

Abstract Submitted  
for the DPP02 Meeting of  
The American Physical Society

Sorting Category: 8.0.0 (Experimental)

**Plasma Diagnostics for Plasma Polymer Coatings Used in Fabrication of Thin Wall CH Shells for Direct Drive OMEGA Cryogenic Experiments**<sup>1</sup> P. ROSS, A. NIKROO, D. CZECHOWICZ, M. DICKEN, General Atomics — High aspect ratio CH shells,  $\approx 1 \mu\text{m}$  thick,  $900 \mu\text{m}$  diameter, are crucial for the success of the cryogenic direct drive inertial confinement fusion (ICF) experiments at the OMEGA laser facility at the University of Rochester's Laboratory for Laser Energetics (LLE). Plasma polymer coatings are currently used in fabrication of such shells, which can be made substantially stronger by altering parameters. High strength is important for inherently fragile high aspect ratio shells. The plasma characteristics used in the deposition process were studied in order to determine a correlation between the plasma parameters and the strength of shells. Several plasma processing parameters such as deposition pressure, power and relative and absolute gas flow rates were varied. The plasma was studied using several techniques such as optical emission spectroscopy, Langmuir probe diagnostics, and mass spectrometry. These diagnostic results were then correlated with direct measurements of the target strength (burst testing and buckle testing) and permeability to determine the ideal parameters for creating the strongest and most permeable ICF targets.

<sup>1</sup>Work supported by US DOE Contract DE-AC03-01SF22260.

Prefer Oral Session  
 Prefer Poster Session

P. Ross  
abbas.nikroo@gat.com  
General Atomics

Date submitted: July 19, 2002

Electronic form version 1.4