AMADEus
Advanced MAterials
by DEsign

université de BORDEAUX

Post-doctoral position at Bordeaux University:
Functional Acoustic Coatings with Soft Metamaterials.

Project

This research project aims at developing a new class of acoustic coatings based on the metamaterial concept, which are easily processable and up-scalable by soft matter techniques coupled with microfluidics (*Science* **342**, 323, 2013). Our "soft" approach has recently proven successful to produce soft 3D acoustic negative-index metafluids, composed of porous particles, with one (*Nature Mater.* **111**, 264301, 2015) or two negative bands (*Adv. Mater.* **28**, 1760, 2016).

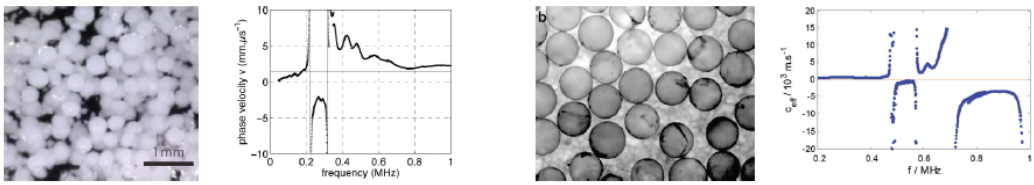

Figure: (left) suspension made of macro-porous silicone-rubber micro-beads exhibiting one negative band. (right) suspension made of micro-porous xerogel-silica micro-beads exhibiting two negative bands.

Now, we focus on the design and the manufacture of metamaterial-based demonstrators with targeted functionalities for water-borne waves closely linked to extreme values of the complex-valued acoustic index such as (i) sub-wavelength acoustic coatings for insulation, anechoism and stealth, or (ii) negative-/zero-index caps for ultrasonic beamforming/front-shaping.

Expected profile

Young researcher with sound bases in (acoustic) wave physics in complex media with a pronounced interest in physico-chemistry. Experience in ultrasound characterization, or related experimental skills, is advantageous, but not mandatory. On top of that, the candidate has to be rigorous, creative and motivated by working in a highly interdisciplinary research environment since he/she will work at I2M closely with the non-permanent staff already hired on this project by our physico-chemist partners (1 PhD student at CRPP + 1 Post-Doc at LOF).

We are a research team unconstrained by traditional disciplines and apply engineering excellence to enable breakthrough scientific discovery. We have a friendly and dynamic research environment with close, daily interaction among all group members and strong collaborations with many international academic partners. We are situated in the heart of University of Bordeaux campus, one of the leading technical universities of Europe, where we enjoy newly renovated office and lab space. The University of Bordeaux, labeled "Campus of Excellence" by the French government in 2011, was awarded significant funding to support its international profile and excellence, both in research and in education. Initiatives include the Advanced MAterials by Design (AMADEus) Laboratory of Excellence targeted to become a worldwide-recognized major cluster in materials science, engineering and technology, carrying out scientific research and innovation at the interfaces of chemistry, physics, biology and engineering.

Contact details

The position is for one year, renewable once, starting at the beginning of 2017. Applications should include a CV, as well as contact details of two academic referees. Please also include a statement explaining your suitability for the project (with all documents in a single file).
Informal enquiries can be sent to Dr Thomas Brunet thomas.brunet@u-bordeaux.fr. Applications should be made through the website of the Laboratory of Excellence AMADEUS (http://amadeus.labex.u-bordeaux.fr/en/Jobs/).

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