s-SNOM Microscopy – A Breakthrough in Material Research and Photonics on the Nanoscale

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Spin-off in 2007 from Max-Planck-Institute of Biochemistry (Munich)

After 15 years of R&D now introducing the NeaSNOM microscopy platform

The only supplier of commercial apertureless NSOM microscopes

Unique expertise in near-field microscopy as well as near-field theory

Several key-patents in apertureless NSOM technology
Problem: Diffraction Limit in Optical Microscopy

Nanotechnology demands optical nearfield microscopy with nm resolution
Solution: NeaSNOM Microscope

- A focused laser beam $L$ illuminates a standard metal-coated AFM probing tip $T$.
- The tip generates a nano-focus $N$ at its apex that is much smaller than the diffraction-limited laser spot.
- The nano-focus $N$ is used to locally probe the sample.
- Optical imaging is performed by recording the light scattered $S$ by the probing tip while scanning the sample surface.

Optical resolution of better than 20 nm – even in infrared and terahertz
Animation of s-SNOM Microscopy
NeaSNOM – Optical Imaging & Spectroscopy at the Nanoscale

Semiconductor Free Carrier Distribution Maps

Chemical Nano-Composition Maps

Nanoscale Stress/Strain Fields

Nano-Plasmonic Fields

... and many more
NeaSNOM – A ready-to-use System

The NeaSNOM Microscopy Platform includes the base components of a NeaSNOM System:

A. NeaSNOM Atomic Force Microscope (AFM)
B. NeaSNOM Light Focusing & Collection Unit
C. NeaSNOM Digital Scan Controller
D. User PC incl. 3 screens with preinstalled NeaScan software

Choose NeaSNOM options

2.1 Depending on the light source, at least one of the detection modules is required:
   - Pseudo-Heterodyne Detection Module for single line lasers
   - Broadband Near-Field Detection Module for broadband light sources

2.2 For specific applications, we offer various options including:
   - Transmissive illumination for transparent samples – Available as fixed or synchronously moving focus
   - Side camera imaging system for precise targeting of small structures

Choose NeaSNOM Light Source

Neaspec offers a wide range of certified and ready-to-use light-source systems with guaranteed performance:

- Visible HeNe laser system
- CO₂ infrared laser system tunable from 9.2µm – 11.2µm wavelength
- A selection of quantum cascade lasers (QCLs) with central wavelengths between 3.8 and 10.5µm and 100cm⁻¹ tuning range
**NeaSNOM – The Flexible Nanoanalytic Platform**

- Unique patented optical near-field signal detection with background suppression
- Engineered to offer the highest flexibility for your application
- Accepts a large selection of light sources throughout the visible, infrared and THz spectrum for illumination
- Optical imaging & spectroscopy at better than 20 nm resolution - Even in infrared & terahertz
- Proprietary high stability AFM optimized for optical nanoscopy
- Compatible with almost all standard AFM cantilevers
Thank you for your attention

Questions are welcome!

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