Contribution ID: **340** Type: **Talk**

【211】Investigating charge-state transitions of molecules on insulating films by atomic force microscopy

Wednesday 28 August 2019 14:00 (30 minutes)

Investigating charged molecules on insulating films is experimentally challenging. Atomic force microscopy, with single-electron sensitivity and capable of operating on insulating substrates, is a promising technique for such studies. Here we demonstrate multiple charge-state stabilization of molecules, induce intermolecular single-electron transfer and show that the charge state of a complex plays a role in its on-surface chemical reaction on multilayer insulating films. Moreover, we perform tunneling spectroscopy by using the atomic force microscope as a current meter, where we count single-electron tunneling events. This allows the quantification of the reorganization energy of a molecule on an insulating substrate.

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Session Classification: Surfaces, Interfaces and Thin Films