

**Abstract Submitted for the Forty-Ninth Annual Meeting  
Division of Plasma Physics  
November 12–16, 2007, Orlando, Florida**

Category Number and Subject:

Theory     Experiment

**Fundamental Limits on the Maximum Aspect Ratios of Laser Drilled Holes,\*** 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.

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