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Nanostructure and Dynamics of Ionic and Non-Ionic PEO-Containing Polyureas SUNANTA CHUAYPRAKONG, JAMES RUNT, Penn State University — A series of polyethylene oxide (PEO) - based diamines with molecular weights ranging from 250 – 6000 g/mol were polymerized in solution with 4,4'-methylene diphenyl diisocyanate (MDI). In addition, PEO soft segment diamines where modified to incorporate ionomeric species and also polymerized with MDI. The role of PEO soft segment molecular weight and the presence of ionic species on nanoscale segregation and cation conductivity were explored. The former was investigated using small-angle X-ray scattering and atomic force microscopy. Dielectric relaxation spectroscopy was used to investigate polymer and ion dynamics. Local environment and hydrogen bonding were identified by using FTIR spectroscopy.

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