

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

X-Ray Spectral Measurements of Cryogenic Capsules Imploded by OMEGA F.J. MARSHALL, J.P. KNAUER, T.C. SANGSTER, J.A. DELETREZ, P.W. MCKENTY, R. EPSTEIN, V.N. GONCHAROV, B. YAAKOBI, Laboratory for Laser Energetics, U. of Rochester — A set of absolutely calibrated, x-ray imaging systems have been used to measure the emergent x-ray spectra from cryogenic D₂- and DT-filled capsules imploded by the OMEGA UV Laser System. The imaging systems include both pinholes and Kirkpatrick–Baez microscopes, all dispersed by transmission gratings. The shapes of the observed spectra allow for inference of the core electron temperature (kT_e) and in selected cases the surrounding main-fuel-layer areal density (ρR_{fuel}). The latter determination is dependent on the assumed temperature and density in the fuel layer and hence can only place bounds on the quantity ρR_{fuel} . Comparisons of these measurements with both one- and two-dimensional hydrocode simulations are used in part to evaluate the performance of these implosions. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement DE-FC52-92SF19460.

D.D. Meyerhofer
Laboratory for Laser Energetics, U. of Rochester

Date submitted: 18 Jul 2007

Electronic form version 1.4