

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Results from and Plans for the Development of the MARBLE Platform for Studying Thermonuclear Burn in the Presence of Heterogeneous Mix on OMEGA and the National Ignition Facility¹ T.J. MURPHY, M.R. DOUGLAS, J.R. FINCKE, J.A. COBBLE, B.M. HAINES, C.E. HAMILTON, M.N. LEE, J.A. OERTEL, R.E. OLSON, R.B. RANDOLPH, D.W. SCHMIDT, R.C. SHAH, J.M. SMIDT, I.L. TREGILLIS, Los Alamos National Laboratory — Work is underway to develop the MARBLE ICF platform for use on OMEGA and NIF in experiments to quantify the influence of heterogeneous mix on fusion burn. This platform consists of a plastic (CH) capsule filled with a deuterated plastic foam (CD) with a density of a few tens of milligrams per cubic centimeter, with tritium gas filling the voids in the foam. In order to affect the morphology of the mix, engineered foams with voids of diameter up to 100 microns will be utilized. The degree of mix will be determined from the ratio of DT to DD neutron yield. Experiments have been performed on OMEGA and are planned for NIF to develop techniques and verify that with uniform fine-pore foam, these implosions behave like atomically mixed plastic and gas. Results will be reviewed and future experiments discussed.

¹This work is supported by US DOE/NNSA, performed at LANL, operated by LANS LLC under contract DE-AC52-06NA25396.

Thomas Murphy
Los Alamos National Laboratory

Date submitted: 21 Jul 2015

Electronic form version 1.4