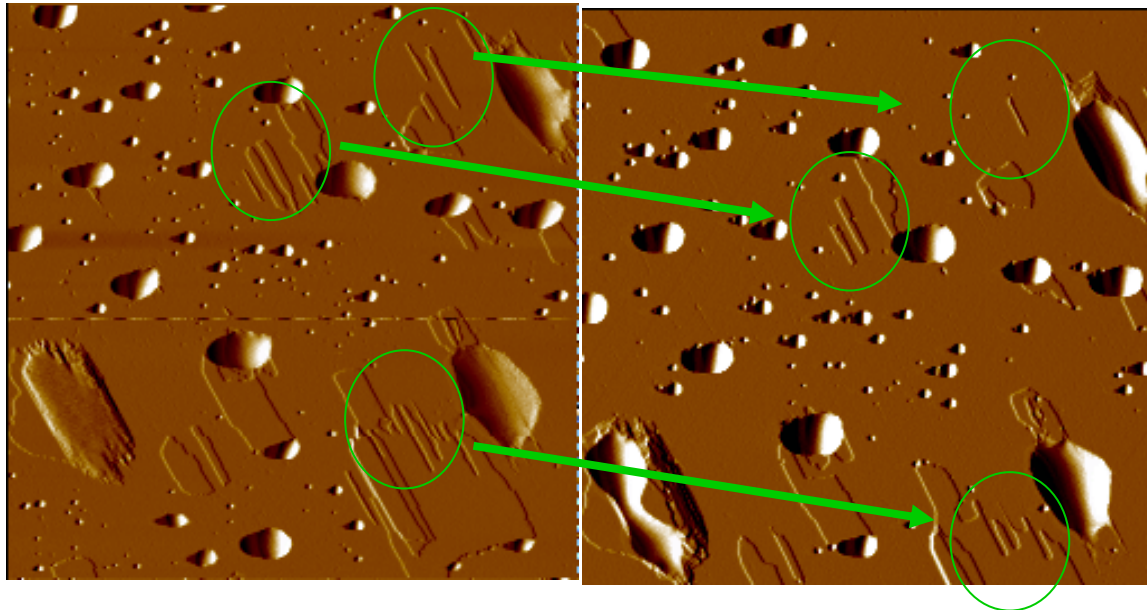


# Water-sorption Induced Transformations in Crystalline Solid Surfaces Characterization by Atomic Force Microscopy

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NNIN Facility utilized: *Characterization Facility*

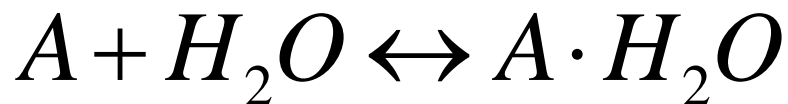


5 × 5 μm, 9 min

5 × 5 μm, 108 min

**Surface Rearrangement of Theophylline Surface Molecules at 65% RH (25°C), which is above the theophylline hydrate transition RH.**

62% RH (25°C)



- AFM was proven to be a sensitive tool for investigation of surface properties.
- Surface solution could “loosen” molecules from anhydrate lattice, increase the mobility of theophylline molecules.
- Theophylline hydrate formation was a nucleation controlled process. Surface solution could be essential for hydrate crystal growth on the anhydrate surface.