PhD position on optical trapping in photonic crystal structures

A PhD student position is available at the Photonic crystal group in the Institute of Physics in the fields of optical tweezers and planar photonic crystals. Planar photonic crystals consist of 100 nanometer sized arrays of holes etched in a planar semiconductor waveguide. These structures allow the control of the electromagnetic field at the wavelength scale. They can be designed in a way that a resonant optical field extends mainly outside of the dielectric medium and can be used to optically trap particles.

The present activities of the group in this field concern the very specific physics of the optical trapping in these structures where there is a very strong feedback action of the trapped particle on the resonant trapping field; the use of such structures to trap particles in vacuum; applications in biophotonics involving optical trapping of viruses or bacteria and their interaction with e.g. antibiotics or bacteriophages.

The subject of the thesis will concern some theoretical but mainly experimental aspects with a special emphasis on one specific point such as processing, optical measurements or photonic crystal structure design. Prior knowledge or a strong interest for at least one of the following topics is a prerequisite: photonic crystal, optical trapping, experimental lab work in optics, semiconductor processing, microfluidics.

Starting date: February 2019, duration 4 years.

For more information on:
EPFL : www.epfl.ch The doctoral schools at EPFL : phd.epfl.ch
The EPFL doctoral school in physics : phd.epfl.ch/edpy
The EPFL doctoral school in photonics : phd.epfl.ch/edpo
The Institute of Physics : iphys.epfl.ch
The Photonic crystal group : sci-sb-rh.epfl.ch

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