SPRING COLLEGE ON

SCIENCE AT THE NANOSCALE

24 May - 11 June 2004
(Miramare - Trieste, Italy)

The Abdus Salam International Centre for Theoretical Physics (ICTP) is organizing a Spring College on Science at the Nanoscale, to be held at the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, from 24 May to 11 June 2004. The College will be directed by Profs. **Roberto CAR** (Princeton University, Princeton, USA), **Supriyo DATTA** (Purdue University, West Lafayette, Indiana, USA), **Giacinto SCOLES** (SISSA, Trieste, Italy and Princeton University, Princeton, USA) and **Sandro SCANDOLO** (the Abdus Salam ICTP, Trieste, Italy). The Local Organizer will be Dr. **Ralph GEBAUER** (the Abdus Salam ICTP, Trieste, Italy).

In recent years it has become possible to manipulate matter at an atomistic scale. The research into ways to perform such manipulations and to carry out measurements, as well as the attempts to understand the basic physics underlying the observed phenomena have rapidly grown into a very active scientific domain. Today, research on nanoscale phenomena is strongly supported in most developed countries due to the important benefits expected from the introduction of nanoscale devices in technological areas such as electronics, micromechanics and biomedicine. But progress in these areas is necessarily linked to advances in the comprehension of the fundamental physical processes taking place at the nanoscale, as well as to cross-disciplinary efforts aimed at unifying languages and concepts from chemistry, materials science and condensed matter physics. In this respect, nanoscale phenomena represent an ideal bench table for the development of new concepts and new trends in basic science.

The field of nanoscience is evolving so rapidly that the gap between achievements in basic research and technological applications has shrunk considerably. It is therefore very desirable to bring researchers from developing countries in contact with this domain of science and stimulate them to be an active part of this field. Making this kind of contact possible is the main target of the Spring College.

The College is planned to focus on three distinct aspects of nanoscience:

- **Phenomenological aspects**
- **Experimental challenges**
- **Quantum (ab-initio) simulations**

About 20-25 world-leading scientists will lecture at the College, covering these domains. Apart from those lectures, introductory tutorials will also be held in order to recall basic concepts underlying the physics at the nanoscale. Hands-on computer exercises and laboratory visits will be offered as supplementary incentives for those interested.

A preliminary list of speakers includes:

Boris Altshuler (Princeton Univ., USA); **Rashid Bashir** (Purdue Univ., USA); **Julio Fernandez** (Columbia Univ., USA); **Cherie Kagan** (IBM, USA); **Uzi Landman** (Gatech, USA); **Mark Lundstrom** (Purdue Univ., USA); **Chris Murray** (IBM, USA); **Michele Parrinello** (ETH, Switzerland); **Mark Ratner** (Northwestern Univ., USA); **Angel Rubio** (San Sebastián Univ., Spain); **Matthias Scheffler** (FHI Berlin, Germany); **Wolf-Dieter Schneider** (EPFL Lausanne, Switzerland); **Annabella Selloni** (Princeton Univ., USA); **Robert Wolkow** (NRC Ottawa, Canada).

Scientists and students from all countries that are members of the UN, UNESCO or IAEA can attend the activity. The main purpose of the Centre is to help researchers from developing countries through a programme of training activities within the framework of international cooperation. However, students, post-doctoral scientists and researchers from developed countries are most welcome to attend. As the College will be conducted in English, participants must have an adequate working knowledge of that language.

As a rule, travel and subsistence expenses of the participants are borne by their home institutions. Every effort should be made by candidates to secure support for their fare (or at least half-fare). 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 old. Such support is available only to those attending the entire College. There is no registration fee to attend this activity.

Some travel support, for US participants only, is also being kindly offered by NSF support through UIUC MCC (Materials Computational Centre, Univ. Illinois of Urbana) to qualified individuals. Please apply directly at: http://www.mcc.uiuc.edu/travel/index.htm **(deadline 20 February 2004).**

The closing date for the receipt of requests for participation is 20 February 2004.

The **Application Form** is obtainable from the ICTP WWW server: **http://agenda.ictp.trieste.it/smr.php?1564** (which will be constantly up-dated) or from the activity Secretariat (smr1564@ictp.trieste.it). It should be completed, signed and returned before **20 February 2004 to:**

the Abdus Salam International Centre for Theoretical Physics
Spring College on Science at the Nanoscale (smr.1564)
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http://agenda.ictp.trieste.it/smr.php?1564

Trieste, November 2003

DIRECTORS

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LOCAL ORGANIZER

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DEADLINE:

20 February 2004