

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**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,  $\phi_{cmc}$ , is a function of the symmetry of the copolymer chain and exhibits a strong dependence on  $\chi N$ , where  $\chi$  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.

Chelsea Chen  
University of Michigan

Date submitted: 09 Dec 2009

Electronic form version 1.4