Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Morphological Transitions in a Triblock Copolymer and Its Sulfonated Ionomer: Thermal Annealing and Solvent Effects SHUJUN CHEN, SAMUEL P. GIDO, Dept. of Polymer Sci. and Eng., Univ. of Mass., Amherst, MA 01003 — The microphase separation behavior of poly(styrene-*b*-(ethylene-*co*-butylene)-*b*-styrene) (SEBS), as well as its sulfonated ionomer (S-SEBS), was studied using TEM and SAXS. The SEBS triblock used in this study has 30 wt % styrene and is expected to form a cylindrical morphology. Upon casting from toluene, a slightly preferential solvent for styrene, however, SEBS revealed a lamellar morphology in TEM, as confirmed by SAXS. After thermal annealing, the morphology changed to core-shell cylinders with EB as the core and styrene as the shell. SAXS confirmed the formation of cylinders in annealed SEBS. The S-SEBS studied has an intermediate sulfonation level of 23 mol %. S-SEBS cast from toluene formed disordered spheres, while S-SEBS cast from THF revealed disordered lamellae. Thermal annealing resulted in little change in the morphology for both samples. Initial examination of S-SEBS samples cast from these two solvents suggested much different viscoelastic properties and quantitative measurements are being conducted using dynamic mechanical analysis.

Shujun Chen
Dept. of Polymer Sci. and Eng., Univ. of Mass., Amherst, MA 01003

Date submitted: 01 Dec 2004 Electronic form version 1.4