

Abstract Submitted
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Controlled Orientation of Block Copolymer Microdomains on Modified Solid Surfaces WEIYIN GU, SUNG WOO HONG, THOMAS RUSSELL, University of Massachusetts-Amherst — The interfacial interactions between block copolymers (BCP) and a substrate are important for the self-assembly of BCPs in thin films, especially in terms of orientation of BCP microdomains. A simple, rapid, and robust technique for controlling the alignment of BCP microdomains on modified surfaces is described. End-functionalized poly(styrene-*b*-ethylene oxide)s (PS-*b*-PEOs) with different block ratios were end-grafted onto Si substrates creating BCP brushes. Thin films of cylindrical forming PS-*b*-PEO were prepared on the surface of anchored BCP brushes and thermally annealed. When the fraction of styrene, f , of the anchored BCP was 1, no features were observed in thin film of a PS-*b*-PEO placed on the surface of the anchored brush due to preferential interaction of the PS block with the brush. When f was varied from 0.3 to 0.7, hexagonally packed cylindrical microdomains oriented normal to the substrate were formed having long range lateral ordering.

Weiyin Gu
University of Massachusetts-Amherst

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