Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Order-to-Order Transitions of Block Copolymer in Film Geometry CHANGHAK SHIN, HYUNGJU AN, JUNE HUH, DU YEOL RYU, Yonsei University, Korea — The phase transition behavior for an asymmetric polystyrene-block-polyisoprene (PS-b-PI) in film geometry, like the order- to-order transition, was investigated by in-situ grazing incidence small angle x-ray scattering (GISAXS). Unlike the bulk behavior, the microdomain (or lattice) orientations in film geometry are influenced by the weak interfacial interactions between the native oxide layer and polyisoprene block due to the efficient interconnectivity, while the random orientation is observed for lamellar (LAM) structure. Compared with the bulk phase behavior, temperature dependence on the morphology leads to the enhancement of LAM morphology, the shifts of transition temperatures for the others, because interactions at the substrate/polymer and polymer/air interfaces influence this free energy balance.

Du Yeol Ryu
Yonsei University, Korea

Date submitted: 15 Nov 2008 Electronic form version 1.4