

Abstract Submitted
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Progress on Liquid Cryogenic Capsule Development for Fast Ignition with Z-Pinch-Driven Fuel Assembly D.L. HANSON, R.A. VESEY, D.B. SINARS, M.E. CUNEO, S.A. SLUTZ, J.L. PORTER, Sandia National Laboratories, C. RUSSELL, D.G. SCHROEN, Schafer Corp., R.R. JOHNSTON, K. YOUNGMAN, Ktech Corp. — We are currently developing a pulsed-power-based approach to fast ignitor fuel assembly where intense thermal x-rays from a z-pinch implosion drive the compression of a hemispherical fuel capsule in a vacuum secondary hohlraum. This asymmetric drive configuration, with hemi-capsule motion constrained by a planar high density glide surface, opens up new design possibilities for indirect-drive cryogenic fuel capsules. As an alternative to foam-stabilized cryogenic solid fuel layers, we are investigating cryogenic fast ignition capsules with a liquid fuel layer confined between a thick outer ablator shell and a thin inner shell. Several approaches are being explored for fabrication of thin (3-5 μm) inner shells. Progress toward demonstration of a working capsule will be presented. Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under Contract DE-AC04-94AL85000.

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