Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Characterization of Nanostructures with Internal Phase Separation from Triblock Copolymers of PAA-b-PMA-b-PS KELLY HALES, HONGGANG CUI, DARRIN POCHAN, University of Delaware, ZHIYUN CHEN, KAREN WOOLEY, Washington University at St. Louis — The characterization and understanding of nano- through microstructures formed by charged, amphiphilic triblock copolymers of poly(acrylic acid)-b-poly(methyl acrylate)-b- polystyrene in water/tetrahydrofuran (THF) solvent mixtures is strongly dependent on block composition, solvent composition, and the presence of divalent, organic counterions. A variety of structures can be produced including polymer nanoparticles with bulk-like nanophase separation in the interior; bulk phase separation into a polymer-rich lamellar phase; spherical, cylindrical, and disk-like micelles; as well as toroidal assemblies. This poster will focus on the structure of polymer nanoparticles and networks formed in low water content systems. The size of the nanoparticles and whether separated nanoparticles vs. an interconnected network was formed can be controlled via solvent composition. Importantly, both the nanoparticles and network phases contain their own inherent nanostructure due to local phase separation of the block copolymers. Cryo-transmission electron microscopy (TEM), traditional TEM, and neutron scattering were used to examine these samples.

Kelly Hales
University of Delaware

Date submitted: 20 Nov 2006 Electronic form version 1.4