

Fabrication of Fast Ignition Targets*

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Fast ignition is a novel scheme for achieving laser fusion. For recent campaigns, General Atomics has been fabricating and assembling cone mounted shells for use as fast ignition targets. Fabrication of such targets requires producing appropriate cones and shells, assembling the targets, and characterization of the assembled targets. The cones are produced using micromachining and plating techniques. The shells are fabricated using the depolymerizable mandrel technique followed by micromachining a hole for the cone. Precise alignment of the cone tip with respect to the center of the shell is a crucial step in the assembly of the target. Characterization of these targets is complicated by the presence of the cone which blocks some viewing angles and scatters light sources. This presentation gives an overview of the developmental efforts, technical issues and a range of possibilities for each fabrication step. In particular, the recent fabrication of two types of targets is discussed. The first involved gas filled targets, which were recently shot at the OMEGA laser facility. The second involved development of copper-doped plasma polymer coatings used in fabrication of copper-doped fast ignition targets for experiments at RAL.

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