

Call for a Post-Doctoral position

Ultrafast opto-acoustics to explore the intranuclear cell mechanics

Starts in 2025, 12 months.

I2M, Physical Acoustics Department – Université de Bordeaux, UMR CNRS 5295

[Website](#)

CONTEXT

Femtosecond laser pulses have been used, since the end of the eighties, to generate and detect acoustic waves of high frequencies in sub-micrometric films, multilayered structures and other nanostructures. In this context, a pump-probe optical technique is used to measure the ultrafast dynamics of the transient reflectivity changes induced in a structure by propagation of the optically generated acoustic wave.

The opto-acoustic team at I2M has achieved pioneering investigations of potential applications of the picosecond acoustics technique in biology. [Appl. Phys. Lett. 93, 123901 (2008)] An opto-acoustic microscope was built allowing the imaging of single animal cell with the mechanical properties as the contrast mechanism. [J. Biophotonics, 7, 453 (2014), Scientific Reports 5, 8650 (2015)]. The sensitivity to the chromatin compaction in cell nuclei was demonstrated also. [Photoacoustics 27, 100385 (2022)].

PROJECT

The proposed project is dedicated to the probing of coherent acoustic phonon propagating in single cell nuclei. The recruited researcher will be in charge of an existing pump-probe optical set-up and of the associated numerical processing tools. In the context of existing collaborations he will be responsible for upgrades of the experimental set-up and for carrying out ultrafast acoustic experiments illustrating unique capabilities of this new modality for probing the intra-nuclear mechanics. He will benefit from the close partnership of the consortium members and of their strong expertise on both the experimental and theoretical aspects involved in this project.

COLLABORATIONS

[Laboratoire Ondes et Matière en Aquitaine](#) (Team S. Dilhaire, LOMA, UMR CNRS 5798)

[Chimie et Biologie des Membranes et Nanoobjets](#) (Team M-C Durrieu, CBMN, UMR CNRS 5248)

QUALIFICATIONS AND EXPERIENCE

The candidate will have hands-on experience in experimental physics involving optical techniques. Attraction for multidisciplinary research and biophysics is a strong asset. Skills in data processing are welcome. Beyond scientific aspects, autonomy, sociability, sense of initiative and organization, will be required qualities.

SALARY: 2750 €/month (gross salary)

CONTACT

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Qualified persons interested to work in the above field and having relevant expertise are invited to email their applications including a statement of interest besides the usual documents (CV, publication list, addresses of references).