

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

The Role of Neutralizing Ion Type on the Dynamics of Sulfonated Polystyrene Ionomers ALICIA CASTAGNA, The Pennsylvania State University, WENQIN WANG, KAREN I. WINEY, University of Pennsylvania, JAMES RUNT, The Pennsylvania State University — Sulfonated polystyrene (SPS) ionomers neutralized with Na, Cs, and Zn were investigated using scanning transmission electron microscopy (STEM), X-ray scattering, and dielectric relaxation spectroscopy. The role of the neutralizing ion on the structure and molecular dynamics will be discussed as a function of sulfonation level. STEM and X-ray scattering revealed the presence of spherical aggregates 2 nm in diameter. Successful fitting of the scattering data to the Kinning-Thomas modified hardsphere model provides additional information on aggregate size, number density and radius of closest approach. The dynamics of these materials, as revealed by DRS, are highly sensitive to the neutralizing ion, in particular, the character of the segmental relaxation, i.e. relaxation time, breadth and number of relaxations. Additionally, the relaxation time of the Maxwell-Wagner-Sillars interfacial polarization process at high temperatures is also highly dependent on neutralization and ion character.

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Date submitted: 17 Nov 2010

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