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**In-Plane Ordering in Diblock Copolymer Brushes.** BULENT AKGUN, GOKCE UGUR, WILLIAM J. BRITAIN, MARK D. FOSTER, Maurice Morton Institute of Polymer Science, The University of Akron, Akron, OH 44325, XUEFA LI, JIN WANG, Experimental Facilities Division, Argonne National Laboratory, Argonne, IL 60439 — Internal and surface structures of polystyrene-*b*-polyacrylate and polyacrylate-*b*-polystyrene diblock copolymer brushes have been studied using grazing-incidence small-angle X-ray scattering (GISAXS) and atomic force microscopy (AFM). Each asymmetric, as-deposited diblock brush that contains a poly(methyl acrylate) (PMA) block shows an in-plane structure with a spacing comparable to the PMA layer thickness. The correlation length of the in-plane ordering is about the nearest neighbor distance and grows with annealing at 180° C. After a brush is treated with a solvent selective for the bottom block, Bragg rods appear in the GISAXS pattern. The lateral spacing corresponding to the Bragg rods is on the order of the brush total thickness. This lateral correlation is also detected by power spectral density analysis of AFM images of the samples' surfaces. The Bragg rods disappear upon heating to 80° C.

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