Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Ion conduction in high ion content PEO-based ionomers. DAVID CALDWELL II, JANNA MARANAS, Pennsylvania State University — Solid Polymer Electrolytes (SPEs) can enable the design of batteries that are safer and have higher capacity than batteries with traditional volatile organic electrolytes. The current limitation for SPEs is their low conductivity, resulting from a conduction mechanism strongly coupled to the dynamics of the polymer host matrix. Our previous work indicated the possibility of a conduction mechanism through the use of ion aggregates. In order to investigate this mechanism, we performed a series of molecular dynamics simulations of PEO-based ionomers at high ion content. Our results indicate that conduction through ion aggregates are partially decoupled from polymer dynamics and could enable the development of higher conductive SPEs.

David Caldwell II
Pennsylvania State University

Date submitted: 06 Nov 2015 Electronic form version 1.4