



EPSRC Centre for innovative  
manufacturing in ultra precision

# National centre for innovation in ultra precision production systems and products



Microstructured large  
imprint drum

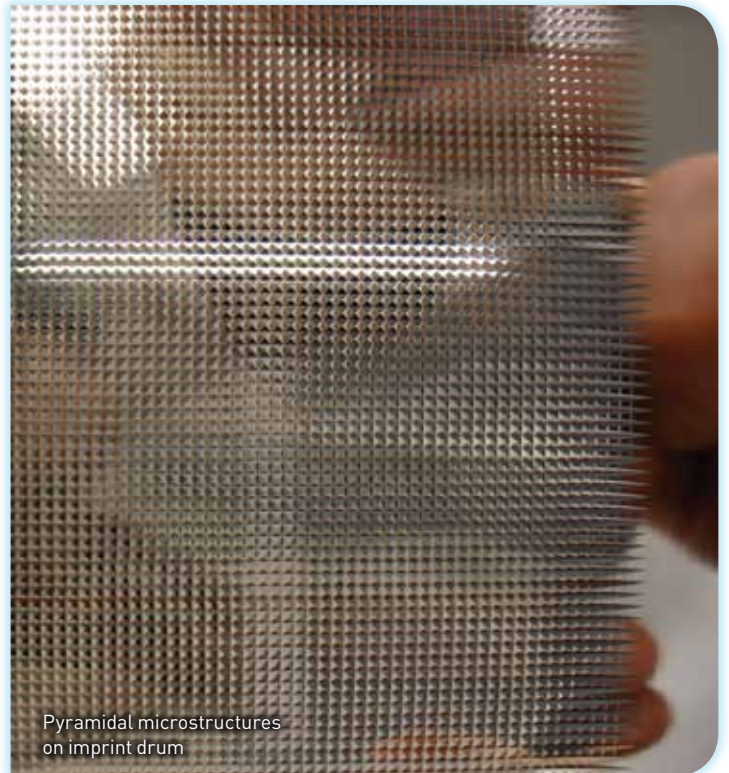


Laser machined  
glassy carbon imprint tool

500  $\mu\text{m}$



Reactive Atom  
Plasma machining



Pyramidal microstructures  
on imprint drum

[www.ultraprecision.org](http://www.ultraprecision.org)

Website under construction

Started in October 2011, this EPSRC Centre managed by Cranfield University and the University of Cambridge, aims to undertake early stage production research to establish new processing technologies demanded for effective production of emerging products.

## Vision

To be the world's foremost research centre for innovation in next generation ultra precision production systems and products, with global outreach.

The Centre aims to create ultra high precision manufacturing processes and tools that can make products with nanoscale precision. It will foster and accelerate development of merging high value products through its dedicated production compatible ultra precision process research platforms and internationally leading research programme. It will facilitate the engagement of the UK precision manufacturing supply chain into the future wealth creating opportunities of emerging sectors.

Through its National Strategy Programme for Ultra Precision, it will deliver a thriving and active network community across academia and industry, supported by information services and collaboration opportunities.



## Key Research Challenges identified for the Centre are:

- To create and demonstrate rapid ultra precision and fine feature generation processes for multi-material processing of emerging products, including their effective quality control, through a portfolio of research projects.
- To create and demonstrate new mass production chains that apply nano and micro scale features rapidly onto large (and continuous) multi-material substrates, to be proven through flagship projects that establish three uniquely performing production research platforms.



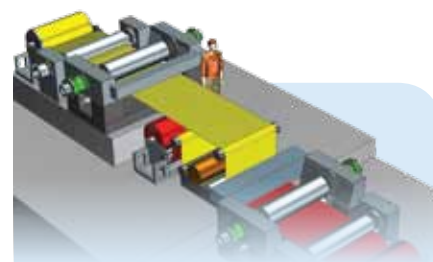
### Nano FIB Platform

Combining laser, plasma and ion beam sources to give nanometre level additive and subtractive processes, with integrated metrology for closed loop control in vacuo on substrates up to 100mm x 100mm.



### Meso Scale Platform

A washing machine sized 'micro factory', incorporating diamond machining, energy beam and print processes for multi-step additive and subtractive manufacturing with in-process metrology.



### Macro "r2r" Platform

Mould fabrication and continuous processing for micro-structured film, combining print, imprint, diamond machining, accretion and energy beam processes.

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