Abstract Submitted for the SHOCK19 Meeting of The American Physical Society

**Temperature measurements to complete equations of state**<sup>1</sup> MINTA AKIN, RYAN CRUM, YEKATERINA OPACHICH, Lawrence Livermore Natl Lab, ERIC DUTRA, MSTS, DAVID BRANTLEY, DAWN GRANINGER, MARKUS DAENE, PHILIP MYINT, RICKY CHAU, Lawrence Livermore Natl Lab — We report on progress toward obtaining a complete equation of state for materials such as LiF, Sn, and Fe by determining bulk temperature under dynamic compression. This effort uses simultaneous radiance and reflectance measurements using streak spectroscopy and optical pyrometry, coupled with advanced models of heat transport at high pressure. T is determined through comparison of reflected and emitted light, enabling an emissivity-corrected graybody emission calculation of interface temperatures evolving in time. Simulations are used to determine the relative sensitivity of temperature gradients within and across materials, the effects of poorly constrained temperature and thermal diffusivity values in equation of state models, and the effects of release wave propagation upon the interface and heat transport measurements.

<sup>1</sup>This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

Minta Akin Lawrence Livermore Natl Lab

Date submitted: 28 Feb 2019

Electronic form version 1.4