

Fabrication and Characterization of Be flats for Omega Experiments*

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Different configurations of sputtered beryllium are needed for inertial confinement fusion experiments on the OMEGA laser at the Laboratory for Laser Energetics (LLE) of the University of Rochester. The configurations differ in shape of the Be-coated sample, chemical make-up, and thickness. Freestanding Be foils with three 200 μm -wide steps of heights 15, 30 and 45 μm have been successfully fabricated through a process of sputtering Be onto a machined substrate and polishing to the desired thickness. The substrate is then leached away to leave the free-standing foil. A freestanding Be foil with ripples across the entire surface has also been fabricated. The ripples have a 50 μm wavelength and amplitude of 0.25 μm . Foils that will be fabricated for the OMEGA experiments will be doped with copper to 1 at. %. We will present the process of fabricating these specialized beryllium samples, including how the Cu-doped beryllium is deposited and then polished to the required dimensions by a series of breakpoint thickness measurements. A detailed description of the techniques used to characterize the final freestanding foils will be shown, including x-ray fluorescence spectroscopy (XRF), scanning electron microscopy (SEM), interferometry, 3-dimensional x-ray imaging, and contact radiography.

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