Abstract Submitted
for the SHOCK19 Meeting of
The American Physical Society

The Laser Shock Station in the Dynamic Compression Sector XIAOMING WANG, Washington State University, DOUG BROEGE, JAKE BROMAGE, ROBERT EARLEY, DALE GUY, Laboratory for Laser Energetics, University of Rochester, JAMES HAWRELIAK, YUELIN LI, PAULO RIGG, ADAM SCHUMAN, JOHN SETHIAN, NICHOLAS SINCLAIR, YOSHIMASA TOYODA, NICHOLAS WEIR, BRENDAN WILLIAMS, JUN ZHANG, Washington State University, JON ZUEGEL, Laboratory for Laser Energetics, University of Rochester, Y. M. GUPTA, Washington State University — The Laser Shock Station in the Dynamic Compression Sector [Advanced Photon Source (APS), Argonne National Laboratory] links a laser-driven shock compression platform with high energy x-ray pulses from the APS to achieve *in-situ*, time-resolved x-ray diffraction measurements in materials subjected to well-characterized, high stress, short duration planar shock waves. The laser shock driver, a highly reproducible, 100J laser system (351nm) with pulse shaping, beam shaping and smoothing, and energy tuning capabilities, produces shock waves in samples over a broad range of stresses. Synchronization of the laser-generated shock wave to within 300ps of a single x-ray pulse allows detailed investigations of shock-induced structural changes at the atomistic level (with simultaneous continuum measurements using laser interferometry). With the capability of one shot every 30 minutes, the Laser Shock Station offers a highly versatile and productive platform for dynamic compression science. A detailed description of this capability – along with representative results – will be presented. Work supported by DOE/NNSA.

Paulo Rigg
Washington State University

Date submitted: 28 Feb 2019 Electronic form version 1.4