

Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Shallow flows over surfaces of patterned wettability¹ MORGANE GRIVEL, DAVID JEON, MORTEZA GHARIB, Caltech — Our previous work showed that surfaces with spatially patterned wetting properties induce passive displacements of shallow flows. Polycarbonate plates were patterned with hydrophobic and hydrophilic stripes, and a thin, rectangular water jet impinged on the patterned surface. We reported development of intriguing roller structures at the hydrophobic-hydrophilic interfaces. In our present work, we study the effect of varying the stripes' width, spacing, and orientation on the dynamics of these roller structures. Specifically, we are interested in the vortex generation and air entrainment by the rollers. We report quantitative results to this effect. We will also discuss potential uses of this technique for modifying contact line dynamics and bow waves near ships.

¹This work is supported by the Office of Naval Research (grant # ONR- N00014-11-1-0031) and by NSF-GRFP.

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Date submitted: 31 Jul 2014

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