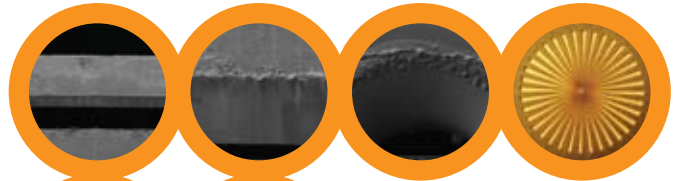


## Micro engineering and manufacturing

### Laser micromachining Micromachining difficult materials

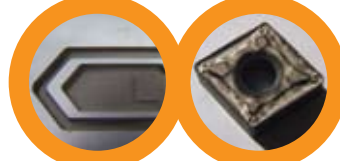
#### Metals

Stainless Steel, Tool steel, Amorphous nickel, Brass.



#### Ceramics

Silicon Nitride, Tungsten Carbide.



#### Polymers

PVDF, Kapton, SU-8, PMMA.

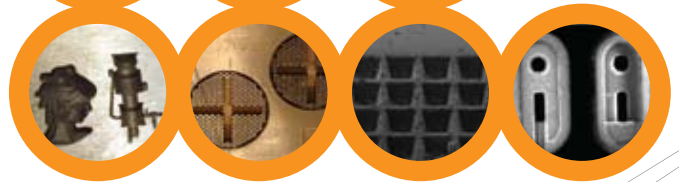


#### Glassy materials

Quartz, Fused Silica, 4  $\mu$  wide slot in glass.



#### 3D milling and machining

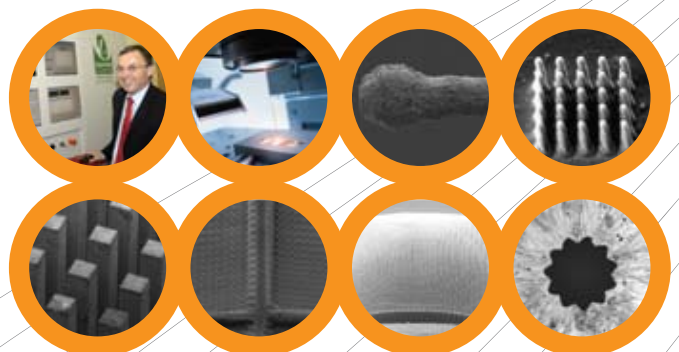


#### Contact Us

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## Micro engineering and manufacturing

### Focussed Ion Beam Machining Micro and Nano machining and deposition

#### FIB milling from 3D CAD model in metals and ceramics

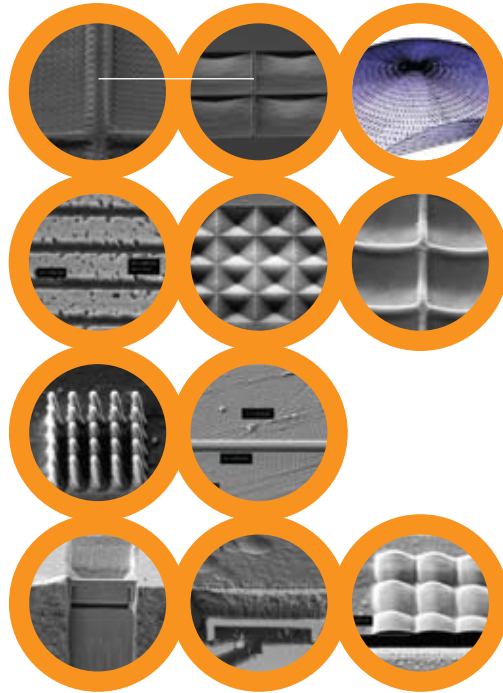
Nano lenses, Micro lenses, CAD model  
Micro lens array, each lens 12 x 12 microns with nano lenses of 120 nanometres diameter.  
75 nm lines in alumina, 1 $\mu$  x 1 $\mu$  pyramids in fused silica, Deep milled lens structures in silicon.

#### FIB 3D Deposition Tungsten Platinum Silicon Dioxide

Tungsten deposition, Silicon dioxide deposition.

#### SEM metrology, EDX, STEM samples

STEM sample preparation, Profile analysis.



#### Contact Us

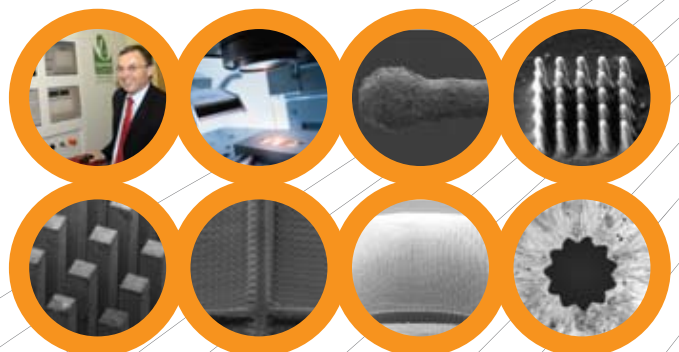
**Dr. Robert Hoyle**  
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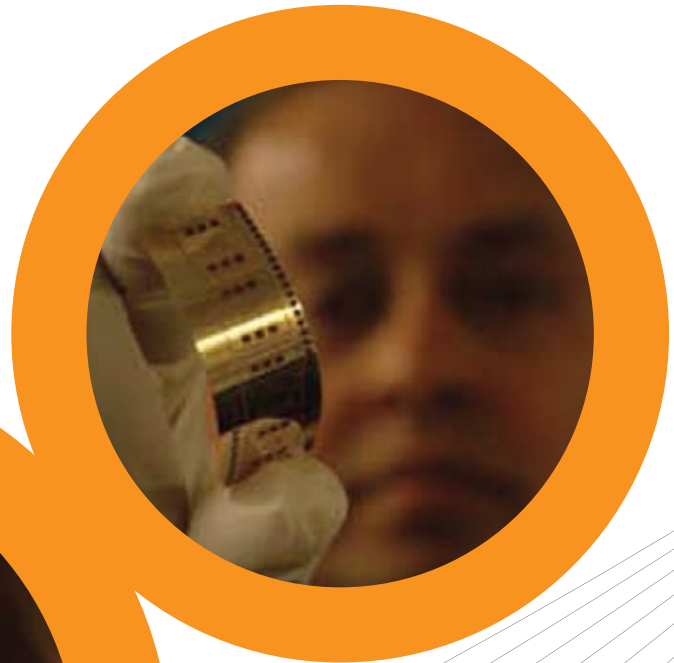
## Micromanufacturing & Product Development

---

Laser Micromachining Ltd is the ideal partner for the rapid development, prototyping and batch production of new products. LML can help you achieve a shorter time to market for new generations of products.

Benefit from LML's wide-ranging expertise in micromanufacturing and let LML provide the R&D and production answers you need.

LML offers a flexible, cost-effective & responsive service which allows new design ideas to be evaluated quickly and high quality parts to be produced with precision & accuracy.





## Micromanufacturing & Product Development

LML has extensive capabilities:

- State-of-the-art laser manufacturing facility with flexible, high precision laser tools.
- Lasers ranging from UV through to Far IR which allow the best laser solution to be selected.
- Ability to machine polymers, metals, glasses, silicon, ceramics, thin films, optical materials & composites.
- Proven track record in rapid turnaround and high quality services.
- Extensive partner network of suppliers to provide complete package for the customer.

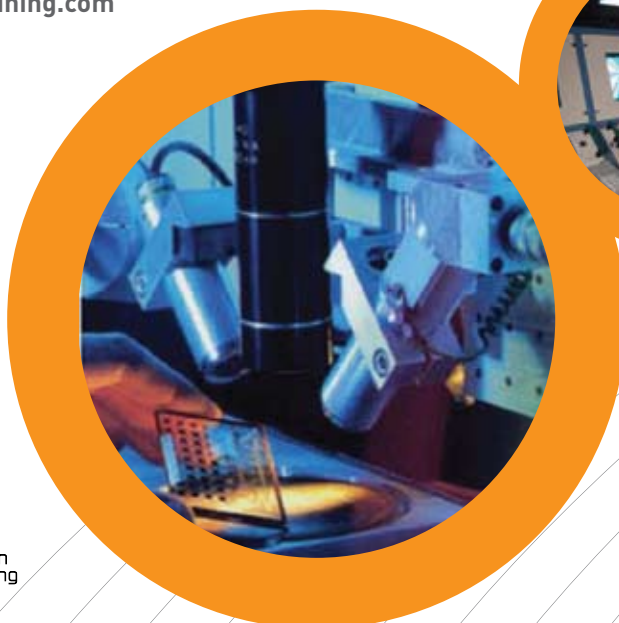
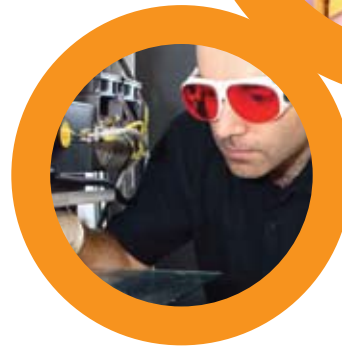
Helping Industry to benefit from Laser Manufacturing

### Contact Us

#### Laser Micromachining Limited

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Denbighshire LL17 0JD, UK  
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E: [info@lasermicromachining.com](mailto:info@lasermicromachining.com)

[www.lasermicromachining.com](http://www.lasermicromachining.com)



## Specialist Laser Micromachining Services

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Unique collection of 3 lasers: 795nm femtosecond, 193nm & 157nm excimer  
Custom designs, Rapid Prototyping, Production micro-foundry  
Approved EPSRC charge-out rates; Commercial open-access facility  
Send your sample for processing or attend in person and learn & take part

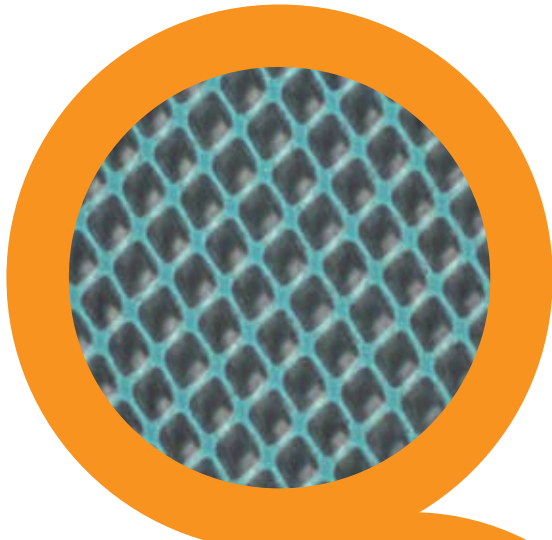
### Life Sciences

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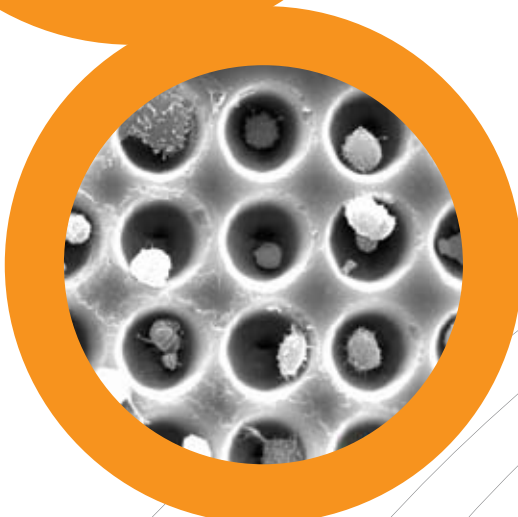
#### Bio-compatible materials

Biodegradable polymers, PFA Glass, Polymers, PDMS.

Custom cut-off membranes



Single cell  
localisation



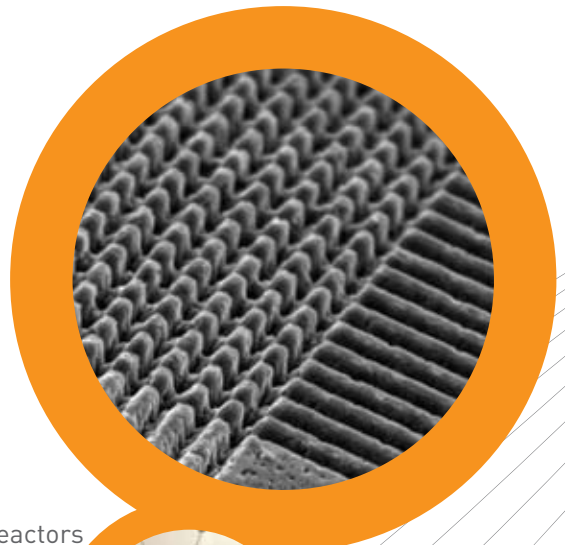
### Chemistry

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#### Chemically resistant materials

PTFE, Fused silica, PEEK Quartz, Teflon AF Stainless steel.

Chromatographic separation columns



Microreactors



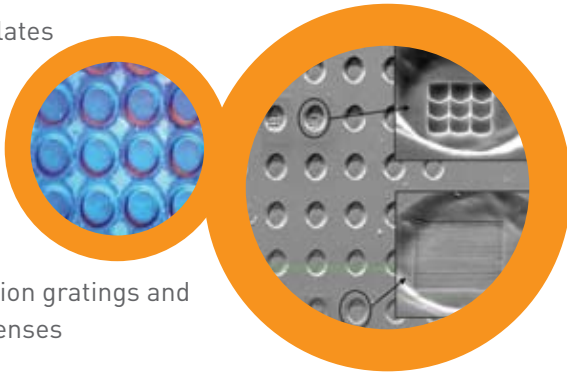
## Specialist Laser Micromachining Services

### Optics

#### UV transmissive materials

Fused silica, Quartz, Teflon AF, Sapphire.

Mask plates



Diffraction gratings and  
micro lenses

NIKON Microscopy suite - optical, SEM,  
surface interferometry: Hands-on access

ThermoFisher Liquid Chromatography - Mass  
Spectrometry: Hands-on access

VEECO Optical Interferometry - thin-film structural  
analysis: Hands-on access

### Contact Us

#### metaFAB

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1-5 The Parade, Cardiff, CF24 3AA, UK

#### Call Neil Sykes on

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sykesn@cf.ac.uk

www.metaFAB.net

**XGEN** next  
generation  
engineering

www.xgen.org.uk

### Electrical & Mechanical

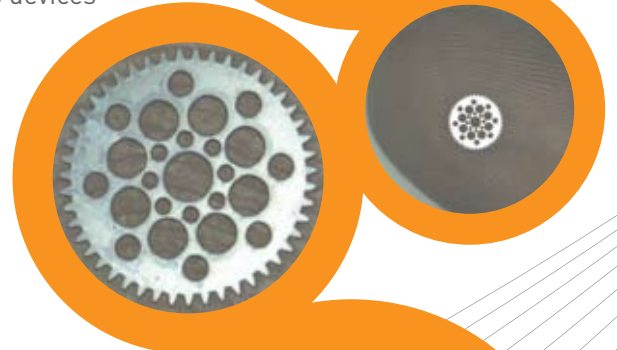
#### Precision machining

Steel, Sapphire, Silicon, PEEK, Alumina, Ceramic.

Any shape any material



MEMS devices



Rapidly produced  
shadow masks

