Nanograph UHV STM

Technical Specifications

- Atomic resolution on Si(111)-7x7 and HOPG graphite.

- Piezoelectric scan-tube scanner.

- 2.5 micron X-Y scan range (for +/- 150V drive voltage, other options available, see below).

- 1 micron Z range (for +/- 150V drive voltage, other ranges available, see below).

- Z resolution <0.01nm.

- X-Y-Z coarse positioning with 100nm resolution over 5mm range in each axis.

- 10^{-11}mbar vacuum range achievable.

- Eddy-current-damped spring suspension vibration isolation stage with resonant frequency ~1Hz.

- Mounted on DN150CF base flange (other options available).

- 2 spare UHV feedthrough ports on base flange for additional custom signals.

- Simple and reliable in-situ tip and sample exchange mechanism.

- Bakeout temperature up to 150°C.

- Unique open design

Optional extras

- Selection of different scan ranges up to 10 micron in X-Y, 5 micron Z.

- Alternative base flanges to suit your requirements.

- Closed loop scan module for precise tip positioning.

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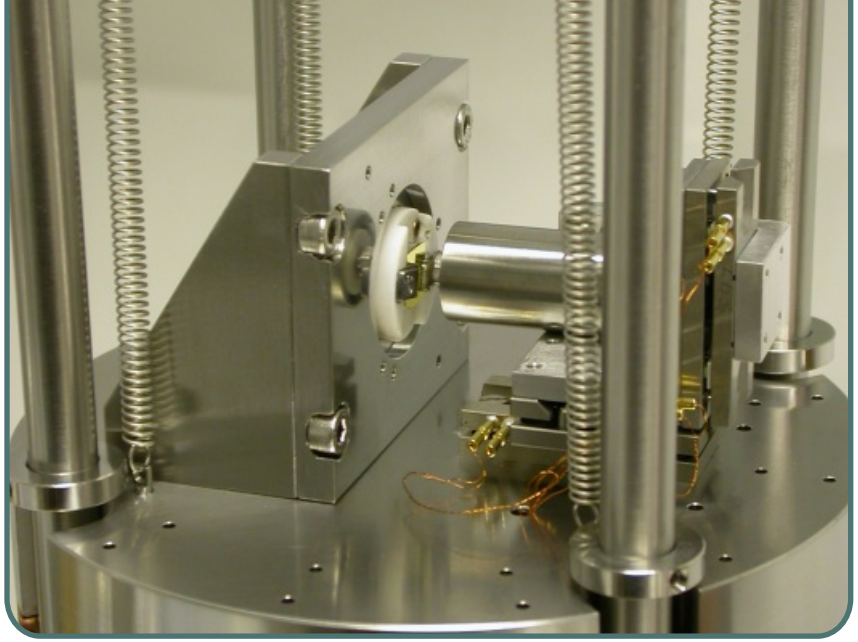
NANOGRAPH SYSTEMS



Reliable STM workhorse for UHV surface science

- Uniquely open design enabling use in combination with other complementary surface analysis techniques
- Eddy-current damping for optimum stability
- 3-Axis coarse positioning with 5mm travel in each axis
- Simple *in-situ* tip and sample exchange

NANOGRAPH SYSTEMS

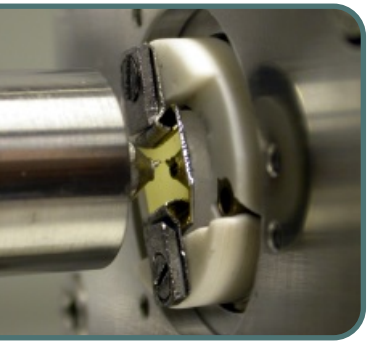
Nanograph UHV STM

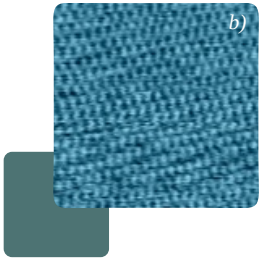
Stable and Reliable

The Nanograph UHV STM has a compact, rigid design, mounted on a highly effective vibration isolation stage. The result is a stable and reliable workhorse STM ideal for everyday surface science measurements.

Guaranteed atomic resolution without air-legs

All our STMs are guaranteed to provide atomic resolution images on the standard STM test surfaces Si(111)7x7 and HOPG. However, with the Nanograph UHV STM we go one stage further and guarantee atomic resolution on HOPG *even with no external vibration isolation*.

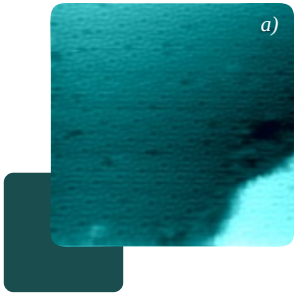


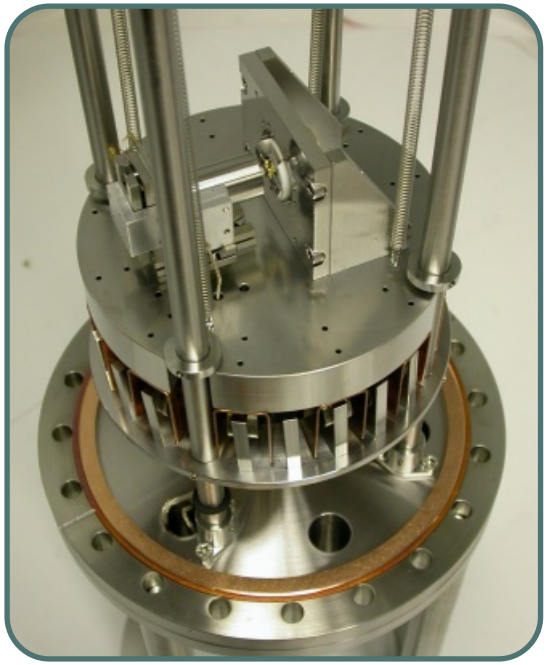


Do your own thing

Many people buy UHV STMs as the basis for their own custom-designed microscopes. With this in mind, two spare ports are included on the microscope base-flange as standard, so it is easy to extend the functionality of your system.

Why not talk to us about your ideas? We are always happy to work with our customers on new development projects.





Images
a) Atomic resolution topography image of Si(111)-7x7 surface
b) Atomic resolution tunnel current image of HOPG graphite, in air with no external vibration isolation

Simple sample exchange

Samples can be changed *in-situ* using a convenient bayonet-style sample holder arrangement. This means that there is no need for the cumbersome wobble-sticks used in many STMs. Instead a standard linear manipulation arm is all that is required. In addition, tips can be exchanged using the same arm, simplifying vacuum system design.

The sample holder is designed for direct heating up to temperatures exceeding 1200°C, to cater for most standard sample preparation schemes. Custom sample holders can be made on request, such as those suitable for electron beam heating.

Sufficiently stable for atomic-resolution STM with no other vibration isolation

Combine Techniques

The layout of the Nanograph UHV STM has been carefully designed to be exceptionally open. Not only does this provide excellent visibility of the tip and sample, but it also enables the STM to be used in conjunction with other surface analysis techniques with ease.

For example this STM is well suited for use with techniques such as SEM, LEED, AES and other spectroscopy methods. It is also ideal for experiments where in-situ deposition is required.