

Abstract Submitted
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Disorder – Order Transitions in Humidified Block Copolymer Electrolytes Studied by *In Situ* SAXS KEITH BEERS, University of California, Berkeley, ANDREW JACKSON, European Spallation Source, NITASH BALSARA, University of California, Berkeley — The relationship between water uptake, proton conductivity and morphology in the dry and hydrated state for a series of poly(sulfonated styrene-*block*-ethylene) was investigated. Specifically, the disorder-to-order transition (DOT) and hydrated morphology was characterized by *in situ* humidity controlled small angle X-ray scattering (SAXS). The enhanced resolution afforded by SAXS allows for better characterization of the DOT than previous studies which have relied upon neutron scattering. The transition to an ordered state is found to display a coexistence of ordered and disordered states over a broad range of relative humidity values.

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