



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 "Materials for 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 meta materials 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, and 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

- *2D nanostructures for energy conversion and storage (graphenes, borophenes, MXenes, and so on)*
- *Materials for rechargeable battery components*
- *Organic and inorganic materials for solar cells*
- *Materials for hydrogen storage (metal hydrides, chemical hydrides, MOFs, zeolites, conducting polymers, etc.)*
- *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.)*
- *Electrocatalytic and photoelectrocatalytic energy conversion*
- *Waste-to-Energy innovative technologies*
- *Materials to enhance energy return on investment, lifespan improvements and circular economy*

List of invited speakers

Caetano Rodrigues Miranda (*Instituto de Física, 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*) **Andr Ferlauto** (*CECS, Universidade Federal do ABC*) **Eduardo Gonaves Ciapina** (*FEG, UNESP*) **Jean-Louis Bobet** (*Institut de Chimie de la Matire Condense de Bordeaux - CNRS, Universit de Bordeaux, France*) **Carlos Frederico Graef** (*FCB, Universidade Estadual Paulista Jlio de Mesquita Filho*) **Moyses Araujo** (*Department of Physics, Karlstad University*) **Anderson Janotti** (*Department of Materials Science & Engineering, University of Delaware*) **Klaus Lips** (*Helmholtz-Zentrum Berlin fr Materialien und Energie*) .

Symposium Organizers

Sydney Ferreira Santos (*CECS, Universidade Federal do ABC*) **Jos Antonio Souza** (*CCNH, Universidade Federal do ABC*) **Federico Rosei** (*Institute National de la Recherche Scientifique (INRS)*) **Clara Santato** (*Polytechnique Montral*) .

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XIX Brazil MRS Meeting