

Abstract Submitted  
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**Investigation** **of**  
**phase coexistence in block copolymer/salt mixtures near order-disorder  
phase transitions**<sup>1</sup> JACOB THELEN, NITASH BALSARA<sup>2</sup>, University of California Berkeley — Mixtures of polystyrene-b-poly(ethylene oxide) (PS-b-PEO) copolymer and lithium bis(trifluoromethanesulfonyl) imide (LiTFSI) salt can microphase separate into ion-conducting (PEO/LiTFSI) and mechanically reinforcing (PS) domains, facilitating their application as solid electrolytes in lithium batteries. PS-b-PEO/LiTFSI mixtures that exhibit thermally accessible order-disorder phase transitions (ODTs) are used to gain thermodynamic insight to the polymer/salt system. The Gibbs phase rule requires a coexistence of phases during a phase transition in binary systems. We use birefringence and SAXS measurements to confirm the presence of coexisting ordered and disordered phases near the ODT and quantify their relative volume fractions throughout the coexistence temperature window.

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