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Observations of the Ablative Richtmyer-Meshkov Effect Relevant to Indirect-Drive Inertial Confinement Fusion ERIC LOOMIS, LANL, DAVE BRAUN, LLNL, STEVE BATHA, LANL, OTTO LANDEN, LLNL — Recent simulations and experiments have shown that isolated features on the outer surface of Inertial Confinement Fusion (ICF) ignition capsules can profoundly impact capsule performance by leading to material jetting or mixing into the hotspot. Controlling the growth of these artifacts is complicated due to uncertainties in equation of state (EOS) models used in simulation codes. Here we report on measurements pertaining to the growth and decay of isolated defects due to x-ray ablation Richtmyer-Meshkov in CH capsules in order to validate these models. Face-on transmission radiography was used to measure the evolution of Gaussian bump arrays in plastic targets. Au halfraums heated to radiation temperatures near 70 eV using 15 beams in a 7.5 ns pulse from the Omega laser (Laboratory for Laser Energetics, University of Rochester, NY) indirectly drove the samples while simultaneous radiographs from Ta and Y backlighter foils were recorded. Shock speed measurements were also made with Omega's Active Shock Break Out (ASBO) diagnostic in conjunction with the x-ray flux recorded by a soft x-ray power diagnostic (DANTE) were used to determine drive conditions in the target. Measurements of 5 micron tall, 17 micron wide bumps show a decrease in bump areal density between 4.5 and 7.5 ns while 33 micron wide bumps saturate near 3 ns consistent with LEOS 5310 and SESAME 7592 simulations.

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