

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Depletion interaction effects on diblock copolymer micelles in selective solvents** SAYEED ABBAS, TIMOTHY LODGE, Department of Chemical Engineering and Materials Science, University of Minnesota — Block copolymers form micelles when dissolved in a selective solvent for one block. At higher concentrations the micelles pack into ordered microstructures. When non-adsorbing homopolymer is added to the solutions, we observe that the ordered morphologies can be disordered. Due to the addition of homopolymer the repulsive inter-micellar interactions are screened, which leads to the melting of the ordered microstructures. This phenomenon is analogous to depletion interactions in colloid/polymer mixtures. We have chosen the polystyrene-*b*-polyisoprene dissolved in dialkyl phthalates, as our model system. To these solutions polystyrene homopolymer is added. The molecular weight of the homopolymer has a significant effect on the phase behavior of the system. Our goal is to study the changes in phase behavior induced by addition of homopolymers and explore the underlying parameters which control the phase behavior.

Sayed Abbas  
Department of Chemical Engineering and Materials Science  
University of Minnesota

Date submitted: 22 Nov 2005

Electronic form version 1.4