

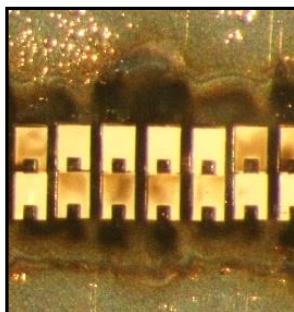
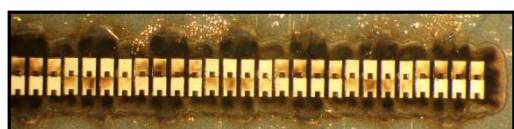
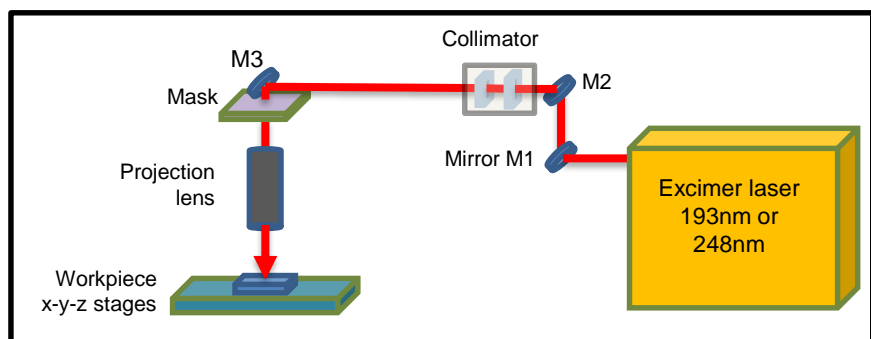
INTRODUCTION

Scitech Precision supports high power laser experiments with the manufacture of high specification laser micromachined targets. Alloys, borosilicate, ceramics, diamond, metals, polymers and single and multilayer thin films can be machined into complex shapes or intricate grids with full characterisation and R&D to support developmental ideas.

Repeatable, consistent targets can be produced using the UV Excimer laser, operating at 193nm or 248nm, the 355nm DPSS (diode pumped solid state) laser, or the infra-red Nd:YAG 1064nm laser.

EXCIMER MACHINING OF MULTILAYER 50µm CUBES

The project involved laser machining cubes from a 50µm multi-layered coating. The layered samples (7 variants) comprised parylene with embedded chlorinated layers and flash coatings of aluminium and bismuth. Scitech Precision would like to acknowledge AWE TF for characterisation support and sample supply.



Typical laser specification:

60W, 200Hz

17-25ns pulse, 100mJ

High micron level resolution

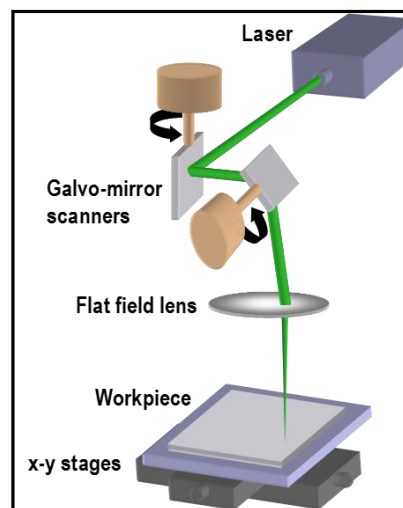
Complex mask design

x1 to x30 demag, Lens N.A from 0.15 (at x10 demagnification)

Ideal for polymers, ceramics, diamond, sapphire, <100nm metal films

355nm DPSS Nd:YAG MESH MACHINING

Sub mm CAD/CNC based (dxf files) laser micro machining of intricate grid structures and complex geometries.



Typical laser specification:

20W, 200kHz

30ns pulse, 100-500µJ

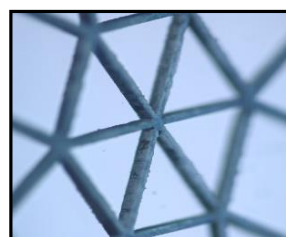
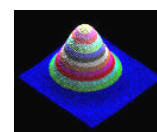
Gaussian beam

18µm focused spot

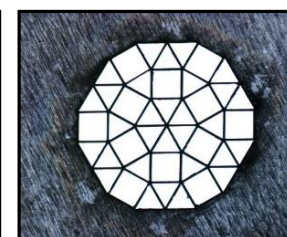
High speed machining

Galvo scanner and/or stages

Ideal for metals, diamond, polymers, ceramics, carbon, glasses, thin films



50µm thick silicon
35µm arm width

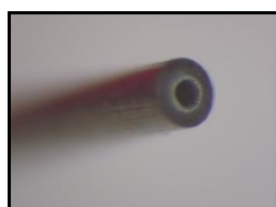


25µm thick tantalum
25µm arm width

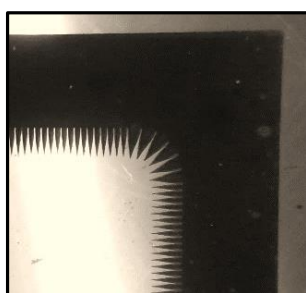


50µm thick niobium
50µm arm width

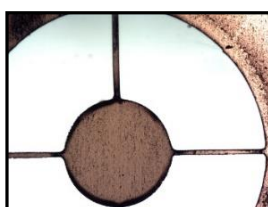
BEAM STOPS AND APERTURES



tungsten rod end
beam stop
100µm diameter
300µm depth hole



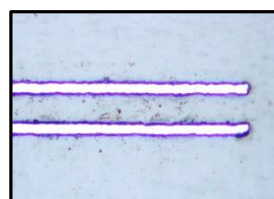
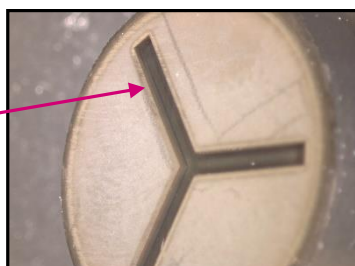
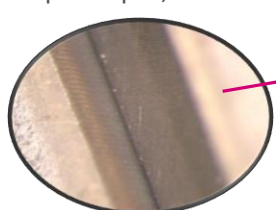
50µm thick tungsten
serrated aperture
200µm pitch, 1.2mm height



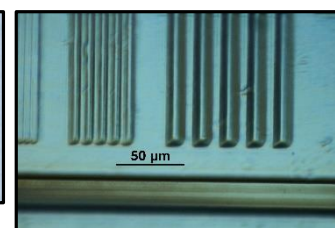
tungsten Schlieren
beam stop
100µm thick
20µm arms

DIAMOND MACHINING

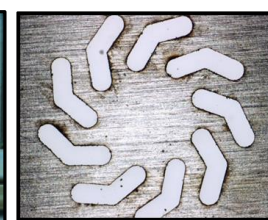
500µm depth, ~1mm width trench



50µm thick tungsten
6µm width slits
20µm gap



25µm PEEK
thin sheet laser scribing



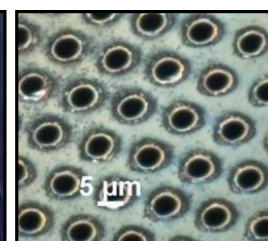
stainless steel
50µm thick
25µm arm width



200µm thick copper
100µm arm width



200µm thick tungsten
200µm arm width
Inner circle: ID 170 µm
OD 1.3mm



sapphire
5µm diameter holes