

# Conference on Physics of Defects in Solids: Quantum Mechanics Meets Topology



**9 - 13 July 2018**  
**Trieste, Italy**

Further information:  
<http://indico.ictp.it/event/8321/>  
[smr3221@ictp.it](mailto:smr3221@ictp.it)

Recent developments in the physics of defects in crystalline solids will be discussed by the leading theorists and experimentalists in the field. Comprehensive review lectures, topical contributed talks and poster sessions are planned, along with a half day tutorial preceding the conference.

## Description:

Defects in crystalline solids are ubiquitous. It is the second law of thermodynamics that gives rise to the appearance of a certain amount of disorder in materials at finite temperatures. Defects have a strong influence on the electronic, optical, thermal, and mechanical properties of the solids, normally deteriorating their characteristics. Defects can also be useful, e.g., for doping of semiconductors or quantum computing. The goal of the conference is to bring together active researchers in the field, as well as several experts in the related areas, to discuss "state of the art" in theory and experiment dealing with the physics of defects in solids. The effects of various imperfections on the properties of solids will be addressed. The attendees will learn about recent developments in theoretical methods and characterization techniques to study defects. Particular attention will be paid to defects in nanomaterials, as the reduced dimensionality strongly affects their behavior.

## Topics:

- Modern techniques used to characterize defect in solids, including
  - Raman spectroscopy
  - Scanning probe microscopy
  - X-ray photoelectron spectroscopy
  - Transmission electron microscopy
  - Optical spectroscopy
- First-principles modeling of native defects and impurities in solids
- Ion and electron irradiation-induced defects
- Dislocations and extended defects
- Simulations of ion impacts onto solids
- Defects in superconductors
- Electronic transport in realistic systems with defects and impurities
- Defects in low-dimensional materials (graphene, inorganic 2D materials, etc.)
- Topological defects
- Defects for quantum computing
- Ion-beam analysis

## Organizers:

C. BITTENCOURT, University of Mons, Belgium  
C. EWELS, Institut des Matériaux, Nantes, France  
S. FACSKO, Helmholtz-Zentrum Dresden-Rossendorf, Germany  
A. V. KRASHENINNIKOV, Helmholtz-Zentrum Dresden-Rossendorf, Germany, and Aalto University, Finland

## Local Organizer:

M. KISELEV, ICTP

## Conference Speakers:

D. D. AWSCHALOM, Quantum Exchange University of Chicago, USA  
U. BANGERT, University of Limerick, Ireland  
P. BOGGILD, DTU Nanotech, Denmark  
D. EFREMOV, IFW, Dresden, Germany  
M. FEUERBACHER\*, Ernst Ruska-Centre for Microscopy, Germany  
A. JORIO, Universidade Federal de Minas Gerais, Brazil  
H. KOMSA, Aalto University, Finland  
J. KOTAKOSKI, University of Vienna, Austria  
G. LEE, Seoul National University, South Korea  
V. MEUNIER, Rensselaer Polytechnic Institute, USA  
T. MICHELY, University of Köln, Germany  
M. NASTASI, University of Nebraska at Lincoln, USA  
J. NEUGEBAUER, Max-Planck-Institut für Eisenforschung, Germany  
L. PIZZAGALLI, CNRS, France  
K. SUENAGA, AIST, Japan  
M. SCARDAMAGLIA, University of Mons, Belgium  
M. SCHLEBERGER, Duisburg-Essen University, Germany  
T. SUSI, University of Vienna, Austria  
A. VANTOMME, KU Leuven, Belgium  
A. WEE, University of Singapore  
B. YAKOBSON\*, Rice University, USA

\* Not yet confirmed

## How to apply:

Online application:  
<http://indico.ictp.it/event/8321/>

Female students and scientists are encouraged to apply.

## Grants:

A limited number of grants are available to support the attendance of selected participants, with priority given to participants from developing countries. There is no registration fee.

## Deadline:

for those who need financial support:

**31 March 2018**

otherwise:

**15 April 2018**



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