

Phase Behavior of Block Copolymer Thin Film on Preferential Surfaces

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Thin films of block copolymers have recently received considerable attention because of their potential nano fabrication applications. In these application, the physics behind the micro structures of block copolymers has been extensively essential. In this study, we report the phase behavior of block copolymer in thin films system. In the thin film state, surface-block interactions and the confinement effect related to film thickness give rise to morphologies that differ from those in the bulk. The phase transition of block copolymer has been observed in thin films by x-ray scattering such as grazing-incident small angle x-ray scattering(GISAXS) and transmission electron microscopy (TEM). GISAXS provide information on a larger scale at high resolution. Analytical solutions of GISAXS patterns based on the distorted wave Born approximation (DWBA) theory.