

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Solution self-assembly behavior of block copolymer blends with restricted hydrophilic block JIAHUA ZHU, SHENG ZHONG, Department of Materials Science and Engineering and Delaware Biotechnology Institute, University of Delaware, KE ZHANG, KAREN WOOLEY, Center for Materials Innovation, Department of Chemistry and Department of Radiology, Washington University in Saint Louis, DARRIN Pochan, Department of Materials Science and Engineering and Delaware Biotechnology Institute, University of Delaware — Novel assembled structures due to segregation of hydrophobic domains trapped within the same micelle core have been produced via a block copolymer blend in tetrahydrofuran/water solution. The block copolymer blend is composed of two/or more block copolymers with shared poly(acrylic acid) (PAA) hydrophilic block, but distinctive hydrophobic blocks. The blended micelles are created by taking advantage of the electrostatic association in the hydrophilic PAA shell between the negatively charged acid of the PAA block and added, positively charged organoamine molecules. Unlike hydrophobic blocks undergo local segregation. This segregation gives rise to new nanostructures deviated from traditional polymeric assemblies such as spheres, cylinders and vesicles. Transmission electron, cryogenic transmission electron, and atomic force microscopy along with x-ray and neutron scattering have been applied to characterize the assembled structures.

Jiahua Zhu
Department of Materials Science and Engineering and
Delaware Biotechnology Institute, University of Delaware

Date submitted: 17 Dec 2008

Electronic form version 1.4