

Abstract Submitted  
for the MAR14 Meeting of  
The American Physical Society

**X-ray Scattering from Ag (001) and Ag (111) Surfaces in Electrochemical Environments: Dynamics and Structure**<sup>1</sup> ROBERT KARL, JR., MICHAEL PIERCE, Rochester Institute of Technology - School of Physics and Astronomy, VLADIMIR KOMANICKY, Safarik University - Department of Condensed Matter Physics, HOYDOO YOU, ANDI BARBOUR, CHENHUI ZHU, Argonne National Laboratory - Material Science Division, ALEC SANDY, Argonne National Laboratory - Advanced Photon Source — We have investigated the Ag (001) and Ag (111) single crystal surfaces in weak electrolyte using a combination of x-ray Crystal Truncation Rod (CTR) experiments to determine structural information and X-ray Photon Correlation Spectroscopy (XPCS) to examine the nano-scale dynamics. Our structural measurements confirm earlier potential dependent measurements of H<sub>2</sub>O over the Ag (111) surface [1], and also show that the Ag (001) H<sub>2</sub>O interface behaves in an analogous fashion. The XPCS dynamics data reveal how the surface evolves, in real-time, relative to the point of zero charge. Both the CTR and XPCS data were collected at different applied potentials. By comparing the CTR data with the XPCS data, along with ex-situ Atomic Force Microscopy (AFM), we will investigate relationships between the dynamics of the Ag surface and the distribution of H<sub>2</sub>O molecules above the crystal surface. [1] M. F. Toney et al. Nature 368, 444 (1994).

<sup>1</sup>This work and use of the Advanced Photon Source were supported by the U.S. Department of Energy, Office of Basic Energy Sciences, under Contract No. DE-AC02-06CH11357. The work at Safarik University was supported by Slovak grant VEGA 1/0782/12.

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Date submitted: 14 Nov 2013

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