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Measurements of T_e and Z in Direct-Drive, Shock-Heated Planar Targets H. SAWADA, S.P. REGAN, T.R. BOEHLY, I.V. IGUMENSHCHEV, V.N. GONCHAROV, F.J. MARSHALL, B. YAAKOBI, T.C. SANGSTER, D.D. MEYERHOFER, Laboratory for Laser Energetics, U. of Rochester, G. GREGORI, D.G. HICKS, S.H. GLENZER, O.L. LANDEN, LLNL — The shell conditions in a direct-drive imploding capsule encompass many states of matter (i.e., Fermi degenerate to strongly coupled and ideal plasmas). Spectrally resolved x-ray scattering is used to infer T_e and Z in planar CH foils irradiated with peak intensities up to 1×10^{15} W/cm^2, generating drive pressures in the 5 to 50 Mbar range. Just after shock breakout, the uniformly compressed portion was irradiated with 9.0 keV x rays from a Zn backlighter. The x rays scattered at either 90° or 120° were dispersed with a Bragg crystal and recorded with an x-ray framing camera. The T_e and Z inferred from spectral line shapes of the elastic Rayleigh and inelastic Compton components will be presented and compared with other diagnostic techniques. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-92SF19460.

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