

Coating and Mandrel Effects on Fabrication of Glow Discharge Polymer NIF Scale Indirect Drive Capsules*

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Targets for the National Ignition Facility (NIF) need to be about 200 μm thick and 2 mm in diameter. Such thick walls are well beyond the thicknesses currently fabricated on a routine basis. We have investigated fabrication of near NIF scale targets using the depolymerizable mandrel technique. In this study, we used PAMS mandrels, about 2 mm in diameter, of varying qualities. These mandrels were coated with as much as 125 μm of glow discharge polymer (GDP). The surface finish of the final shells was examined using scanning electron and atomic force microscopy. Shells satisfying the current NIF standard were fabricated. A clear dependence of the surface finish and modal spectrum on the quality of the initial PAMS mandrels was observed. Isolated features were found to be the greatest cause for the deterioration of the modal power spectrum.

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