Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Determination of Lithium Ion Distributions in Nanostructured Block Polymer Electrolyte Thin Films by XPS Depth Profiling MING LUO, University of Delaware, JONATHAN GILBERT, Massachusetts Institute of Technology, CAMERON SHELTON, University of Delaware, MICHAEL RUBNER, ROBERT COHEN, Massachusetts Institute of Technology, THOMAS EPPS, University of Delaware — We present the first experimental, quantitative determination of lithium salt distributions in nanostructured block polymer electrolyte thin films. High resolution C60+ depth profiling X-ray photoelectron spectroscopy (XPS) was employed to resolve the ion distribution in a lamellar forming block polymer electrolyte thin film, which is considered challenging by conventional scattering or electron microscopy techniques. This experimental technique is applicable to investigations of nanoscale distributions of molecules in a myriad of nanostructured polymer thin film systems. Our results have important implications for understanding ion transport in nanostructured polymer systems and provide crucial insights for the future design and optimization of block polymer structures for high efficiency energy storage devices.

Ming Luo
University of Delaware

Date submitted: 13 Nov 2014 Electronic form version 1.4