

Ph.D Project EIPHI GS MINELICO

Job title	PhD Research Position in micro-Brillouin light scattering
Job type (PhD, Post-doc, Engineer)	PhD
Contract duration (months)	36 months
Qualifications (Master, Ph.D ...)	Master in optics, wave physics, instrumentation, or applied physics
Job hours (full time/part time)	Full Time
Employer	UBFC Université Bourgogne Franche-Comté
Financing Institutions	Région Bourgogne Franche-Comté & Graduate School EIPHI
Host Laboratory	FEMTO-ST, MN2S department
URL Host Laboratory	https://www.femto-st.fr/en/Research-departments/MN2S/Presentation
Address Host Laboratory	Institut FEMTO-ST, Université de Franche-Comté, 15B avenue des Montboucons, 25030 Besançon, France
Job description	<p>Characterization by micro-Brillouin analysis of nanostructured materials and biological objects</p> <p>It is proposed to work on microscopy techniques based on inelastic light scattering (Brillouin light scattering). Such techniques allow one to obtain acoustic velocities inside matter, with many applications in material science but also in biology. Instrumental developments will be complemented by the development of computer programs aiming at simplifying and guiding measurements. Samples considered include functional materials fabricated at the FEMTO-ST institute or obtained through collaborations, but also biological objects present in blood, e.g. cells or vesicles.</p> <p>Specific goals include setting up the micro-Brillouin experiment on an existing multi-pass Fabry-Perot interferometer (The Table Stable LTD), including translation tables to obtain Brillouin maps of small samples; writing computer code for experiment/theory comparison; considering piezoelectric and glancing-angle deposition thin-films elaborated on-site; setting up a virtual laboratory experiment for public demonstrations; characterizing biological samples and comparing with atomic force microscopy results in terms of mechanical elasticity; characterizing active and functional samples obtained within an international collaboration.</p> <p>The PhD student will be in charge of instrumental developments together with an optical research engineer, will write codes together with a theorist of light and sound interactions, and will examine biological objects under the supervision of a biologist. Team work is expected.</p>

Supervisor(s)	Dr Hab. Vincent Laude (thesis director), Dr Alexis Mosset (co-supervisor), Dr Hab. Céline Elie-Caille (co-supervisor)
Candidate profile	The candidate should hold a master degree in optics, acoustics, applied physics, wave physics, or instrumental techniques, or equivalent. Understanding of reference frames and tensors describing material properties will be useful. Interest in fundamental aspects of physics and instrumentation will be appreciated. Brillouin experiments require care, self-organization, and commitment to control precisely all experimental aspects. The depth of numerical simulations will be adapted to the candidate's profile and interest.
Keywords	Brillouin light scattering, opto-acoustics, material science
Application deadline	June 1 st , 2022
Application Depending on the type of position	<p>Please send the following documents (all in one PDF file) by e-mail to Vincent Laude vincent.laude@ubfc.fr :</p> <ol style="list-style-type: none"> 1) For EU candidates: Copy of your national ID card or of your passport page where your photo is printed. For non-EU candidates: Copy of your passport page where your photo is printed. 2) Curriculum Vitae (may include hyperlinks to your ResearchID, Research Gate, or Google Scholar accounts if any). 3) Detailed list of publications (if any, may include hyperlinks to DOI of publications). 4) Letter of motivation relatively to the position (Cover Letter) in which applicants describe themselves and their contributions to previous research projects (maximum 1 page) 5) Copy of your Master degree if already available. 6) Coordinates of reference persons (maximum 3, at least your master thesis supervisor): Title, Name, organization, e-mail. <p>If you have questions regarding the application, please contact the supervisor.</p>