

Abstract Submitted
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Solvent Tuning of Cluster Morphology in Ionic Block Copolymer Solutions¹ MANJULA SENANAYAKE, SIDATH WIJESINGHE, ANURADHI WICKRAMASINGHE, SUPUN MOHOTTALALAGE, DVORA PERAHIA, Clemson University, Clemson, SC, 29631, LILIN HE, Oak Ridge National Laboratory, Oak Ridge, TN, 37831, CARL WILLIS, MARC CHARENDOFF, Kraton Polymers, US, LLC, Houston, TX 77084 — Ionic block copolymers find broad uses in transport-controlled applications. Tuning ionic clusters formed in solutions that can propagate into membranes offers a path to tailor performance. Here micellar structures of a symmetric ABCBA co-polymer resolved by SANS, as the polarity of the solvent is changed by adding propanol to cyclohexane, are reported. C is a randomly sulfonated polystyrene, B is hydrogenated polyisoprene, and A is poly(t-butyl styrene). Core-shell aggregates dominate the solutions of the pure solvents with the ionic blocks residing in the core of the micelle. The packing of the ionizable segments is significantly tighter in a hydrophobic environment than in a hydrophilic one. The corona however is more compact in the hydrophilic environment. A transitional region is observed as the fully miscible solvents are mixed with elongated structures dominating the solution.

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Manjula Senanayake
Clemson University, Clemson, SC, 29631

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