

The Abdus Salam **International Centre for Theoretical Physics**

ICTP - SISSA SISSA WORKSHOP ON NEW MATERIALS FOR RENEWABLE ENERGY 17 - 21 October 2011 (ICTP, Miramare, Trieste, Italy)





The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, and the International School for Advanced Studies (SISSA), Trieste, are jointly organizing a Workshop on New Materials for Renewable Energy", to take place from 17 to 21 October 2011. This event is co-sponsored by the Centre Européen de Calcul Atomique et Moléculaire CECAM and CNR-IOM DEMOCRITOS, Trieste, Italy.

This Workshop will address emergent materials and fundamental processes relevant in the context of renewable energy production, storage, conversion, and usage. The transition to sustainable energies from traditional energy sources based on fossil fuels or nuclear power is presently hampered by the low efficiencies or high costs of the available materials. The development of new materials by engineering their structure at the nano-scale is recognized to be the main bottleneck for both technology and basic science. Rational materials design holds the promise to drastically increase the performance of both renewable energy conversion and energy storage. In this sense, new materials are a key element for a possible transition towards a more sustainable energy economy.

The discovery and understanding of new physical and chemical processes underpins the development of a new generation of materials with improved performances, which could not be achieved by just incremental optimization of the existing materials. Understanding the interplay between structure, energetics and function of this new generation of materials makes this field also very appealing from a fundamental scientific point of view. Since the structure at the atomic scale is usually responsible for the observed efficiencies, this field is an ideal playground for collaborations between experiment and theory.

Another very important goal of this Workshop is to bring scientists from developing countries in contact with state of the art research and to enable them to carry out their own research in this domain. As most developing countries lie in areas with strong solar radiation, strong winds, or both, thanks to this large resource base, they are ideally suited for implementations of renewable energy technology. Also, the absence of a powerful energy infrastructure (grids) makes the use of small, decentralized, energy conversion devices very attractive.

Topics covered in this workshop will include:

- photovoltaics,
- artificial photosynthesis,
- fuel cells,
- electrocatalysis,
- batteries.

FORMAT:

The Workshop will consist of invited lectures as well as contributed oral presentations. Also, a poster session will be organized. Applicants willing to present a poster are invited to submit a short one-page abstract along with their online application form

PARTICIPATION



ORGANIZERS:

Stefano FABRIS (CNR-IOM DEMOCRITOS and SISSA, Trieste, Italy)

Ralph GEBAUER (ICTP, Trieste, Italy)

INVITED SPEAKERS:

Vincenzo BALZANI (Università di Bologna) Marcella BONCHIO^{*} (ITM-CNR and Università di Padova) **Christopher CRAMER** (University of Minnesota) **Filippo DE ANGELIS** (CNR and University of Perugia) Sossina M. HAILE (California Institute of Technology) **Sharon HAMMES-SCHIFFER** (Penn State University) Nicola MARZARI (Oxford University) Mohammad K. NAZEERUDDIN (Ecole Polytechnique Fédérale, Lausanne) Simone PICCININ (CNR-IOM DEMOCRITOS, Trieste) **Xavier Sala ROMAN** (Universitat Autònoma de Barcelona) Serdar SARICIFTCI (University of Linz) **Robert SCHLÖGL** (Fritz Haber Insitute, Berlin) **Michiel SPRIK** (Cambridge University) **Carlo TALIANI** (CNR Bologna) **Omar M. YAGHI** (University of California, Los Angeles) **Teketel YOHANNES** (Addis Ababa University)

Scientists and students from all countries that are members of the United Nations, UNESCO or IAEA may attend the activity. As it will be conducted in English, participants must have an adequate working knowledge of this language. Although the main purpose of the Centre is to help researchers from developing countries through a programme of training activities within a framework of international cooperation, a limited number of students and post-doctoral scientists from developed countries are also welcome to attend.

As a rule, travel and subsistence expenses of the participants are borne by their home institutions. However, limited funds are available for some participants, who are nationals of, and working in, a developing country, and who are not more than 45 years of age. Such support is available only to those attending the entire activity. Every effort should be made by candidates to secure support for their fare (or at least half-fare). There is no registration fee for attending the activity.

HOW TO APPLY FOR PARTICIPATION

Application accessed The Form can be at the activity website: http://agenda.ictp.it/smr.php?2269. Once in the website, comprehensive instructions will guide you step-by-step, on how to fill out and submit the application form. Deadline for receipt of applications: 30 MAY 2011

Activity Secretariat: Telephone: +39-040-2240305 E-mail: smr2269@ictp.it

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(* = to be confirmed)

DEADLINE for receipt of applications:

30 MAY 2011

(if requesting financial or visa assistance)

10 AUGUST 2011

(if no financial or visa assistance is required)