

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Surface Interaction Influence on Transition Behavior of Block Copolymer Films DU YEOL RYU, EUNHYE KIM, HYUNGJU AHN, Yonsei University, JUNHAN CHO, Dankook University, THOMAS RUSSELL, University of Massachusetts, Amherst — The phase transitions for the films of block copolymers (BCPs) on the modified surface, like the order-to-disorder transition (ODT), was investigated by in-situ grazing incidence small angle x-ray scattering (GISAXS). The selective interactions at the surface by PS-brush substrate that favors the preferential interactions with the PS component of the block copolymer enhance the parallel orientation of the lamellar microdomains to the film surface. The thickness dependences of transition temperatures for BCP films on the preferential surface will be discussed in terms of the temperature dependence of χ between two block components. Interestingly, with decreasing film thickness, typical behavior of the BCP films on the preferential interactions indicates an increase of transition temperature, which is in quite contrast to a decrease of transition temperature for the films on the balanced interfacial interactions.

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Date submitted: 17 Nov 2009

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