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Responsive Poly (ε-carbobenzyloxy-L-lysine)-based Colloidal Particles: Exploring and Characterizing the Inverse α-Helix to Random Coil Transition in m-Cresol[1] CORNELIA ROSU, Louisiana State University, SIBEL TURKSEN-SELCUK, ERIC SOTO-CANTU, None, PAUL S. RUSSO, Louisiana State University — Like other synthetic polypeptides, poly (ε-carbobenzyloxy-L-lysine), PCBL, exhibits unique properties that make it a good candidate for a broad range of applications and fundamental investigations. This work explores one particular feature found in PCBL in the single solvent, m-cresol: a sharp, reversible coil-to-helix transition at 27°C. In nature, such polypeptides undergo similar transitions while attached to living cells. Tethering PCBL polymers to spherical silica particles enables the study of effects such as polypeptide chain length, grafting density and core particle curvature in a fundamental way. This can be accomplished in a single, organic solvent without interference from strong pH and salt effects. This presentation will concern steps taken to make such studies a reality. Methods to characterize grafting density have been established, good control has been exerted over the core size and, by some synthetic routes, also the molecular weight of the PCBL chains in the shell. The coil-to-helix transition is observed for some particles but not all.

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