

Titre du mini colloque
Micro Nanoscale Heat Transport Management

1. Organismes (avec affiliation, usuellement 2 ou 3 personnes) :

Ali Belarouci, Institut des Nanotechnologies de Lyon – CNRS
Séverine Gomés, Centre d’Energétique et de Thermique de Lyon – CNRS
Samy Merabia, Institut Lumière et Matière – CNRS

2. Parrainage ou lien avec des sociétés savantes, des GDR ou autres structures :

GDR « NANOmaterials for Energy applications » (GDR NAME)

3. Résumé de la thématique du minicolloque :

Research on micro and nanoscale heat transport has seen an ever-increasing level of activity during the last decade with direct impact on both fundamental science and engineering. Considerable progress has been made possible thanks to the development of time and spatially resolved experimental techniques as well as advanced simulation tools pushing the limits to the investigation of the behavior of energy carriers-phonons, photons and electrons- at small length scales and short time scales. Yet, these investigations call for a deep fundamental understanding of the physics of nanoscale heat transport, which in turn may help in the design of materials with improved properties, or the exploitation of new phenomena to conceive devices displaying innovative functionalities. Progress in the field can be made possible only through dissemination and communication among the different communities involved in this multidisciplinary field, namely, solid-state physics, microelectronics, nanooptics, metrology, engineering and modeling.

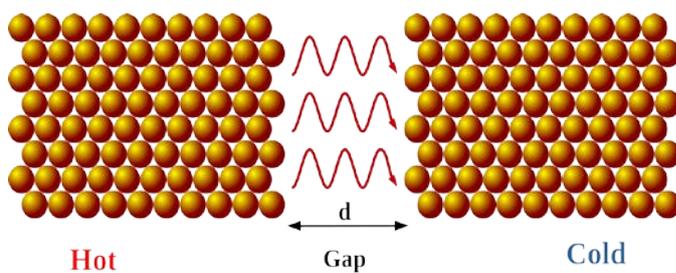
This colloquium aims to bring together leading academic scientists and researchers to exchange and share their experiences and research results on all aspects of Micro, Nanoscale Heat Transport. It also provides an interdisciplinary platform to present and discuss the most recent innovations, trends, as well as practical challenges encountered and solutions adopted in this field.

The main topics of the colloquium include (and is not limited to) the following:

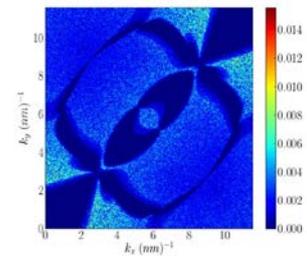
- Heat transport by phonons, electrons and electron/phonon processes
- Near-field radiative heat transfer
- Nonequilibrium effects, thermodynamics and devices
- Heat transport in 2D materials and metamaterials
- Heat transport in molecular junctions
- Nanoscale/microscale thermal metrology
- Thermal interface resistance and heat transport at interfaces
- Radiative cooling and heating
- Thermotronics and thermoplasmonics
- Thermoelectricity and thermophotovoltaics

- Thermal transport in nanocomposites, polymers, liquids and amorphous materials
- Ultrafast heat transfer

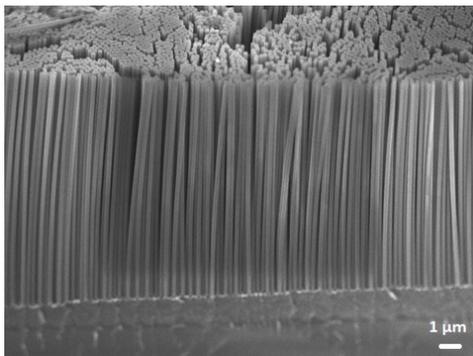
Prospective authors are kindly encouraged to contribute to and help shape the colloquium through submissions of their research abstracts. High quality research contributions describing original results of conceptual, constructive, empirical, experimental, or theoretical work in these topics are cordially invited for presentation at the conference.



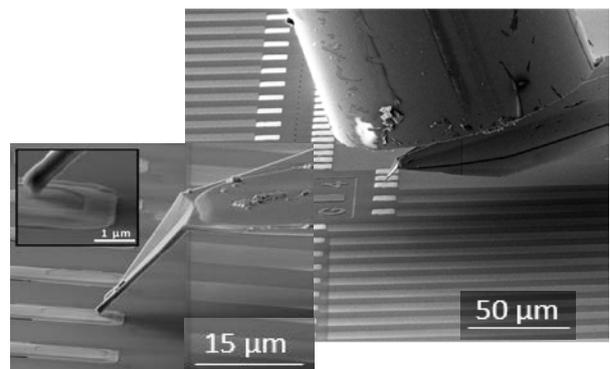
Thermal transport in the extreme near field



*Spectral thermal conductance
across a Si/Ge interface*



Silicon nanowire forest for thermoelectric applications



Scanning thermal microscopy