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Electrokinetic investigations of uniformly dissociated polymer films ALEXANDER BARBATI, BRIAN KIRBY, Sibley School of Mechanical and Aerospace Engineering, Cornell University — We execute electrokinetic investigations of a Nafion polymer film attached to a rigid glass substrate. These measurements reveal a film charging mechanism that follows Donnan potential scalings over several decades of hydronium and salt concentration, showing invariance of the film dissociation with respect to both pH and solution ionic strength. Electrokinetic measurements are additionally supplemented by observations characterizing the physical (ellipsometry) and chemical (XPS) film state. Our experimental results are analyzed using analytical and numerical modeling of the volumetrically–charged soft interface to interpret measured fluxes with more familiar quantities such as conductivities, surface potentials, and apparent slip lengths.

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