



Joint Workshop on

Advanced Materials and Nano-technology
for
Energy and Environmental Sustainability

This seminar aims to share different perspectives related to Advanced Materials and Nano-technology for Energy and Environmental Sustainability, with a special focus on lithium, fuel cells and hydrogen storage in order to give an overview of research works developed both in Argentina and the United Kingdom.

Date: Thursday 15th and Friday 16th March 2018

Location: Centro Cultural de la Ciencia (C3), Godoy Cruz 2270, Ciudad Autónoma de Buenos Aires (CABA), Argentina



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Day 1, March 15th

Centro Cultural de la Ciencia (C3), Godoy Cruz 2270

- 8:30** Registration
- 9:00** **Welcome Words** by Dr. Alejandra PALERMO (*ROYAL SOCIETY OF CHEMISTRY*), Prof. Richard CATLOW (*ROYAL SOCIETY*) and Dr. Jorge TEZÓN (*CONICET*).
- 9:20** **Progress in performance of active materials for lithium-ion batteries.**
Prof. Arnaldo VISINTIN (*Principal Researcher- CONICET*)
Jujuy Research and Development Center in Advanced Materials and Energy Storage (CIDMEJu) (CONICET- UNJu)-Jujuy, Argentina.
- 9:50** **Computer Modelling of Energy Materials**
Prof. Richard CATLOW -Foreign Secretary, *Royal Society-UK.*
Professor of Computational and Materials Chemistry, *University College London.*
Professor of Catalytic and Computational Chemistry, *University of Cardiff.*
- 10:20** **Sustainable extraction of lithium chloride from natural brine: from fundamental to electrochemical engineering**
Prof. Ernesto CALVO (*Senior Researcher-CONICET ; FRSC*)
Institute of Physical Chemistry of Materials, Environment and Energy (INQUIMAE) (CONICET-UBA)-Buenos Aires, Argentina.
- 10:50** - Coffee break -
- 11:10** **Nanomaterials at the edge: pervovskite exsolutions**
Prof. John IRVINE
Professor of Chemistry, *University of St. Andrews-UK.*
- 11:40** **In-situ/in-operando characterization techniques of materials for clean energies applications**
Prof. Adriana SERQUIS (*Principal Researcher-CONICET*)
Materials Characterization Group, National Atomic Energy Commission (CONICET-CNEA)-Río Negro, Argentina.
- 12:10** **Composition–structure–property relationships in lithium-ion battery materials from computer modelling**
Dr. Benjamin MORGAN
Royal Society University Research Fellow, *University of Bath-UK.*



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12:40 - Break -

13:40 Short presentations of Argentinean Early Career Researchers (ERC)

Moderator: Dr. Alejandra PALERMO

Experimental and theoretical studies on ways to avoid the shuttle mechanism in lithium-sulfur batteries

Dr. LUQUE, Guillermina-Researcher at the *Research Institute for Physical Chemistry of Cordoba (INFIQC)* CONICET/UNC-Córdoba, Argentina.

Electrochemical technologies from physical principles

Dr. GIUNTA, Pablo- Researcher at the *Institute of Hydrogen Technologies and Sustainable Energies (ITHES)* CONICET-UBA-Buenos Aires, Argentina.

Right next to lithium rich brines in northern Argentina: oportunities for science awaken around a vital raw material

Dr. FLEXER, Victoria-Researcher at the *Jujuy Research and Development Center in Advanced Materials and Energy Storage (CIDMEJU)* CONICET/UNJu-Jujuy, Argentina.

Nanoconfinement of LiBH₄: synergies with doped/decorated graphene

Dr. GASNIER, Aurelien-Researcher at the *Physicochemistry of Materials Department, Bariloche Atomic Center, National Atomic Energy Commission (CNEA)*-Río Negro, Argentina.

Detection of synergistic processes in the hydrogen electrode reaction on heterogenous electrode surfaces

Lic. BRITES HELU, Mariela-Scholar at the *Applied Chemistry Institute from Litoral (IQAL)* CONICET /UNL-Santa Fe, Argentina.

14:20 Atomistic and coarse-grained modeling of Li-ion batteries

Prof. Ezequiel LEIVA (*Senior Researcher-CONICET*)

Research Institute for Physical Chemistry of Cordoba (INFIQC) (CONICET-UNC)-Córdoba, Argentina.

14:50 The Green Black: Carbonization in Water for Metal Free Electrocatalysis

Prof. Magdalena TITIRICI

Materials Research Institute, Queen Mary University of London-UK.



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15:20 *Hydrogen for PEM fuel cells. Production and purification from renewable resources*

Prof. Fernando MARIÑO (*Independent Researcher-CONICET*)
Institute of Hydrogen Technologies and Sustainable Energies (ITHES) (CONICET-UBA)-Buenos Aires, Argentina.

15:50 - Coffee-Break -

16:10 *Using XAS and atomistic simulations to design novel energy materials*

Dr. Maria ALFREDSSON
School of Physical Sciences, *University of Kent-UK*.

16:40 Short presentations of Argentinean ECRs

Moderator: Dr. Alejandra PALERMO

Technological Solutions for Energy Storage

Dr. COZZARIN, Melina-Researcher at *Y-TEC (YPF-Tecnología)*-Buenos Aires, Argentina.

Nanomaterials for lithium ion batteries

Dr. RUIZ, Fabricio-Researcher at the *Bariloche Atomic Center, National Atomic Energy Commission (CNEA)*-Río Negro, Argentina.

Surface and bulk modifications in Solid Oxide Fuel Cell materials for electrochemical response optimization

Dra. MOGNI, Liliana Researcher at the *Materials Characterization Group, Bariloche Atomic Center, National Atomic Energy Commission (CONICET-CNEA)*-Río Negro, Argentina.

Nanostructured materials derived from coordination polymers (MOFs) for energy conversion and storage

Dr. RONCAROLI, Federico-Researcher at the *National Atomic Energy Commission (CNEA)*-Buenos Aires, Argentina.

Chemistry at the electrode surface in lithium containing systems: combining electrochemistry with photoelectron spectroscopies.

Lic. MARCHINI, Florencia- Scholar at the *Institute of Physical Chemistry of Materials, Environment and Energy (INQUIMAE)* CONICET/UBA - Buenos Aires, Argentina.

17:20 Close-wrap



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Day 2, March 16th

Centro Cultural de la Ciencia (C3), Godoy Cruz 2270

- 8:30** Registration
- 9:00** Overall reflections on day 1
- 09:30** ***Probing the structure and chemistry of buried interfaces in energy materials***
Prof. Steven SKINNER
Department of Materials, *Imperial College London-UK.*
- 10:00** ***Membranes and nanostructured materials for energy conversión and storage: synthesis, characterization, and applications***
Prof. Horacio CORTI (*Senior Researcher -CONICET*)
National Atomic Energy Commission(CNEA)-Buenos Aires, Argentina.
- 10:30** ***New Dimensions in Energy Materials***
Prof. Duncan GREGORY
School of Chemistry, *University of Glasgow-UK.*
- 11:00** - Coffee break -
- 11:20** ***R&D at the Institute of Energy and Sustainable Development: Biotechnological processes capable of transforming resources from wastewater into valuable products***
Prof. Daniel PASQUEVICH (*Principal Researcher- CONICET*)
along with Dr. María Belén PRADOS (*Assistant Researcher-CONICET*)
Institute of Energy and Sustainable Development, National Atomic Energy Commission (CNEA)-Río Negro, Argentina.
- 11:50** ***Manipulating Excited States in Conjugated Polymers for Optoelectronic Applications***
Dr. Hugo BRONSTEIN
Department of Chemistry, *University of Cambridge-UK.*
- 12:20** ***Nanomaterials for clean energy applications: from hydrogen production to carbon dioxide reuse***
Prof. Fabiana GENNARI (*Principal Researcher -CONICET*)
Physicochemistry of Materials Department, National Atomic Energy Commission (CNEA)-Río Negro, Argentina.
- 12:50** Closing remarks and perspectives.