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Morphologies in Sulfonated Styrenic Pentablock Copolymer Membranes JAE-HONG CHOI, MATT BRAMSON, KAREN I. WINEY, Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA 19104 — Membranes of pentablock and triblock copolymers consisting of poly(*tert*-butyl styrene) (TBS), hydrogenated polyisoprene (HI), and partially sulfonated poly(styrene-*ran*-styrene sulfonate) (SS) were studied using small angle X-ray scattering (SAXS) and transmission electron microscopy (TEM). The TBS-HI-SS-HI-TBS pentablock and TBS-HI-SS triblock copolymer membranes exhibit anisotropic microphase separated morphologies. Because the pentablock and triblock copolymers can be expected to have complex morphologies, thermal annealing was conducted to promote well-defined morphologies. The annealed membranes exhibit stronger peaks and more high order reflections in SAXS patterns, as well as better defined microstructures in the TEM. Electron microscopy studies with various staining protocols are underway to establish the morphology of the pentablock copolymer membranes including the size and shape of the three microdomains (TBS, HI and SS). We gratefully acknowledge Kraton Polymers, Inc. for materials.

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