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The Effect of High-z Impurities on Implosions and Burn in SiO_2 Shells. GEORGE KYRALA, DOUGLAS WILSON, JOHN BENAGE, MARK GUNDERSON, Los Alamos National Lab, Los Alamos, NM, RICHARD PETRASSO, JOHAN FRENJE, M.I.T, Boston, MA, WARREN GARBETT, STEVEN JAMES, AWE, Aldermaston, UK, BARUKH YAAKOBI, LLE, Univ of Rochester, NY — Impurities in imploding capsules affect the equilibration among the three temperatures: ion, electron and radiation temperatures. The changes in the ion temperature and the transport properties then affect the burn of DT within an imploding shell. We have started an initiative to explore the physics of ignition and burn in high Z capsules through both theory and experiments now possible using innovative fabrication techniques. The goal of this work is to create a viable high Z shell ignition and burn program for NIF. In this work, we have fielded thin l mm diameter glass shells overcoated with plastic and filled with varying amounts of xenon and krypton gas to study the progression from non- equilibrium to equilibrium burn as the dopant gas concentration is increased. While a normal glass capsule with a plastic overcoat loses energy to radiation during compression, the high Z shell confines the radiation even as equilibrium burn is approached. The shells also used some fill of ^{3}He to measure the proton spectrum from the D^{3}He reaction to measure the target temperature and ρR. We will discuss the results of these first experiments and show the variation of the yield with doping concentration.

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