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**Study of Low Temperature Fuel Cells Thin Films Morphology by GISAXS** TOMOMI IRITA, THOMAS RUSSELL, University of Massachusetts
— Grazing incidence small angle x-ray scattering experiments were performed on thin films of Nafion solutions as a function of time as the solvent, methanol/water, evaporated. The development and orientation of the structure and morphology in the thin films, at the free surface and in the bulk of the film, was characterized by the scattering below and above the critical angle. The scattering profiles indicated that Nafion thin morphology was strongly influenced by the conformations of Nafion molecules in the solutions. In addition, the morphology in thin films of sulfonated block copolymers of polystyrene-b-poly(ethylene-o-butylene)-b-polystyrene, an alternative material for fuel cell applications, was characterized by GISAXS and scanning force microscopy using different solvents and under an applied electric field. Both the solvents used and the applied field was found to markedly influence the orientation of the ion conducting domains in the films.

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