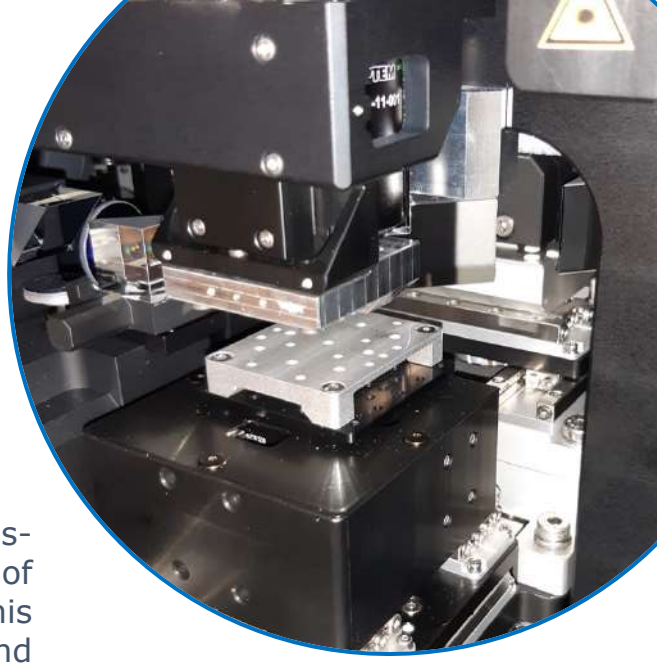
Near Field Scanning Optical Microscope



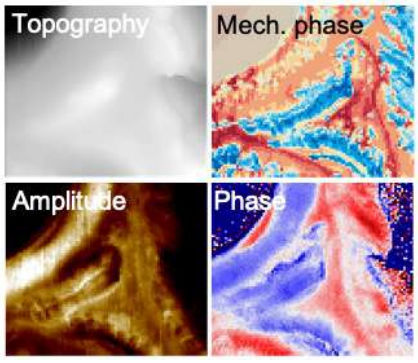
NeaSNOM – Neaspec Attocube Gmbh

Scattering scanning near-field optical microscope (s-SNOM) is a sub-wavelength microscope capable of achieving a spatial resolution down to 10 nm. This AFM-based SNOM have a large flexibility and capabilities in imaging and spectroscopy over a large spectral range (from Visible up to THz) for both optical and non-optical applications.

Technical specifications

- Stable atomic force microscope with center-symmetric design for minimal thermal drift and low mechanical noise below 0.2 nm with fixed tip-position (intermittent contact-mode and contact mode)
- Integrated bright field optical microscope (700 μm field of view) with an apochromatic objective
- integrated parabolic mirror with motorized positioner for precise focusing of light (range of 4 mm in x,y,z with a positioning accuracy of <10 nm)
- Typical scan range of 100 μm × 100 μm
- Signal demodulation at each pixel of 1st to 5th harmonic order of the tip frequency
- Simultaneous amplitude- and phase-resolved imaging at each pixel in ms acquisition time
- 633 nm laser source coupled with the near-field microscope

Realizations



Example of s-SNOM imaging over Poplar plant cell walls with simultaneous recording of the topography, the mechanical phase and the amplitude and phase of the optical near-field signal.

Field of applications

With the characteristics described above, the s-SNOM can serve as a nano-characterization platform covering fields of applications such as nano-plasmonics and photonics nanoantennas, hyperbolic materials, waveguides, …), materials characterization (on organic and inorganic samples).

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