

EFCD2015 - CHALLENGES TOWARDS ZERO Pt FOR OXYGEN REDUCTION
PALAIS DES CONGRÈS, LA GRANDE MOTTE, FRANCE
ORAL PROGRAMME

SUNDAY 13 SEPTEMBER 2015 - 16:00-21:00

16:00 - Registration desk opens
19:00 - 21:00 **Poster session 1 and welcome reception: food and drinks**

MONDAY 14 SEPTEMBER 2015

– **Morning**

09:00 - 09:15 Conference Opening
Deborah Jones & Frédéric Jaouen, Chairs, CNRS, France

Discussion Leader: Deborah Jones

09:15 - 09:55 *Alternative PEFC Catalysts for Future Commercial FCVs*
Yu Morimoto, Toyota Central R&D Labs. Inc., Japan

09:55 - 10:35 *Extended Surface Electrocatalyst Development for Ultra-low Pt loading Fuel Cells*
Bryan Pivovar, National Renewable Energy Laboratory, USA

10:35 - 11:00 Coffee break

Discussion Leader: Frédéric Jaouen

11:00 - 11:20 *PVD Grown Metal Oxide Supported Ultra-low Pt Catalyst for Oxygen Reduction Reaction*
Md Aman Uddin, University of Connecticut, USA

11:20 - 11:40 *Solution Processable Pt Thin Film Catalyst Layers by Electroless Deposition*
Isaac Martens, University of British Columbia, Canada

11:40 - 12:00 *Characterization of Ultra-low Pt Loading MEAs Prepared by Electrospray*
Daniel Garcia Sanchez, Deutsches Zentrum für Luft und Raumfahrt, Germany

12:00 - 12:20 *Positioning of a Reference Electrode in a PEM Fuel Cell*
Andrei Kulikovskiy, Research Centre Juelich, Germany

12:20 - 14:00 Lunch Break

– **Afternoon**

Discussion Leader: Vojislav Stamenkovic

14:00 - 14:40 *Nanostructured low-Pt and non-Pt electrocatalysts for the Oxygen Reduction Reaction*
Peter Strasser, Technische Universität Berlin, Germany

14:40 - 15:10 *MOFs and POPs - Two new classes of Porous Precursors for Highly Efficient Non-PGM Catalyst Design and Synthesis*
Di-Jia Liu, Argonne National Laboratory, USA

15:10 - 15:30	<i>Metal/nitrogen-doped Carbons as Active and Stable Electrocatalysts for Hydrogen Evolution</i> Haiwei Liang, Max Planck Institute for Polymer Research, Germany
15:30 - 15:50	<i>Transition Metal Ion-chelating Ordered Mesoporous Carbons for the Oxygen Reduction Reaction</i> Johanna K. Dombrovskis, Chalmers University of Technology, Sweden
15:50 - 16:20	Coffee break
Discussion Leader: Stephen Paddison	
16:20 – 17:00	<i>Development of Non Precious Metal Oxide Cathode for PEFCs</i> Ken-Ichiro Ota, Yokohama National University, Japan
17:00 - 17:20	<i>Measuring an Electrocatalyst's Vital Signs: the Need for in operando Studies</i> Timo Jacob, Ulm University, Germany
17:20 - 17:40	<i>Morphological and Dimensional Effect of the Graphene on High Performing Oxygen Reduction Reaction Catalysts in Acidic Media</i> Min Wook Chung, Korea Advanced Institute of Science and Technology, Korea
17:40 - 18:00	<i>Effect of Halide Impurities on the Mechanism of the ORR and a Critical Assessment of X</i> Daniel Scherson, Case Western Reserve University, USA
18:00 - 19:15	Break

– **Evening**

19:15 - 21:00	Poster Session 2 and Reception
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– Morning**Discussion Leader: Andrea Russell**

09:00 - 09:30	<i>Unravelling the Mysteries of Electro-Active Sites in Non Pt Group Metal Electrocatalysts</i> Sanjeev Mukerjee, Northeastern University, USA
09:30 - 09:50	<i>Influence of the Structural Composition on the Activity and Stability of Me-N-C Catalysts</i> Ioanna Martinaiou, Technische Universität Darmstadt, Germany
09:50 - 10:10	<i>The Use of X-ray Absorption Spectroscopy to Unveil the Active Site Structure of Non-precious Metal Electrocatalysts for PEM Fuel Cells</i> Andrea Zitolo, Synchrotron SOLEIL, France
10:10 - 10:30	<i>The Mechanism of the Oxygen Reduction Reaction on Non-precious Metal Catalysts in Acidic Conditions: an ab initio Study</i> Stephen J. Paddison, University of Tennessee, USA
10:30 - 10:55	Coffee break

Discussion Leader: Hubert Gasteiger

10:55 - 11:35	<i>Challenges and Opportunities with 3M Nanostructured Thin Film (NSTF) Ultra-low PGM ORR Electrocatalysts</i> Andrew Steinbach, 3M Company, USA
11:35 - 11:55	<i>New Low Pt Loading Fuel Cell Cathode Architecture Made of Self-standing Arrays of Electrocatalyst Nanotubes</i> Arnaud Morin, CEA LITEN - Université Grenoble Alpes, France
11:55 - 12:15	<i>Design of Hollow Pt-Ni Nanostructures and their Application for the Oxygen Reduction Reaction</i> Frédéric Maillard, CNRS - LEPMI - Université Grenoble Alpes, France
12:15 - 14:00	Lunch Break

– Afternoon**Discussion Leader: Plamen Atanassov**

14:00 - 14:40	<i>Non-noble Metal Catalysts based on Carbon Nanotubes for Fuel Cell Application</i> Bruno Josselme, CEA Saclay, France
14:40 - 15:00	<i>Hybrid Electrodes Consisting of Carbon Nanotubes, MN_4 Macrocyclic Complexes and Graphite for the Reduction of O_2</i> José H. Zagal, University of Santiago de Chile, Chile
15:00 - 15:20	<i>Activity of Water Splitting Prussian Blue-type Catalysts in PEM Electrolysers</i> Jose-Ramon Galan-Mascaros, Institute of Chemical Research of Catalonia, Spain
15:20 - 15:40	<i>Nitrogen-doped Carbon-based Catalysts for Oxygen Reduction Reaction</i> Eunae Cho, KAIST, Republic of Korea
15:40 - 16:10	Coffee break

Discussion Leader: Bryan Pivovar

16:10 - 16:50	<i>How Much Value there Really is in Non-precious Metal ORR Catalysts for Fuel Cells?</i> Piotr Zelenay, Los Alamos National Laboratory, USA
16:50 - 17:10	<i>PEM Fuel Cell Behavior of Non-precious Metal-based Air Electrodes Probed by Linked Experiments and Modeling</i> Thomas A. Zawodzinski, University of Tennessee, USA
17:10 - 17:30	<i>Modeling Hierarchical Non-Precious Metal Catalyst Cathodes for PEFCs Using Multi-Scale X-ray CT Imaging</i> Siddharth Komini Babu, Carnegie Mellon University, USA
17:30 - 17:50	<i>Kinetics and Performance of Precious Metal-free Cathode with World Leading Durability</i> Andrew Creeth, ACAL Energy Ltd, United Kingdom
17:50 - 19:30	Break

– **Evening**

19:30 -	Beachside Dinner
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– Morning

Discussion Leader: Piotr Zelenay

09:00 - 09:30	<i>The Status of Hydrogen Fuel Cells and H₂ R&D in the Fuel Cell and Hydrogen Joint Undertaking Program – Overview on the Platinum Loading Project Activity</i> Lionel Boillot, Fuel Cells & Hydrogen Joint Undertaking
09:30 - 10:00	<i>The Challenges for Pt Alloys in Automotive Applications - Progress on De-alloyed PtNi Cathode Catalysts</i> Jonathan Sharman, Johnson Matthey Fuel Cells, UK
10:00 - 10:20	<i>Overview of CATAPULT: Novel Catalyst Structures Employing Pt at Ultra-low and Zero Loadings</i> Deborah Jones, CNRS - Université de Montpellier, France
10:20 - 10:35	<i>Highlight of CATAPULT: Rational Approaches for the Design of MOF-based Fe-N-C and Hybrid Pt/Fe-N-C Catalysts with Improved ORR Activity and/or Durability in PEM Fuel Cells</i> Frédéric Jaouen, CNRS - Université de Montpellier, France
10:35 - 11:00	Coffee break

Discussion Leader: Sanjeev Mukerjee

11:00 - 11:20	<i>Overview of CATHCAT - The CathCat Project: Novel Catalyst Materials for the Cathode Side of MEAs Suitable for Transportation Applications</i> Oliver Schneider, Technische Universität München, Germany
11:20 - 11:35	<i>Highlight of CATHCAT - Model Studies of Pt-lanthanide Alloys for Oxygen Reduction</i> Elisabeth Ulrikkeholm, Technical University of Denmark, Denmark
11:35 - 11:55	<i>Overview of SMARTCAT - Systematic, Material-oriented Approach using Rational design to develop break-Through Catalysts for commercial automotive PEMFC</i> Pascal Brault, CNRS - Université d'Orléans, France

Discussion Leader: Oliver Schneider

11:55 - 12:10	<i>Highlight of SMARTCAT - Challenges and Opportunities of Doped Tin Oxides in Fuel Cell Electrodes</i> Alejandro Oyarce, SINTEF, Norway
12:10 - 12:30	<i>Overview of NANOCAT: Development of Advanced Catalysts for PEMFC Automotive Applications</i> Pierre-André Jacques, CEA, France
12:30 - 12:45	<i>Highlight of NANOCAT: Development of Low PtCo and PtNi Loading Alloys by Magnetron Sputtering</i> Francisco José Fernández-Carretero, Tecnalia, Spain
12:45 - 14:00	Lunch Break

– Afternoon

Discussion Leader: Daniel Scherson

14:00 - 14:40	<i>Non-Platinum Group Metal Electrocatalysts: Successes and Challenges</i> Plamen Atanassov, University of New Mexico, USA
14:40 - 15:00	<i>Can Zero-loading of Platinum be Achieved by Using Anion Exchange Membrane Fuel Cells?</i> Dario Dekel, Technion - Israel Institute of Technology, Israel
15:00 - 15:20	<i>Enhanced Oxygen Reduction Reaction Activity of Nitrogen-doped Carbon Nanomaterials for Direct Methanol Alkaline Fuel Cell Application</i> Kaido Tammeveski, University of Tartu, Estonia
15:20 - 15:40	<i>Oxygen reduction reaction using electro-catalysts based on Non-Precious Metals in different carbon structures</i> Carlota Dominguez, Instituto de Catálisis y Petroleoquímica
15:40 - 16:00	Coffee break
16:00 - 16:30	<i>Advanced Catalysts with Ultra -Low PGM Content for PEMFC Cathode</i> Vojislav Stamenkovic, Argonne National Laboratory, USA
16:30 – 17:00	<i>Concluding remarks</i> Deborah Jones and Frédéric Jaouen, CNRS, France