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Modification of Aqueous Peptide-based Block Copolymer Morphologies through Addition of Ionic Liquid ASHLEY JOHNSON, JACOB RAY, SANDEEP NAIK, LAURA BULLOCK, DANIEL SAVIN, School of Polymers and High Performance Materials — The self assembly of block copolymers in aqueous solution is a synthetically tunable behavior. Varying composition and the size of the block lengths, a range of morphological structures can be obtained each having diverse characteristics. Polypeptide blocks incorporate pH responsiveness due in part to the helix-coil transition. In these studies, we use light scattering to explore the morphology and pH responsiveness of PPO-P(Lys) diblock and triblock copolymers. While these materials have limited solubility for pH>8, the addition of a small amount of ionic liquid extends the phase range to pH above 10. Similar behavior is observed in Pluronic copolymers, which are solubilized in the presence of ionic liquid. Through use of dynamic light scattering (DLS), transmission electron microscopy (TEM), circular dichroism (CD), and Fourier Transform IR (FTIR), we seek to obtain a molecular-level understanding of the peptide interactions in water/ionic liquid solutions and how this translates to pH responsiveness.

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