Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Morphologies in Diblock Copolymer and Ionic Liquid Mixtures
JAE-HONG CHOI, Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA 19104, LIANG GWEE, YOSSEF A. ELABD, Department of Chemical and Biological Engineering, Drexel University, Philadelphia, PA 19104, KAREN I. WINEY, Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA 19104 — The morphologies of mixtures of a poly(methyl methacrylate-*b*-styrene) diblock copolymer and an ionic liquid, 1-ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide, have been studied with different ionic liquid contents. The solution cast block copolymer-ionic liquid mixture films appear transparent, because the ionic liquid EMIm-TFSI is preferentially compatible to the MMA phase. The ordered microphase separation structures in the films were characterized via small angle X-ray scattering (SAXS) and transmission electron microscopy (TEM). The block copolymer and ionic liquid mixtures show ordered structures typical of block copolymers: hexagonally ordered cylinders and lamellae. The swelling behavior of block copolymer in ionic liquid as ionic liquid contents will be discussed. Also, the structure of mixture and ion transport property will be correlated.

Jae-Hong Choi
Department of Materials Science and Engineering,
University of Pennsylvania, Philadelphia, PA 19104

Date submitted: 01 Dec 2009 Electronic form version 1.4