

Abstract Submitted
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Creating Uniform Temperature Solid Density Plasmas with Intense Femtosecond Lasers¹ K. GEORGE, S. JIANG, The Ohio State University, S. WILKS, A. LINK, Lawrence Livermore National Laboratory, D.W. SCHUMACHER, R.R. FREEMAN, K.U. AKLI, The Ohio State University — The isochoric heating of reduced mass targets was investigated with the SCARLET laser using 10J, < 100 fs pulses. Laser intensity (focal spot size) as well as target dimensions (transverse and longitudinal) were varied in an effort to generate plasmas of uniform temperature and density. XUV imaging at 68 eV was employed to infer spatially resolved temperature maps while K-alpha spectroscopy was used to determine bulk target temperature. For 100 micron diameter, 3 micron thick Al/Cu/Al disk targets a bulk temperature in excess of 50 eV was achieved at solid density over a spatial temperature scale length of approximately 70 microns. A reduction of the target thickness and thus total mass was observed to increase target temperature.

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