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Templated Self-Assembly of Asymmetric Ternary Blends of Block Copolymers and Homopolymers[1] KARL STUEN, FRANCOIS DETCHEVERRY, CARLA THOMAS, Univ. of Wisc. - Madison Dept. of Chem. and Biol. Eng., RICHARD FARRELL, CRANN, Dept. Chem. Univ. Coll. Cork, Tyndall Nat. Inst., Ireland, MICHAEL MORRIS, CRANN, Dept. Chem. Univ. Coll. Cork, Ireland, JUAN DE PABLO, PAUL NEALEY, Univ. of Wisc. - Madison Dept. of Chem. and Biol. Eng. — Templated assembly of ternary blends of cylinder-forming PS-*block*-PMMA and homopolymers of PS and PMMA was investigated experimentally and with Monte Carlo simulations of a coarse-grained model. The blends were deposited into trench features coated with a neutral brush to induce cylinder orientation perpendicular to the substrate. The ternary blends were used to systematically control the commensurability between the blend and trenches of constant width. Important patterning parameters such as the degree of perfection, the domain spacing perpendicular and parallel to the confining template, the domain uniformity, and shape of the unit cell were quantified as a function of blend composition. The cylindrical nanostructures appear to have improved uniformity across the trench width compared with spherical systems.

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