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Overview of Double Shell Designs and Challenges for Fabrication and Diagnostics[1] S.H. BATHA, D.S. MONTGOMERY, W.S. DAUGHTON, E.C. MERRITT, E.S. DODD, D.C. WILSON, T. CARDENAS, J.L. KLINE, Los Alamos National Laboratory — Double shell capsules are predicted to ignite and burn at relatively low temperatures ($\sim$ 3 keV) via volume ignition, and are a potential low-convergence path to substantial α-heating and ignition on NIF. Double shells consist of a dense, high-Z pusher, which first shock heats then performs PdV work on a DT fuel volume, bringing the entire fuel volume up to high pressure thermonuclear conditions near implosion stagnation. The high-Z pusher is accelerated via a shock and subsequent collision from an ablatively-driven low-Z outer shell. A broad capsule design parameter space exists due to the inherent flexibility of potential materials for the outer and inner shells and intervening foam cushion. This is narrowed down by design physics choices and the ability to fabricate and assemble a double shell capsule. We describe tradeoffs in various design choices for double shell capsules, and challenges for capsule fabrication. The dense, high-Z inner shell also presents diagnostic challenges and opportunities, which we will present.

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