

Abstract Submitted
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Enhanced order in thinfilms of Pluronic (A-B-A) and Brij (A-B) block copolymers blended with poly(acrylic acid)¹ VIJAY R. TIRUMALA, BRYAN D. VOGT, HAE-JEONG LEE, ERIC K. LIN, Polymers Div., NIST, JAMES J. WATKINS, Polymer Science & Engr. Dept., UMass-Amherst — Pluronic (PEO_m-PPO_n-PEO_m) and Brij (PEO_m-PE_n) based block copolymer films have recently been used as sacrificial templates for the fabrication of mesoporous low-*k* thinfilms. We have found that the addition of a low molecular weight third component homopolymer exhibiting strong interactions with one of the blocks enhances the local and long-range order of both Pluronic and Brij templates in the melt. In this work, small-angle neutron scattering and x-ray reflectivity were used to investigate the microstructure of block copolymer/poly(acrylic acid) blend templates. In templates where PEO serves as a majority phase, both scattering and reflectivity measurements show that addition of PAA decreases the interfacial width and strengthens domain segregation. In templates with PEO as the minority phase, addition of PAA can induce an order-order transition. Tuning the microphase morphology of block copolymer thinfilms using a low-molecular weight homopolymer additive has many implications for methods that use block copolymer melts as sacrificial templates.

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