# *Masters Thesis in Brillouin microspectroscopy for biological/biomedical applications*

We are inviting applications for a ***12 Month Masters thesis*** at the VBCF Advanced Microscopy Facility to assist in the realization of a novel Brillouin Microspectroscopy platform.

Brillouin light scattering spectroscopy offers a means of all optically measuring the mechanical properties of a material by studying the spectral shifts associated with the inelastic scattering of light from inherent acoustic phonons. Recently the field has been seeing a revival for biomedical applications, owing in part to the realization of highly efficient imaging spectrometers and a growing interest in the importance of mechanical properties in biological systems both for research applications and biomedical diagnostics. The Brillouin light scattering signal is however very weak, limiting its potential use for many applications. This project deals with ways of enhancing it.

This project would involve the realization of optimum structures for Surface Enhanced Brillouin light scattering sensors and would consist of a combination of optical modelling, nanofabrication and optical microspectroscopy measurements. The candidate will receive training in nanofabrication techniques with our collaborators at the CEITEC nanofabrication facility in Brno, where they will also fabricate the required nanostructures. Finite Element modeling as well as optical experiments on test samples and eventually biologically relevant samples will be performed at the VBCF Advanced Microscopy Facility located at the Vienna Biocenter (Dr. Bohr-Gasse, 1030).

This multi-disciplinary project will assure that the candidate gains experience in a range of skills spanning optical/nanophotonics simulations, nanofabrication, and optical spectroscopy of biological samples.

**Requirements/Application:**

The candidate is expected to have a Bachelors degree in the physical sciences and be comfortable working with sensitive optical setups. Previous experience working in laser labs and with Finite Element or FDTD simulations of optical nanostructures is advantageous.

The chosen candidate will work as part of a dynamic multi-disciplinary team, is expected to be hard working and passionate about the technology, and will receive a generous monthly stipend.

Applications with a cover letter and CV should be sent to: kareem.elsayad@vbcf.ac.at, and will be reviewed on a running basis until a suitable candidate is found. The expected starting date is as soon as possible.