

Abstract Submitted  
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**Directed Dewetting of Thin Polymer Films**<sup>1</sup> SUCHANUN MOUNGTHAI, TRANG PHAM, GUS RAJAENDRAN, GILA STEIN, Univ. of Houston — We present a simple route to generate arrays of microscale polygons by directed dewetting of polystyrene thin films on topographic pre-patterns.<sup>2</sup> Silicon wafers are patterned with arrays of ca. 10  $\mu\text{m}$  wide hexagonal holes using photolithography and wet etching. Patterned substrates are coated with thin films of polystyrene and heated above the glass transition temperature to promote dewetting. The dewetting process is monitored *in-situ* with optical microscopy, and final droplet structures are also imaged with atomic force microscopy. The mechanism of polygon formation is driven by Rayleigh instability; Formation rates and final polygon size are controlled by temperature/viscosity, film thickness, and the geometry of the topographic pre-pattern.

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<sup>2</sup>Yoon et al., *Soft Matter*, 2008, 4, 1467-1472.

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