

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Fundamental Limits on the Maximum Aspect Ratios of Laser Drilled Holes¹ A.C. FORSMAN, E.H. LUNDGREN, A.M. KOMASHKO, General Atomics — The drilling of $<6 \mu\text{m}$ diameter holes in $170 \mu\text{m}$ deep shells has been demonstrated using a nanosecond laser system that produces a formatted pulse output where each laser shot consists of a pair of timed nanosecond laser pulses. This work was done to enable gas fills in beryllium capsules for inertial confinement fusion experiments. This is an involved goal in laser process development. The interplay of material characteristics, hydrodynamic flows, and laser-matter interactions have been studied. The drilling process will be described, as well as possible limitations on the maximum ratio of hole depth to hole width that are imposed by the laser matter interactions, the material properties and the laser produced plasmas themselves.

¹Supported by the US DOE under DE-AC52-06NA27279.

R.B. Stephens
General Atomics

Date submitted: 24 Jul 2007

Electronic form version 1.4