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The Use of Ti K-shell Emission Spectroscopy as a Tracer for Fuel/Ablator Mix in Directly Driven Microballoon Implosions DONALD HAYNES, MARK GUNDERSON, DOUGLAS WILSON, GEORGE KYRALA, Los Alamos National Laboratory, SEAN REGAN, Laboratory for Laser Energetics — Radiative hydrodynamic simulations of a recent series of directly driven microballoon implosions indicate that the central region of the core reaches temperatures sufficient to populate the hydrogenic ionization stage of titanium. Introducing a very thin (1000 Angstrom) layer of titaniated plastic at the inside surface of the ablator, we use time resolved spectroscopy in the photon energy range of the alpha transitions in hydrogen- and helium-like Ti to determine the time dependence of the intrusion of ablator material into the central core of these implosions. Here, we present the motivation for these experiments, pre-shot modeling and details of the NLTE, Stark-broadened Ti K-shell emission model used in the analysis of these experiments. (LA-UR-05-5606)

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