Microtarget Mass Production for the RAL High Accuracy Microtargetry System

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Recent and future developments in High Power Laser science are pushing repetition rates to levels of 1Hz and above. Systems such as Astra Gemini at Rutherford, the planned HIBEF beamline at DESY and the ELI systems will carry out fundamental research on a range of experiments which will drive a large increase in the target numbers that are consumed.

To deliver target solutions to this requirement, Scitech Precision Ltd. in collaboration with the CLF has developed a range of fabrication processes based upon those used for Micro-Electro-Mechanical System (MEMS) manufacture. This allows wafer-scale fabrication where each wafer may hold arrays of several thousand individual laser targets. A target manufacturing run of a number of wafers could therefore provide sufficient targets for a typical experimental campaign even when shot at high repetition rates and could provide a robust and simple target holding and delivery system for other pick and place assembly solutions

This presentation will describe the fabrication processes and how they are combined to create a range of laser targets. It will conclude by describing how these target arrays are integrated into the RAL High Accuracy High Throughput Microtargetry System (HAMS).

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