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Observation of Surface Corrugation-Induced Alignment of Lamellar Microdomains in PS-b-PMMA Thin Films. HO-CHEOL KIM, SANG-MIN PARK, CHARLES RETTNER, IBM Almaden Research Center, BRIAN BERRY, Department of Chemistry, University of Arkansas at Little Rock, ELIZABETH DOBISZ, Hitachi Global Storage Technologies — Previously we reported the alignment of lamellar microdomains of a block copolymer containing hybrid on a corrugated surface, which provides self-assembled crossbar nanostructures. The alignment of lamellae of the hybrid system is believed due to the anisotropic bending property of lamellae. Attempts to similarly align the lamellae of PS-b-PMMA using the same length scales of surface corrugation were not successful. In this study, we investigated the alignment of lamellar microdomains of PS-b-PMMA using even broader ranges of length scales of the surface corrugation. Within specific ranges of roughness scales, we observed that the lamellar microdomains of PS-b-PMMA align perpendicular to the direction of surface corrugation. The effect of relative scales of periodicity and film thickness of PS-b-PMMA to those of surface corrugation on the alignment of lamellae is discussed in this paper.

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