

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Ion Specific Effects in Charged Polymer Membranes for Water Purification** GEOFFREY GEISE, YUANYUAN JI, University of Virginia — Global need for sustainable water and energy sources presents an opportunity for polymer science as many technologies for water purification and some emerging power generation technologies rely on polymeric membranes to control rates of water and ion transport. Ion exchange membranes are used in many of these technologies, and the presence of charged groups on the polymer backbone of such materials influences ion sorption and, subsequently, both rates of ion transport and the selective nature of ion transport. Membranes are often characterized using sodium chloride, which is widely prevalent in nature, but several applications expose membranes to a variety of different ions. For electric field-driven processes, ion transport properties, such as ionic resistance and electrochemical permselectivity, are sensitive to the specific nature of the ions present in the system. This presentation will discuss the influence of ion properties and ion-polymer interactions on the ion transport properties of polymer membrane materials. The observed ion specific effects can be understood in terms of both the thermodynamic and kinetic (mobility) contributors to the overall ion transport process.

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Date submitted: 11 Nov 2016

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