

Abstract Submitted
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Measurement of the Si Mass Ablation Rate in Direct-Drive Implosions on the OMEGA Laser System A.K. DAVIS, D.T. MICHEL, I.V. IGUMENSHCHEV, R.S. CRAXTON, R. EPSTEIN, V.N. GONCHAROV, S.X. HU, T.C. SANGSTER, D.H. FROULA, Laboratory for Laser Energetics, U. of Rochester — The Si mass ablation rate in direct-drive inertial confinement fusion implosions was measured using a pinhole x-ray framing camera on the OMEGA Laser System. In targets consisting of a Si layer over a CH layer, two x-ray self-emission peaks from the coronal plasma were measured once the laser burned through the higher- Z outer layer. The location of the inner peak is related to the position of the ablation front and the location of the outer peak corresponds to the position of the interface of the two layers. The emergence of the interface peak was used to measure the burn-through time of the outer layer, giving its average mass ablation rate. By repeating this experiment for different outer-layer thicknesses, time-resolved measurements of the mass ablation rate were obtained. Simulations validated the methods and verified that the measurement techniques are not sensitive to perturbation growth at the ablation surface. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

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