

Symposium D:

Phonons & Fluctuations in low dimensional structures

Scope: Steering heat by light or vice versa, examining nano-scale energy conversion, as in thermoelectricity and harvesting in biological systems, are two aspects that share the underlying science of energy processes across atomic interfaces and energy propagation in the nanoscale and or in confined systems. The nanometer scale defies several of the bulk relationships as confinement of electrons and phonons, locality and non-equilibrium become increasingly important. A deep understanding is sought using advanced experimental methods to reach the nm scale for electronic and thermal properties, as well as the possibility to perform theoretical work with many more atoms than in the past by means of advanced, e.g., molecular dynamics and ab-initio methods. State of the art knowledge in statistical mechanics, quantum physics and quantum biology, noise, low frequency fluctuations, phonon engineering, combined phononic-photonic crystals, acousto metamaterials, among others are topics that converge in the underpinning science, which we wish to explore in this symposium. The propagation of phonons as energy carriers impacts not only heat transfer (thermoelectricity, thermal interface materials), but also the very concept and handling of temperature in non-equilibrium and highly localised conditions. Much of the needed progress depends on the materials studies and this symposium will target the interface material aspects as well as the emerging concepts to advance in this field. There are multiple applications areas, which will be impacted such as phase change materials, coherence in quantum information, energy conversion in thermoelectric materials, thermal management in nanoelectronics, to name but a few.

Hot topics:

<ul style="list-style-type: none"> • Radiative heat transfer • Energy conversion in the nanoscale • Nano scale thermal conductivity • Micro to nanoscale thermal management • Phononic crystals • Photon-phonon interaction in nanostructures 	<ul style="list-style-type: none"> • Electron-phonon interaction in low dimensions • Phonons in Metrology and in Biology • Coherent acoustic phonons and phonon sources • Thermal rectifiers, memories and computation
---	--

Scientific Committee

Bahram Djafari-Ruohani (University of Lille 2, France)
 Anthony Kent (University of Nottingham, UK)
 Fabio Marchesoni (University of Camerino, Italy)
 Natalio Mingo (CEA, France)
 Cesar A. Rodriguez-Rosario (University of Bremen, Germany)
 Javier Rodriguez Viejo (Autonomous University of Barcelona)
 Pascal Ruello (University of Le Mans, France)
 Thomas Dekorsy (University of Konstanz, Germany)

Symposium Organisers

Jouni Ahopelto (VTT, Espoo, Finland) – jouni.ahopelto@vtt.fi
 Clivia Sotomayor Torres (ICN2 & ICREA, Bellaterra, Spain) – clivia.sotomayor@icn.cat
 Sebastian Volz (Ecole Centrale Paris and CNRS, Paris, France) – Sebastian.volz@ecp.fr

Deadline for abstract submission: **January 16, 2014**
www.emrs-strasbourg.com