

Abstract Submitted  
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**Morphology and Ion Transport in Mixtures of Polymers and Ionic Liquid** JAE-HONG CHOI, Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, Pennsylvania 19104-6272, 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, Pennsylvania 19104-6272 — Mixtures of polymers and ionic liquid have been prepared using homopolymers, random copolymers, and block copolymers: poly(methyl methacrylate), poly(methyl methacrylate-*ran*-styrene), and poly(methyl methacrylate-*b*-styrene). The ionic liquid is 1-ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide. These mixtures are investigated using X-ray scattering and electron microscopy. Mixtures of the homopolymer and random copolymer with the ionic liquid are homogeneous and amorphous morphology with excess scattering as content of ionic liquid increases. The block copolymer and ionic liquid mixtures show ordered structures typical of block copolymers that vary with ionic liquid content. The morphologies of the copolymer-ionic liquid mixtures will be correlated with the conductivities.

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