

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Block copolymers exhibiting simultaneous electronic and ionic conduction for use in lithium battery electrodes ANNA JAVIER, Lawrence Berkeley National Laboratory, SHRAYESH PATEL, University of California, Berkeley, DANIEL HALLINAN, Lawrence Berkeley National Laboratory, NITASH BALSARA, University of California, Berkeley — A block copolymer system that can demonstrate both electronic and ionic conductivity is analyzed for its performance in rechargeable lithium batteries. Here, the electrically active polymer is poly(3-hexylthiophene), while poly(ethylene oxide) is used as the lithium ion conductor. This block copolymer is then mixed with LiFePO_4 and used as the cathode material. Other components in the battery include a lithium metal anode and poly(styrene)-*block*-poly(ethylene oxide) (SEO) as the solid electrolyte. Lithium bis(trifluoromethane)sulfonimide (LiTFSI) is utilized to facilitate ionic conductivity in both the electrolyte and the cathode. The synthesis of the block copolymer and its device performance in rechargeable lithium metal batteries will be presented.

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Date submitted: 26 Nov 2010

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