

The Role of Micromachining in Target Fabrication for Fast Ignition Experiments[□]

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Fast ignition is a concept that is being actively investigated in the HED community. The fast ignition targets described here are highly precise targets composed of a small glow discharge polymer (GDP) shell (~860 μ m diameter) mounted on a gold hyperboloid tipped cone. The process of creating these targets is composed of several steps. The first step consists of machining a copper cone that is then plated with a layer of gold approximately 120 μ m thick. Next, a hole is machined in a hollow GDP shell that will later be mounted on the gold cone. After the hole of this shell has been measured, the coated cone is machined to shape and to include a shelf so that the shell will sit at the desired location in relation to the tip of the cone. Finally, the copper mandrel is etched away from the gold and the target is assembled with the shell glued into place. At every step of this process, parts must be made and kept within tight specifications to meet the target requirements, not the least of which is that after assembly the shell center must be a specified distance from the gold cone tip with a tolerance of less than 10 μ m.

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