

Abstract Submitted  
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**Use of Atomic Layer Deposition to create homogeneous SRXF/STXM standards**<sup>1</sup> NICHOLAS BECKER, Illinois Institute of Technology, JEFFREY KLUG, Argonne National Laboratory, STEVE SUTTON, University of Chicago, ANNA BUTTERWORTH, ANDREW WESTPHAL, University of California, Berkeley, JOHN ZASADZINSKI, Illinois Institute of Technology, THOMAS PROSLIER, Argonne National Laboratory — The use of Standard Reference Materials (SRM) from the National Institute of Standards and Technology (NIST) for quantitative analysis of chemical composition when analyzing samples using Synchrotron based X-Ray Florescence (SR-XRF) and Scanning Transmission X-Ray Microscopy (STXM) is common. However, these standards can suffer from inhomogeneity in chemical composition and often require further corrections to obtain quantitative results. This inhomogeneity can negatively effect the reproducibility of measurements as well as the quantitative measure itself, and the introduction of assumptions for calculations can further limit reliability. Atomic Layer Deposition (ALD) is a deposition technique known for producing uniform, conformal films of a wide range of compounds on nearly any substrate material. These traits make it an ideal deposition method for producing thin films to replace the NIST standards and create SRM on a wide range of relevant substrates. Utilizing Rutherford Backscattering, STXM, and SR-XRF we will present data proving ALD is capable of producing films that are homogenous over scales ranging from 100 $\mu$ m to 1nm on TEM windows.

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