

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**A complete set of ion transport properties in a microstructured electrolyte** SCOTT MULLIN, University of California, Berkeley, ASHOUTOSH PANDAY, Lawrence Berkeley National Lab, GREG STONE, NITASH BALSARA, University of California, Berkeley — The microstructured block copolymer electrolyte poly(styrene)-*block*-poly(ethylene oxide) (PS-PEO) doped with lithium bis(trifluoromethanesulfonimide) (LiTFSI) is of interest for battery applications because LiTFSI segregates to the PEO phase to form ion-conductive channels, while the PS phase provides mechanical strength. Ionic conductivity in this system follows an unpredicted increase with molecular weight. In order to better understand this increase, the salt diffusion coefficient and lithium ion transference number have been measured for lamellar PS-PEO samples as a function of molecular weight. Together, these parameters fully describe ion transport in this system, thus providing fresh insight into the effects of block copolymer microstructure.

Scott Mullin  
University of California, Berkeley

Date submitted: 20 Nov 2009

Electronic form version 1.4