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Structure and Ionic Conductivity Evolution of a Block Copolymer Electrolyte during Thermal Annealing MAHATI CHINTAPALLI, NITASH BALSARA, Univ of California - Berkeley — Mixtures of block copolymers (BCPs) and lithium salts are promising materials for battery electrolytes because they exhibit high ionic conductivity and high modulus. However, since most polymer electrolytes show high conductivities only at temperatures above ambient, it is important to understand how the structure and ionic conductivity of BCP electrolytes evolve during thermal annealing. *In situ s*mall angle X-ray scattering and ac impedance spectroscopy were used to characterize a BCP electrolyte, lamellar polystyrene-*block*-poly(ethylene oxide) mixed with lithium bis(trifluoromethanesulfonylimide) (LiTFSI), during thermal annealing. As annealing progressed, long range lamellar order and domain spacing increased, and scattering contrast between the two BCP phases decreased. A concomitant decrease in ionic conductivity was observed.

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