

Abstract Submitted
for the NES09 Meeting of
The American Physical Society

Lateral Shear of Gold Nanoparticle-clusters on Self Assembled Monolayers of *p*-Aminothiophenol¹ DIPTI SHARMA, MARINA RUTHS, UML — This study explores the shear-induced rearrangements of gold nanoparticles (diameter=30nm) on self-assembled monolayers (SAMs) of *p*-aminothiophenol (ATP), formed on template-stripped gold substrates. The nanoparticles are attached to the SAM through electrostatic attraction. A number of adsorbed gold nanoparticles in the form of nanoclusters can be seen on the surface after 24 hours of immersion time in the gold suspension (concentration= 1.28×10^{-10} M). As a nanoforce was applied on the nanoclusters with an AFM tip, a shift in the lateral position of the nanoparticles was observed. This shift increases and changes the shape of the nanocluster as the force on the nanoparticles is increased. This shift can be explained in terms of a sliding-rolling model where some nanoparticles roll over their neighbor nanoparticles as the stress increases on the nanocluster.

¹NSF CAREER: Adhesion and friction of multi-asperity contacts CMMI-0645065.

Dipti Sharma
UML

Date submitted: 30 Mar 2009

Electronic form version 1.4