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Assessment of In Situ Time Resolved Shock Experiments at Synchrotron Light Sources* J. BELAK, J.H. KINNEY, R. HANKS, C. MAY, R.S. LEE, University of California, Lawrence Livermore National Laboratory, Livermore, CA, J. ILAVSKY, W.-K. LEE, K. FEZZAA, E.M. DUFRESNE, E. LANDAHL, Advanced Photon Source, Argonne National Laboratory, Argonne, IL, J.P. HESSLER, Chemistry Department, Argonne National Laboratory, Argonne, IL — Prior to fielding in situ time resolved experiments of shock wave loading at the Advanced Photon Source, we have performed feasibility experiments assessing a single photon bunch. Using single and poly-crystal Al, Ti, V and Cu shock to incipient spallation on the gas gun, samples were prepared from slices normal to the spall plane of thickness 100-500 microns. In addition, single crystal Al of thickness 500 microns was shocked to incipient spallation and soft recovered using the LLNL e-gun mini-flyer system. The e-gun mini-flyer impacts the sample target producing a 10's ns flat-top shock transient. Here, we present results for imaging, small-angle scattering (SAS), and diffraction. In particular, there is little SAS away from the spall plane and significant SAS at the spall plane, demonstrating the presence of sub-micron voids. ∗Use of the Advanced Photon Source was supported by the U. S. Department of Energy, Office of Science, Office of Basic Energy Sciences, under Contract No. W-31-109-Eng-38 and work performed under the auspices of the U.S. Department of Energy by University of California, Lawrence Livermore National Laboratory under Contract W-7405-Eng-48.

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