

Abstract Submitted
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Micelle Formation of Diblock Copolymers in Thin Film Homopolymers and Homopolymer Blends CHELSEA CHEN, PETER GREEN, University of Michigan — A-b-B diblock copolymers, at very small concentrations, form micelles in a melt of homopolymer chains of type A or B. In the bulk, the critical micelle concentration, ϕ_{cmc} , is a function of the symmetry of the copolymer chain and exhibits a strong dependence on χN , where χ is the interaction parameter and N is the degree of polymerization of the copolymer. We examined micelle formation in thin film mixtures of: (1) polystyrene-b-poly(2-vinylpyridine) (PS-b-PVP)/polystyrene (PS); (2) PS-b-PVP/ blend of PS and tetramethyl bisphenol-A polycarbonate (TMPC); and (3) polystyrene-b-poly(methyl methacrylate) (PS-b-PMMA)/PS. The critical micelle concentration is found to be orders of magnitude larger than the bulk; it is a strong function of film thickness, the substrate/chain segment interactions and the interactions between the different polymeric segments in the system.

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