Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

**Time resolved inner-shell spectroscopy of laser produced plasmas using a HOPG crystal in Von Hamos geometry**[1] R.L. WEBER, R.R. FREEMAN, L. VAN WOERKOM, The Ohio State University, A.J. MACKINNON, A.G. MACPHEE, R. DICKSON, D. HEY, Lawrence Livermore National Lab, F. KHATTAK, E. GARCIA SAIZ, D. RILEY, Queens University of Belfast, S.N. CHEN, F. BEG, University of California, R.B. STEPHENS, General Atomics, M. NOTLEY, D. NEELY, G. GREGORI, Rutherford Appleton Laboratory — Time resolved heat transport in warm dense matter, an essential component of the Fast Ignition concept, has been studied using inner-shell spectra from Ti and Al/Ti/Al foils. Thermal emission is generated by irradiation with either 527 nm and 1ns or 1053 nm and 5 ps pulses using the Vulcan laser at RAL. Fluorescence emission was recorded with a ZYA grade HOPG crystal used in mosaic focusing mode and Von Hamos geometry. The crystal was coupled with a Kentech Low Magnification Streak Camera, fitted with a fluffy CsI photocathode, providing a temporal resolution of about 50 ps. Although the small dynamic range of the streak camera restricts measurement of the full duration of He-alpha emission, our data indicates that the FWHM duration of the resonance line is approximately 1.5 ns when the Ti foil is irradiated with 1 ns pulses.

[1]This work was partially funded by the US DOE by the University of California Lawrence Livermore National Laboratory under contract no. W-7405-ENG-48 and by the US Office of Fusion Energy Science.

Rebecca Weber
The Ohio State University

Date submitted: 20 Jul 2006 Electronic form version 1.4