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Optimization of Polishing Techniques to Reduce Foil Thickness Variation.[1] NINA LANGLEY, University of California, San Diego, WENDI SWEET, EDUARDO MARIN, General Atomics — Thin foils of Beryllium (Be) and Depleted Uranium (DU) are used in detection applications for plasma and radiation experiments. To improve foil performance, a new standard method for polishing foils was created to reduce thickness variation to +/-2 μm and produce repeatable foil thicknesses. Using non-hazardous metals as surrogates to Be and DU, the results from increased automation and varying polishing times & pressures were compared against previous methods, whose thickness variation neared +/-10 μm. Metal foils of Aluminum (Al), Tin (Sb), Silver (Ag) and Gold (Au) with diameters from 3 mm to 12.5 mm were polished to target thicknesses of 5 μm, 10 μm, and 40 μm. Topographies of the foils were inspected to determine reproducibility of thickness variation within specification using Dual Confocal Microscope (DCM) imaging and White-light Interferometry Microscope (WIM) imaging.

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Nina Langley
University of California, San Diego

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