ATOMIC FORCE MICROSCOPY

The ARA-AFM is ideally suited to the investigation of topographic structures at the highest resolution. All standard AFM modes are supported, assuring the highest flexibility throughout the full range of AFM applications. For high-performance materials research imaging tasks, the ARA-AFM can be equipped with the Lithography Module, allowing to create image and any feature on substrate to be imaged along with topography on the nanometer scale. The user-friendliness and versatility of this system can benefit an enormous variety of scientific works.

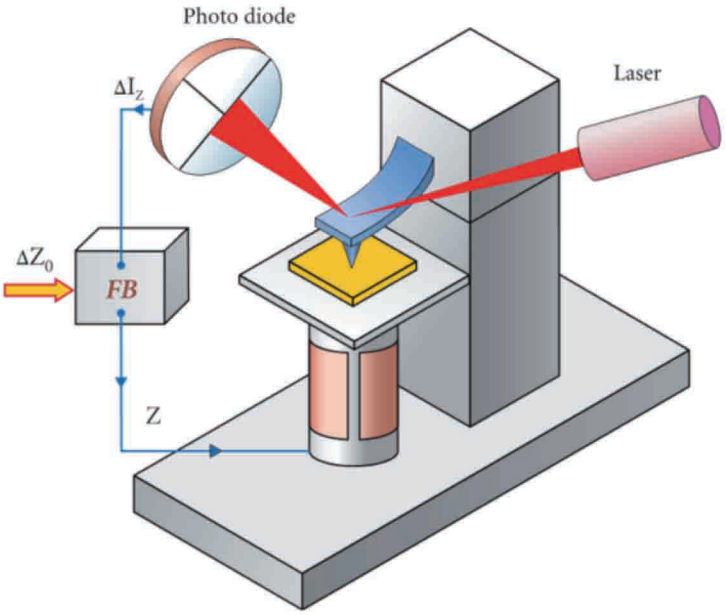
ARA-AFM scanning by the probe. On account of that, the system is ideal for investigating small samples with resolution (atomic-molecular level) as well as for big samples and scanning range up to 100×100×10 μm.
Due to the open architecture, the functionality of ARA-AFM can be extended essentially: specialized magnetic measurements with external magnetic field, high-temperature experiments, Near-field optical microscopy, Raman spectroscopy, etc.

Features

- Contact mode
- Noncontact mode
- Dynamic mode with fly
- Tapping mode (Semicontact)
- Force spectroscopy
- Lateral Force Microscopy (LFM)
- Phase Imaging mode
- Force Modulation mode
- Nano-Lithography with script-language
- Chemical nano-Lithography
- Magnetic Force Microscopy (MFM)
- Electrostatic Force Microscopy (EFM)
- Conductive atomic force microscopy
- Piezo Response Microscopy (PRM)

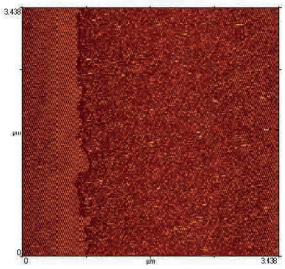
Advantages

- Different data channels including amplitude, phase, topography
- High sampling rate and digital filtering implementation
- High bandwidth sensors and high quality nano scanner
- Disturbance and noise rejection through closed loop operation

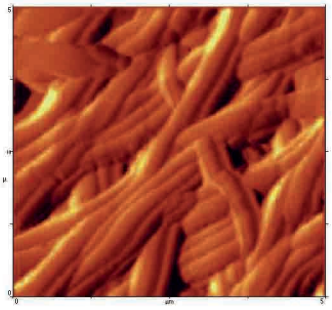


SPECIFICATIONS

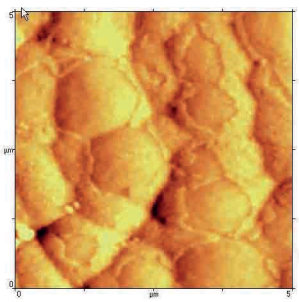
Range of scanning	50	µm
Lateral resolution	1	nm
Vertical resolution	0.1	nm
Larger scale sample movement	7	mm
Laser power	0.01	w
Actuator bandwidth	70	KHz
Photodiode sensitivity	18	A/W
Sensor bandwidth	7	MHz
Micro actuator	0.6	mµ



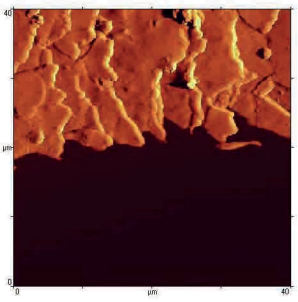
Force Modulation Microscopy (FMM)
material change on coated-Linen



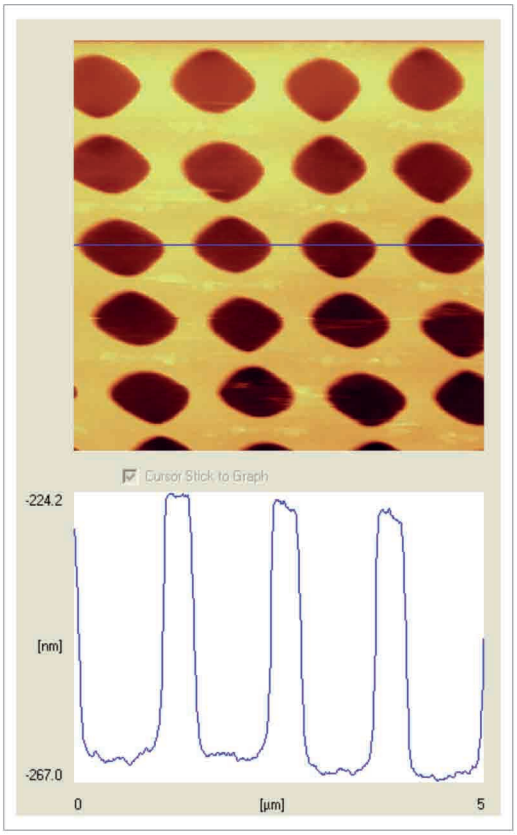
nano-textures of linen material 5x5 u



contact mode-CoFe nano-particle-5x5 u



Dynamic mode - Human Hair - 40x40 u



Standard sample

Applications

- Inspection of parts made using MEMS technology
- Data storage devices (data storage media inspection)
- Micro and nanostructures (gratings, self organizing systems)
- Materials science
- Nanolithographies & nanomanipulations
- Medicine & biology
- Semiconductors
- Thin films
- Coating and polishing quality control
- Polymers

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