



Certus Standard

Scanning Probe Microscope

Applications:

- ▶ Scanning Probe Microscopy
- ▶ Integration with various measurement and research systems
- ▶ Upgrade to Certus Optic I/U and Centaur I/U (HR)

Scan & See ▶

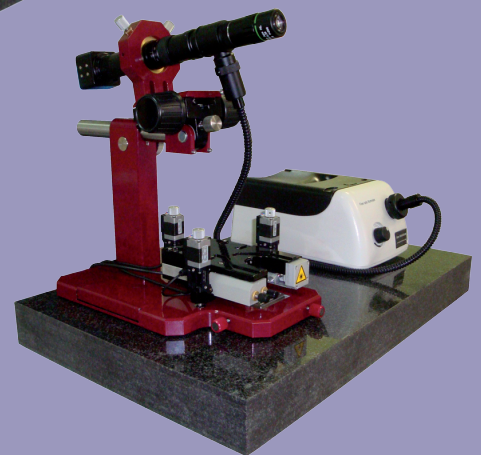
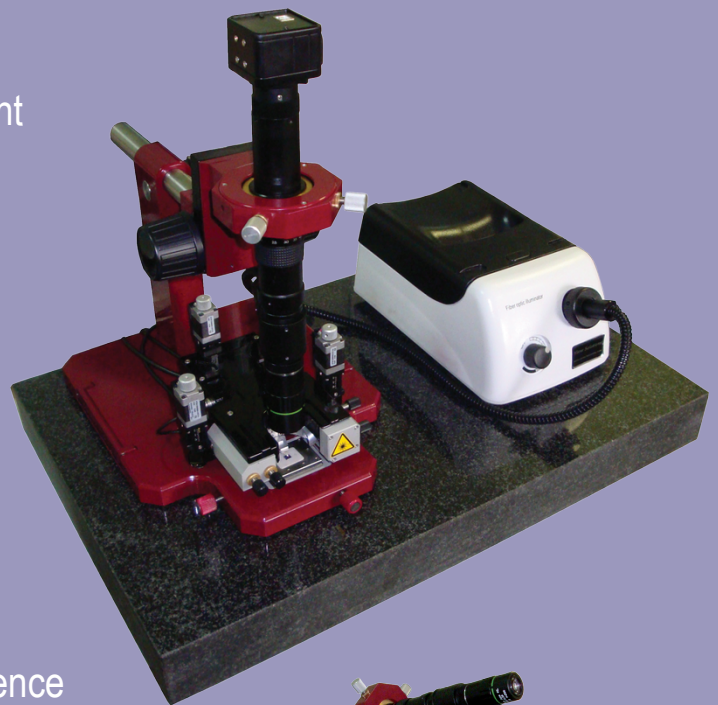
Where to use:

- ▶ Biology
- ▶ Chemistry
- ▶ Physics
- ▶ Interdisciplinary researches:
 - ▼ Nanotechnology
 - ▼ Material Science
 - ▼ Pharmaceuticals
 - ▼ Microelectronics
- ▶ Specialists education

- ▶ Our R&D team has 10-years experience in the field of scanning probe microscopy
- ▶ The Certus has flexible configuration for diverse applications.
- ▶ Unique combination of drive electronics system and the Certus software will enable to carry out your experiments in an extremely short time

Accessories:

- ▶ DNA-test samples
- ▶ Ultra-sharp cantilevers
- ▶ Atomic smooth substrates
- ▶ Quartz resonator probe with glued tungsten tip (tip radius of curvature is less than 20 nm after the chemical etching and ~ 5 nm after the FIB-etching)



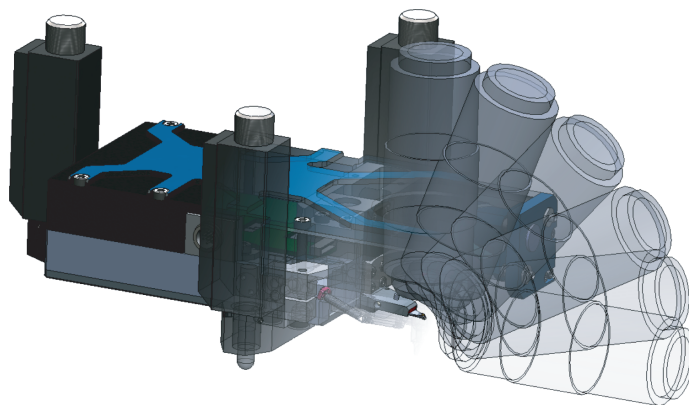
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The Certus SPM features:

Scanning head:

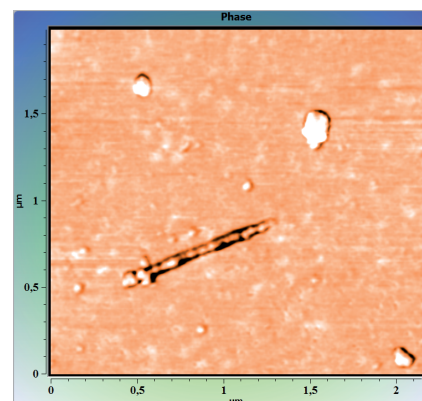
- ▶ XYZ – plane scanner with “closed-loop” system based on three capacitance sensors without second order scanning plane distortion
- ▶ Optical convenient design of SPM-head allows to keep out standard microscopic functions, easy viewing of scanning workspace and mounting of additional objective
- ▶ Plane vertical landing of SPM-probe
- ▶ Quick-detachable SPM-probe coupling unit for one-touch changing of SPM procedures: AFM to NSOM for example



Specification:

- ▶ XYZ range 100x100x15 μm
- ▶ Residual nonlinearity 0.003 %.
- ▶ Angle tilting $< 0.01^\circ$ over the full range
- ▶ Minimum scan step 0.1 nm
- ▶ Plan deviation < 1 nm
- ▶ Temperature drift < 1 nm/h
- ▶ Resonant frequency XY — 1 kHz
- ▶ Resonant frequency Z — 3 kHz
- ▶ Maximum sample size 50x50x30 mm
- ▶ Maximum scanning speed 10 Hz (line/sec)

The Phase Image SWNT. ▶

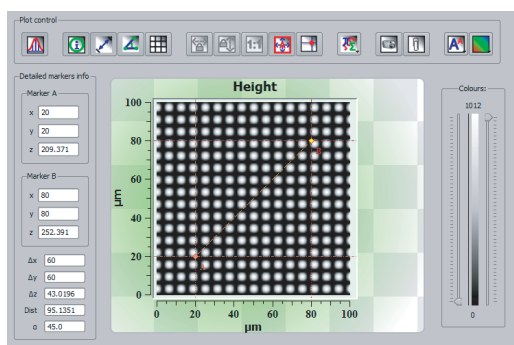


Controller:

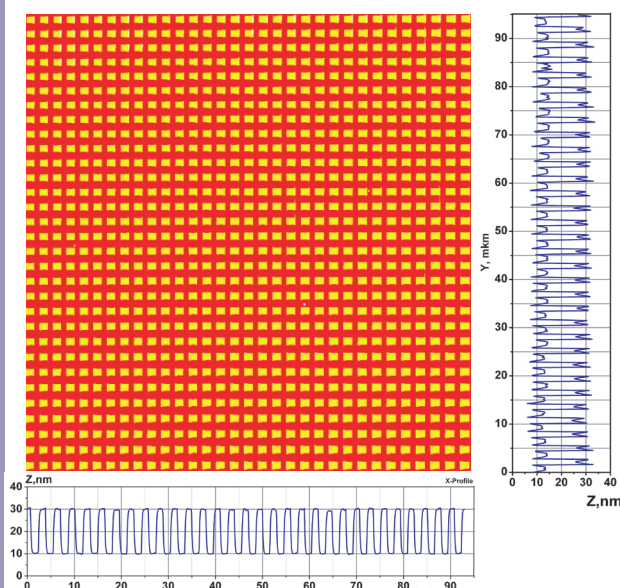
- ▶ Drive digital controller combined USB 2.0 interface
- ▶ Up to 6 channels of piezoelectric scanners with “closed-loop” system control
- ▶ Possibility of carrying out long-continued studies using external detectors



Software:



- ▶ Modern cross-platform simultaneous driven software for all the Certus units
- ▶ Built-in capabilities of the collected data basic processing and exporting into specialized software



◀ The periodic structure Si/SiO₂. Contact mode. Image size 100x100 μm , 1024x1024 points. High linearity is clearly observed to prove positioning system performance.

Latex microspheres on surface, dehydrated sample. Semi-contact mode. The average diameter of microspheres about 94 nanometers. Image size 1x1 μm , 300x300 points. Topography and profile in selected section ▶

