

Abstract Submitted
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Disorder-to-Order Transition Induced by Alkyne/Azide Click Chemistry in Diblock Copolymer Thin Films XINYU WEI, Department of Polymer Science and Engineering, University of Massachusetts Amherst, WEI CHEN, Center for Nanoscale Materials, Argonne National Laboratory, JOSEPH STRZALKA, Advanced Photon Source, Argonne National Laboratory, THOMAS RUSSELL¹, Department of Polymer Science and Engineering, University of Massachusetts Amherst — The thin film morphology of binary blends of poly(ethylene oxide)-*block*-poly(n-butyl methacrylate-*random*-propargyl methacrylate) (PEO-*b*-P(nBMA-*r*-PgMA)) diblock copolymer and Rhodamine B azide was investigated. During thermal annealing, the click reaction between the alkyne-bearing diblock copolymer and the azide lead to a significant increase in non-favorable segmental interaction and thus microphase separation of the block copolymer. Different morphologies were realized by controlling block copolymer composition and the mole ratio between the alkyne and azide groups. The effects of film thickness and annealing temperature on microdomain orientation and lateral ordering were also revealed. Our studies suggest a promising approach to fabricate nanostructured materials with long-range lateral ordering.

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