Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

**Overflow cascades on liquid-infused surfaces** IAN JACOBI, Technion & Princeton University, JASON WEXLER, HOWARD STONE, Princeton University — The shear-driven dewetting of liquid-infused, micro-patterned surfaces is shown to exhibit a complex cascade of overflow, droplet generation and liquid displacement behaviors. Because liquid-infused surfaces are important in systems as varied as free-surface microfluidic devices and high Reynolds number drag-reducing coatings, understanding the dewetting mechanism is crucial to designing substrates capable of retaining infused liquid or, alternatively, dispensing it in a controlled way. Shear flow experiments on a variety of liquid-infused surface architectures are performed and the interfacial dynamics are characterized at macro- and microscopic scales. Analysis of the different stages of the dewetting cascade is then used to develop substrate design criteria for enhanced liquid control under a variety of shear flow conditions.

Ian Jacobi
Technion & Princeton University

Date submitted: 31 Jul 2014 Electronic form version 1.4