

Abstract Submitted
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Influence of substrate confinement on the phase-correlation in the capillary breakup of lithographically patterned polymer stripes¹ ZHENG ZHANG, YIFU DING, University of Colorado at Boulder — We study the simultaneous capillary breakup of parallel polymer stripes, which were partially embedded in an immiscible polymer and confined on elastic substrates. Polystyrene (PS) and Poly(methyl methacrylate) (PMMA) were used because of their immiscibility. When annealed at a temperature above the glass transition temperatures of both polymers, capillary instabilities of the stripes were observed. We found that substrate-induced confinement influenced the phase-correlation in the breakup of neighboring stripes. With the increase of substrate confinement, the simultaneous breakup of the parallel polymer stripes transitioned from non-correlated to in-phase, irrespective of the viscosity ratio between PS and PMMA.

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