

Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Streaming potential and conductivity measurements reveal electrokinetic properties of porous and charged layers ALEXANDER BARBATI, BRIAN KIRBY, Cornell University — We perform streaming potential, conductivity, and supporting physical and chemical measurements on thin Nafion polymer films spun on rigid glass slides. Our data reveals a phenomenological zeta potential that scales inversely with the negative logarithm of ionic strength (electrolytes NaCl and HCl) and displays a weak, but unexpected, dependence on pH. Using derived coupling coefficients for streaming current and conductivity, we analyze the phenomenological zeta potential to extract porous layer resistance, fixed charge density, and the Donnan potential within the porous layer. We supplement these electrokinetic studies with physical and chemical measurements of the sample, using profilometry, XPS, and ellipsometry measurements to further inform the state of the system.

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Date submitted: 02 Aug 2013

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