



POSEIDON – Unconventional principles of underwater wave control in the sub-wavelength regime

*Post-doctoral position in « metamaterials for underwater acoustics »
at the Institute of Electronic, Microelectronic and Nanotechnology (UMR CNRS 8520)
Laboratory of Acoustics, 41 Boulevard Vauban – Lille (FR)*

Project Context and objectives: The performance of underwater noise mitigation systems is currently poor at the sub-wavelength scale, and an effective solution to attenuate underwater waves over broadband low frequencies does not exist, yet. In this context, *the objective of this post-doc position is to exploit metamaterials to develop a new class of underwater noise reduction systems capable of controlling wave reflectivity and absorption over broad sub-wavelength frequency ranges.*

Main tasks and responsibilities: The candidate will work in the framework of the ERC StG project POSEIDON (« Unconventional principles of underwater wave control in the sub-wavelength regime »). She / he will investigate phononic crystals and elastic metamaterials in the context of underwater acoustics, where (heavy) fluid-structure interaction takes place invalidating most of the approaches used in airborne acoustics. Collaborations with people specialized in the fabrication and characterization of underwater materials is foreseen. The candidate is also expected to contribute on the analysis and interpretation of data, manuscript preparation and dissemination of the results in the context of national and international conferences/meetings.

Required qualifications: The ideal candidate is required to hold a PhD in engineering, physics, or similar disciplines with advanced experience in numerical methods (FEM, BEM, ...). A solid background in structural mechanics and wave propagation in periodic media is also required. A good knowledge in fluid-structure interaction is also recommended.

Application: Applicants are asked to provide the following documents:

- 1) a motivation letter (approximately 1 page) explaining why they are applying for this position
- 2) a detailed CV
- 3) two to three reference letters

Information should be sent to Dr. Marco Miniaci (marco.miniaci@gmail.com, marco.miniaci@univ-lille.fr).

The online application procedure is also required (CNRS website).

Location: The Institute of Electronic, Microelectronic and Nanotechnology (UMR CNRS 8520 – <https://www.iemn.fr/en/>) is in Villeneuve D'Ascq, close to the city of Lille (France). With a total staff of over 500 persons, the institute has a broad area of research activity ranging from physics to materials science, acoustics, micro- and nanotechnology. The laboratory of Acoustics (where the candidate will carry on her / his research and where she / he will have her / his office) is in the city center of Lille, at 41 Boulevard Vauban, within the « Junia » buildings.

Starting date: January 1st, 2023.

Funding: This contract is supported by the ERC StG project POSEIDON on « Unconventional principles of underwater wave control in the sub-wavelength regime ».