

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Functionalizing Silica Nanoparticles Designed for Improved Ion Transport MICHAEL O'REILLY, JAMIE FORD, KAREN WINEY, University of Pennsylvania — Silica nanoparticles have been functionalized with polyethylene oxide and sulfonated polyester to synthesize improved single ion conducting polymer nanocomposites. Our motivation is to minimize ionic aggregation at room temperature by anchoring the sulfonate anion to the surface of a nanoparticle via polymer grafting. The tethered anion's mobility should be restricted, allowing the cation to conduct more easily through the short chain PEO matrix, thereby increasing the free ion content. Secondary benefits of nanoparticle dispersion include suppressed crystallinity and increased viscosity at room temperature in low molecular weight systems where ionic conductivity is elevated.

Michael O'Reilly
University of Pennsylvania

Date submitted: 11 Nov 2011

Electronic form version 1.4