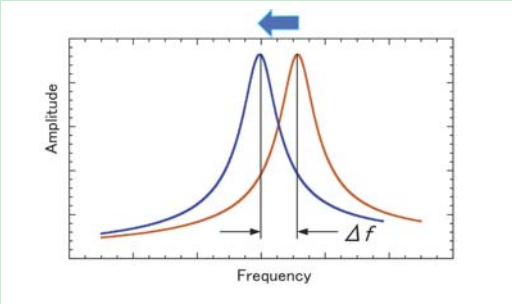
Easy-to-use Advanced Technologies

Non-Contact Mode

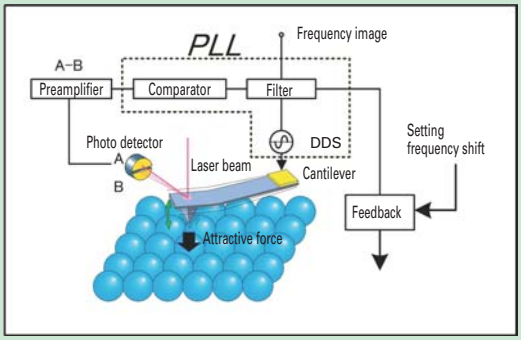
Point

Standard configuration

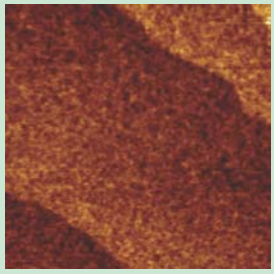
In this mode, the cantilever vibrates by itself at a resonant frequency and when the cantilever is approached to the sample, a vibration peak at the resonant frequency is shifted to a lower-frequency due to an attractive force between the cantilever and sample. To maintain this shift constant, frequency feedback is made.



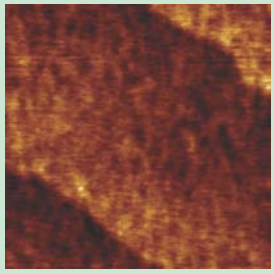
To set the frequency of the cantilever beam to the resonant frequency any time, PLL (Phase Locked Loop) is used. The FM detection method with PLL is a standard configuration of JEOL SPMs, which is an unprecedented feature of JEOL SPMs.



●High resolution



Non-Contact mode

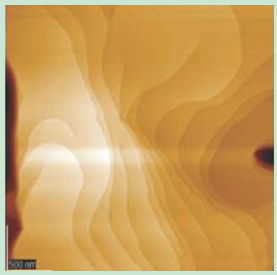


AC mode

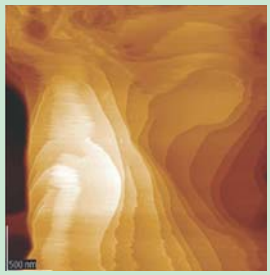
Example of imaging of Si steps

In Non-Contact mode, a higher-resolution image is obtained than in AC mode.

●Damage-less



Non-Contact mode



AC mode

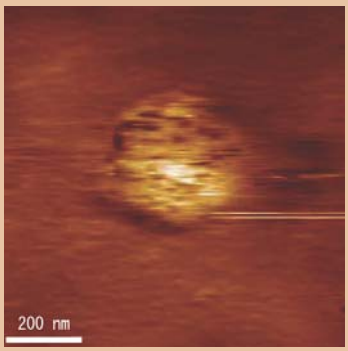
Example of imaging of n-alkane film on polyimide

In Non-Contact mode, an image is obtained without damaging the sample surface.

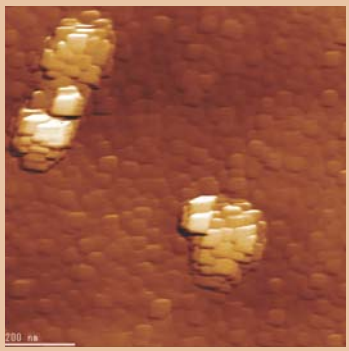
Vacuum evacuation

Option

You can start evacuation by just pressing the Start button on the evacuation system controller. A Pirani gauge and a Penning gauge can be automatically switched, enabling the atmospheric pressure to high pressures to be accurately measured. Also, you can stop the evacuation system by one-button operation, from stopping to venting the pump automatically; thus eliminating cumbersome valve open/close operations.



Imaging under the air



Imaging under the vacuum

Example of imaging of recrystallized glass

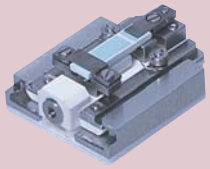
In the imaging under the air, a true topographic shape cannot be obtained due to water adsorbed onto the sample surface. In the vacuum environment, this water desorbs, enabling crystalline facets to be observed.

Data courtesy of Dr.Yoshitaka Mitsuda, Univ. of Tokyo.

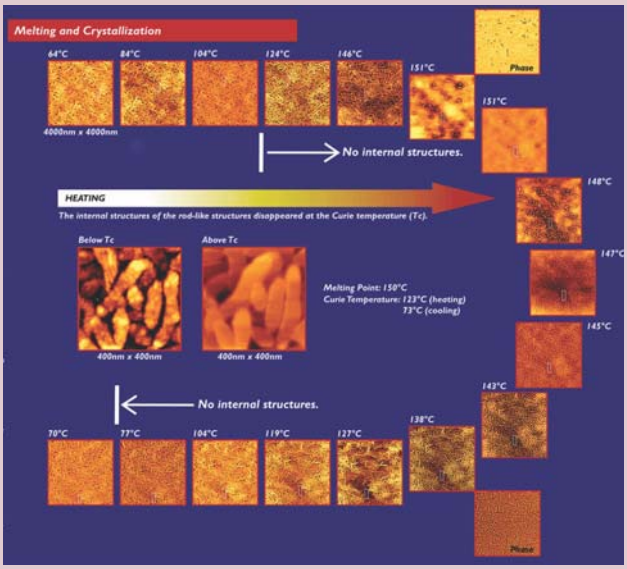
Sample heating

Option

The heating holder uses a thermally-stable graphite heater, enabling the sample to be heated up to 150°C in the air. By adding the vacuum evacuation system, the sample can be heated up to 500°C.



Room temperature to 150°C (in the air)
Room temperature to 500°C (in the vacuum)



Example of imaging of macromolecule material

Phase transformations are observed at 124°C and 77°C. Also, the field of view does not move during observation.

Data courtesy of Dr.Takafumi Yamada, Kyoto Univ.
Thin Solid Films, 397 (2001) 133

Usable

Sample exchange mechanism

You can exchange a sample while maintaining the vacuum. Operations of automatic sequences are made by just pressing a button.

Usable

Temperature controller

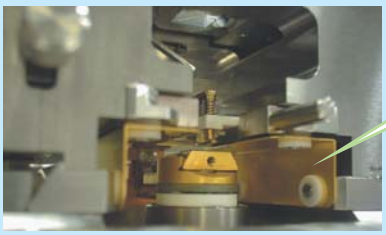
You can control the sample temperature with 0.1°C accuracy.

Usable

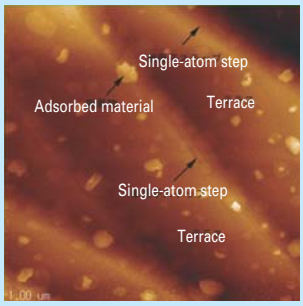
Specimen cooling

Option

By using liquid nitrogen, you can easily cool the sample and observe it.
Anti Frost Shroud (AFS) reduces sample contamination caused by frost formation.

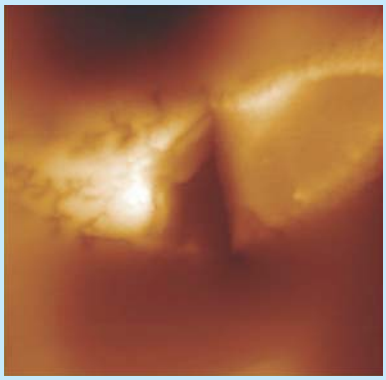


–130°C to room temperature



Imaging of Si steps during cooling

Single-atom steps on rearranged Si are observed during cooling.



Imaging of a freeze-fractured red blood cell

A rapidly frozen red blood cell was fractured in vacuum and was subjected to in-situ observation.

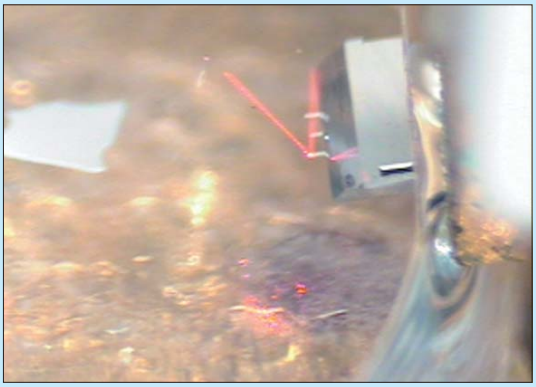
Ultramicroscopy, 102/2 (2005) 107

Simple in-fluid observation

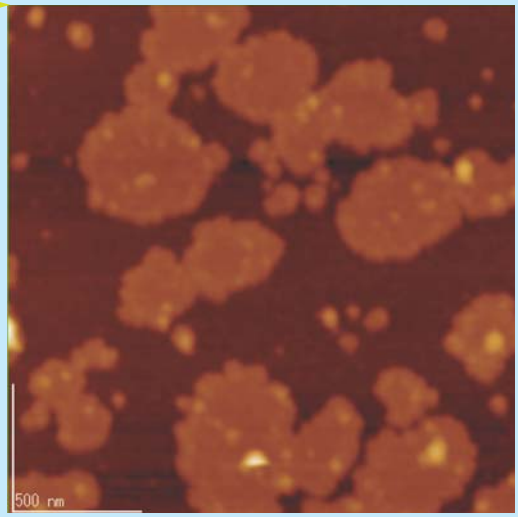
Point

Standard configuration

You can attach a cover glass to the standard cantilever holder, allowing simple in-fluid observation without cumbersome preparation.



In-fluid observation when a cover glass is attached to the cantilever.



Example of in-fluid observation of a two-molecule lipid film

Data courtesy of Dr.Takehisa Dewa, Nagoya Institute Technology