

Abstract Submitted  
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**Ignition Capsule with High Density Carbon Ablator for NIF<sup>1</sup>**

D. HO, S. HAAN, LLNL, M. HERMANN, Sandia National Laboratory, J. SALMONSON, LLNL — An ignition capsule with nano-crystalline high density CVD carbon ablator is emerging as one of the principal configurations for NIF because it offers several advantages. (1) With the same outer radius, the higher density ablator absorbs more energy than the beryllium ablator. (2) The carbon ablator formed by vapor deposition can have smaller and more uniform grains than beryllium. Rapid progress is being made in target fab in reaching ignition specs. (3) The higher density reduces coupling of the DT ice surface and the ablator/ice interface from the unstable ablation front, reducing growth of perturbations seeded by ice roughness and inner shell roughness. Possible disadvantages are: (1) The ice surface might in fact be rougher because of differences in the beta-layering in C vs Be. (2) The outer surface needs to be smoother because of slightly lower ablation rates, and because a given surface roughness corresponds to a larger mass perturbation. Overall the carbon ablator has good stability behavior, especially at the ablator-fuel interface. We will present 1-D design for capsules operating at 270 and 300 eV peak hohlraum temperatures, 2-D stability calculations, and melt behavior after the passage of the 2<sup>nd</sup> shock.

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