

Turin, Italy  
February 8<sup>th</sup>, 2019

# 1<sup>st</sup> Electrochemical Discussions: latest insights on **PGM-free** catalysts for Energy Systems and Fuel Cells

Chair: Prof. Stefania Specchia, Politecnico di Torino

Co-Chair: Prof. Carlo Santoro, University of The West of England

## Scope of the workshop:

The **first Italian workshop** dedicated to **PGM-free and low-content PGM catalysts** for the O<sub>2</sub> reduction and H<sub>2</sub> oxidation reactions in polymer-electrolyte fuel cells, and O<sub>2</sub> and H<sub>2</sub> evolution in polymer-based electrolyzers. Invited lectures from **national and international TOP experts** will provide the latest insights on:

- PGM-free and ultra-low PGM catalysts
- Catalysts for proton- or anion-exchange membrane fuel cells or electrolyzers
- Bipolar plates for membrane fuel cells or electrolyzers
- Ageing and durability
- Modelling of catalytic sites and reaction pathways
- Mass-transport issues for non-PGM and ultra-low PGM loadings
- Advanced characterization techniques

**Event free of charge**

**Open poster session** only for registered participants

**ENERGY CENTER - AUDITORIUM**  
**Via Borsellino 38/16**  
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## PROGRAM

9.00-9.20	<b>Stefania Specchia</b> (Politecnico di Torino, Italy) – INTRODUCTION
9.20-9.45	<b>Plamen Atanassov</b> (University of California Irvine, USA) – Platinum Group Metal-free electrocatalysts for Polymer Electrolyte Fuel Cells derived by Sacrificial Support Method
9.45-10.10	<b>Vito Di Noto</b> (University of Padova, Italy) – “Platinum-free” ORR electrocatalysts - Impact of hierarchical graphene support on physico-chemical features and electrochemical performance
10.10-10.35	<b>Ulrike I. Kramm</b> (TU Darmstadt, Germany) – In-situ active site identification in Fe-N-C catalysts by Mössbauer spectroscopy
10.35-11.00	<b>Anthony Kucernak</b> (Imperial College, United Kingdom) – Counting active sites and estimating turnover rates in Fe-C/N catalysts
11.45-12.10	<b>José H. Zagal</b> (University of Santiago de Chile, Chile) – Reactivity descriptors for the activity of MN <sub>4</sub> molecular catalysts for electrochemical reactions relevant to energy conversion
12.10-12.35	<b>Massimo Innocenti</b> (University of Firenze, Italy) – New catalysts for Energy Systems with high EROEI values (Energy Returned On Energy Invested)
12.35-13.00	<b>Jasna Jankovic</b> (University of Connecticut, USA) – 2D and 3D characterization of fuel cell catalyst layers on multiple scales
13.00-13.25	<b>Andrea Casalegno</b> (Politecnico di Milano, Italy) – Experimental and physically based modelling analysis of electrochemical impedance to interpret limiting phenomena during PEMFC operation
15.00-15.25	<b>Frederic Jaouen</b> (CNRS Montpellier, France) – Fe-N-C and Fe-N-C/Mn-oxide composites for ORR catalysis in alkaline electrolyte
15.25-15.50	<b>Barbara Mecheri</b> (University of Roma Tor Vergata, Italy) – PGM-free catalysts for Microbial Fuel Cells: ORR activity and stability of M-N-C nanostructures
15.50-16.15	<b>Alessandro Lavacchi</b> (CNR-ICCOM Firenze, Italy) – Performance degradation of Pt-free Alkaline Direct Ethanol Fuel Cells
16.15-16.45	<b>Lior Elbaz</b> (Bar-Ilan University, Israel) – Recent advances in the design of 3D PGM-free molecular catalysts for ORR
16.45-17.10	<b>Vincenzo Baglio</b> (CNR-ITAE Messina, Italy) – CNR-ITAE activity on PGM-free catalysts for energy conversion and storage devices
17.10-17.30	<b>Carlo Santoro</b> (University of The West of England, United Kingdom) – CLOSURE

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