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Structure and Dynamics of Polymer/Ionic Liquid Systems Studied by In-Situ Electron Microscopy PAUL KIM, THOMAS RUSSELL, DAVID HOAGLAND, Polymer Science and Engineering Department, University of Massachusetts — Ionic liquids (ILs) have extremely low vapor pressures and high conductivities, which taken together, make many IL-soft matter systems suitable for investigation by electron microscopy. Polymer crystallization in ultrathin film has attracted increasing attention as it provides (i) new clues on the nature of polymer crystallization and (ii) opportunity for enhancing the performance of polymer thin film devices. Exploiting ILs as crystallizing solvents, the evolving morphologies of several semi-crystalline polymers were investigated in-situ by optical microscopy, scanning electron microscopy (SEM), and transmission electron microscopy (TEM). To understand polymer dynamics in ILs, nanoparticles dispersed in ILs were investigated as model dynamical systems. Spatial and temporal imaging information affords insight into polymer-IL interactions.

Paul Kim
Polymer Science and Engineering Department,
University of Massachusetts

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