



## Certus Optic

Scanning Probe Microscope + Optical Microscope

### Applications:

- ▶ Scanning Probe Microscopy
- ▶ Optical Microscopy
- ▶ Scanning Near-field Optical Microscopy (SNOM)
- ▶ Samples-nanopositioning for research in a wide range of fields science and technology

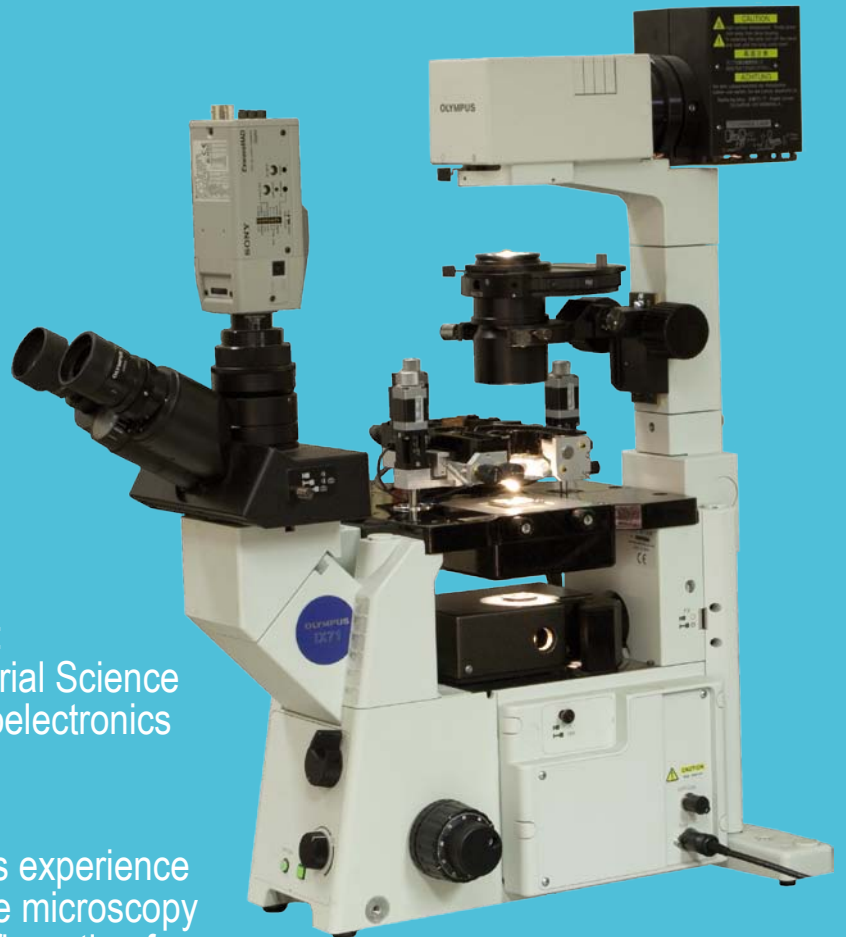
### Where to use:

- ▶ 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)



### Contacts:

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# The Certus Optic 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

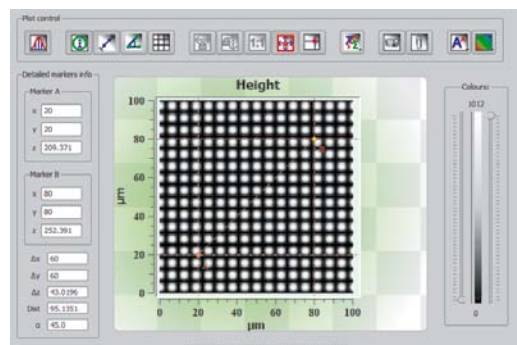
## XY Stage:

- ▶ XY range 100x100  $\mu\text{m}$
- ▶ 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
- ▶ Maximum sample size 50x50x30 mm
- ▶ Maximum sample weight — 100 g
- ▶ Maximum scanning speed 10 Hz (line/sec)

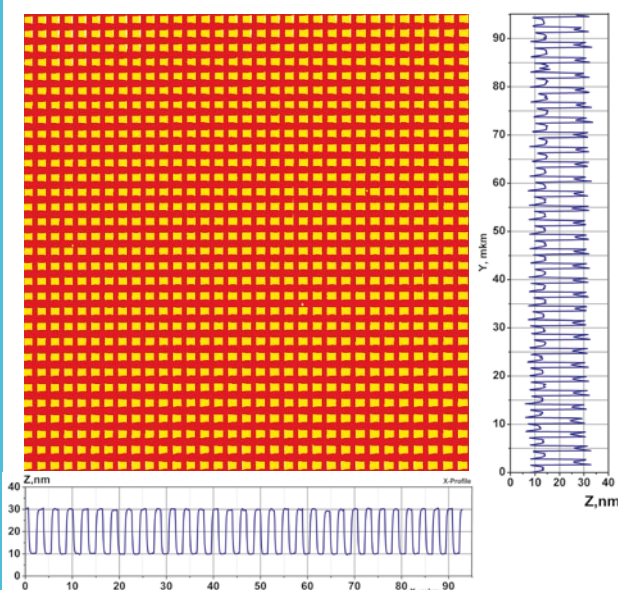
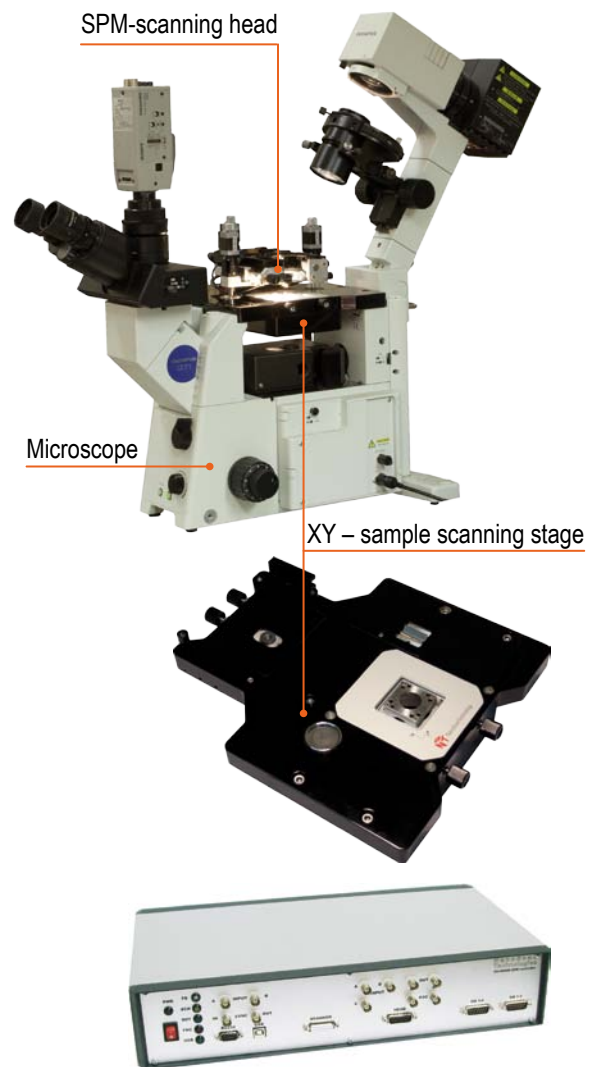
## Controller:

- ▶ 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 Optic units
- ▶ Built-in capabilities of the collected data basic processing and exporting into specialized software



◀ The periodic structure Si/SiO<sub>2</sub> image obtained with AFM contact mode. Dimension scan 100x100  $\mu\text{m}$ , 1024x1024 points. High linearity is clearly observed to prove positioning system performance.

The image DNA molecules on mica, data obtained in tapping mode. Dimension scan 1x1  $\mu\text{m}$ , 512x512 points. ▶

