Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Order-to-order Transition in Closed-loop type Block Copolymer HYUNGJU AHN, HOYEON LEE, SUNGMIN PARK, DU YEOL RYU, Yonsei University — Recently, the complex morphologies such as gyroid (GYR), hexagonally perforated layer (HPL) and non-cubic network phase (Fddd) observed in block copolymer (BCP) melts. In this study, we investigated the unique and unusual OOT behavior of asymmetric deuterated polystyrene-block-poly(n-pentyl methacrylate) copolymers, denoted as dPS-b-PnPMA at narrow range of volume fraction. Scattering results and transmission electron microscopy show that dPS-b-PnPMAs exhibit an unusual OOT phase behavior of GYR?HPL and GYR?HPL?GYR, whereas a general morphological transition occur from HPL to GYR with increasing temperature. The OOT process found in this work provides a physical insight into a new type of morphological transition in diblock copolymer system.

Hyungju Ahn
Yonsei University

Date submitted: 08 Nov 2011 Electronic form version 1.4