Deterministic Fabrication and Characterization of Fill Tube Surrogate Targets for OMEGA Experiments Using a Polymer Stalk*

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Equipment and techniques have been developed for the fabrication of fill tube surrogate targets for OMEGA experiments. The fill tube is attached manually by heating 4000 MW poly(alpha-methylstyrene) in a fixed reservoir, which can be touched onto the capsule surface and pulled into the shape of a fill tube. The joint is uniform and robust with diameters of no less than 20 μm. Various surrogate dimensions can be achieved by modifying temperature and technique with reproducible results within 5 μm. After attachment, the capsules are mounted to trim the surrogate to a desired length on a calibrated stage. Characterizing the surrogates involves a high magnification automated microscope to measure the fillet diameter, length, and width at various angles. Details of the novel and heating reservoir and pulling techniques will be presented. These new techniques are also being applied to fabrication of improved momolithic fill tubes for LLE.

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