



~~~~ Polymer Physics Seminar ~~~~

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301 Steidle Bldg.

Synthesis and Characterization of Polysiloxane-based Single Ion Conductor containing Weak-binding Salt

Polymer electrolytes have been found many applications in energy storage and conversion devices, such as lithium battery and fuel cells. The requirement of high performance polymer ion conductors attracts many great efforts. Polysiloxane-based ion conductor, which is obtained by modifying polymethylhydrosiloxane (PMHS) via hydrosilylation reactions, is one of the most promising candidates. Instructed by the equation: $\sigma = \rho \mu e$, polar groups which can solvate ions and raise the dielectrical constant of matrix were attached to the polymer backbone. Meanwhile different borate salts which exhibit weak interaction between anions and cations have been synthesized and attached to polymer backbone as well. The resulting polymers are characterized by NMR, DSC, SAXS and DRS (dielectric relaxation spectroscopy). Compared to the poly (ethylene glycol) (PEG) – based ionomers synthesized in our lab before, some of the new ionomers show higher room temperature conductivity. Electrode polarization (EP) analysis was applied to explain the reason.