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Theory Experiment

Density Uniform and Surface Characterization of Tantalum Oxide Aerogel for Radiation Transport Experiments,* J.F. Hund, C.A. Frederick, A.P. Tipton, E.M. Giraldez, J.L. Kaae, C.A. Back, M.L. Hoppe, Jr., *General Atomics* – Tantalum aerogel was fabricated and machined at General Atomics for radiation transport experiments at the OMEGA laser facility. These targets are machined into small disks from 250 or 500 mg/cc tantalum oxide aerogel. During machining, differences in density uniformity and machining characteristics were observed in some of the aerogels. Ultimately, rough surfaces or intrinsic density variations in the sample can lead to areal density non-uniformities that can affect the experiment. Using contact radiography, optical profilometry, and scanning electron microscopy the surface roughness and areal density uniformity were quantified. This information was used to improve the synthesis procedure of the bulk aerogel material to fabricate more uniform aerogel targets and provide input for comparison shot data of experiment vs modeling data.

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