Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Radiative Effects on Direct Drive Implosion Temperatures[1] J.A. KOCH, H.-K. CHUNG, R. HEETER, W. HSING, R.W. LEE, A. MILES, H.-S. PARK, H. ROBEY, H. SCOTT, R. TOMMASINI, Lawrence Livermore National Laboratory, J. FRENJE, C.K. LI, R. PETRASSO, Plasma Science and Fusion Center, Massachusetts Institute of Technology, V. GLEBOV, University of Rochester, Laboratory for Laser Energetics — We have performed experiments at the Omega Laser Facility to measure time-resolved electron (Te) and ion temperature (Ti) in implosion plasmas. These experiments used direct laser drive on thin glass shells filled with a mixture of D, ^{3}He, Kr, and Xe, and used neutron and proton emission to diagnose Ti along with x-ray emission to diagnose Te. The Kr dopant serves as an optically-thin tracer for Te measurements via K-shell spectroscopy, while the Xe dopant enhances radiation losses and alters time-dependent temperatures through the shock and compression phases. These experiments are intended to establish an experimental platform for studying the energetics effects of high-Z dopants in hot, dense plasmas, including ignition plasmas at the National Ignition Facility. We describe the experiments and the supporting hydrodynamics simulations.

[1]This work was performed under the auspices of the U.S. Department of Energy by the University of California Lawrence Livermore National Laboratory under contract No. W-7405-ENG-48.

Jeffrey Koch
Lawrence Livermore National Laboratory

Date submitted: 23 Jul 2007 Electronic form version 1.4