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Complex Transitions of Block Copolymer in Melt and Film Geometry[1] BYEONGDU LEE, Argonne National Laboratory, HYUNGJU AHN, HOYEON LEE, DU YEOL RYU, Department of Chemical and Biomolecular Engineering, Yonsei University — The complex transitions such as the order-to-order transition (OOT) and the order-to-disorder transition (ODT) for an asymmetric polystyrene-block-polyisoprene (PS-b-PS), where PS block is a major component and is preferentially interacting with a PS grafted substrate, were investigated by in-situ small-angle x-ray scattering (SAXS) and grazing incidence x-ray scattering (GISAXS) in film geometry. Block copolymer in the bulk possesses an OOT pathway of a lamellar morphology (LAM), perforated layered structure (PL), (Fddd+GYR)-GYR-DIS, On the other hand, the PS-b-PI film that preferentially interacts with a PS grafted substrate shows LAM-HML-GYR-DIS, where HML indicates a hexagonally modulated layer structure with epitaxial orientation.

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