

Abstract Submitted
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Morphology study in block copolymer electrolytes SCOTT MULLIN, NISITA WANAKULE, NITASH BALSARA, University of California, Berkeley — Poly(styrene-*b*-ethylene oxide)/lithium bis(trifluoromethane)sulfonimide (SEO/LiTFSI) is of interest in battery applications since the doped PEO phase can conduct ions and the glassy PS phase can prevent dendrite growth upon recharging. It is believed that the LiTFSI molecules are localized in the PEO microphases. Previous studies have shown that highly conducting electrolytes can be made from symmetric SEO copolymers. The purpose of this study is to explore the conductivity of asymmetric SEO copolymer systems doped with LiTFSI. Our studies encompass both neat asymmetric SEO copolymers and SEO copolymers blended with PS homopolymers to separate the effects of architecture of the copolymer molecules and morphology adopted by the system in the melt state. Conductivity is measured by AC impedance, morphology is determined by small angle X-ray scattering, and crystallinity of the PEO chains is determined by differential scanning calorimetry. All samples were prepared in hermetically sealed sample cells in an Argon glovebox.

Scott Mullin
University of California, Berkeley

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