



## Postdoctoral researcher position

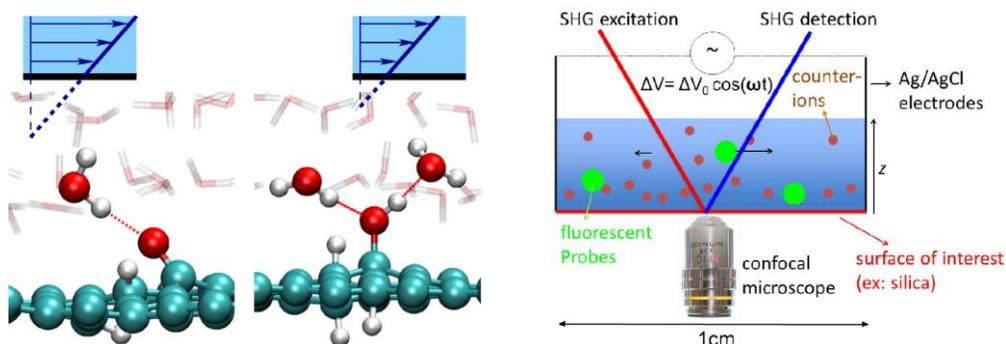
### Nanofluidic energy conversion using reactive surfaces: numerical and experimental investigation

**Location:** Institut Lumière Matière, Université Lyon 1-CNRS, France

**Salary:** net salary between 2270 and 2460 € per month depending on experience

**Contract Type:** full time, fixed term (one year initially, can be renewed for up to a total of two years)

**Starting date:** 1<sup>st</sup> October 2016 or as soon as possible thereafter (taking into account administrative delays, ~ 1,5 months for European citizens, ~ 2,5 months otherwise)



Applications are invited for the above post to work on the project “NEctAR: Nanofluidic Energy Conversion using reActive suRfaces”, funded by the French National Research Agency (ANR).

Water desalination and sustainable energy harvesting are among the greatest challenges of our society, and nanofluidics offers promising solutions to address them. Nanofluidic energy conversion systems rely on electrokinetic (EK) effects, which couple different types of transport (hydrodynamic, electric, ionic, thermal...) at interfaces. EK effects are sensitive to the molecular detail of interfaces, and should thus depend on their physical chemistry. Yet the possibility to couple surface reactivity and EK transport to enhance the performance of nanofluidic devices has never been studied to the best of our knowledge.

In this project, we explore these couplings in order to design innovative nanofluidic systems for sustainable energies, focusing on waste heat harvesting. To that aim, we gather experimentalists and theoreticians who work on the same systems, and who probe simultaneously the physical chemistry of the interfaces as well as their transport properties, combining ab initio and force field molecular dynamics simulations, non-linear optics, and macroscopic transport measurements. This strategy opens the way to find optimal situations where reactive interfaces have a large impact on nanofluidic energy conversion.

We are looking for a postdoctoral researcher to participate in this project. The adequate candidate will have a background in physical chemistry of liquids or soft condensed matter. He/she should have experience of molecular simulations or experimental tools to investigate liquids at interfaces, and be willing to contribute to both numerical and experimental work, with a ratio depending on his/her background and motivation. Candidates should be organized, have good communication and writing skills and enjoy working as part of a team as well as independently. The successful candidate will be expected to contribute to the publication of scientific papers, and to their dissemination at relevant workshops and conferences.

The Institute of Light and Matter is one of the leading centers for condensed matter research in France, and offers a stimulating and friendly environment. The successful applicant will interact with the four researchers involved in the project, Laurent Joly, Samy Merabia, Anne-Laure Biance and Oriane Bonhomme, who will bring their expertise in numerical and analytical modeling, experimental measurement of fluidic transport, and non-linear optic characterization. He/she will benefit from significant local computing resources, and state-of-the-art experimental tools, which will be updated thanks to the funding allocated to this project. Finally, besides scientific aspects, the researcher will live in Lyon, a beautiful city with the cultural life of a very big city and the feel of a small town, and most importantly the capital of French food.

Informal enquiries and/or applications may be addressed to Laurent Joly: [laurent.joly@univ-lyon1.fr](mailto:laurent.joly@univ-lyon1.fr), principal investigator of the NEctAR project. Please see also the website of the project (still under development at the moment) for more information: <https://sites.google.com/site/annnectar/>.