

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Sliding friction levels of molecularly thin organic layers on C60 substrates. SAMUEL KENNY, JACQUELINE KRIM, North Carolina State University — Friction at the nanoscale is known to encompass phononic, electrostatic, conduction electronic and magnetic effects [1], and molecularly thin layers sliding on surfaces are exceptionally sensitive to the commensurability of the two materials in contact. The excitation of frustrated translational phonon modes in non-spherical organic monolayers is also closely linked to friction, but the exact role has yet to be established. To explore this topic, we report quartz crystal microbalance measurements of the frictional properties of systems that can be readily modelled: ethanol and related organic molecules sliding on metal substrates in the presence and absence of C60 overlayers. The C60 overlayer acts to spread the adsorbate layers further apart, thus reducing adsorbate-adsorbate interactions while also impacting the interfacial commensurability. [1] J. Krim, *Advances in Physics*, 61 (2012) pp. 155-323. Work funded by NSF

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Date submitted: 11 Nov 2016

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