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Category Number and Subject: 4.6.0 Fast ignition and shock ignition

[] Theory [x] Experiment

Study of Fast Electron Transport into Imploded High-Density Plasmas Using Cu-doped CD Shell Targets,* MS Wei, RB Stephens, A Greenwood, D Hoover, N Alfonso, H Huang, E Giraldez, *GA*; LC Jarrott, H Sawada, FN Beg, *UCSD*; W Theobald, C Stoeckl, *LLE*; MH Key, P Patel, C Chen, H McLean, *LLNL*; T Yabuuchi, H Habara, *Osaka U* — Details of fast electron transport and energy coupling into the imploded high density plasma core are characterized using fluorescence from Cu added to the CD shell of a cone-guided Fast Ignition (FI) target. Like previous integrated FI experiments [1], this work uses the OMEGA 60 beams (18 kJ) for fuel assembly, and the high intensity EP beam (10 ps, 1.5 kJ, $I_{\text{peak}} > 10^{19}$ W/cm²), focused onto the inner cone tip, to produce fast electrons. Transport and energy coupling are diagnosed by measuring the induced Cu K-shell x-ray radiation (total yield and spatial distribution) from the imploded Cu-doped shell, complemented with neutron yield measurement. The escaped electron energy spectra are also recorded at several angles. Experimental results and comparison to Monte-Carlo and hybrid PIC calculations will be presented.

[1] W Theobald et al., *Phys. Plasmas* **18**, 056305 (2011).

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