Droplet optomechanics
The seminar will be given in English

Droplet is one of the most fundamental structures in nature. Yet, their mechanical resonances were never before studied. This is in contrast with droplets capillary resonances (where restoring force is by surface tension) that were studied by Rayleigh in 1879.

The aim of this work is to experimentally excite the acoustical modes of microdroplets. Here we fabricate micro droplets and activate them as a hybrid resonator that co-hosts optical- and mechanical-resonances. The acoustical mode of the droplet is then excited by using the radiation pressure of the optical mode.

We experimentally observe acoustical vibrations at 40 MHz that start at an optical threshold of 68 µW. The high optical quality factors (optical, mechanical and capillary) of our droplets suggest hybridizations of different wave-systems that might allow multi-sensory detectors where many waves are used (sound, light and capillary waves) to interrogate an analyte.