P. Hoe.

#8789: Flow and process modelling of a Selective Membrane Capacitive Deionization. Pascal Mickaël, Hanna Rousseau, Lukas Kramer, André Lauth.

#8463: Consistent understanding of a hydrogen-peroxide electrosynthesis device by combining oxygen reduction and organics oxidation reaction. Sang Eunjoo, Vogel-Schaud Caroline Chloe, Crispin Xavier

#8084: Could Nanofluidics Replace Polymeric Ion-exchange Membranes? Kamandar Pouran, Ilya Kyzhnyar, Daniel Vermaas.

#6575: Evaluation of Mild Steels, Corrosion Inhibitory Properties in Pickling Process Using Electrochemical Techniques. Ebenezer Ebenezer, Ebenezer Ebenezer, Dr Olajumoke Aboyewa, Oyewole Kayode, Gabriel Ebenezer, Ebenezer Ebenezer, Ebenezer Ebenezer, Ebenezer