

Postdoc: “Material removal using ultrashort engineered laser beams”

Laboratoire Hubert Curien, CNRS UMR 5516 Université Jean Monnet, Saint Etienne

Optics and Photonics Department / Laser-matter interaction Group

The “Laser-matter interaction” group at the Laboratoire Hubert Curien, CNRS UMR 5516, Jean Monnet University in Saint Etienne, France, is currently seeking a postdoctoral candidate for its research activities. Applications are invited for a position that will open in August 2025. The position is for one year with possible prolongation.

Environment: Hubert Curien Laboratory is a mixed research unit, jointly run by the “Centre National de la Recherche Scientifique - CNRS” and the Jean Monnet University. The proposed subject concerns laser ablation and structuring of surfaces on micro- and nano-scales. The Ultrafast laser platform located at the Hubert Curien Laboratory hosts state-of-the-art equipment for beam engineering, laser processing, and process characterization.

Project: Defining matter structural characteristics is key for designing materials and functions. The project will explore the process of laser ablation and nanostructuring using engineered laser pulses that mix various spectral and polarization components.

Objective: The activity will focus on the achievement of high precision, control, and accuracy in structuring surfaces on extreme scales with pattern flexibility and in selectively removing residual coatings.

Job description. The candidate will develop setups for programmable vectorial beam engineering and characterization in space and time and for the coherent superposition of pulses with different spectral contents. It will study ablation effects on micro and nanoscale and elucidate the role of far and near field components with the help of phenomenological models. It will equally develop procedures for laser area patterning with nm resolution for developing surfaces with optical functionalities.

Candidate profile. We are looking for a highly motivated researcher with a strong interest in fundamental and experimental physics and a strong background in optics. Experience in developing optical systems and in the utilization of lasers is a plus. Candidates should have a PhD degree in physics or engineering, and show interest for interdisciplinary work in the field of laser-material interactions. The application should be supported by sound academic records and recommendation letters. Expertise is required in the following areas: ultrafast laser-material interactions, condensed matter, microscopy, ultrafast optics. Programming skills and a good command of English are also required.

Payment: Postdoctoral fellowship (net salary 2000-2500€ according to the experience)

Duration: 12 months

Application Deadline: 15/03/2025

Contact (with customary documents: CV, letter of intent, recommendation letters/contacts):

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<http://laboratoirehubertcurien.fr>

Note: The Laboratoire Hubert Curien is a restricted access area. The fellowship is conditioned by a security clearance, to be applied for during the application (two months process time). To apply for a security clearance, we need the following documents: exhaustive CV, passport copy.