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Poly(Z-Lysine)-based Block Copolymer Organogels SANDEEP S. NAIK, ADAM D. RICHARDSON, DANIEL A. SAVIN, School of Polymers and High Performance Materials, University of Southern Mississippi — A series of AB diblock copolymers consisting of poly(Lysine(Z)) (A = P(Lys(Z))) and poly(propylene oxide) or polyhedral oligomeric silsesquioxane (B = PPO, POSS) were synthesized and found to form stable, rigid organogels in THF and chloroform at room temperature. In these systems, the protecting group on the P(Lys) side-chains remains intact. As such, the secondary structure of the polypeptide chains retains helicity over a wide range of solution conditions. Gel formation in these systems results from the assembly of the solventphobic P(Lys(Z)) chains, which pack densely in an anti-parallel fashion, minimizing interfacial curvature. These gels all exhibited shear-thinning behavior, and as the temperature was heated to 350 K exhibited a gel-sol transition. The role of solvent polarity and molecular weight of the P(Lys(Z)) chains on the mechanical strength will be discussed.

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