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Structure and dynamics of single-ion conducting P(STFSILi)-ran-P(EGMA) copolymer electrolytes JENNIFER SCHAEFER, CHRISTOPHER SOLES, National Institute of Standards and Technology — Recently, PEO-based copolymers containing the lithiated STFSI monomer have been investigated for use as single-ion conducting electrolytes in lithium batteries. Single-ion conducting electrolytes eliminate ion concentration gradients that diminish cell performance. The low ionic conductivity of these electrolytes has limited their applicability thus far, but electrolytes based on the STFSI monomer have been shown to have sufficient conductivity to support cell operation at moderate temperatures. We will report on the characterization of the morphology and dynamics of P(STFSI)-ran-P(EGMA) copolymer electrolytes as a function of the monomer ratio (ion loading) and length of the polyethylene glycol comb. Copolymers containing sufficiently short PEG combs remain amorphous at ambient temperatures over a range of STFSI content.

Jennifer Schaefer
National Institute of Standards and Technology

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