

SPIE Optics and Photonics  
OEI402  
August, 2006

## **High Energy Laser Detonation - A Comparison of Four Optical Designs**

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### Abstract

OASYS Technology has performed design and fabrication of high-energy laser detonation devices for Los Alamos National Laboratories to demonstrate the feasibility of detonating high explosive by focusing the energy from a fiber-coupled, high energy laser onto a metallized window surface. A high explosive package containing the metallized window keeps the high explosive material isolated from the ambient environment until activated by the vaporization of the window metal film by the laser. The package constraints for these designs require a right angle turn that must be achieved by reflection, since the minimum bend radius of the fiber is substantially larger than the desired package size. Four optical designs were proposed and fabricated to compare survival and detonation efficiency. This paper will discuss the design requirements, fabricated designs, test methods and results, and conclusions.