Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Morphology of Sulfonated Styrenic Pentablock Copolymer Solutions and Membranes ARUN KOTA, KAREN WINEY, Department of Materials Science and Engineering, University of Pennsylvania — We report a systematic investigation of the morphology of sulfonated styrenic pentablock copolymer solutions and membranes obtained from Kraton Polymers LLC. The polymer studied was poly((t-butyl-styrene)-b-(ethylene-r-butylene)-b-(styrene-r-styrene sulfonate)-b-(ethylene-r-butylene)-b-(t-butyl-styrene)). Small angle x-ray scattering (SAXS) revealed that the solutions exhibited micellar morphologies. The solution SAXS data was modeled using the Kinning-Thomas model to obtain radius of the micelle core, the radius of closest approach between two micelles and the volume fraction of micelles. The membranes exhibited anisotropic morphologies with different d-spacings in-plane and through-plane. A good linear correlation was observed between the radius of closest approach between two micelles in the solutions and the d-spacings in the membranes. Efforts are underway to characterize the type of morphology in the membranes using electron microscopy and correlate them to the transport properties.

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Date submitted: 11 Dec 2008 Electronic form version 1.4