Abstract Submitted
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Instability growth seeded by ablator material inhomogeneity in implosions on the National Ignition Facility[1] S.W. HAAN, S.H. BAXAM-USA, P.M. CELLIERS, G.W. COLLINS, D.S. CLARK, A. NIKROO, M. STADERMANN, D.D. HO, N.B. MEEZAN, V. SMALYUK, C.R. WEBER, Lawrence Livermore National Laboratory, H. HUANG, D.E. HOOVER, A.Q.L. NGUYEN, W. REQUIERON, K.P. YOUNGBLOOD, General Atomics, J.L. KLINE, A.N. SIMAKOV, D.C. WILSON, S.A. YI, Los Alamos National Laboratory — Previous work [Physics of Plasmas 22, 032708 (2015)] on instability growth seeded by oxygen in CH NIF capsules has been extended. Oxygenation of CH can be caused by exposure to X-rays, UV, or visible light, such that irregularities in oxygen are very likely to dominate surface roughness as seed for instabilities in CH NIF implosions. 3D Rayleigh-Taylor experiments show structure that can most plausibly be explained as resulting from this oxygen. Experiments are planned on Omega and NIF to validate this phenomenon, which is still primarily simulation-motivated. Design work and available results for these experiments will be described. The oxygenation of CH might be mitigated by a coating of aluminum oxide on the outside of the shells. Growth is also seeded in Be shells, by density and composition non-uniformity from both oxygen and Ar, and in High Density Carbon shells by density nonuniformity. We present updated requirements for these nonuniformites, and compare to characterization of current shells.

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