

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Chemical Functionalization of Silicone, Quartz and Mica: Soldiers Report from the Trenches** YAN YU, LIANG HONG, ADELE' POYNOR, STEVE GRANICK, University of Illinois at Urbana-cChampaign — Methods of organic surface functionalization are widely reported yet in implementing them, different research groups encounter varying degrees of success. This laboratory has been involved in subsequent physical studies that are exceptionally sensitive to defects in organic monolayers: (a) single-molecule fluorescence studies of polymer diffusion, where chemical defects provide 'hot spots' to which polymers adsorb too strongly; (b) surface forces studies of molecularly-thin films, where topographical defects prevent atomically-smooth mica surfaces from contact; (c) ellipsometry experiments of how water dewets hydrophobic surfaces, where topographical surface heterogeneity appears to negate this effect. This has also motivated us to perform systematic studies concerning monolayers formed by different chemical reactions. We have explored in depth which experimental details are most critical and the criteria by which 'good' monolayers can be distinguished from 'bad'.

Yan Yu  
University of Illinois at Urbana-champaign

Date submitted: 02 Dec 2004

Electronic form version 1.4