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**Layering and Characterization of Cryogenic-DT Targets for OMEGA** D.H. EDGELL, R.S. CRAXTON, L.M. ELASKY, D.R. HARDING, L.S. IWAN, R.L. KECK, L.D. LUND, S.J. VERBRIDGE, A. WEAVER, M.D. WITTMAN, W. SEKA, Laboratory for Laser Energetics, U. of Rochester — The Laboratory for Laser Energetics has begun layering, characterizing, and imploding DT-ice-layer cryogenic targets on OMEGA. Shadowgraphic characterization protocols for $D_2$ ice layers in OMEGA cryogenic targets developed over several years have been modified for DT. In $D_2$ layers, three-dimensional, ice-layer analysis identifies the major cause of nonuniformity as temperature perturbation from IR absorption in the target support structures. $D_2$ surface-averaged, rms-roughness ranges from 1.7 to 8 $\mu$m were observed. DT layers are formed using beta layering, eliminating IR heating and its absorption by the target support structures. Initial results indicate that the major nonuniformities observed in $D_2$ targets have been eliminated and layers with surface-averaged rms roughness $<2$ $\mu$m have been formed. New challenges have arisen for DT layering, requiring changes in the layering protocols. Three-dimensional, DT-ice-layer characterization has identified a new dominant perturbation in ice-layer uniformity consistent with fractionation at the point of initial freezing. Automation of the layering process has been initiated to minimize the time and effort required to form quality layers. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-92SF19460.

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