



Symposium B : Energy Harvesting I

Scope of the Symposium

This symposium will provide an interdisciplinary forum for the latest R&D activities on development of advanced functional materials for sustainable solar fuels and energy generation, environmental and electronic applications. It will address the latest advances regarding fundamental understanding of materials properties and their performance and stability by bringing together top worldwide academic scientists and engineers. The symposium aims to gather the most significant advancements in recent years for a sustainable generation of hydrogen and oxygen from solar energy conversion. Not limited to that, it will also be dedicated to the development of novel (nano)materials, new architectures, interfaces and contacts for new generation solar cells (perovskites, organic and hybrid, dye sensitized, modules and Tandem devices) and fundamental investigations on the physical-chemical properties of semiconductors.

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

- *Latest improvements in photoelectrode design and performance for (sea)water splitting and CO₂ reduction*
- *Novel hybrid molecular-semiconductor catalytic systems*
- *Progress in operando/in-situ spectroscopic techniques for energy generation*
- *Advances in materials design for efficient plasmonic/hot electron/multiple exciton generation*
- *Status of long-term performance and stability strategies and assessments of materials for solar energy conversion*
- *Atomic-scale understanding of mechanisms for solar energy conversion and structural-performance relationships*
- *Materials for down conversion/up conversion processes*
- *Advances in materials design and control, bandgap engineering, quantum confinement, and plasmonic effects to enhance the solar energy device conversion*
- *Large-area processing and fabrication of solar modules*
- *Tandem and multi-absorber solar cells*
- *Photoelectrochemical cells (PEC)*
- *Solar driven electrochemical and photoelectrochemical processes*
- *Novel catalysts, photocatalyst and nanostructured materials for hydrogen and oxygen evolution*
- *Hydrocarbon synthesis from CO₂ reduction*
- *Theoretical approaches to designing and discovering novel concepts for solar energy conversion*
- *New generation of solar cells (organic and hybrid, dye sensitized solar cells): novel materials (hole and electron transport layers, contacts, metal oxide interfaces), lifetime and stability, new techniques for fabrication, encapsulation, and printing of*
- *Perovskite-based solar cells: stability and life-time studies, physical chemical and opto-electronic properties, new materials (hole and electron transport layers, contacts, metal oxide interfaces), film structure and morphology*
- *Carbon nanotubes, fullerenes, graphene and other nanomaterials applied to solar cells*

Tentative list of invited speakers (To be confirmed)

Artur Braun (EMPA) **Chung-Li Dong** (Tamkang Univ) **Daniel Esposito** (Columbia Univ) **Frank Osterloh** (UC Davis) **Fiorenzo Ventrone** (Universit du Qubec) **Gerko Oskam** (CINVESTAV) **Ian Sharp** (TU Munich) **Jin Zhang** (UC Santa Cruz) **Jinghua Guo** (Lawrence Berkeley Natl. Lab) **Jozsef Pap** (MTA) **Juan Ramon Morante** (IREC) **Kevin Sivula** (EPFL) **Lionel Vayssieres** (Xian Jiaotong Univ.) **Mahendra Sunkara** (Univ. Louisville) **Ooman Varghese** (Univ. Houston) **Renata Solarska** (Warsaw Univ) **Sanjay Mathur** (Cologne Univ) **Shaohua Shen** (Xi'an Jiaotong Univ) **Tim Lian** (Emory Univ) **Wolfram Jgermann** (TU Darmstadt) .

Symposium Organizers

Renato Vitalino Goncalves (*Universidade de So Paulo ? IFSC-USP*) **Gunnar Westin** (*Uppsala University*) **Jesum Alves Fernandez** (*University of Nottingham Nottingham ? UK*) **Heberton Wender** (*Universidade Federal do Mato Grosso do Sul*) .

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XIX Brazil MRS Meeting