

## **Fabrication challenges of the Materials targets at NIF**

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The laser performance available on the National Ignition Facility (NIF) has opened the doors on a new portion of the material property domain reachable for study in a laboratory. Pressures and densities that can be achieved on NIF are one-of-a-kind, which emphasizes the importance of the Materials targets. In parallel to the increase of the number of targets produced per year at the Lawrence Livermore National Laboratory Target Fabrication Group to the NIF overall 400-shot-a-year rate, these Materials targets have become more complex, forcing process improvements, productivity gain and a large target engineering effort.

In this poster, we will discuss the challenges and solutions to precision fabrication and assembly of these components that have enabled acquiring critical data on diverse materials in terms of strength (“Strength” targets), diffraction (“TARDIS” targets, for “TARget Diffraction In Situ”) and Equations Of State (EOS targets) on NIF. We will especially review the importance of mastering the glue layer thickness and uniformity for all Materials targets and we will describe the technique we developed to bond materials and make glue-less Vanadium-Lead and Vanadium-Lead/Antimony assemblies to coin ripples for Rayleigh-Taylor studies on Strength targets. We will also show some of our latest details about high precision machining of critical components, such as the steps for EOS targets.

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