Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Fabrication of Nanostructured Multilayers from Crosslinkable Block Copolymers DONGJUNE HWANG, EUNHYE KIM, HYUNJUNG JUNG, DU YEOL RYU, JOONA BANG, DEPT. OF CHEMICAL & BIOLOGICAL ENG., KOREA UNIV., KOREA TEAM, DEPT. OF CHEMICAL ENG., YONSEI UNIV., KOREA TEAM — In this work, we fabricated three dimensional nanotemplates using crosslinkable block copolymers (BCPs). We synthesized crosslinkable BCP, P(S-*r*-(S-N_3))-*b*-PMMA, in which 1.5 mol % of crosslinkable azide (N_3) groups were incorporated. First, 40 nm thick films of P(S-*r*-(S-N_3))-*b*-PMMA, exhibiting the hexagonal arrays of perpendicularly oriented cylinders, were prepared on the silicon substrates. After crosslinking the films, cylinder- or lamellar-forming BCPs were prepared without disturbing the underlying layers. For cylinder-forming BCPs, it was observed that the cylindrical microdomains in respective layers were exactly registered. For lamellar-forming BCPs, the underlying layers could neutralize the interfacial interactions as PS-*r*-PMMA random copolymers and thus the perpendicular orientation of lamellae was achieved. The detailed structures of nanostructured multilayers were characterized by atomic force microscope (AFM) and scanning electron microscope (SEM), and grazing-incidence small-angle x-ray scattering (GISAXS).

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Date submitted: 01 Dec 2008 Electronic form version 1.4