EPFL

Conference Program

22nd Symposium on

Modelling and Experimental Validation of

Electrochemical Energy Technologies

ModVal 2026

Olympic Museum, Lausanne, Switzerland

March 10-11, 2026

Organized by:

Prof. Sophia Haussener & MER Dr. Jan Van herle

Hosted by:

École Polytechnique Fédérale de Lausanne (EPFL)

In collaboration with:

Laboratory of Renewable Energy Science and Engineering
Group of Energy Materials

EPFL

**22nd Symposium on Modeling and Experimental Validation
of Electrochemical Energy Technologies (ModVal 2026)**
Olympic Museum, Quai d'Ouchy 1, 1006 Lausanne, Switzerland, March 10-11, 2026

ModVal
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Olympic Museum, Quai d'Ouchy 1, 1006 Lausanne, Switzerland, March 10-11, 2026

**ModVal
2026**
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Sponsors

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Program Overview

Tuesday March 10th	
07:30	Registration opens at entrance of the museum
08:45	Welcome, Room: *Auditorium*
09:00	**Plenary I, Room: *Auditorium***
09:50	Short Break

	Session A: *Energy Storage* Room: *Auditorium* (ground floor)	Session B: *Energy Conversion* Room: *Coubertin* (2nd floor)
10:00	Session A1: *Next Generation*	Session B1: *High temperature electrolysis*
11:00	Coffee Break@*Room Olympia*, Poster@*Room Olympia/Lausanne*	
11:30	Session A2: *Thermal impact*	Session B2: *High temperature fuel cells*
12:30	Lunch Break@Room Olympia, Poster@Room Olympia/Lausanne	
13:40	Session A3: *Particle Cracking*	Session B3: *PEMFC I*
14:40	Coffee Break@*Room Olympia*, Poster@*Room Olympia/Lausanne*	
15:00	**Poster Session@*Room Olympia/Lausanne***	
16:30	Session A4: *Diagnostics*	Session B4: *PEMFC II*
18:00	**Poster Session@*Room Olympia/Lausanne***	
19:00	**Conference Dinner at Olympic Museum**	

Wednesday March 11th	
08:30	**Plenary II, Room: *Auditorium***
09:20	Short Break

	Session A: *Energy Storage* Room: *Auditorium* (ground floor)	Session B: *Energy Conversion* Room: *Coubertin* (2nd floor)
9:30	Session A5: *Manufacturing*	Session B5: *PEMWE*
10:30	Coffee Break@*Room Olympia*, Poster@*Room Olympia/Lausanne*	
11:00	Session A6: *Modelling I*	Session B6: *AEMWE*
12:00	Lunch Break@Room Olympia, Poster@Room Olympia/Lausanne	
13:10	Session A7: *Modelling II*	Session B7: *Transport in electrodes and membranes*
14:30	Closing remarks and announcement of **ModVal2027** at Room *Auditorium*	

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Oral program

Each oral talk includes 17 minutes presentation and 3 minutes Q&A

	Tuesday March 10th	
07:30	Registration opens at entrance of the museum	
08:45	Welcome, Room: *Auditorium* (ground floor)	
	Chair: **Sophia Haussener**, **Jan Van herle**	
09:00	Plenary I, Chair: **Sophia Haussener**, Room *Auditorium* (ground floor)	
	Curtis P. Berlinguette (University of British Columbia)	
	Reactive carbon capture	
09:50	Short Break	
	Session A: *Energy Storage* Room: *Auditorium* (ground floor)	**Session B: *Energy Conversion*** Room: *Coubertin* (2nd floor)
10:00	Session A1: *Next Generation* Chair: **Jakub Wlodarczyk**	Session B1: *High temperature electrolysis* Chair: **André Weber**
10:00	**Siwar Ben Hadj Ali** (Université de Picardie Jules Verne) An Experimentally-validated Modeling Workflow Coupling Electrochemistry and Solid Mechanics on Resolved Microstructures of ASSB Generated from Manufacturing	**Andrey Koksharov** (German Aerospace Center) Development of 3D Model for Proton Conducting Ceramic Electrolysis Cell
10:20	**Nikolaos Papadopoulos** (Porsche AG) Electrochemical Modeling of Silicon in Lithium-Ion Batteries Using a Multi-Species, Multi-Reaction Framework with Atomistic Insights	**Meng Lin** (Southern University of Science and Technology) Quantitative Analysis of Morphology and Performance of Electrode Microstructure in Solid Oxide Electrolysis Cells via Pore-scale Modeling
10:40	**Elisa Buccafusco** (Politecnico di Torino)	**Yanyu Chen** (Forschungszentrum Jülich GmbH)

	A Multiscale Numerical Investigation of LNMO/LFP Blended Cathodes	Multiphysics Simulation of Ni Agglomeration and Migration in Solid Oxide Cells under High-Steam Partial Pressure and Polarization Conditions
11:00	Coffee Break@*Room Olympia*, Poster@*Room Olympia/Lausanne*	
11:30	Session A2: *Thermal impact* Chair: **Nicola Courtier**	Session B2: *High temperature fuel cells* Chair: **Meng Lin**
11:30	**Weihan Li** (RWTH Aachen University) AI for Batteries: Modelling, Testing and Operation	**Xinyu Guo** (North China Electric Power University) Spatially-resolved local electrochemical performance of solid oxide electrolysis cell: the effects of steam supply and polarization
11:50	**Mark Blyth** (University of Bristol) Fitting Thermal Parameters from Electrical Data Gives Lumped Models of Heterogeneous Cells, by Predicting Their Effective Temperature	**Felix Kullmann** (Karlsruhe Institute of Technology) Design Guidelines for Ceria-based Fuel Electrodes: Connecting 3D Microstructure and Cell Performance
12:10	**Sebastian Frentzen** (Karlsruhe Institute of Technology) Degradation and Reformation of the Solid Electrolyte Interphase at the Onset of Thermal Runaway	**Daniel Ewald** (Institute for Applied Materials – Electrochemical Technologies) Impedance-based Performance Analysis and Modeling of Pressurized SOFCs for Aviation
12:30	Lunch Break@Room Olympia, Poster@Room Olympia/Lausanne	
13:40	Session A3: *Particle Cracking* Chair: **Simon Daubner**	Session B3: *PEMFC I* Chair: **Fink Clemens**
13:40	**Maximilian Fath** (Karlsruhe Institute of Technology) Quantifying the Impact of Secondary Particle Cracks on High-Nickel Insertion Batteries	**Elisa Revello** (Politecnico di Torino) Optimization of a hybrid battery-supported fuel cell propulsion architecture for a 4 MW regional aircraft
14:00	**Philipp Benjamin Kuhn** (Karlsruher Institute of Technology) Increased Effective Diffusion Coefficient of Secondary Particles Due to Beneficial Effects of Cracking	**Fabian Klärchen** (TU Braunschweig) Modeling of Liquid Water Transport in Fuel Cell Gas Channels Based on Contact Angles
14:20	**Nikolai Erhardt** (Karlsruher Institute of Technology) A Physics-Informed Model for Chemo-Mechanical Damage in Lithium-Ion Battery Particles	**Maxence Desnoyers** (Université de Picardie Jules Verne) Numerical Framework to Study Structural Wetting Properties of Proton Exchange Membrane Fuel Cell Catalyst Layers with Manufacturing Parameters

14:40	Coffee Break@*Room Olympia*, Poster@*Room Olympia/Lausanne*	
15:00	**Poster Session@*Room Olympia/Lausanne***	
16:30	Session A4: *Diagnostics* Chair: **Nikolaos Papadopoulos**	Session B4: *PEMFC II* Chair: **Jürgen Schumacher**
16:30	**Martino Fortunati** (Politecnico di Milano) Machine Learning Model–Based Electrochemical Diagnostics for Comprehensive Lithium-Ion Battery Health Assessment	**Yuze Hou** (Fraunhofer Institute for Solar Energy Systems ISE) Pore-Scale Modeling of Through-Plane Reactive Transport in PEM Fuel Cell Electrodes with Optimized Mesoporous Carbon Supports
16:50	**Quentin Moglia** (Université Grenoble Alpes) Monitoring Heterogeneous Deformation in Lithium Batteries Using Strain Gauges and Digital Volume Correlation	**Nikita Gusev** (ETH Zürich) Lattice Boltzmann model for volume-averaged fluid dynamics in heterogeneous non-Darcian porous media
17:10	**Priscilla Caliandro** (Bern University of Applied Sciences) Battery Health Monitoring and Degradation Analysis for EV Fleets: A Data-Driven Pipeline Approach	**Philipp Oppek** (Karlsruhe Institute of Technology) Spatially Resolved Impedance Analysis and Modeling in PEMFCs
17:30	**Noël Hallemans** (University of Oxford) Multisine electrochemical impedance spectroscopy	**Tancrède Oswald** (Friedrich-Alexander Universität Erlangen-Nürnberg) Model-Based Reduction of the Required Validity Space of Electrochemical Models for Efficient Testing
18:00	**Poster Session@*Room Olympia/Lausanne***	
19:00	**Conference Dinner** at Olympic Museum	

	Wednesday March 11th	
08:30	Plenary II, Chair: **Jan Van herle**, Room *Auditorium* (ground floor) **Alejandro A. Franco** (Unviersité de Picardie Jules Verne) ***From Powder to Cell: Accelerating Battery Production*** ***with Multiscale Modeling, AI and XR***	
09:20	Short Break	
	Session A: *Energy Storage* Room: *Auditorium* (ground floor)	**Session B: *Energy Conversion*** Room: *Coubertin* (2nd floor)
09:30	Session A5: *Manufacturing* Chair: **Alejandro A. Franco**	Session B5: *PEMWE* Chair: **Roberto Valenza**

09:30	**Emmanuel Yerumoh** (Université de Picardie Jules Verne) 3D Resolved Computational Modeling to Simulate the Electrolyte Wetting of a Lithium-Ion Battery Cell with 18650 Format	**Lucas Anschütz** (Leibniz University Hannover) Modelling Hydrogen Permeation during Run-in Phase of PEM Water Electrolysis
09:50	**Caroline Willuhn** (Technical University of Braunschweig) DEM-Based NCM622 Cathode Microstructures: Influence of Carbon-Binder-Domain Addition Method on Electrochemical Properties	**Diamantis Almpantis** (Lund University) Multiphysics and Data-Driven Modeling of AC-Coupled PV–PEM Systems with Experimental Validation
10:10	**Simon Daubner** (Imperial College London) Microstructure-aware DFN Models and the Tortuosity of Graded Electrodes	**Felix Dittmar** (Fraunhofer Institute for Chemical Technology) Development and Validation of a Layer-Unspecific Physical Model for Voltage Degradation and RUL Prediction in PEM Water Electrolyzers
10:30	Coffee Break@*Room Olympia*, Poster@*Room Olympia/Lausanne*	
11:00	Session A6: *Modelling I* Chair: **Jakub Wlodarczyk**	Session B6: *AEMWE* Chair: **Matthieu Dessiex**
11:00	**Julian Ulrich** (Karlsruhe Institute of Technology) Nonlinear Battery Model in Frequency-Domain and its Parameterization	**Erwan Tardy** (Université Grenoble Alpes) Modeling of Anion Exchange Membrane Electrolysis: Investigation of the Dual Ion-Transport Pathways
11:20	**Max Okraschevski** (German Aerospace Center) Towards a predictive scale-resolved 3D model of sulfurized polyacrylonitrile (SPAN) batteries for aviation	**J.W. Haverkort** (Delft University of Technology) Multiphase Flow Experiments and Modeling of Shunt Currents in Alkaline Water Electrolysers
11:40	**Pierre Hugon** (Université Grenoble Alpes) Quantification of Lithiation Heterogeneities in Graphite Electrode under Normal and Fast Charging Conditions Using Phase-field Modelling	**Clemens Fink** (AVL List GmbH) A Novel CFD Model for AEM Electrolyzers
12:00	Lunch Break@Room Olympia, Poster@Room Olympia/Lausanne	
13:10	Session A7: *Modelling II* Chair: **Wolfgang Bessler**	Session B7: *Transport in electrodes and membranes* Chair: **Etienne Bountin**
13:10	**Patricia Ogochukwu Mmeka** (Offenburg University of Applied Sciences)	**Christopher Arntsen** (SINTEF Industry)

	Low-complexity Parameterization of a Degradation-sensitive Equivalent Circuit Model	Transport Properties of Ammonia-saturated Nafion Membranes
13:30	**Mohammed Asheruddin Nazeeruddin** (Imperial College London)	**Tabea Schenuit** (University of Stuttgart)
	Suppressing Phantom LAM/LLI in Voltage-Curve Degradation Mode Analysis via Ohmic IR Correction and Branch-Aware Hysteresis Handling	Effective Reaction Rates of Oxygen Reduction Reaction in Gas Diffusion Electrodes by First Principles Microscale Modelling
13:50	**Rabin Siva Dev** (Mercedes-Benz AG)	**Francesca Lorenzutti** (École Polytechnique Fédérale de Lausanne)
	Modelling of OCV Hysteresis	Pore-Scale Modeling of Electrochemical CO_2 Reduction within the Catalyst Layer of a Gas Diffusion Electrode
14:30	Closing remarks and announcement of **ModVal2027** at Room *Auditorium*	

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Poster program

A. Energy Storage (Room Olympia)

A1 Diagnostics
A101   **Feng Guo** (Hasselt University)
Electrochemical-Model-Based Voltage Sensor Fault Diagnosis and Fault-Tolerant SOC Estimation for LFP Batteries
A102   **Kasper Westman** (Chalmers University of Technology)
The secret life of e-scooter batteries
A103   **Yohan Aymon** (Bern University of Applied Sciences)
Early Detection of Lithium Plating in Fast Charging Protocols for NMC Cells
A104   **Carlos Daniel Saez Martinez** (Université Grenoble Alpes)
An original protocol to characterize electrode selective degradation mechanisms
A105   **Blanka B. Gaál** (University of Oxford)
Understanding the Charge-Transfer Kinetics of LFP and LMFP Battery Cells
A106   **Weihan Li** (RWTH Aachen University)
AI for Batteries: Modelling, Testing and Operation
A107   **Jonas A. Braun** (Offenburg University of Applied Sciences)
Operando diagnostics of the open-circuit voltage curve of batteries with voltage-controlled models
A2 Manufacturing
A201   **Soorya Saravanan** (Université de Picardie Jules Verne)
An Automated Model Parametrization Framework for Microstructure Simulation of Electrochemical Devices
A3 Modelling
A301   **Hamid Hamed** (Hasselt University)
Insights into Battery Aging: Lessons Learned from Analyzing Public Datasets
A302   **Marek Sedlařík** (Brno University of Technology)
Parameter Identification of Lithium-Ion Battery Equivalent Circuit Models Using GITT and EIS
A303   **Nicola E. Courtier** (University of Oxford)

	Towards Reproducible Physics-based Parametrization of Lithium-ion Batteries
A304	**Dibyendu Ghosh** (University of Oxford)
	Parametrisation of the equivalent hydraulic model
A305	**Paula Lorson** (Karlsruhe Institute of Technology)
	Modelling of battery half-cells consisting of $LiFePO_4$ considering mechanics and particle size distribution
A306	**Christoph Pohl** (Weierstrass Institute for Applied Analysis and Stochastics)
	Thermodynamically consistent modelling of solid-electrolyte-interphase growth
A307	**Manuel Landstorfer** (Weierstrass Institute for Applied Analysis and Stochastics)
	Modeling and simulation of porous electrodes with phase separation based on non-equilibrium thermodynamics and homogenization theory
A308	**Cinti Davide** (Zürcher Hochschule für Angewandte Wissenschaften)
	Coupled Transport, Poisson and gFBV Model for 1D Double Layer Description of RFB Electrode-Electrolyte Interface
A309	**Jaime López García** (Zürcher Hochschule für Angewandte Wissenschaften)
	Qualitative Regime Behaviour in Reduced-Order Porous Electrode Models for Redox-flow Cells
A310	**Will Clarke** (University of Portsmouth)
	Hooks, shoulders, knees and toes: Understanding bumps in LFP half-cell voltage curves through the composite phase-change model
A311	**Joe Ross** (University of Oxford)
	Optimal loading control accounting for cell-to-cell variability in parallel battery modules
A312	**Steffen Zappe** (University of Bayreuth)
	Kinetic Monte Carlo Modelling of Hydrogen Evolution and Iron Plating in Hybrid All-Iron Redox Flow Batteries
A313	**Aigerim Yessim** (Helmut-Schmidt-Universität/Universität der Bundeswehr Hamburg)
	Reduced-Order Modeling of Polymer-Based Battery Electrodes
A314	**Michele Spinola** (Capgemini Engineering)
	Optimal Control of a Half-Cell Equivalent Circuit Model for Li-ion Batteries with Applications to Fast Charging
A315	**Jochen Zausch** (Fraunhofer Institute for Industrial Mathematics)
	Bridging Cell and System Scales: Coupled Electrochemical and Thermal Simulation of Batteries with Silicon-Dominant Anodes
A316	**Giuliano Lombardo** (University of Stuttgart)
	Optimization of ion mobility in Li-ion batteries by metal fibers
A317	**Connor McAllister** (University of Oxford)
	Impedance of battery electrolytes: an analytical approach
A318	**Katrin Bitzer** (Fraunhofer Institute for Industrial Mathematics)

	A Time-Dependent 0D Model of Redox Targeting-Based Flow Batteries with Two-Step Electron-Transfer Reactions
A319	**Simon Schwab** (Offenburg University of Applied Sciences)
	Model-based quantification of specific energy and thickness change of lithium-ions cells with silicon-graphite negative blend electrodes
A320	**Wolfgang Bessler** (Offenburg University of Applied Sciences)
	LIBquiv: An open-source MATLAB class for time-domain simulation of battery equivalent circuit models
A321	**Alessio Lombardo Pontillo** (Politecnico di Torino)
	Homogenization of LIBs: a fast model for state-of-charge in-line monitoring
A322	**Sanghyun Kim** (Hyundai Motor Company)
	Assessing the Limitations of 1D Models in Large-Format Batteries: A Comparative P2D and P4D Study on Aspect Ratio Effects
A323	**Johannes Bakkelund** (University of Agder)
	Electrolyte Motion in Lithium-ion Batteries - A Multiscale Modelling Framework
A324	**Raphael Mühlpfort** (Karlsruhe Institute of Technology)
	Investigation of Effective Transport Parameters of Lithium-Ion Cells Using a Hybrid Simulation Model
A325	**Robert Triebl** (AVL List GmbH)
	Understanding the performance of LMFP/NMC blend cathodes with the help of simulation
A326	**Noah Lettner** (German Aerospace Center)
	Thermodynamically consistent modeling of ion exchange membranes in multi-ionic environments
A327	**Eric Woillez** (Université Grenoble Alpes)
	Parametrization of phase-separating materials in the Newman model
A328	**Veronika Vachenauer** (Technical University of Munich)
	Comparison of SEI-Growth Models for Lithium-Ion Batteries
A329	**Kawa Manmi** (University of Warwick)
	Solid Electrolyte Interphase Model Based on Non-equilibrium Thermodynamics
A330	**Elia Zonta** (Technical University of Munich)
	Probing simulation-based inference for credible battery model parameter estimation from impedance data
A331	**Elyes Ahmed** (SINTEF Digital)
	Calibrating P2D Battery Models with Gradient-based Optimization: From Single-Objective Sensitivity-Based Grouping to Multi-Objective Game-Theoretic Strategies
A332	**Shakul Pathak** (Massachusetts Institute of Technology)
	Analytical Approximations of Porous Electrode Theory for Reaction-limited Batteries
A333	**Ioannis Bartsiokas** (University of Warwick)

	Multi-Disciplinary Design Optimization of Li-ion Batteries: Coupling Electrochemical, Mechanical, and Thermal Performance
A334	**Svenja Both** (German Aerospace Center)
	Probing inhomogeneous rocksalt growth using structure-resolved simulations
A335	**Carlos Garcia** (Imperial College London)
	Battery Parameter eXchange (BPX): a flexible standard for battery modelling and parameterisation
A4 Next generation	
A401	**Amir Ali Panahi** (Imperial College London)
	Accelerating Lithium-Ion Battery Simulation with Neural Operators
A402	**Owen Moir** (Echion Technologies)
	Pre-emptive Data Infrastructure Enables Model Validation at Scale: Insights from a Battery Startup
A403	**Alex Baigneres** (Echion Technologies)
	Electrochemical performance modelling of fast-charging niobium-powered applications using PyBaMM
A404	**Laura Femmer** (German Aerospace Center)
	Theory-based Analysis of 1,4-Polyanthraquinone as Cathode Material for Post-Lithium Batteries
A405	**Prakhar Verma** (Imperial College London)
	PyBaMM-Based One-Dimensional Model for Morphological Evolution and Capacity Degradation in Li–S Cells
A5 Particle cracking	
A501	**Alexandra Pamperin** (Karlsruhe Institute of Technology)
	Geometry dependence of effective transport in a periodic medium
A502	**Milena Markovic** (École Polytechnique Fédérale de Lausanne)
	Accelerated Aging of LFP Batteries: Investigating Cathode Degradation Mechanisms
A503	**Sunil Kumar Rawat** (Imperial College London)
	Beyond Paris's Law: rethinking particle cracking, active material isolation, and degradation in lithium-ion cells by a mechanically coupled LAM model
A6 Thermal impact	
A601	**Simon Kücher** (Technical University of Munich)
	Temperature dependence of tortuosity measurements for different electrode types under compression
A602	**Pamella Palmeira de Araújo** (Lund University)
	High-Fidelity Modeling of Cell-Level Thermal Runaway in Lithium-Ion Batteries
A603	**Elisa Revello** (Politecnico di Torino)

	PCM-Based Thermal Energy Storage for Thermal Management of Heavy-Duty Batteries
A604	**Joel Wooden** (Bern University of Applied Sciences)
	Reduced-Order Thermal Modeling of Cylindrical Lithium-Ion Battery Cells: An Experimentally Economical Approach
A605	**Leonie Pfeifer** (Karlsruhe Institute of Technology)
	Influence of Thermal Gradient Direction during Aging on the Thermal Conductivity of Blend-Cathodes
A606	**Eric Peng** (Imperial College London)
	Thermal Conductivity Evolution of Lithium-Ion Pouch Cells over Lifetime
A607	**Alastair Hales** (University of Bristol)
	Identifying and Developing Standards for Electrochemical and Empirical Battery Model Validation

B. Energy Conversion (Room Lausanne)

	B1 High temperature electrolysis
B101	**Hangyu Yu** (École Polytechnique Fédérale de Lausanne)
	PressHyous – Pressurized hydrogen produced by high temperature steam electrolysis
B102	**Xiaolu Wang** (North China Electric Power University)
	Parameter Identification and Modeling of Solid Oxide Electrolysis Segmented Cells
B103	**Andrea Bazzanella** (École Polytechnique Fédérale de Lausanne)
	Solar-Driven Hydrogen Production Using a Molten Carbonate Electrolyser
B104	**Mathieu Zysset** (École Polytechnique Fédérale de Lausanne)
	Dynamic Multiphysics Modeling of Solid Oxide Electrolyzers
	B2 High temperature fuel cells
B201	**Lucia Pera** (École Polytechnique Fédérale de Lausanne)
	0D model for predicting sulphur-contaminant degradation in biogas-fuelled SOFCs
B202	**Michele Bruno** (École Polytechnique Fédérale de Lausanne)
	From Single Cell to System: Multiscale Analysis of Carbon Deposition in SOFCs
B203	**Anis Taissir** (German Aerospace Center)
	Modelling Approaches and Validation for Solid Oxide Cell Cross-Flow Stacks
B204	**Junyi Tao** (The University of Tokyo)
	Simulation of solid-state dewetting of thin nickel film in solid oxide fuel cells using phase field modeling
B205	**Shuang Zhao** (North China Electric Power University)
	Numerical Simulation of Multi-physics Field Uniformity in SOFC Stack Configuration
B206	**Yulong Lv** (North China Electric Power University)

In-situ simultaneous characterization of in-plane inhomogeneity of electrochemical performance and temperature field of solid oxide fuel cells

B207	**Martin Gay** (École Polytechnique Fédérale de Lausanne)
	Modeling and validation of a packed bed reactor for catalytic oxy-combustion in a 10 kW SOFC+mGT system
B208	**Federico Ferrari** (École Polytechnique Fédérale de Lausanne)
	A Dynamic 1D Modeling Framework for Reversible Solid Oxide Cells in OpenModelica

B3 PEMFC

B301	**Monika Jałowiecka** (Warsaw University of Technology)
	Direct formic acid fuel cell performance assessment with new hydrophilic electrodes and uniform reagent distribution system
B302	**Sébastien Kawka** (CEA)
	Stress heterogeneities inside PEMFC stacks: a comparison between metal and carbon bipolar plates
B303	**Lisa Machard** (Technische Hochschule Nürnberg Georg Simon Ohm)
	Electrochemical Impedance Spectroscopy and Relaxation Time Analysis for PEM Fuel Cells using Deep Learning
B304	**Margherita Bulgarini** (Politecnico di Milano)
	Fluid dynamic and electrochemical interactions between flow field design and CCM properties in PEM fuel cells
B305	**Edoardo Scoletta** (Zürcher Hochschule für Angewandte Wissenschaften)
	The Role of Transient Dynamics in PEM Fuel Cells: Polarization Hysteresis and Impedance Analysis
B306	**Roman P. Schärer** (Zürcher Hochschule für Angewandte Wissenschaften)
	Unified Microkinetic Modelling of Coupled Oxygen Reduction and Degradation Reactions in PEMFC Cathode Catalyst Layers
B307	**Maha Benhamad** (Université Grenoble Alpes)
	Impact of CO_2 and N_2 hydrogen dilution on PEMFC performance: A numerical study
B308	**Christian Altenhofen** (Gamma Technologies GmbH)
	MLP Neural Networks applied to PEMFC predictive degradation and control optimization
B309	**Matilde Russo** (Imperial College London)
	An elementary step-based reaction mechanism for carbon corrosion in PEMFCs
B310	**Nick Raue** (Fraunhofer Institute for Solar Energy Systems ISE)
	Implementation and validation of a PEMFC mesoporous substructure electrode model into a 3D CFD-Code
B311	**Yann Bultel** (Université Grenoble Alpes)
	Innovative approaches to freeze/thaw cycling in PEM fuel cells: unveiling degradation mechanisms and multi-scale aging modeling

B312	**Dunke Liu** (Forschungszentrum Jülich)
	Two-phase flow simulation of multi-droplets motion in gas channel of polymer electrolyte fuel cells
B313	**Heesoo Park** (The University of Tokyo)
	Microstructure-Dependent Carbon Corrosion in PEMFC Cathodes under Accelerated Stress Testing
B314	**Jan-Christoph Jeske** (Otto-von-Guericke Universität Magdeburg)
	Optimizing the Range of a Fuel Cell Electric Vehicle with a genetic algorithm
B315	**Larisa Karpenko-Jereb** (EEC-LABS – Digital Labs for Electrochemical Energy Conversion)
	1D-Degradation Models to Study PEMFCs
B316	**Ludwig Bossle** (Karlsruhe Institute of Technology)
	Hybrid DEM-VoF Multiphase Model for Microchannels of Electrochemical Devices
B317	**Maciej Gruberski** (Warsaw University of Technology)
	The influence of transport porous layer wettability on Direct Formic Acid Fuel Cell performance
B318	**Tancrède Oswald** (Friedrich-Alexander Universität Erlangen-Nürnberg)
	Model-Based Reduction of the Required Validity Space of Electrochemical Models for Efficient Testing
B319	**Kersten Schwab** (Karlsruhe Institute of Technology)
	Influence of the Cathode Catalyst Material Selection on the Cathode Gas Transport Processes in PEMFC
B320	**Leonard Freisem** (Université Grenoble Alpes)
	PEMFC Local Fault Identification by Magnetic Tomography and Deterministic Optimization
B321	**Felix Benz** (Forschungszentrum Jülich)
	Microscopic Mechanical Models for PEM Compared to Real Cell Deformations
B322	**Jens Eller** (Paul Scherrer Insitut)
	Ex situ small angle neutron scattering study of water uptake in hydrocarbon based catalyst layers
	B4 PEMWE
B401	**Iain Malone** (University College London)
	Evaluating the Validity of In Situ Reference Electrode Measurements in PEM and AEM Water Electrolysers
B402	**Dario Mauth** (Bosch Research)
	Model based investigation of hydrogen crossover dynamics
	B5 AEMWE
B501	**Ronit Kumar Panda** (Gen-Hy Cube SAS)

	Model-Based Design Engineering for Industrial AEM Electrolyzer Stacks Using Coupled 1D–3D Multiphysics Models
B502	**Claudius Stockinger** (University of Stuttgart)
	Modelling of Mass Transport Limitations in Mixed Wetting Gas Diffusion Electrodes
B503	**Guillaume SERRE** (CEA)
	Multiphysics model describing the performances of AEM electrolyzer cell
B504	**Laura Brétillon** (CEA Liten)
	Investigation of ionomer nature and pH roles on HER and OER in AEMWE using RDE for model calibration
B505	**Yoga Rahmat** (German Aerospace Center)
	Process Modelling of High-Pressure Alkaline Electrolysis, Syngas Generation, Methanol Synthesis, and Cost Estimation
B506	**Margarida L.R. Peixoto** (University of Porto)
	Characterisation of Bubble Size Distribution in a Vertical Water Electrolyser
B507	**Amadeus Wolf** (Fraunhofer Institute for Chemical Technology)
	Dynamic System Modeling of Alkaline Water Electrolysis Including Natural Convection and Degradation Effects
B508	**Pedro Affonso Nóbrega** (PSL University)
	Using physics-based models as data-driven ones: a new approach for modelling fuel cells and electrolyzers
B6 CO$_2$ electrolysis	
B601	**Venu Agarwal** (École Polytechnique Fédérale de Lausanne)
	Model-Based Optimization of Cathode Architecture and Bipolar Membrane Properties in Bicarbonate-Fed CO$_2$ Electrolyzers
B602	**Lourenço C. Vieira** (Zürcher Hochschule für Angewandte Wissenschaften)
	Studying Local Inhomogeneities in Zero-gap CO$_2$ Electrolysis via Validated 2D Multiphysics Simulation
B603	**Roberto Valenza** (École Polytechnique Fédérale de Lausanne)
	Hydrogen production by combined hydrothermal liquefaction and membraneless electrochemical reforming of organic waste with integrated CO$_2$ capture
B604	**Aviral Rajora** (TNO)
	Using simulations and machine learning for efficient electrochemical CO$_2$ reduction for ethylene production
B605	**Natalie Frassl** (École Polytechnique Fédérale de Lausanne)
	Investigating Morphological Evolution and Degradation of Electrocatalysts During Electrochemical CO$_2$ Reduction
B606	**Etienne Boutin** (École Polytechnique Fédérale de Lausanne)
	(Micro-)kinetic Effect on Selectivity during Pulsed Electrolysis: Exploring the Space of Electrochemical Parameters

B607	**Matthieu Dessiex** (École Polytechnique Fédérale de Lausanne)
	The Cathode Ionomer as an Interfacial Modulator in Electrolyte-Free CO_2 Electrolysis

	B7 Transport in electrodes and membranes, and diagnostics
B701	**Alessio D'Alessandro** (Ansaldo Green Tech)
	Insight on in-cell three-electrode EIS using an insulated endplate as pseudo-reference
B702	**J. Raphael Seidenberg** (RWTH Aachen University)
	Definition and Interpretation of Concentration and Activation Overpotentials
B703	**J. Raphael Seidenberg** (RWTH Aachen University)
	Modeling of electrochemical impedance spectroscopy measurements under gas evolution
B704	**Mostafa Delpisheh** (Newcastle University)
	Coupled electrochemical–MHD modeling of magnetic-field-induced water electrolysis in acidic electrolyte
B705	**Axel R. Dullak** (Zürcher Hochschule für Angewandte Wissenschaften)
	Local Lattice Boltzmann Implementation for Electrochemical Transport in OpenLB
B706	**Kira Ohlinger** (Friedrich-Alexander-Universität Erlangen-Nürnberg)
	Energy and Exergy Balancing in Modular Electrochemical and Fluid Dynamic Systems Modelling
B707	**Jürgen Fuhrmann** (Weierstrass Institute)
	Modeling and simulation of a closed electrochemical cell via an ion-conserving modified Poisson–Boltzmann model with dielectric decrement

	B8 Solar-driven electrochemsitry
B801	**Thomas Heipke** (École Polytechnique Fédérale de Lausanne)
	Investigation of a tandem membrane-photoelectrode assembly for solar hydrogen production
B802	**Simone Pokrant** (Paris-Lodron University of Salzburg)
	Current decay curves and degradation of oxynitride photoanodes for renewable hydrogen generation
B803	**Abhinav Bhanawat** (École Polytechnique Fédérale de Lausanne)
	Optimizing fiber geometry in transparent fibrous conducting substrates for enhanced photoelectrochemical performance
B804	**Paul Feurstein** (École Polytechnique Fédérale de Lausanne)
	Predicting Operation and Degradation of Photoanodes

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**22nd Symposium on Modeling and Experimental Validation
of Electrochemical Energy Technologies (ModVal 2026)**
Olympic Museum, Quai d'Ouchy 1, 1006 Lausanne, Switzerland, March 10-11, 2026

**ModVal
2026**
10–11 Mar, 2026
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Modval 2026 Plenary speakers

Prof. Alejandro A. Franco (Unviersité de Picardie Jules Verne)

Prof. Alejandro A. Franco is a Full Professor at the Université de Picardie Jules Verne, an Honorary Member of the Institut Universitaire de France and Affiliate Professor at University of Washington (Seattle, USA), with over 25 years dedicated to the multiscale modeling of electrochemical energy devices, and batteries in particular. His pioneering work, recognized by two ERC grants, integrates physics-based simulations, AI, and mixed reality to optimize battery manufacturing. He was honored with the 2019 French Prize for Pedagogy Innovation for his use of Virtual Reality in battery education, and is the recipient of the 2025 Battery Division Whittingham Mid-Career Award of the Electrochemical Society. Prof. Franco published more than 180 publications, 12 book chapters, 23 patents, and has delivered more than 230 invited lectures. He also coordinates the Erasmus+ i-MESC MSc. programme, at the crossroads between battery science, engineering and digitalization. He is the co-founder and CSO of Aikemics, a startup providing unique digital solutions for the battery industry.

Prof. Curtis P. Berlinguette (University of British Columbia)

Prof. Curtis P. Berlinguette leads an interdisciplinary team that designs and builds electrochemical reactors to accelerate decarbonization. Dr. Berlinguette is a Distinguished University Scholar at the University of British Columbia, where he is a Professor of Chemistry and Chemical & Biological Engineering. He is also a Fellow of the Royal Society of Canada, CIFAR Program Director, and Principal Investigator at the Stewart Blusson Quantum Matter Institute (SBQMI). His academic group has advanced a range of clean energy applications including CO_2 utilization, membrane reactors for decarbonizing the chemicals industry, and lower-temperature fusion.

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Acknowledgement

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Bern University of Applied Sciences

Special thanks to Prof. Priscilla Caliandro for her generous help of abstract review.

Conference Venue

Olympic Museum
Email: info.museum@olympic.org
Homepage: www.olympics.com/museum
Location: Le Musée Olympique, Quai d'Ouchy 1, 1006 Lausanne
Contact: Tina Reist, Corporate Events Manager

Conference Program

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Hosted by:

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