

2 mm Beryllium Shell Fabrication for Sandia National Laboratories*

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2 mm beryllium targets pressurized with ~ 20 atm of a deuterium – 0.4 at. % argon gas mixture are fabricated for implosions on the Z-pinch facility at Sandia National Laboratories leading to record neutron yields. This paper will discuss the process of fabricating such pressurized target from an intact shell. These processes include laser drilling a ~ 15 μm diameter fill hole in the shell, removing the CH mandrel by pyrolysis, pressurizing the target with a deuterium/argon gas mixture and sealing the fill hole while under pressure with UV glue. The targets were characterized for gas pressure and deuterium gas permeation half-life by utilizing techniques including scanning electron microscopy (SEM), x-ray fluorescence spectroscopy (XRF), mass spectrometry and controlled shell bursting.

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