Target Fabrication Facility

The following gives guidance to the services and support provided by Target Fabrication for experiments in the CLF. You should discuss your target requests with Chris Spindloe (christopher.spindloe@stfc.ac.uk) prior to the submission of your proposal.

Overview

The Target Fabrication group has access to a wide range of facilities that are able to fabricate the most complex of targets geometries for the VULCAN laser facility and the ORION facility (through academic access routes). The group also has capabilities to produce targets in high numbers for experimental campaigns on the GEMINI laser facility and this includes the provision of tape target systems to utilise the high repetition rate available. We will engage you in a rigorous planning procedure to ensure we deliver the highest quality targets in time for your experiment and to provide the flexibility during an experimental run that allow the maximisation of the time available on the facilities.

Current Target Fabrication Capabilities

Thin Film Coating

- Thin Film Coating of a range of metals (10nm-2000nm in-house and above 2000nm by arrangement) and plastics (Formvar, Polystyrene and Polyethylene, Parylene N and C).
- CVD production of DLC (Diamond-Like-Carbon).
- Amorphous Carbon foils from a few nm to a few microns.

Micromachining

- World leading micro-machining for the production of hohlraums, cones and other geometries
- Diamond point turning for high precision surfaces
- Laser micromachining for non contact processing of parts and complex 2D geometric cutting.

Low Density Materials

- Capabilities to produce foams and aerogels to specific requirements.
- Foams with embedded particulates (doped) can be provided with appropriate research and development time

Medium Rep-rate technologies

- Array based thin film targets of micron and nanometre thickness foils.
- Array based foam target production for higher rep rate experiments.
- Complex Tape Targets developed using thin film coating and etching capabilities
- Full tape drive delivery system provision and support including multiple drives available for an experiment. (Geometry and operation to be discussed with TF and Gemini group)

Characterisation

Full suite of characterisation serves including

- SEM (including elemental analysis)
- AFM and White light interferometer for surface characterisation
- Confocal microscopy and high resolution optical microscopy.
- X-Ray tomography for sample analysis.

MEMS Fabrication

Access to the latest fabrication technologies for mass produced targets including micro-dots, thin foils, spokes and indents fabricated in large numbers for statistical studies.

Gas Targetry

- Gas filled targets for low-rep rate experiments

Target characterisation requests are to be submitted before the experimental campaign and all target provision data and results will be available for the user group during and after the experimental campaign.