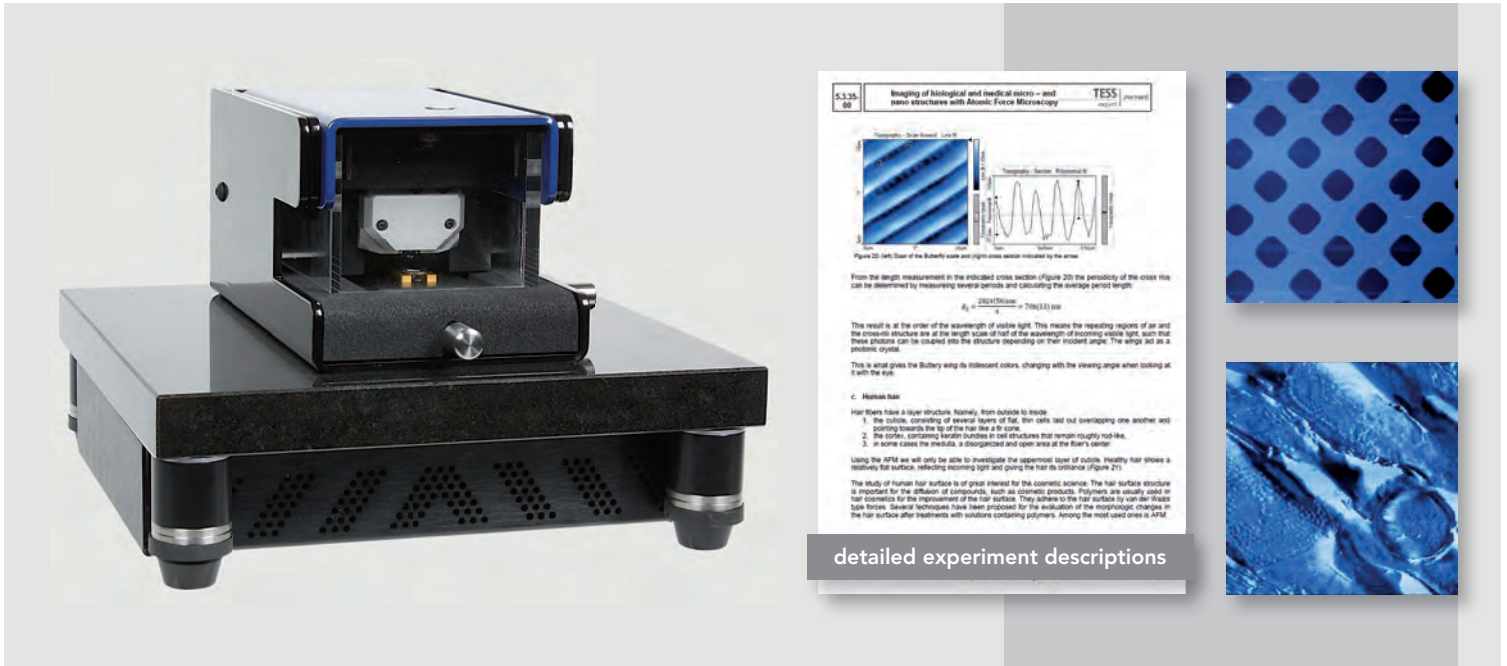


# Compact Atomic Force Microscope (AFM) – Visualisation and Characterisation on the Nanoscale



## Scanning probe microscopy for educational purposes in physics, chemistry, life sciences, and material sciences

Scanning probe microscopy is one of the most established and common research methods on the micro- and nanoscale. Among its areas of application is the quality assurance during the production of nanostructured components and surfaces. In order to use and expand this technological progress efficiently, the education and training of students at schools and universities in these complex methods play an increasingly important role. In addition to PHYWE's compact scanning tunnelling microscope (ref. no. 09600-99), which has been available for several years, another microscope with even more research possibilities on these small scales has been developed.

The compact atomic force microscope by PHYWE is characterised by its particularly compact design with an integrated control unit, XY stage, vibration isolation system, and shielding against sources of interference such as sound and airflow. Thanks to its comfortable and easy operation and the supplied software "measureNANO" for measurements, evaluations, and visualisation, the device is suitable for numerous areas of application, e.g. as a demonstration unit or as a unit for practical laboratory courses at schools, universities, and science centres, or as a research-supporting device at universities. Laser and detector adjustments are not necessary. Simply unpack the device, connect it, install the cantilever, and then start your measurements.

The measurement options of the basic version (static force, dynamic force, simple spectroscopy) can be expanded by suitable extension packages. Apart from phase contrast measurements and electrostatic and magnetic measurements, extended spectroscopy and manipulation methods are also available. An integrated high-quality top-view camera ensures the visual control of the measurements. The optical access point at the side can be expanded with an additional digital camera.

## Features

- Compact measuring USB device with integrated control-unit, XY stage, vibration isolation, and airflow shielding
- Imaging of micro- and nanostructures up to  $70 \times 70 \mu\text{m}^2$
- Determination of material characteristics and manipulation
- Easy and safe access to samples and cantilevers
- Laser and detector adjustments not required
- Complete set, including samples, cantilevers, and tools
- Unpacking, switching-on, and measuring within 15 minutes
- Extension sets for special areas of application

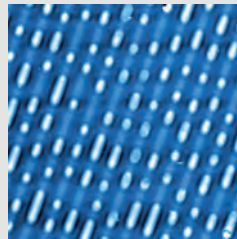
Measurement examples



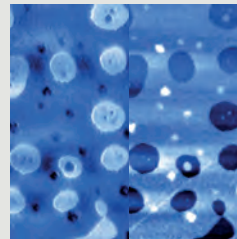
60 x 60  $\mu\text{m}^2$ , aluminium foil



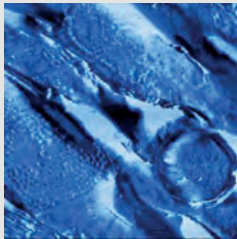
50 x 50  $\mu\text{m}^2$ , microstructure



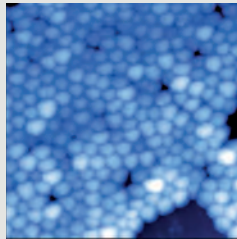
20 x 20  $\mu\text{m}^2$ , CD stamper



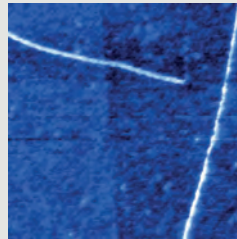
3 x 3  $\mu\text{m}^2$ , PS/PMMA films, topography, phase contrast



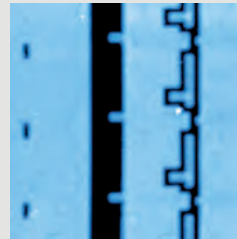
60 x 60  $\mu\text{m}^2$ , skin cross-section



10 x 10  $\mu\text{m}^2$ , staphylococcus bacteria



500 x 500  $\text{nm}^2$ , carbon nanotube (CNT)



40 x 40  $\mu\text{m}^2$ , switched capacitor array (SCA) chip structure



Detailed user handbook, including experiment descriptions

Products

**Exclusively in the educational market!**

**Compact atomic force microscope (AFM), basic set**

Scanning head and a control-unit on a vibration-isolated experimentation board (25 x 25 x 18 cm); flip mechanism with transparent scanning head cover; automatic sample illumination switch-off (white LED); auto-home function for cantilever protection; adapter for side camera; tools for cantilever and sample exchange; cantilevers (6); samples (6); "measureNANO" software; measurement modes: simple spectroscopy, static force, dynamic force; handbook including a brief description and several introductory experiments; power supply unit; aluminium case with compartments for extension packages and an optional side camera.

**Compact atomic force microscope (AFM), basic set**

09700-99

**Material upgrade, for compact atomic force microscope**

Software package (phase contrast, EFM, MFM, force modulation, spreading resistance), set of samples and cantilevers.

**Material upgrade, for compact atomic force microscope**

09701-00

**Spectroscopy and manipulation upgrade, for compact atomic force microscope**

Software package (advanced spectroscopy, lithography, manipulation, and user interface (LabView, Visual Basic, etc.)), set of samples and cantilevers.

**Spectroscopy and manipulation upgrade, for compact atomic force microscope**

09702-00

**Active vibration isolation stage (21 x 21 x 7 cm), including control system**

**Active vibration isolation stage (21 x 21 x 7 cm), including control system**

09760-00

**Digital side view camera, magnetic adhesive**

**Digital side view camera, magnetic adhesive**

09750-00

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