# *Symposium A : Materials for energy conversion and storage*

## Scope of the Symposium

Implementing the infrastructure for universal access to sustainable energy is a critical scientific, technological and social challenge, which requires major efforts in developing and developed countries. This 3rd edition of the Energy conversion and storage symposium will focus on the scientific and technological developments in materials for sustainable renewable energy challenge. Contributions regarding the development of organic, inorganic, hybrid, nano and metamaterials applied to different forms of energy conversion and energy storage are expected. Research areas related to hydrogen storage, advanced batteries, solar cells, photo-electrochemistry, fuel cells, solar fuels, catalysis and electrocatalysis are interesting to this symposium. Contributions adopting experimental techniques and modeling and simulation of energy materials; devices for energy storage, saving and conversion; smart grids, as well as Waste-to-Energy innovative technologies, are welcome. Special emphasis is devoted on advanced materials and nanostructures, advanced characterization techniques, non-conventional synthesis and processing routes, multiscale modeling of energy-related materials. This symposium aims to bring together Brazilian and foreign researchers interested in different aspects of energy-related materials, opening possibilities for valuable discussions of new concepts, trends and technologies for energy conversion and storage. In particular, the energy challenge will be addressed using the UNESCO Chair MATECSS (Materials and Technologies for Energy Conversion, Saving and Storage) as platform and on-going international collaborations. We expect this symposium will be a valuable opportunity to strength on-going collaborations, prospect new ones and build-up multidisciplinary research networks to foster a collaborative atmosphere and multidisciplinary picture in addressing the sustainable renewable energy challenge.

## Abstracts will be solicited in (but not limited to) the following areas

- *Materials for rechargeable battery components*
- *2D nanostructures, quantum dots, nanowires, nanoparticles and other nanostructures for energy conversion and storage*
- *Organic and inorganic materials for solar cells*
- *Materials for hydrogen storage (metal hydrides, chemical hydrides, MOFs, zeolites, conducting polymers, etc.) and storage of other gas fuels*
- *Characterization techniques for energy materials*
- *Modeling and simulation of materials for energy storage and conversion*
- *New materials for Energy Saving (solid state lighting, smart grids, smart windows, etc.)*
- *Waste-to-Energy innovative technologies*
- *Electrocatalytic and photoelectrocatalytic energy conversion and storage*
- *Materials to enhance energy return on investment, lifespan improvements and circular economy*

## Tentative list of invited speakers (To be confirmed)

**Caetano Rodrigues Miranda** (*Instituto de Fsica, Universidade de So Paulo*) **Jacques Huot** (*Dpartement de Chimie, Biochimie et Physique, Universit du Qubec Trois-Rivires, Canada*) **Adam Duong** (*Dpartement de Chimie, Biochimie et Physique, Universit du Qubec Trois-Rivires, Canada*) **Eduardo Gonalves Ciapina** (*Faculdade de Engenharia de Guaratinguet, UNESP*) **Jean-Louis Bobet** (*Institut de Chimie de la Matire Condense de Bordeaux - CNRS, Universit de Bordeaux, France*) **Francesca Iacopi** (*Faculty of Engineering and IT, University of Technology Sydney*) **Naomi Matsuura** (*Department of Materials Science & Engineering, University of Toronto*) **Jennifer Rupp** (*Materials Science and Engineering, Massachusetts Institute of Technology*) **Laura Fabris** (*Department of Materials Science and Engineering School of Engineering Rutgers, The State University of New Jersey*) **Jolle Margot** (*Facult des arts et des sciences - Dpartement de physique, Universit de Montreal*) **Mohamed Chaker** (*Centre nergie Matriaux Tlcommunications, INRS*) **Carlos Moyses Araujo** (*Department of Physics and Astronomy, Materials Theory, Uppsala Universitet, Sweden*) **Horacio Corti** (*Instituto de Qumica Fsica de los Materiales, Medio Ambiente Y Energa*) **Juan Escrig** (*Facultad de Ciencia, Universidad de Santiago de Chile*) **Victor Castano**

(*Centro de Fsica Aplicada y Tecnologa Avanzada, Universidad Nacional Autnoma de Mxico*) **Zhiqun Lin** (*School of Materials Science and Engineering, Georgia Institute of Technology, USA*) **Anderson Janotti** (*Department of Materials Science & Engineering, University of Delaware* ) **Fiorenzo Vetrone** (*Centre nergie Matriaux Tlcommunications, INRS*) .

## Symposium Organizers

**Sydney Ferreira Santos** (*CECS, Universidade Federal do ABC*) **Federico Rosei** (*Institute National de la Recherche Scientifique (INRS)*) **Jos Antonio Souza** (*CCNH, Universidade Federal do ABC*) **Marcos Paulo Belanon** (*Universidade Tecnolgica Federal do Paran*) .