Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Surface Neutrality for PS-b-PMMA Copolymer Thin Film SUJIN HAM, EUNHYE KIM, CHANGHAK SHIN, DU YEOL RYU, Yonsei University, CRAIG HAWKER, University of California, Santa Barbara, CA, THOMAS RUSSELL, University of Massachusetts, Amherst, MA, YONSEI UNIVERSITY COLLABORATION, UNIVERSITY OF CALIFORNIA, SANTA BARBARA COLLABORATION, UNIVERSITY OF MASSACHUSETTS, AMHERST COLLABORATION — Many attempts were made to control over the microdomain orientations of block copolymers in the thin films such as application of strong electric field, solvent annealing and chemical modification of the substrate surface because a variety of nanoscale periodic patterns of the block copolymers offers the potential use as nanolithographic templates, data storage, electronics and membranes. From this study, we suggest the experimental surface conditions for neutrality based on PS/PMMA. Lamellar or cylinder-forming PS-b-PMMA copolymers were used to investigate the thickness dependence of the perpendicular orientation of the microdomains by varying the chemical compositions (PS/PMMA) of underlying random copolymer brushes. The brush surfaces modified by the random copolymers were obtained by thermal annealing due to simple chemical reaction. From the thickness windows for the perpendicular orientation in PS-b-PMMA thin films, the real neutral surface could be observed.

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Date submitted: 28 Nov 2007 Electronic form version 1.4