

Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Droplet Interaction with Lubricant Impregnated Surfaces RAJEEV DHIMAN, Department of Mechanical Engineering, MIT, JONATHAN DAVID SMITH, Department of Mechanical Engineering, MIT, SUSHANT ANAND, Department of Mechanical Engineering, MIT, ROBERT COHEN, Department of Chemical Engineering, MIT, GARETH MCKINLEY, KRIPA VARANASI, Department of Mechanical Engineering, MIT — The interaction of water drops with lubricant impregnated surfaces was studied experimentally under static and dynamic conditions. Such surfaces contain microscopic roughness features into which a liquid lubricant is impregnated and held by virtue of capillary forces. The remarkable feature of such a construction is that droplets, immiscible to the lubricant, experience negligible resistance to movement on the surface, provided the system is designed carefully under static and dynamic considerations. We describe these considerations and present their implications to droplet mobility. We also study impacting droplets and observe shedding characteristics that are unique to lubricant impregnated surfaces.

Rajeev Dhiman
MIT

Date submitted: 10 Aug 2012

Electronic form version 1.4