

O 42: Invited Talk Gil Alexandrowicz

Time: Tuesday 17:45–18:30

Location: HE 101

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Lateral Interactions on Surfaces: An Empirical Perspective

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Lateral forces between surface atoms and molecules play a critical role in a wide variety of surface related phenomena. Examples include thin film growth, industrial catalysis, and the assembly of nanostructures. Direct experimental data for the nature and the magnitude of these forces was typically unavailable, and simplifying assumptions were made both to deduce these interactions from indirect macroscopic

measurements and to include them in numerical models of surface systems.

The recently developed helium spin echo spectrometer[1], has the unique capability to measure both surface motion and lateral interactions on an atomic length scale and on a pico to nano-second time scale[2]. In this talk I will describe how this instrument is used to measure lateral interactions and present recent results obtained for the strongly interacting surface system CO/Pt(111). Surprisingly, we find that the standard surface science approximations completely fail to describe this prototypical system and that the interactions between the CO molecules are of a complex many body nature. [1] AP Jardine et. al. Science 305, 1790 (2004). [2] G Alexandrowicz et. al. Phys. Rev. Lett. 97, 156103(2006).