Abstract Submitted
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In-situ coherent x-ray scattering from Ag (001) and Ag (111) surfaces in vacuum and gas-phase environments[1] ROBERT KARL, JR., Rochester Institute of Technology, ANDI BARBOUR, Argonne National Laboratory, VLADIMIR KOMANICKY, Safarik University, CHENHUI ZHU, Rochester Institute of Technology, DANIEL HENNESSY, University of Cincinnati Blue Ash, HOYDOO YOU, Argonne National Laboratory, MICHAEL S. PIERCE, Rochester Institute of Technology — We have been able to obtain X-ray photon correlation spectroscopy (XPCS) quality data from the Ag (001) and Ag (111) surfaces at two different locations along the specular scattering rod. We observe dynamic behavior related to temperature and gas-phase composition. We will present the methods of the XPCS analysis routines, as they have been adapted to this specific system, and the preliminary results for the dynamics, such as step edge motion, island growth, and surface phase transitions, of the Ag surface features in these different conditions. These dynamics are also q dependent and vary from slow at low q, to faster dynamics at positions near the Ag (001) anti-Bragg scattering position where the experimental sensitivity is sufficient to detect changes at a monolayer level. This indicates that the dynamics involved are occurring right at the surface and do not involve multiple layers. These results will then be compared to our recent similar measurements on the Au (001) surface [1].

[1] M.S. Pierce, V. Komanicky, A. Barbour, D.C. Hennessy, A. Sandy, and H. You, Physical Review B 86, 085410 (2012).

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