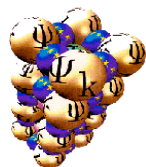




**Spring College on
COMPUTATIONAL NANOSCIENCE
17 - 28 May 2010
(ICTP, Miramare, Trieste, Italy)**



The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste is organizing a **Spring College on Computational Nanoscience, to take place from 17 to 28 May 2010**. This event is co-sponsored by the **Psi-k Network**, the Centre Européen de Calcul Atomique et Moléculaire **CECAM** and **INFM-CNR-DEMOCRITOS**.

The development of materials and devices at the nanoscale presents great challenges, from synthesis to assembly to characterization. Ever more often, progress takes place by complementing experimental work with computational modelling, harnessing the predictive power and atomic resolution of quantum simulations to describe molecular architectures exactly at those scales - hundreds of thousands of atoms - where the most promising and undiscovered properties are to be engineered.

The College will consist of lecture cycles on the fundamentals of nanoscience and nanotechnology, and on the appropriate methodologies and algorithms needed to characterize or predict properties; this activity will be partnered by keynote experimental lectures, outlining the most promising and fascinating challenges lying ahead, and by two brief tutorials on modeling structural, electronic and optical properties from first-principles (**SIESTA, Quantum-ESPRESSO**).

TOPICS TO BE COVERED:

- 1) electronic properties at the nanoscale;**
- 2) chemistry at the nanoscale;**
- 3) optical properties at the nanoscale;**
- 4) electronic and thermal transport at the nanoscale;**
- 5) mechanical properties at the nanoscale;**
- 6) control and assembly of nanoscale structures;**
- 7) biological, inorganic/organic and biomimetic materials.**

PARTICIPATION

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 number of students and post-doctoral scientists from developed countries are also expected and 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. 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

The Application Form can be accessed at the activity website: <http://agenda.ictp.it/smr.php?2145>. Once in the website, comprehensive instructions will guide you step-by-step, on how to fill out and submit the application form by **30 JANUARY 2010**.

Activity Secretariat:

Telephone: +39-040-2240305 Telefax: +39-040-224163
E-mail: smr2145@ictp.it ICTP Home Page: <http://www.ictp.it>

(updated Trieste, 21 December 2009)

DIRECTORS:

Adam FOSTER
(TUT, Tampere, Finland)

Nicola MARZARI
(MIT, Cambridge, USA)

Sandro SCANDOLO*
(ICTP, Trieste, Italy)
**also Local Organizer*

LECTURERS:

Stefano BARONI (DEMOCRITOS, Trieste)

Stefan BLUEGEL (IFF, Jülich)

Dario ESTRIN (Buenos Aires)

Daan FRENKEL (Cambridge, UK)

Giulia GALLI (UC Davis, USA)

Ralph GEBAUER (ICTP, Trieste)

Peter GUMBSCH (Karlsruhe)

Hannu HAKKINEN (Jyväskylä)

Antti-Pekka JAUHO (DTU, Lyngby)

Steven JOHNSON (MIT, Cambridge, USA)

Richard M. MARTIN (Illinois, Urbana, USA)

Francesco MAURI (IMPMC, Paris)

Elisa MOLINARI (S3-Modena & Reggio Emilia)

Risto NIEMINEN (HUT, Espoo)

Gianfranco PACCHIONI (UNIMIB, Milano)

Matthias SCHEFFLER (FHI, Berlin)

David TOMANEK (Michigan, Lansing, USA)

Erio TOSATTI (SISSA, Trieste)

Michele VENDRUSCOLO
(Cambridge, UK)

EXPERIMENTAL KEYNOTE SPEAKERS:

Flemming BESENBACHER (Aarhus, DK)

Philip KIM (Columbia, NY, USA)

Francesco STELLACCI (MIT, Cambridge)

Michael STRANO (MIT, Cambridge, USA)

Latha VENKATARAMAN
(Columbia, NY, USA)

**DEADLINE for
submitting applications:**

30 JANUARY 2010