Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Probing the Reversibility Limit of Lithium Ion Transport in Solid Film Batteries[1] HOWARD WANG, LIWEI HUANG, KAIKUN YANG, Institute for Material Research and Department of Mechanical Engineering, State University of New York, Binghamton, NY 13902, GREGORY DOWNING, Material Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD 20899, ALEC TALIN, PAUL NANEY, Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD 20899, JASON ZHANG, Energy and Environment Directorate, Pacific Northwest National Laboratory, Richland, WA 99352, JON OWEJAN, JEFFREY GAGLIARDO, JEANETTE OWEJAN, Electrochemical Energy Research Laboratory, General Motors Company, Honeoye Falls, NY 14472 — Time-resolved neutron depth profiling (TR-NDP) has been used to measure the lithium distribution in electrode layers of thin film batteries during charge/discharge cycles. TR-NDP data demonstrate quantitatively that ionic transport in electrodes follows the electric current in the external circuits under normal charge/discharge conditions whereas deviates upon sudden structural changes. The reversibility limit of ionic transport has been quantified to indicate the onset of battery failure.

[1]The NIST/ARRA funding through GM is greatly appreciated

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Date submitted: 11 Nov 2011 Electronic form version 1.4