

FDFC 2019 detailed program

Tuesday Morning February 12th

8h00 - 8h45	Welcome	
8h45 – 9h00	Introduction and Welcoming Words, Bruno AUVITY, General Chairman	Plenary Auditorium
9h00 – 9h45	Plenary Lecture: Dimitrios PAPAGEORGOPOULOS, DoE, USA Advancing Hydrogen and Fuel Cells in the U.S. through Early-Stage Research and Development <i>Chairman: Prof. Loic BOULON</i>	Plenary Auditorium
9h45 – 10h30	Plenary Lecture: Pierre BOILLAT, Paul Scherrer Institute, Switzerland 20 years of neutron imaging for fuel cells: what did we learn and what is yet to come ? <i>Chairman: Dr. Arnaud MORIN</i>	Plenary Auditorium
10h30 – 11h00	Coffee Break	
11h00 – 13h00	Session 1a : Operando Imaging and Diagnostic Techniques in Fuel Cell and Electrolyser Research I <i>Chairlady: Prof. Aimy BAZYLAK</i>	Plenary Auditorium
11h00 – 11h20	Operando measurements and visualization of water distribution in PEMFCs at high current densities – J. Jankovic (Invited talk)	
11h20 – 11h40	Advancements in time-resolved X-ray tomographic imaging of liquid water in gas diffusion layers of polymer electrolyte fuel cells – Hong Xu	
11h40 – 12h00	Synchrotron Radiography for a Proton Exchange Membrane (PEM) Electrolyzer – O. Panchenko	
12h00 – 12h20	The Impact of Cathode Nitrogen Purging on In Operando Imaging of PEM Electrolyzer Anode via Neutron Radiography - ChungHyuk Lee	
12h20 – 12h40	High-resolution neutron imaging of operando fuel cell alternative membrane – Jongmin Lee	
11h00 – 13h00	Session 1b: SOFC and SOEC I <i>Chairman: Prof. Dr.-Ing. Olivier GUILLON</i>	Room 200
11h00 – 11h20	Test bench design for fuel cell based micro-CHP systems - H. Bekebrok	
11h20 – 11h40	State-of-the-Art Solid Oxide Electrolyzers: Thermodynamic, Economic, and Environmental Analyses – W. G. Colella	
11h40 – 12h00	SOFC mCHP sizing study for several countries in Europe for residential and commercial market – S. Hody	
12h00 – 12h20	Dynamic and steady state models for IT-SOFC - J. Lesmayoux	
12h20 – 12h40	Key parameters of proton conducting Solid Oxide Fuel Cells from point of view of coherence with mathematical models - J. Milewski	
12h40 – 13h00	Physical Modeling of solid oxide Electrolysis cells in CO-electrolysis mode - G. Futter	
11h00 – 12h40	Session 1c: Electrocatalysis I <i>Chairman: Dr. Carlo SANTORO</i>	Room G H
11h00 – 11h20	Distorted surfaces for PEMFC Electrocatalysis – R. Chattot	
11h20 – 11h40	Minimizing mass-transport loss in proton exchange membrane fuel cell by freeze-drying of cathode catalyst layer – K. Talukdar	
11h40 – 12h00	Supercritical deposition: a powerful technique for synthesis of highly active electrocatalysts for Fuel cells and Electrolysers – C. Erkey	
12h00 – 12h20	Novel Electrodes based on nanotubes of Nickel-Platinum alloys for Oxygen Reduction Reaction in PEMFC – O. Lagrichi	
12h20 – 12h40	Oxygen Evolution Reaction investigation on model catalysts in acidic medium: electro-oxidation and catalytic activity of Ir(111), Ir(210) and nanopyramids on Ir(210) – M. Scohy	
13h00 – 14h15	Lunch	

Tuesday Afternoon February 12th

14h15 – 15h00	Plenary Lecture: Federico ZENITH, SINTEF & NTNU Energy and Process Engineering, Norway Diagnostics, Prognostics and Control of Low-Temperature PEM Fuel Cells <i>Chairman: Dr. Samir JEMEI</i>	Plenary Auditorium
15h00 – 16h40	Session 2a: PEM Fuel Cell degradations <i>Chairman: Dr. Rod BORUP</i>	Plenary Auditorium
15h00 – 15h20	Effect of fuel impurities (CO, CO ₂ , H ₂ S) on PEMFCs with ultra-low loaded anodic catalyst layers – S. Prass	
15h20 – 15h40	PEM fuel cell performance in presence of trace concentrations of HCl and C ₄ Cl ₄ F ₆ in hydrogen under automotive load cycling – I. Profatilova	
15h40 – 16h00	The effect of toluene on PEMFC performance – J. Viitakangas	
16h00 – 16h20	The importance of proper freeze start testing conditions – from an industry's point of view – S. Temmel	
15h00 – 16h20	Session 2b: PEMF Fuel Cell : GDL I <i>Chairman: Dr. Stéphane CHEVALIER</i>	Room 200
15h00 – 15h20	Liquid water formation in cathode gas diffusion layers of PEMFC: the three scenarios – P. Carrère	
15h20 – 15h40	Pore scale modeling of the transport in reconstructed porous electrodes – Min Lee	
15h40 – 16h00	Comparison of through-plane and in-plane gas permeability in the gas diffusion layers (GDLs) with pure and mixed dry gases – M. Mukherjee	
16h00 – 16h20	Cost effective PEM electrolysis: component improvement and understanding of mass transport – K.A. Friedrich	
15h00 – 16h20	Session 2c: Diagnostics and Fault Tolerant Control I <i>Chairs: Dr. Nadia STEINER, Dr. Matthias GERARD and Prof. Yann BULTEL</i>	Room G H
15h00 – 15h20	Diagnostic and Fault Tolerant Control: next challenges – N. Steiner and M. Gerard	
15h20 – 15h40	Local faults identification on a PEMFC by external magnetic field – Y. Bultel	
15h40 – 16h00	Proton Exchange Membrane Fuel Cell Prognostics Using Genetic Algorithm and Extreme Learning Machine – Kui Chen	
16h00 – 16h20	Enhancing the Performance of Kalman Filter for Online Identification of a Fuel Cell Semi-Empirical Model – M. Kandidayeni	
16h20 – 17h00	Coffee Break + Poster Session	

Tuesday Afternoon February 12th

17h00 – 18h40	Session 3a: Operando Imaging and Diagnostic Techniques in Fuel Cell and Electrolyser Research II <i>Chairlady: Prof. Aimy BAZYLAK</i>	Plenary Auditorium
17h00 – 17h40	Pore Network Modeling as a support to better understand water management in Proton Exchange Membrane Fuel Cells – J. Pauchet (Invited talk)	
17h40 – 18h00	Advanced Microscopy Methods to Interrogate Materials and Interfaces in PEM Fuel Cell Catalyst Layers – K. More (Invited talk)	
18h00 – 18h20	Measurement of water content in PEMFC catalyst layer using Operando small angle scattering – A. Morin	
18h20 – 18h40	Micro-Raman operando determination of the membrane water content distribution in the working PEMFC – S. Deabate (Invited talk)	
18h40 – 19h00	Confocal Raman microscopy as non-destructive tool to resolve structure and properties in ionomer composite membranes – M. Breitwieser (Invited talk)	
17h00 – 19h20	Session 3b: Hydrogen Electrochemical Compression <i>Chairman: Prof. Gael MARANZANA</i>	Room 200
17h00 – 17h20	Techno-Economic Analysis of Innovative Electrolytes for Low Temperature Electrochemical Hydrogen Compressors (EHCs) – W. Colella	
17h20 – 17h40	Thermo-Economic Analysis of Proton-Conducting Electrochemical Hydrogen Compressors (EHCs) – W. Colella	
17h40 – 18h00	Electrochemical hydrogen compression and separation development at HySA Infrastructure Centre in South Africa – D. Bessarabov	
18h00 – 18h20	Using of an electrochemical compressor for hydrogen recirculation in fuel cell vehicles – W. Wiebe	
18h20 – 18h40	Operating heterogeneities in a PEM Electrochemical Hydrogen Compressor – G. Sdanghi	
18h40 – 19h00	Anode electrocatalysts for the electrochemical purification and compression of hydrogen – M. Tregaro	
19h00 – 19h20	Nanocomposite Hybrid Membrane for electrochemical H ₂ compression and purification application – J. Bigarré	
17h00 – 18h40	Session 3c: Diagnostics and Fault Tolerant Control II <i>Chairs: Dr. Nadia STEINER, Dr. Matthias GERARD and Prof. Yann BULTEL</i>	Room G H
17h00 – 17h20	An Online Adaptive Dynamic Programming Control for PEMFC - C. Lin-Kwong-Chon	
17h20 – 17h40	Health-Conscious Energy Management in Hybrid Electric Vehicles based on Prognostics Results – Meiling Yue	
17h40 – 18h00	Online indicators of fuel cell degradation in real uses – M. Grandjacques	

Wednesday Morning February 13th

9h00 – 9h45	Plenary Lecture: Olivier GUILLON, Forschungszentrum Jülich GmbH, Germany Development of solid oxide cells for a renewable energy-based future <i>Chairman: Prof. Olivier JOUBERT</i>	Plenary Auditorium
9h45 – 10h30	Plenary Lecture: Plamen ATANASSOV, University of California, Irvine USA Platinum Group Metal-free Electrocatalysts for Polymer Electrolyte Fuel Cells: Successes and Challenges <i>Chairman: Prof. Claude LAMY</i>	Plenary Auditorium
10h30 – 11h00	Coffee Break + Poster session	
11h00 – 13h00	Session 4a : SOFC and SOEC II <i>Chairman: Dr. Yasunobu MIZUTANI</i>	Plenary Auditorium
11h00 – 11h20	Cost Analysis of Proton-conducting Solid Oxide Fuel Cells (SOFC) – W. Colella	
11h20 – 11h40	Study of electrochemical property on Sr-doped LaNi _{0.5} Mn _{0.5} O _{3-y} as cathode for intermediate-temperature solid oxide fuel cells - J. Meng	
11h40 – 12h00	Study of the versatility of a solid cell working both as fuel cell and electrolysis modes - A. Le Gal Le Salle	
12h00 – 12h20	Nickel-doped ceria nanoparticles as promoters of Ni-YSZ electrodes for Solid Oxide Electrolysis Cells - B. Mewafy	
12h20 – 12h40	Catalytic Studies of Biogas based Solid Oxide Fuel Cell - R. Raza	
12h40 – 13h00	Oxygen transport mechanisms through the surface of mixed conductor - P-M Geffroy	
11h00 – 12h40	Session 4b: PEMFC GDL II <i>Chairman: Dr. Joel PAUCHET</i>	Room 200
11h00 – 11h20	Techno-economic Analysis of Gas Diffusion Layers (GDLs) – W. Colella	
11h20 – 11h40	The effect of permeability and porosity of gas diffusion layer (GDL) on the performance of a membrane fuel cell – M. Mukherjee	
11h40 – 12h00	Novel electrospun nano-fibrous GDLs with graded pore sizes for PEM fuel cells – M. Balakrishnan	
12h00 – 12h20	Directly grown carbon nanotubes on gas diffusion layers to enhance fuel cells performances – M. Fontana	
12h20 – 12h40	Development of MPLs for low cost PTLs of PEM electrolyzers – A. Gago	
11h00 – 12h40	Session 4c: Alternative Fuel for Fuel Cells and Electrolyzers I <i>Chairman: Prof. Christophe COUTANCEAU</i>	Room G H
11h00 – 12h00	Electrocatalytic oxidation of organic compounds: a way to produce pure hydrogen in a PEM electrolysis cell for low temperature fuel cells – C. Lamy (Invited talk)	
12h00 – 12h40	Exploiting Ethanol in Electrochemical Energy Conversion and Storage: a Comparison between Electrochemical Reforming and Direct Ethanol Fuel Cells – A. Lavacchi (Invited talk)	
13h00 – 14h15	Lunch	

Wednesday Afternoon February 13th

14h15 – 15h55	Session 5a: Electrocatalysis II <i>Chairman: Dr. Dimitrios PAPAGEORGOPOULOS</i>	Plenary Auditorium
14h15 – 14h35	Kinetic isotope effect as a tool for establishing oxygen reduction reaction mechanism – T. Asset	
14h35 – 14h55	Molecular dynamics approach to plasma nanocatalyst growth – P. Brault	
14h55 – 15h15	Towards improved catalytic activity and stability of non-precious metal catalyst for proton exchange membrane fuel cells – K. Kumar	
15h15 – 15h35	PEM-Fuel Cell catalyst behavior between room temperature and freezing point – R. Kunkel	
14h15 – 15h55	Session 5b: Fluid flow studies for FC stack <i>Chairman: Prof. Dr. Jürgen SCHUMACHER</i>	Room 200
14h15 – 14h35	Flow sharing and turbulence phenomena in PEMFC stack headers – Pang-Chieh (Jay) Sui	
14h35 – 14h55	Investigation of liquid water heterogeneities in large area PEM fuel cells using a pseudo-3D multiphysics model – E. Tardy	
14h55 – 15h15	PEMFC flow-field design, channel/land width ratio optimization – J. Andre	
15h15 – 15h35	Study of alternative fuel feeding strategy on fuel cell stack performances and stability – S. Rodosik	
15h35 – 15h55	Experimental study of hydrodynamics into alkaline electrolysis – P. Mandin	
14h15 – 15h55	Session 5c: SOFC and SOEC III <i>Chairman: Dr. Stefano FRANGINI</i>	Room G H
14h15 – 14h35	Progress of protonic ceramic fuel cell in Japan toward ultra-high efficiency – Y. Mizutani (Invited talk)	
14h35 – 14h55	Co-extruded multi-layer solid oxide fuel cell based on Yttria stabilized zirconia: fabrication and performance – B. Mani	
14h55 – 15h15	LaPrNiO _{4+δ} as an innovative oxygen electrode for intermediate temperature solid oxide cells: improving the electrochemical properties by varying the architectural design – N.I. Khamidy	
15h15 – 15h35	Grid-stabilizing co-electrolysis stack operation and impact on stack condition and product quality – D. Schäfer	
15h35 – 15h55	Development of Tubular co-Electrolysis Cells and Short-stack for Syngas and Methane Production - Y. Tanaka	
15h55 – 16h15	Coffee Break + Poster Session	

Wednesday Afternoon February 13th

16h15 – 18h35	Session 6a: Alternative Fuel for Fuel Cells and Electrolysers II <i>Chairman: Prof. Christophe COUTANCEAU</i>	Plenary Auditorium
16h15 – 16h55	Development of Photo-electrocatalyst Based on Pt/Self-doped TiO ₂ Nanotubes - G. Tremiliosi-Filho (Invited talk)	
16h55 – 17h15	Synthesis, characterization and electro-catalytic evaluation of Pt _x Me _{10-x} /C and Pd _x Me _{10-x} /C catalysts for glycerol electro-oxidation – R. Kouamé	
17h15 – 17h35	Oxygen reduction reaction and DMFC application for EDTA-derived non precious metal FeNC and CoNC catalysts - C. Lo Vecchio	
17h35 – 17h55	Electro-oxidation of oligosaccharides – N. Neha	
17h55 - 18h15	Electro-conversion of monosaccharides on alloyed PdAu catalysts: effect of the composition on activity and selectivity – T. Rafaïdeen	
18h15 – 18h35	Efficient Solid Oxide Electrolysers for Syngas Generation – G. Kaur	
16h15 – 18h35	Session 6b: Ageing: MEA and Stack I <i>Chairman: Dr. Ludwig JORISSEN</i>	Room 200
16h15 – 16h35	Development of an aging estimation tool for a PEM fuel cell submitted to a mission profile – A. Pessot	
16h35 – 16h55	In-operando investigation of the degradation mechanisms during startup/shutdown in PEMFC for automotive application – A. Bisello	
16h55 – 17h15	Impact of gas starvation events on the evolution of local anode and cathode potentials during load transients in polymer electrolyte membrane fuel cells – O. Lottin	
17h15 – 17h35	Local degradations induced in a PEMFC stack by start-up/shut-down cycles: investigations coupling in situ and ex situ analyses – F. Micoud	
17h35 – 17h55	Mitigation of PEMFC degradation upon freeze-Thaw cycling using a Methanol-Water solution as antifreeze – P. Gazdzicki	
17h55 - 18h15	Impact of the ageing modes on the performances losses of a PEMFC stack and related degradation of the MEA components microstructure and properties – S. Escribano	
18h15 – 18h35	Monitoring of ageing campaigns of PEM fuel cell stacks using model-based methods – S. Aabid	
18h35 – 18h55	Durability and Water transport in a miniature fuel cell – R.L. Borup	
16h15 – 18h55	Session 6c: Hydrogen Systems: Design, Energy Management System and Converters <i>Chairman: Prof. Daniel HISSEL</i>	Room G H
16h15 – 16h35	Hydrogen from RES and the energy market: a review of recent literature and addresses – G. Squadrito	
16h35 – 16h55	Energy Management of a hybrid tidal turbine-hydrogen micro-grid: losses minimization strategy – M. Barakat	
16h55 – 17h15	A New Decentralized Energy Management Strategy for a Modular Fuel Cell System – A. Khalatbrisolatani	
17h15 – 17h35	A Comparison of Passive and Active Coupling of PEM Fuel Cell stack and Supercapacitors – F.A. Macias	
17h35 – 17h55	Development of a PEM Fuel Cell/Battery Hybrid Power System with Heat-recovery System – Kai Ou	
17h55 - 18h15	HYFILL: a dynamic and multiphysic modeling tool for simulation and analysis of hydrogen refueling stations – P. Olivier	
18h15 – 18h35	Use of Model Predictive Control in isolated Microgrid with a hybrid Batteries - Hydrogen Storage – D. Morin	
18h35 – 18h55	Deadbeat control for a DC-DC converter design in a hybrid fuel cell electric vehicle – H.B. Yuan	

Thursday Morning February 14th

9h00 – 9h45	Plenary Lecture: Christophe VACQUIER , FAURECIA <i>Chairman: Dr. Dimitrios PAPAGEORGOPOULOS</i>	Plenary Auditorium
9h45 – 10h30	Plenary Lecture: Yannick LEGAY, ALSTHOM GROUP <i>Chairman: Dr. Dimitrios PAPAGEORGOPOULOS</i>	Plenary Auditorium
10h30 – 11h00	Coffee Break + Poster session	
11h00 – 12h40	Session 7a : Ageing MEA and Stack II <i>Chairman: Dr. Christophe TURPIN</i>	Plenary Auditorium
11h00 – 11h20	Characterization of stainless steel passivation layer – S. Brimaud	
11h20 – 11h40	Modified CNT support for improved performance and durability of HT-PEMFC- C. Cremers	
11h40 – 12h00	Ageing tests at constant currents and modeling of a high-temperature PEMFC – S. Rigal	
12h00 – 12h20	Durable and low cost coating materials benchmark for HT-PEMFC bipolar plates – M. Cavarroc	
12h20 – 12h40	Performance and durability of single HT-PEMFC fuel cell with bare and CrN/Cr-coated 316L stainless steel bipolar plates – Ruiyu Li	
11h00 – 12h40	Session 7b: Alternative Fuel for Fuel Cells and Electrolysers III <i>Chairman: Prof. Christophe COUTANCEAU</i>	Room 200
11h00 – 11h40	Pros and cons of direct borohydride fuel cells: an electrocatalysis and electrocatalysts prospect – M. Chatenet (Invited talk)	
11h40 – 12h00	Autothermal Catalytic Hydrogen Production for Use in PEM Fuel Cell: Catalyst Characterization and Activity – F.R. Malik	
12h00 – 12h20	Microbial fuel cell as interesting category of fuel cells capable of operating with a multitude of organic molecules – C. Santoro (Invited talk)	
12h20 – 12h40	Study of substrates in biofilm forming <i>Thermotoga neapolitana</i> cultures – G. Squadrito	
11h00 – 12h40	Session 7c: SOFC and SOEC IV <i>Chairman: Prof. Dr.Andreas FRIEDRICH</i>	Room G H
11h00 – 11h20	Infiltration, a way to improve the electrochemical performances of SOFC component cells – JC Grenier	
11h20 – 11h40	Electrolyte ceramic material BCZY: Cold sintering process – K. Thabet	
11h40 – 12h00	Influence of spinel protective coating on Crofer interconnects conductivity - R. Ihringer	
12h00 – 12h20	Perovskite conversion coatings as novel and simple approach for improving functional performance of Solid Oxide ferritic stainless steel interconnects - S. Frangini	
12h20 – 12h40	Influence of La _{0.6} Sr _{0.4} CoyFe _{1-y} O _{3-d} composition on the cyclic voltammetry - C. Rossignol	
12h40 – 13h00	Exsolution of Ni nanocatalyst at the surface of layered perovskitemanganites as potential hydrogen electrode for solid oxide electrochemical cells - P. Managutti	
13h00 – 14h15	Lunch	

Thursday Afternoon February 14th

14h15 – 16h35	Session 8a: MEA design, modeling and characterization <i>Chairman: Prof. Pang-Chieh Sui</i>	Plenary Auditorium
14h15 – 14h35	Reduction Break-In time for a polymer electrolyte membrane fuel cell – A. Orozco Arenas	
14h35 – 14h55	Analysis of processes appearing in the catalyst layer during the break-in procedure of a PEM fuel cell K. Christmann	
14h55 – 15h15	Characterization of Polymer Electrolyte Membrane Fuel Cell operating in the stoichiometric regime – S. Chevalier	
15h15 – 15h35	Experimental parameter uncertainty in PEM fuel cell modeling – R. Herrendoerfer	
15h35 – 15h55	Transmission Line Impedance models considering oxygen transport limitations in polymer electrolyte membrane fuel cells – S. Touhami	
15h55 – 16h15	Dependency of membrane types, catalyst layer thickness and ionomer contents on MEA performances of PEMFC – P.K. Mohanta	
16h15 – 16h35	Nafion-free Membrane Electrode Assembly for PEMFC application – A. Frelon	
14h15 – 15h55	Session 8b: Ageing: Catalyst <i>Chairman: Prof. Plamen ATANASSOV</i>	Room 200
14h15 – 14h35	State-of-Health modeling and analysis of potential-induced degradation in the cathode catalyst layer of PEMFC – AC Scherzer (Invited talk)	
14h35 – 14h55	Combining identical-location transmission electron microscopy and X-Ray photoelectron spectroscopy to unravel structure, composition and OER activity – F. Claudel	
14h55 – 15h15	Physical modeling of catalyst degradation in PEMFC: simulation of particle growth and platinum band formation under AST and real operation – T. Jahnke	
15h15 – 15h35	Nature of the high stability of graphene-supported catalysts upon accelerated stress tests for fuel cells: electrochemical and physicochemical evidences – T. Lagarteira	
15h35 – 15h55	Shedding light on the degradation mechanism of PGM based carbon-supported electrocatalysts in alkaline media – an <i>in situ</i> Fourier-transform infrared study – C. Lafforgue	
14h15 – 14h55	Session 8c: Membrane for FC <i>Chairman: Dr. Matthias BREITWIESER</i>	Room G H
14h15 – 14h35	Nanocomposite membranes of functionalized SiO ₂ nanoparticles grafted on PVDF : PEMEC and PEMFC applications – T. Paruit	
14h35 – 14h55	Supramolecular organization of active layers for Proton Exchange Membrane Fuel Cells – T.B.H. Tran	