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Coherent Surface X-ray Scattering: Observation of Pt (001) Step-Flow Motion MICHAEL PIERCE, Department of Physics, Rochester Institute of Technology, DANIEL HENNESSY, KEE-CHUL CHANG, Materials Science Division, Argonne National Laboratory, VLADIMIR KOMANICKY, Faculty of Science, Safarik University, JOSEPH STRZALKA, ALEC SANDY, Advanced Photon Source, Argonne National Laboratory, ANDI BARBOUR, HOYDOO YOU, Materials Science Division, Argonne National Laboratory — We recently [1] observed oscillations of speckle intensities from the Pt (001) surface at high temperatures (T $>$ 1620K), persisting for tens of minutes. Using a model of hex-reconstructed terraces we showed that the observed oscillations come from surface dynamics due to sublimation induced step-flow motion. Our results demonstrate the possibility that coherent surface x-ray scattering (CSXS) can be applied to monitor the real-time evolution of surfaces. Hopefully CSXS can be extended further to in-situ "real-world" environments. This work and the use of the Advanced Photon Source were supported by the U.S. DOE, Office of Basic Energy Sciences under Contract No. DE-AC02-06CH11357. The work at Safarik University was supported by VEGA 1/0138/10 and VVCE-0058-007.

[1] M.S. Pierce, et al., Appl. Phys. Lett. 99, 121910 (2011).

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