European Research Council
Established by the European Commission

Postdoctoral position in Grenoble, France

Physics of new bubble-based meta-materials

The context This project plans to take advantage of novel 3D fabrication techniques to develop innovative acoustic materials. These materials are based on the use of bubbles with a huge acoustic resonance, while being much smaller than the wavelength of sound.

The challenges The first objective is to build *rigid frames* holding a bubble by 3D fabrication (see figure). When submerged into water, a bubble is kept by capillary forces but still free to pulsate at each the openings of the frame. The resonance of such hybrid bubbles will be first studied. The second objective is to fabricate a lot of these resonators, and to study their collective vibrations. We then expect original acoustic properties for a medium containing a lot of these resonators, such as super attenuation or coherent emission of sound. The latter effect, also called acoustic laser or SASER, has been predicted theoretically but never observed experimentally.

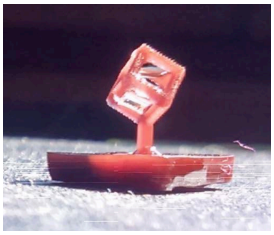

Figure *Cubic frame obtained from 3D fabrication to hold bubbles underwater.*

Your profile A PhD degree in physics or acoustics. The candidate will be involved in the design and fabrication.

Environment Laboratoire Interdisciplinaire de Physique is located on Grenoble campus, France. The postdoc will be working with Olivier Stephan (3D fabrication), Thomas Combriat (microfluidics and acoustics) and Philippe Marmottant (microacoustics). The position is funded by the ERC Consolidator Grant BUBBLEBOOST. The starting date is fall 2017, for one year, and can be extended until March 2019.

Applications: Candidates are invited to contact Philippe Marmottant at the e-mail address philippe.marmottant@univ-grenoble-alpes.fr. The following items will be required: a PhD diploma, a CV with publication list, names and contact information of several references, together with a letter outlining past research activities and future research interests.

Contact Philippe Marmottant, Mél: philippe.marmottant@univ-grenoble-alpes.fr, page web
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