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Responsive Polypeptide-based Block Copolymer Assemblies DANIEL A. SAVIN, GOPAL VENKATACHALAM, SANDEEP S. NAIK, KAY E. GEBHARDT, University of Vermont — Amphiphilic block copolymers of poly(butadiene) and poly(L- lysine) (PB-P(Lys)) as well as poly(propylene oxide) and P(Lys) (PPO-P(Lys)) were synthesized and their solution properties studied using dynamic light scattering and transmission electron microscopy. We exploit secondary structure changes that occur in the P(Lys) chain to observe changes in solution morphology as a function of solution conditions. At high pH, the P(Lys) chain assumes either an α-helical or a β-sheet conformation depending on temperature, while at lower pH the side chains become protonated, resulting in an expanded coil configuration. In these studies, we explore the pH and temperature responsiveness for a series of block copolymers with varying morphology.

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