

Abstract Submitted  
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**Complex Micelle Morphologies Constructed by Charged Block Copolymer Self-assembly** DARRIN Pochan, University of Delaware — The combination of electrostatic interactions and block conformational control, when combined with traditional block copolymer parameters such as relative block length, architecture, and amphiphilicity, provides the opportunity to build novel self-assembled structures. Two sets of molecules will be discussed. The first is a synthetic, linear triblock copolymer with two hydrophobic blocks connected to a charged hydrophilic block. Assembling these molecules in water/organic solvent mixtures containing multivalent organic counterions produces biomimetic micelles such as toroids and disks. These nanostructures can be chosen with the correct choice of counterion and solvent conditions. The second molecule is a linear diblock copolymer containing a rigid rod alpha helical hydrophobic block and a random coil, charged hydrophilic block. The self-assembly is defined by the helicity of the hydrophobic block. By controlling the kinetics of assembly one can form interconnected hydrogels, twisted fibrils, or hexagonal plates, all anchored by hydrophobic cores of alpha helical peptide. Transmission electron microscopy, neutron scattering, atomic force microscopy, circular and infrared spectroscopy, and light scattering results will be presented.

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