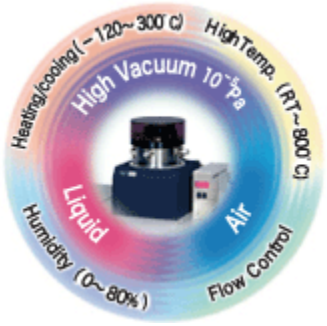
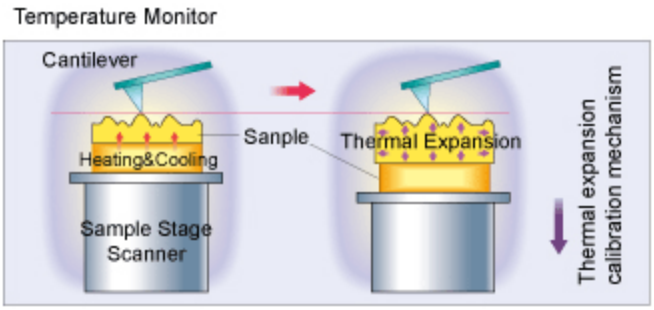
Environment Control Unit AFM5300E

The Hitachi research-grade AFM5300E offers significantly improved sensitivity, accuracy, and resolution of electromagnetic property measurements operated under high-vacuum conditions. Furthermore, it establishes a benchmark for comprehensive environmental control and is the only tool on the market affording AFM imaging in air/liquid/vacuum, a broad temperature range (-120 °C to 800 °C), magnetic field or humidity controls, as well as correlated AFM/SEM/ion milling investigations.

1. In response to environment measurement needs (supports optic system in air/continuous heating and cooling)

This environment control SPM measures within environments that cannot be realized by conventional large scale SPM units. The electronic measuring instrument under high vacuum conditions enables control to the lowest limits the effects of surface water and material mapping of samples under heating and cooling conditions. The newly developed “Temperature Sweep Function” makes possible continuous material measurement until the cantilever touches the sample surface by inspecting outside the Z axis measurement area due to thermal expansion or shrinkage of the sample by environment temperature change and feedback control. (Patent no. 3857581, Patent no. 3926638)

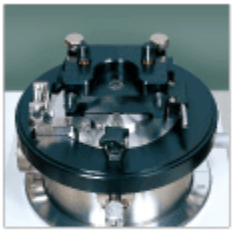




- in air
- in a liquid
- in a vacuum
- temperature control
- humidity control support

2. Easy operation realized (integrated holder flange)

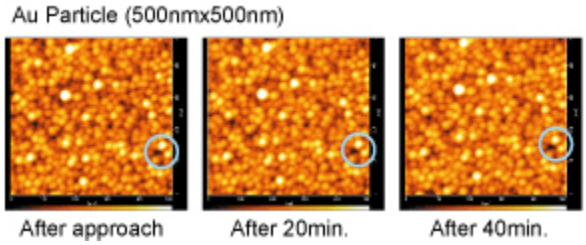
By employing the “Integrated holder flange open shut function” of unnecessary tools, together with simplifying the scanner replacement and introduction replacement of the sample, the optic axis adjustment after replacing the sample that resulted from the environment control SPM also became unnecessary. The holder does not need to be replaced when changing the measurement mode.


Optical head


Open or close upper flange

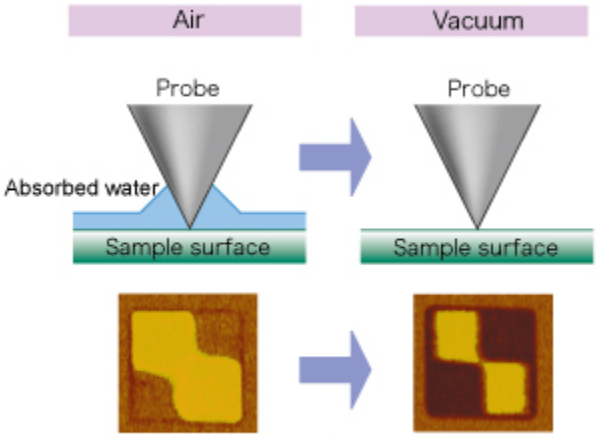
3 .Superior performance

Employs a "Swing Cancel" Function. The swinging part of a sample is fully reduced and the drift amount controlled. Confidence increased by polishing the basic performance is indispensible to nano-order structural analysis. Drift amount: less than 0.015 nm/sec.



4. Improves resolution of the electrical properties mode by reducing the influence of surface absorption water

When observicing electrical characteristics, resolution in some cases may drop from the effects of moisture on the sample surface or probe. Moisture, contaminants, etc. on the surface is eliminated by going to vacuum status. Observation of high resolution and high sensitivity becomes possible in the material observation mode.



SNDM image of PN Dope test pattern