

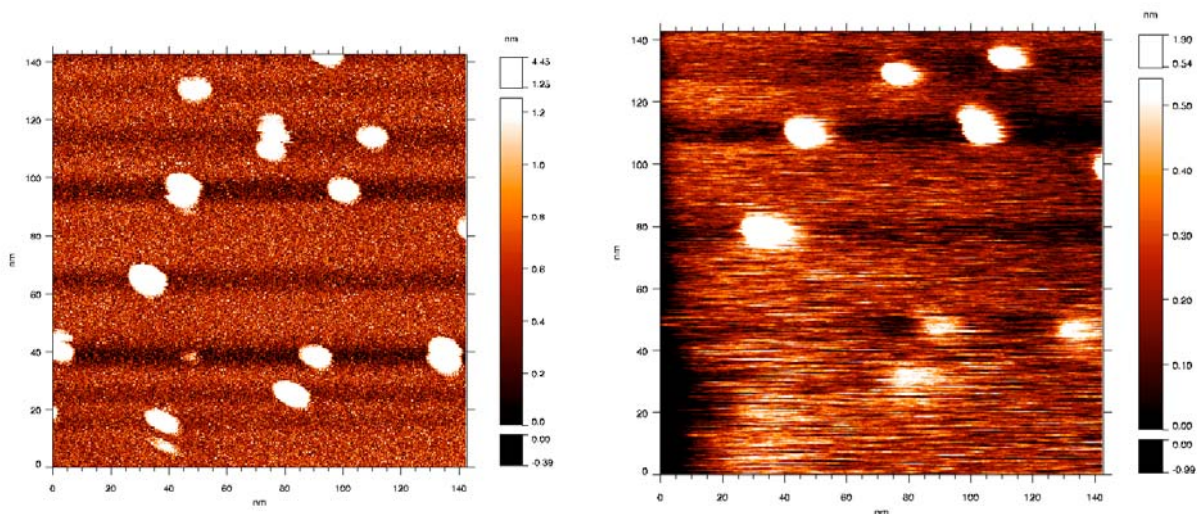
## Particle shapes in ncAFM vs. dSTM experiments for a model catalyst: Pd / MoS<sub>2</sub>(0001)

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We have made preliminary measurements of the shape of small Pd particles deposited on the cleavage face of a natural molybdenite (MoS<sub>2</sub>) crystal. [1] Dynamic STM (dSTM) [2] and ncAFM were done sequentially using the same multi-walled C nanotube tip attached to a silicon cantilever. At the maximum frequency shift at which we could obtain stable imaging by ncAFM, the ncAFM particle heights were significantly less than the dSTM heights. The smallest particle in dSTM images taken before and after ncAFM images was not even detected in the ncAFM images. For our preparation conditions, ncAFM and dSTM disturbed the particles much less than static STM using either the nanotube tip, a conventional Si tip, or a conventional W STM tip.



The dSTM image at left used 0.03 nA average detected current; the ncAFM image at right used  $df = -17$  Hz. For both images the nanotube tip bias was +3.0 V and the amplitude was about 8 nm. The cantilever natural resonance was 237 kHz. Both images are 142 nm x 142 nm; the height scales from dark to white are 1.2 nm for dSTM and 0.55 nm for ncAFM.

This work was supported by DOE OBES Office of Chemical Sciences and the M. J. Murdock Charitable Trust. SLT supported by a graduate fellowship from UW/Pacific Northwest National Laboratory Joint Institute for Nanoscience.

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