

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

X-Ray Spectroscopy of Rapidly Heated Buried-Aluminum Layers C.R. STILLMAN, P.M. NILSON, C. MILEHAM, D.D. MEYERHOFER, D.H. FROULA, Laboratory for Laser Energetics, U. of Rochester, M.E. MARTIN, R.A. LONDON, LLNL — The thermal x-ray emission spectrum from rapidly heated solid targets containing a buried-aluminum layer was measured. The targets were driven by high-contrast 1ω or 2ω laser pulses at focused intensities up to 1×10^{19} W/cm². Aluminum thermal lines in the 1.5- to 2-keV spectral range were measured with time-integrated and time-resolved spectrometers. The average plasma conditions in the buried layer were inferred by fitting x-ray spectra from a collisional-radiative atomic physics model to the measured data. The achievement of dense, high-temperature plasma conditions with an intense 2ω drive will be discussed. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944 and the Stewardship Science Graduate Fellowship Grant Number DE-NA0002135.

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Date submitted: 21 Jul 2015

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