

Abstract Submitted
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Adsorbed block copolymer nanolayers on solids JENNIFER IMBROGNO, State Univ of NY- Stony Brook, MANI SEN, Department of Materials Science and Engineering, Stony Brook University, Stony Brook, NY 11794-2275, STEVEN KAHN, Department of Chemistry, University at Buffalo, The State University of New York, Buffalo, NY 14260-3000, SHOTARO NISHITSUJI, Department of Polymer Science and Engineering, Graduate School of Science and Engineering, Yamagata University, Yamagata, 992-8510, Japan, E. BHOJE GOWD, CSIR-NIIST, Trivandrum-695 019, Kerala, India, MAYA K. ENDOH, TADANORI KOGA, Department of Materials Science and Engineering, Stony Brook University, Stony Brook, NY 11794-2275 — Directed self-assembly of block copolymers (BCP) has been used as an advanced lithography method. In this study, we aim to shed light onto the structures of BCP at the polymer melt-solid interface. Polystyrene-block-poly (4-vinylpyridine) (PS-b-P4VP) block copolymer was used. Spun-cast 32 nm PS-b-P4VP thick films on silicon substrates were (i) thermally annealed at high temperature above T_g of the polymers or (ii) solvent vapor annealing with chloroform (non-selective solvent) and subsequent 1,4-dioxane (selective solvent). Using atomic force microscopy (AFM), we found perpendicular hexagonally packed cylinders at the topmost surface of the resultant PS-b-P4VP films regardless of the annealing processing. In addition, to study the adsorbed layer structure, we rinsed the annealed films with toluene and characterized the morphologies and film structures using grazing incidence small-angle X-ray scattering, x-ray reflectivity and AFM. The details will be discussed.

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