

➤ POST-DOCTORAL RESEARCHER

The Centre for Energy and Thermal Sciences, Lyon, France (CETHIL) opens a position of post-doctoral researcher for the area of nanoscale heat transfer.

This work will be performed in the frame of the european collaborative project 'QUANTIHEAT' financed by FP7, which gathers the strengths of 20 partners on the topic of scanning thermal microscopy and its applications.

Context

Scanning thermal microscopy (SThM) is a technique based on atomic force microscopy (AFM) that aims at measuring temperature and thermal properties at an ultralocal scale, with nanometre-scale spatial resolution. The field of application is the study of nanomaterials and micro and nanosystems and devices.

The analysis of the measurement data is often difficult because the effective thermal properties depend on the geometry and structure of the investigated sample. As a consequence, these measurements data have to be compared with simulations that allow extracting the right parameters to be determined.

Goals

With the help of the currently-available tools at CETHIL and of his prior experience, the post-doctoral researcher will develop methods to simulate the nanostructured samples with various tools:

- Numerical solutions of the Boltzmann Transport Equation (BTE) for 1D, 2D and 3D
- Analytical solutions in some cases where geometry allows it
- Computation of thermal boundary resistances.

The goal of this work is to provide:

- effective parameters that will be used in multi-scale numerical calculations simulating partial differential equations, such as thermal conductivity and contact thermal resistance
- a way to couple multi-scale commercial codes and a library of effective parameters previously calculated
- a way to couple the developed numerical codes and multi-scale commercial codes used in the heat transfer field.

Education / Competencies / Strengths

- PhD in nanoscale heat transfer or electronic transport
- Experience in simulations and theory
- Mobility : the post-doctoral researcher may need to travel to various meetings or to partner locations
- Mastering french would be a plus

Position and associated conditions

Type of position: post-doctoral researcher

Brutto salary per month: 1800 à 2200 € depending on experience

Type of contract: Non-permanent full-time position during 12 months

Starting date: as soon as possible. It will depend on the selected candidate's availability.

Localisation: Centre d'Energétique et de Thermique de Lyon (CETHIL, CNRS UMR 5008), Campus La Doua-LyonTech, Villeurbanne (Lyon), France

Applications (Resume, letter of motivation, names of two references) should be sent by email before 2014-09-20 to:

Dr Séverine GOMES, CNRS permanent researcher and coordinator of the project

Email: severine.gomes@insa-lyon.fr

Dr P-Olivier CHAPUIS, CNRS permanent researcher

Email: olivier.chapuis@insa-lyon.fr
