

Transition Behavior of Weakly Interacting PS-*b*-PMMA Copolymer in Film

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The transition behavior, order-to-disorder transition (ODT), for the films of a symmetric polystyrene-*b*-poly(methyl methacrylate) (PS-*b*-PMMA) with in a weak segregation regime on a modified surface was investigated by in-situ grazing incidence small angle x-ray scattering (GISAXS). The selective interactions at surface by PS-brushed 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. With increasing film thickness up to 5 λ (lamellar period), this effect for weakly interacting PS-*b*-PMMA films leads to a gentle decrease of the transition temperature. This thickness dependence of transition temperatures for PS-*b*-PMMA films on preferential surfaces in terms of the temperature dependence of χ between two block components will be discussed.