

Developments in Target Fabrication for HEDLA Experiments

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In order to perform laboratory astrophysics experiments, innovative target materials and techniques are needed to access appropriate plasma temperature and density regimes. Targets require components that constitute the laboratory platform for the experiments, specialized materials that may act as surrogates for the astrophysical object that is of interest, high-precision assembly, and finally characterization. The components may be subsets of those used in ICF or other HED experiments to create radiative heating, generate a shock, or tailor a radiation flux, e.g. hohlraums, ablaters, or doped plastics. However, the materials that act as surrogates can be highly specialized, requiring exotic materials such as aerogels which serve as surrogates for the interstellar medium, or machined polyimide disks which are imprinted with a complex perturbation to study instabilities. Examples will be presented to demonstrate the state-of-the art fabrication techniques and new capabilities will also be described.