

Abstract Submitted  
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**Fabrication of Graded Germanium-doped CH Shells<sup>1</sup>** K.-C. CHEN, H. HUANG, A. NIKROO, General Atomics, S. LETTS, R. COOK, Lawrence Livermore National Laboratory — One of the capsule designs for achieving ignition on the National Ignition Facility (NIF) is a 2 mm diameter graded germanium-doped plastic (CH) shell with a 160  $\mu\text{m}$  thick wall. The graded Ge-doped design allows a somewhat relaxed outer surface finish requirement than the original uniformly Ge-doped CH design. We produced Ge-doped shells that met nearly all the NIF design specifications using plasma-assisted polymer deposition with  $(\text{CH}_3)_4\text{Ge}$  as the doping source. The Ge concentration, layer thickness and surface smoothness were determined by quantitative contact radiography, x-ray fluorescence analysis, and atomic force microscopy. The shell has an inner 10  $\mu\text{m}$  undoped CH layer, followed by 481  $\mu\text{m}$  of 0.83 atom % Ge-doped CH, 10  $\mu\text{m}$  of 0.38 atom % Ge-doped CH and then 90  $\mu\text{m}$  of undoped CH, with an outer surface rms roughness of  $\sim 24$  nm (modes 10-1000). A few isolated surface domes about 1  $\mu\text{m}$  high and 20  $\mu\text{m}$  in diameter were present.

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