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Analysis of pinhole spatially-resolved spectra from Ti-doped implosions at OMEGA[1] TIRTHA JOSHI, HEATHER JOHNS, DANIEL MAYES, TUNAY DURMAZ, ROBERTO MANCINI, University of Nevada, Reno, RICCARDO TOMMASINI, Lawrence Livermore National Laboratory, SEAN REGAN, JACQUES DELETTREZ, Laboratory for Laser Energetics, TAISUKE NAGAYAMA, Sandia National Laboratories — We discuss the observation and analysis of spectrally-resolved images from direct-drive OMEGA implosions. The targets were deuterium filled, spherical plastic shells of varying thicknesses and gas pressures with a submicron Ti-doped tracer layer at the fuel-shell interface. The Ti spectral signature is primarily observed at the collapse of the implosion and recorded with a streaked spectrometer and three identical gated, multi-monochromatic imager (MMI) instruments fielded along quasi-orthogonal lines-of-sight. Both streaked and gated data show simultaneous emission and absorption spectral features associated with Ti K-shell line transitions. The spectrally-resolved images recorded with MMI were processed to obtain narrow-band images[2] and spatially-resolved spectra characteristic of contour regions on the image[3] Two different spectroscopic methods were used to extract electron temperature and density, and mixing of the Ti into the core. Results are presented for experiments performed with different shell thicknesses, filling pressures and laser pulse shapes.

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[2]T. Nagayama, et al, J. App. Phys. **109**, 093303 (2011).
[3]T. Nagayama, et al, Phys. Plasmas **19**, 082705 (2012).

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