Abstract Submitted
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PS/PMMA Blends in the Presence of Cyclohexane: Selective Solvent Washing or Equilibrium Adsorption?[1] HARALD ADE, NCSU, S. E. HARTON, Columbia University, J. LUNING, SSRL, H. BETZ, Pennsylvania State University — Cyclohexane has been frequently used as a selective solvent to remove PS layers or domains from polystyrene:poly(methyl methacrylate) (PS:PMMA) blends and for reorganization or self-assembly of polymer brushes and block copolymers. We have found that cyclohexane is not efficient at PS removal, observing significant residual PS at PMMA surfaces. These results were compared to PMMA surfaces after PS was allowed to adsorb to the surface from a dilute theta solution in cyclohexane. Using near edge X-ray absorption fine structure spectroscopy and inverse gas chromatography, coupled with theoretical calculations using self-consistent mean-field theory, we have demonstrated that selectively washing a polymer from a polymer blend is nearly identical to adsorption of a polymer to a 'soft' surface from a dilute solution. Improved knowledge about the effects of selective solvents will improve experimental analysis of washed systems as well as the manipulation of block copolymer and polymer brush reorganization or self-assembly.

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