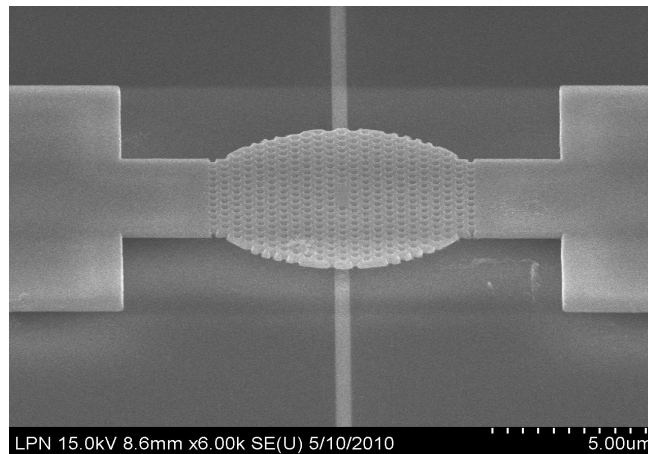




**Laboratoire  
de Photonique  
et de Nanostructures**

**Two-year post-doctoral position on optomechanics**

Optomechanics deals with the interaction of light with a mechanical oscillator. It utilizes the coupling between light and the geometry of a mechanical oscillator (for example through radiation pressure) to read or tailor the mechanical motion of the oscillator. Optomechanical coupling can be enhanced by use of an optical cavity that confines the electromagnetic field and thus increases the optical power seen by the mechanical oscillator. This coupling is also stronger at the nano-scale because of the very small mass of nano-mechanical oscillators. In our work, the optomechanical resonator consists of a photonic crystal slab optical cavity, sustaining mechanical vibrations in the GHz frequency range and strongly coupled to light.



InP photonic crystal resonators bonded over a Si optical access waveguide.

A first major objective of the post-doctoral project aims at pushing forward this novel technological direction by integrating optical and acoustic excitation/detection functionalities on such optomechanical platform, i.e. integrated silicon optical access waveguide as well as surface acoustic waves transducers. Such resonators will exploit photonic or dual photonic-phononic crystal slab nanocavities (phoxonic nanocavities) confining and co-localizing photons and phonons in an ultimate volume. Arrays of coupled oscillators via the optical waveguide will be implemented,. A second objective aims at unveiling the largely unexplored physics that governs the mechanical and optomechanical response of such novel devices, in view of exploiting the strong interaction between light and mechanical vibrations for metrological applications. Such applications include microwave oscillators and sensors.

This post-doctoral position is carried out in the context of the **EU-funded Marie Curie training network cQOM** (“Cavity Quantum Optomechanics”). It will involve nanofabrication in the laboratory's clean rooms as well as experimental work. Workshops and exchanges with the most prestigious groups working in the domain of cavity optomechanics in Europe are planned.

**Contact:** Isabelle Robert-Philip - email : [isabelle.robert@lpn.cnrs.fr](mailto:isabelle.robert@lpn.cnrs.fr) – tel : 33 1 69 63 61 79

**More informations on:** <http://www.lpn.cnrs.fr/en/PEQ/OQS.php>

LPN/CNRS - UPR 20 - route de Nozay - 91460 Marcoussis - France