O 9: Invited talk (Shigeki Kawai)

Time: Monday 15:00–15:45 Location: H 2013

Invited Talk O 9.1 Mon 15:00 H 2013

Three dimensional dynamic force spectroscopy at room temperature — •Shigeki Kawai and Ernst Meyer — Klingelbergstrasse 82, CH-4056 Basel

Measurement of force and potential above the surface is of crucial importance to investigate the adsorption and friction on a surface at atomic-scale. Such information can be extracted via the frequency shift of an oscillating cantilever in dynamic force spectroscopy (DFS). Since the first site-dependent measurement of the force in 2001, this technique rapidly evolved, and is now used for high-resolution three-dimensional force mapping mainly at low temperature where the thermal drift is negligibly small.

Here we realized 3D-DFS measurements even at room temperature (RT). The thermal drift as a critical issue in the measurement at RT was precisely excluded by an atom-tracked tip-positioning, which was activated each before the distance dependence measurement. Then, high-density and high*resolution 3D force field was measured on ionic crystal surfaces and self-assembled molecule. A detailed contact mechanism such as deformations of the surface and tip and movement of the molecule was studied.