

Université Claude Bernard Lyon 1- Hosting offer for a MSCA Post-doctoral fellowship candidate in Nanophononics

Host Organisation	Université Claude Bernard Lyon 1
Laboratory	Institut Lumière Matière
Website (lab / research team)	https://ilm.univ-lyon1.fr/
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Host Organisation

The Université Claude Bernard Lyon 1 welcomes Marie Skłodowska Curie Postdoctoral Fellowships applications !

With 62 laboratories and more than 7000 publications per year, and leading French university in terms of the number of patents filed in collaboration with industry, Lyon 1 contributes to scientific and innovation progress in numerous fields: health, mathematics, IT, physics, chemistry, earth and space sciences, life sciences, etc. Creator of emerging knowledge and new technologies, the University is consolidating its research excellence on a global and international level by developing inter- and multidisciplinary approaches targeting the major challenges facing today society.

Host research lab/team

The Institut Lumière Matière (ILM) is a leading research lab in Europe in fundamental and applied research in physics and chemistry.

The Institute for Light and Matter (iLM) is a joint CNRS-University of Lyon 1 research unit counting ~300 employees, including ~100 PhD students and post-docs and hosts ~140 trainees and 50 international visitors per year. ILM is internationally recognized for the excellence of its research going from fundamental to applied in physics and chemistry, leading to ~250 articles per year in international peer-reviewed journals and 6 patents per year. The entire staff is committed to promoting excellence and ethical and responsible research. The ILMTech technology platform offers cutting-edge instruments and expertise to academic and socio-economic players. 8 start-ups and a Labcom have emerged from the ILM. The research activity of the Institute spans experimental, numerical, and theoretical approaches and covers a very broad range of topics related to Physics, from laser physics to biophysics and condensed matter theory; this breadth fosters collaborations and innovations at the interface between disciplines.

The research team Transport, Magnetism and Materials for Energy (Energy) counts 12 permanent researchers, 3 Research Engineers, currently 5 doctoral researchers and 2 postdoctoral researchers. The group works on the fundamental understanding of microscopic mechanisms leading to properties useful for energy harvesting, storage and reconversion. To this aim, the group is committed to the development of three technological platforms: i) Transport, counting home-made and customized equipment for thermal, electric, magnetic and thermoelectric transport measurements from 2 to 900 K; ii) Plyra, counting nanoparticles aggregates deposition methods and electron

spectroscopy experiments (ARPERS, UPS); iii) PLECE, counting several high-pressure environments (DAC, Belt, Paris-Edinburgh). The group research is intensively based on optical spectroscopy techniques (Raman, Brillouin), x ray diffraction and large scale facilities advanced spectroscopy techniques (inelastic neutron and x ray scattering at neutron and synchrotron radiation sources, 4-wave mixing experiments at free electron laser).

Hosting Offer

The **Institut Lumière Matière** offers to host a MSCA Postdoctoral Fellowship candidate (typically a post-doc of less than 8 years research experience since PhD defence), submitting an application to the next MSCA-2026-PF call for proposals (deadline 09th of September 2026), interested to work on the following research topic:

- Nanophononics: coherent phonon dynamics and related transport properties
- Thermal management by phonon engineering

The fellowship could last for 12 to 36 months, depending on the type of Postdoctoral Fellowship.

Supervision

The successful Marie-Curie Post-doctoral fellow will be supervised by Valentina Giordano (VG).

VG is a CNRS Director of Research in “Energy” team, and scientific director of the technological platform Transport@ILMTEch. Since more than 10 years, VG has started and leads in the Energy group a research axis on the microscopic mechanisms ruling thermal transport in novel functional materials, including complex crystals and nanostructured materials. Her original strategy consists in coupling the investigation of phonon dynamics in a large spectral range with macroscopic thermal transport measurements for a microscopic understanding of the mechanisms at play. Specifically, in order to address the phonons which are the major heat carriers for a given material, and the ones more expected to be affected by nanostructuration, VG has developed an expertise in a large panel of experimental techniques allowing to access phonon wavelengths from macroscopic down to sub-nanometric. This approach has allowed VG and co-workers to obtain key results, which have changed the common understanding of thermal transport in materials relevant for thermoelectricity, microelectronics and, generally speaking, thermal management, and led to 68 publications in peer reviewed journals, 1 proceeding, 3 books chapters and 11 popularization articles.

5 selected publications:

1. “The effect of echoes interference on phonon attenuation in a nanophononic membrane” M. Hadi et al. *Nat. Comm.* 15, 1317 (2024)
2. “Glass-like phonon dynamics and thermal transport in a GeTe nanocomposite at low temperature”, R. Cravero et al. *Small*, 2310209 (2024); Back-Cover de *Small*
3. “Phonon behavior in a random solid solution: a lattice dynamics study on the high-entropy alloy FeCoCrMnNi” S. R. Turner et al. *Nat. Comm.*, 13, 7509 (2022)
4. “Revisiting the Lattice Dynamics of Cubic Yttria-Stabilized Zirconia” S. R. Turner et al., *Phys. Rev. Materials* 7, 115401 (2023)
5. “Direct measurement of individual phonon lifetimes in the clathrate compound Ba_{7.81}Ge_{40.67}Au_{5.33}” P.-F. Lory et al, *Nat. Comm.* 8,491 (2017)

Application process

Interested candidates are invited to contact us exclusively by email at valentina.giordano@univ-lyon1.fr.

Make sure that you include the reference to this offer in the title of your email. Please attach a CV, a motivation letter, your MSc marks, **as well as a 1 page research proposal**.

Professional grant application support:

Candidates will receive the support of the supervisors, as well as online training from a professional grant application company, and advices from successful applicants, to prepare and submit their application with the Institut Lumière Matière as a host laboratory, to the next MSCA-PF call for proposals.