SPM Oil Droplet Observation in Water (In-Liquid Observation Method)

- Deformation of oil droplets by clamp pressure -

Oil droplets were assessed through observation in liquid via SPM. The oil droplets have formed a spherical shape through balance with the water in submersion. However, it was observed that the size of the oil droplets differs depending on the degree of cantilever force.
In Fig. 1, observations were made with cantilever clamping force of approximately 10 nN. In Fig. 2, minor changes are noted in both the diameter and height as a result of the strong 40 nN force. The quantity of oil droplets has not changed, but they appear to have been deformed by the application of cantilever clamping.
It is generally difficult to observe the form of oil droplets, but SPM has enabled observation in distilled water.

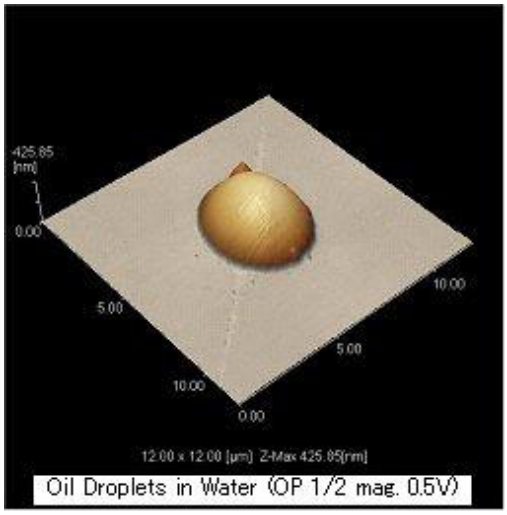

Fig. 1 Oil Droplets in Water

Cantilever clamping force: approximately 10 nN
Substrate: Silicon wafer

Diameter: 5.3 micrometer
Height: 420 nm

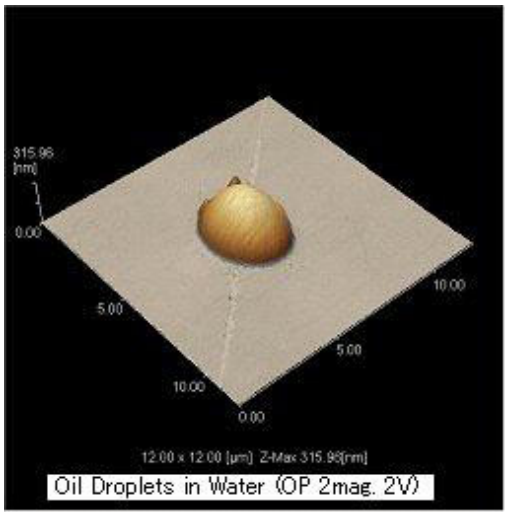

Fig. 2 Oil Droplets in Water

Cantilever clamping force: approximately 40 nN
Substrate: Silicon wafer

Diameter: 4.6 micrometer
Height: 310 nm