

Abstract Submitted  
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**Controlled Dimensions of Nanostructures in Asymmetric Ternary Blends of Block Copolymers and Homopolymers in Thin Films**<sup>1</sup> CARLA THOMAS, KARL STUEN, Univ. of Wisc. - Madison Dept. of Chem. and Biol. Eng., NICOLA FERRIER, Univ. of Wisc. - Madison Dept. of Mech. Eng., PAUL NEALEY, Univ. of Wisc. - Madison Dept. of Chem. and Biol. Eng. — Ternary blends of cylinder-forming PS-*block*-PMMA and homopolymers of PS and PMMA were investigated in thin films on a neutral brush with the domains oriented perpendicular to the substrate. Five blends with homopolymers having different degrees of polymerization (N) were studied to quantify the dimensional scaling of the domains and suitability for patterning. In the dry brush regime, the best pattern uniformity and fewest defects were found when N of the homopolymers matched N of the corresponding block of the block copolymer. The lattice spacing of the cylindrical array,  $D$ , and cylinder diameter uniformity changed with  $\phi_H$ , the homopolymer volume fraction in the film, and N of the homopolymers. With the ternary blends,  $D$  could be increased up to 200 percent relative to the neat block copolymer; the ternary blends allow  $\phi_H$  greater than 0.4 without inducing a phase change.

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