Abstract Submitted for the MAR16 Meeting of The American Physical Society

**Coordinated Water Under Confinement Eases Sliding Friction** ADRIAN DEFANTE, NISHAD DHOPOTKAR, ALI DHINOJWALA, Univ of Akron — Water is essential to a number of interfacial phenomena such as the lubrication of knee joints, protein folding, mass transport, and adsorption processes. We have used a biaxial friction cell to quantify underwater friction between a hydrophobic elastomeric lens and a hydrophobic self-assembled monolayer in the presence of surfactant solutions. To gain an understanding of the role of water in these processes we have coupled this measurement with surface sensitive sum frequency generation to directly probe the molecular constitution of the confined contact interface. We observe that role of confined coordinated water between two hydrophobic substrates covered with surfactants is the key to obtaining a low coefficient of friction.

> Adrian P. Defante Univ of Akron

Date submitted: 06 Nov 2015

Electronic form version 1.4