Title: Complex fluids at complex surfaces simply complicated

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Abstract: We study wetting and filling of patterned surfaces by a nematic liquid crystal. We focus on three important classes of periodic surfaces: triangular, sinusoidal and rectangular. The results highlight the similarities and differences of nematic wetting of these surfaces and wetting by simple fluids. The interplay of geometry, surface and elastic energies can lead to the suppression of either filling or wetting. The periodic rectangular surface displays re-entrant transitions, with a sequence dry-filled-wet-filled, in the relevant region of parameter space.

Author Keywords: Wetting Transitions; Nematics Liquid Crystals; Patterned Substrates

KeyWords Plus: Nemantic-Liquid-Crystal; Induced Orientational Order; Phase-Transition; Substrate Interface; Isotropic-Phase; Wedge; Alignment; Layer; Films

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