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Effects of Salts and Ionic Liquids on the Thermodynamics of Poly(ethylene oxide)-Containing Block Copolymers NISITA WANAKULE, JUSTIN VIRGILI, ALEXANDER TERAN, UC Berkeley, NITASH BALSARA, UC Berkeley, LBNL — We explore the thermodynamics of block copolymers doped with the salt, lithium bis(trifluoromethanesulfonyl)imide (LiTFSI), and the ionic liquid, imidazolium bis(trifluoromethanesulfonyl) imide ([Im][TFSI]). The block copolymers comprise of polyethylene oxide (PEO), a polymer with a higher dielectric constant, and polystyrene (PS), a polymer with a lower dielectric constant. A combination of small-angle x-ray scattering (SAXS) and birefringence was used to determine morphology and order-to-disorder transition temperatures (ODT). Leibler's theory for microphase separation was employed to determine the effective Flory-Huggins interaction parameter. These values are compared to theoretically-determined values of the effective interaction parameter which were calculated with no adjustable parameters using a theory developed by Zhen-Gang Wang.

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