Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Structure and Phase Transition in Sulfonated Block Copolymer
MOON JEONG PARK, NITASH BALSARA, Lawrence Berkeley National Laboratory, University of California, Berkeley — Ion conducting polymers containing sulfonic acid are of interest for the fuel cell applications. This study is based on sulfonated poly(styrene-b-methylbutylene) block copolymers. Small-angle X-ray scattering experiment was performed on the dry state and these materials show remarkably rich sequence of phase transitions, i.e., lamellae, gyroid, hexagonally perforated lamellae, hexagonal cylinder, and disorder, depending on temperature, molecular weight, and fraction of sulfonated monomers. Small-angle Neutron scattering measurements under controlled temperature and humidity provided us powerful insight into the structure of hydrated materials. We will present data on the relationship between water uptake and morphology. In future work we plan to measure the proton conductivity of these materials.

Moon Jeong Park
Lawrence Berkeley National Laboratory, University of California, Berkeley

Date submitted: 17 Nov 2006 Electronic form version 1.4