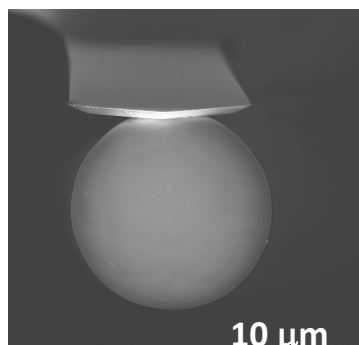


Bachelor and Master Thesis projects

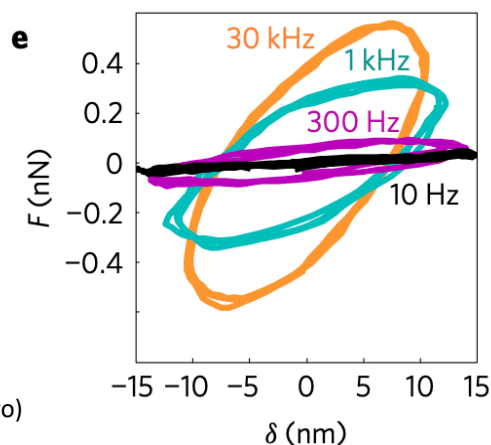
Micro-rheological characterization of soft matter systems based on Atomic Force microscopy

Atomic Force microscopy (AFM) is a powerful experimental tool for the characterization of the mechanical properties of soft matter. This project aims to develop an **AFM-based platform for the frequency dependent characterization of the elasticity of soft samples**, from polymeric materials to cell and tissues in their physiological conditions. It will be possible to measure the frequency dependence of the elastic modulus (stress-strain proportionality factor) and characterize the viscoelastic behavior of the sample. The student will develop new hardware and software tools to take control over the operation of an AFM system to perform micro-rheological measurements and will apply the protocol to relevant physical and biological systems.

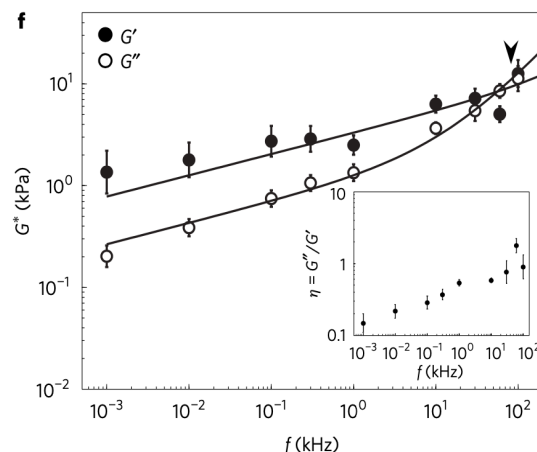
Puricelli et al., RSI 86, 033705 (2015). DOI: [10.1063/1.4915896](https://doi.org/10.1063/1.4915896), H. Holuigue et al, Sensors (2022), DOI: [10.3390/s22062197](https://doi.org/10.3390/s22062197)



SEM image of a custom AFM probe (Vmicro)



Force-deformation relationship



Freq. dependence of the elastic modulus

Adapted from
<https://doi.org/10.1038/nphys4104>

See also

