

Abstract Submitted
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Simultaneous Electronic and Ionic Charge Transport in Poly(3-hexylthiophene)-b-Poly(ethylene oxide) SHRAYESH PATEL, University California, Berkeley and Lawrence Berkeley National Lab, ANNA JAVIER, Lawrence Berkeley National Lab, NITASH BALSARA, University California, Berkeley and Lawrence Berkeley National Lab — Block copolymers can self-assemble to distinct channels, which allows for simultaneous transport of electronic and ionic charge carriers. A potential polymer system is Poly(3-hexylthiophene)-b-Poly(ethylene oxide) (P3HT-b-PEO). P3HT serves as the electronic conducting channel while the PEO serves as the ionic conducting channel. Both conductive blocks are doped to induce simultaneous electronic and ionic conduction. The PEO phase is doped with LiTFSI while the P3HT is doped with F₄TCNQ, which generates hole carriers. In addition, we take into account the case where no electronic dopant is added to P3HT phase. The charge transport properties of the material are analyzed via ac impedance spectroscopy and dc polarization techniques. These experiments provide decoupled electronic and ionic transport in P3HT-b-PEO.

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