Bruker Nano

N8 NEOS AFM/SPM

The N8 NEOS is the first optical microscope to demonstrate atomic scale resolution in combination with Atomic Force Microscopy (AFM/SPM). As today's most advanced navigated AFM, the N8 NEOS provides a seamless workflow for investigating samples from low over high optical resolution to the ultimate magnification possible.
The system includes a research grade optical microscope and Bruker's NANOS AFM for the analysis of all kinds of samples.

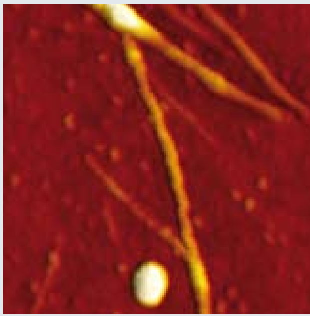
- Atomic scale resolution
- Easy navigation: from finding interesting features to quantifying them with the AFM takes a turn of the turret
- Sequential AFM and optical microscopy for unblocked sample view
- Fiber-optic interferometry for calibrated AFM measurement conditions

World's most productive AFM/SPM

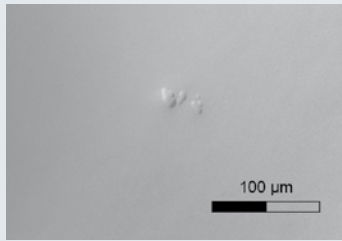
The pre-selection of interesting structures is greatly simplified through the use of a high-quality microscope optics and techniques (brightfield, darkfield, differential interference contrast). The basis for low thermal drift and atomic scale stability is a rigid granite stand. The vertical stage and the microscope turret have been designed to provide superior performance. With the look and feel of a standard optical microscope, the N8 NEOS makes AFM investigations easy and efficient.

Backed by Years of AFM Expertise

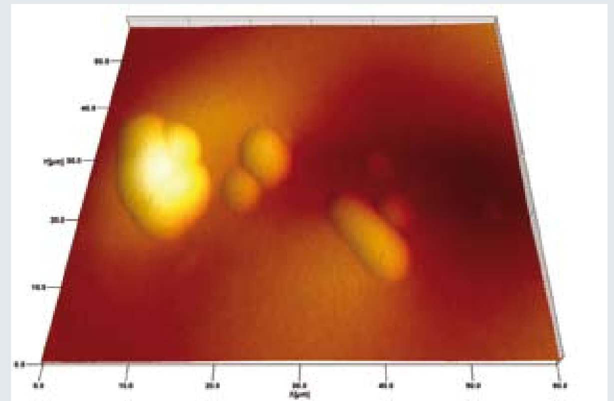
The N8 NEOS is the result of more than a decade of permanent development in making AFM technology easily available to the researcher and scientist.



2D image of carbon nanotubes
Image size: 500 nm x 500 nm,
Z-height: 14 nm



Epi-defect on a Si-wafer
Above: Optical image with differential interference contrast
Right: 3D view of the same area measured with AFM



Measuring modes

Bruker's NANOS Atomic Force Microscope is the heart of the N8 NEOS inspection microscope. All NANOS measuring modes are available, i.e. contact, all non-contact modes, lateral force, MFM/EFM, SSPM, nanolithography, and more. A liquid compatible version is available.

Applications

The N8 NEOS can be easily adapted to special requirements and customers´ wishes.

Detection principle

The NANOS AFM/SPM uses fiber-optic interferometry for the detection of the cantilever deflection. It provides not only superior sensitivity but also a calibrated measurement of displacement and amplitude, resp. In addition, the fiber-cantilever holder is so compact that most NANOS AFMs are tip scanned systems (flexure stages optional). A cantilever exchange is easily done without alignment or manual adjustment.

Specifications of the N8 NEOS-AFM/SPM-System

Maximum scan range (depending on scanner size): from 20 µm to 100 µm hardware linearized scan motion in X-Y-direction (optional in Z-direction)

Noise level:	0.05 nm RMS in vertical direction (Z)
Detection principle:	fiber optical interferometry, noise level < 0.01 nm RMS
Tips:	silicon tips, various types
Tip change:	adjustment free
Digital input res.:	16 bit A/D
Digital output res.:	16 bit D/A
Channels:	max. 8 simultaneously
External inputs:	max. 3 with 16 bit res.
Image size:	freely selectable, from 128 to 1024 pixels,
Computer interf.:	USB
OS:	MS-Windows XP® MS-Windows Vista®
Microscope:	Nikon Eclipse LV optionally with bright/dark field or differential interference contrast (DIC)
Positioning:	manual translation stage, 25 mm x 25 mm other sizes available by request
Weight:	approximately 60 kg
Material:	granite

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