

# THE MICRO AND NANO JOB SHOP

## Succeeding as a Laser Micromachining Service Provider

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UK Laser Micromachining Centre

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[www.UK-LMC.co.uk](http://www.UK-LMC.co.uk)



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# BACKGROUND

- ❖ Many national programs underway to promote and support MNT.
- ❖ Rapid increase in breadth and depth of MNT requirements (industry + R&D).
- ❖ UK government has been active for many years in backing MNT within UK.

**MICRO & NANOTECHNOLOGY NETWORK**

Micro Nano Technology

Welcome

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MNT Contact List: Email: [NanoKTN](mailto:NanoKTN) Tel: 0191 280 4326 [Login / Join](#)

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- MNT UK**  
UK MNT Network, Activities, Member Benefits, Contacts...
- COMMUNITIES**  
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**Announcement**

**Re-branding of the MNT Network:** All of the products produced by the MNT Network will be re-branded and continue to be available through the Nanotechnology KTN. Please note that the MNT Network is no longer in existence, the new contact details for the NanoKTN are given above.

**MNT e-News Bulletin**

This fortnightly email bulletin provides the latest news from the network and its members, including press releases, events, funding opportunities, brokerage, vacancies and short courses. Sign up today >>>

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**Industrial Map of UK MNT - 2006 Edition**

Listing 643 companies involved in the micro and nanotechnology sector.

[Download the latest Version >>>](#)

Google: "UK MNT FORUM"

- ❖ Government backing geared towards maximising economic benefit for national economy.
- ❖ Establishment of state-of-the-art facilities with 'open access'.
- ❖ Laser micromachining identified as a key technology.
- ❖ Establishment of **UK-LMC** in 2005.



# GOVERNMENT BACKING

UK-LMC part-funded by national government and regional (Welsh) government.

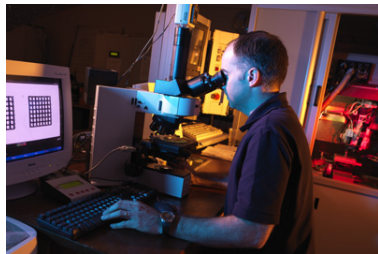
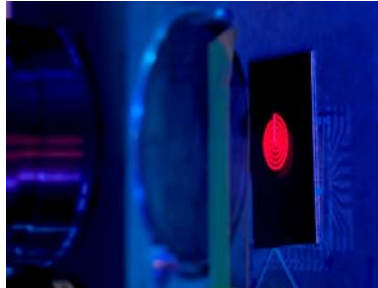
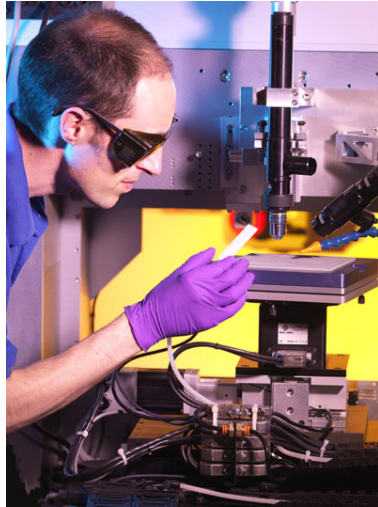
## Advantages

1. Financial support in critical early years.
2. Part of national program  
– joint promotion, critical mass.
3. Funding only after critical review  
- lower risk at start-up.
4. Large network of support & advice available.

## Disadvantages

1. Discussions and decisions can be very lengthy (slow).
2. Grants usually paid in arrears.
3. Requirement for regular monitoring, reporting & auditing.
4. Industry can perceive government-backed enterprises as not being commercial.

# MAIN DRIVERS



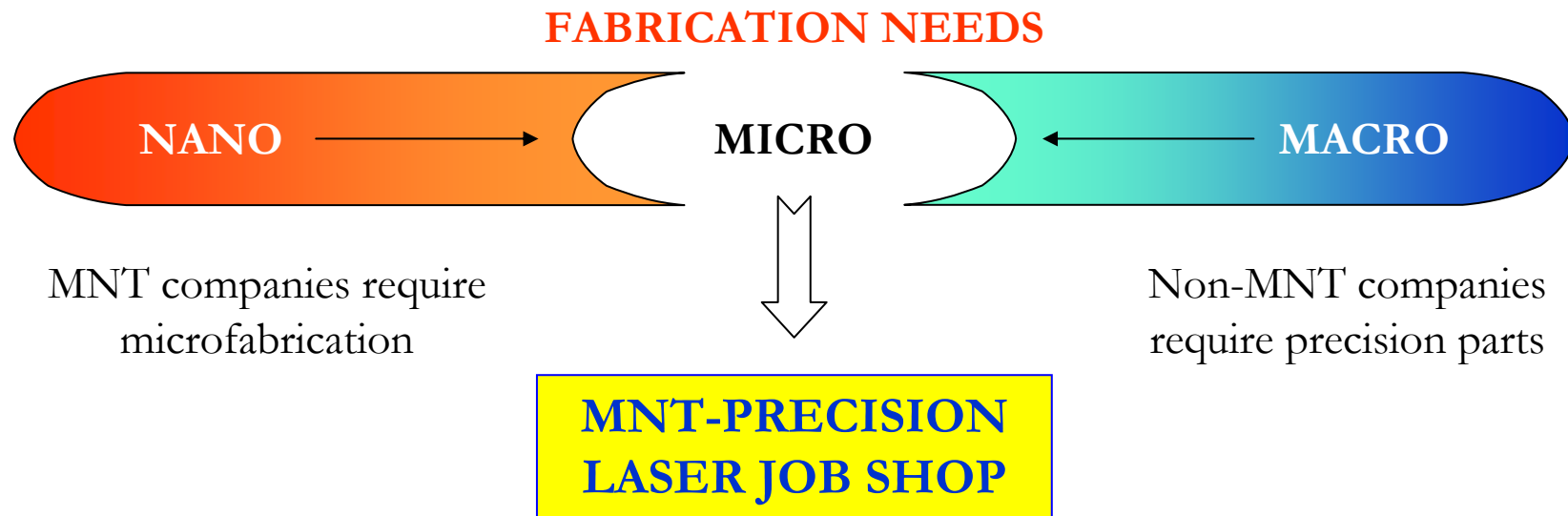
## Key Requirements

1. Provider of high quality laser micromachining services.
2. Technical capabilities to meet exacting demands of MNT.
3. Flexibility and responsiveness.
4. Open-access for all:
  - Simple way of working.
  - Small jobs accepted.
  - No catch (e.g. selling equipment).
5. Independence.



# FABRICATION TRENDS

- ‘Nano’ tag on many products, fabrication of most parts on micro scale.
- ‘Traditional’ precision products are extending into the micro domain.



# TYPICAL MNT CUSTOMERS

## REQUIREMENTS

- **Materials:** glass, polymers, silicon, thin metals, thin films, composites.
- **Features:** holes, slots, channels, complex shapes in 2D/3D parts.
- **Quality:** high precision, tight tolerances, precise control.
- **Dimensions:**  $\sim 1\mu\text{m}$  to  $\sim 500\mu\text{m}$ .

## EXPECTATIONS

Produce desired features in selected materials to design specification and deliver high quality finished article.

Fast turnaround, competitive prices, 1off to larger numbers.

Novel designs and product ideas – make something for the first time.

Basic demands are similar to 'traditional' users of laser machining – except for smaller features, tighter tolerances and wider range of materials.



# LASER JOB SHOPS



## TRADITIONAL

- Well-established.
- ~100 in UK.
- Highly competitive market.
- Integral part of supply chains.
- Pressures on pricing.
- Fast turnaround for 'standard' jobs.
- Mainly metal & plastic cutting.

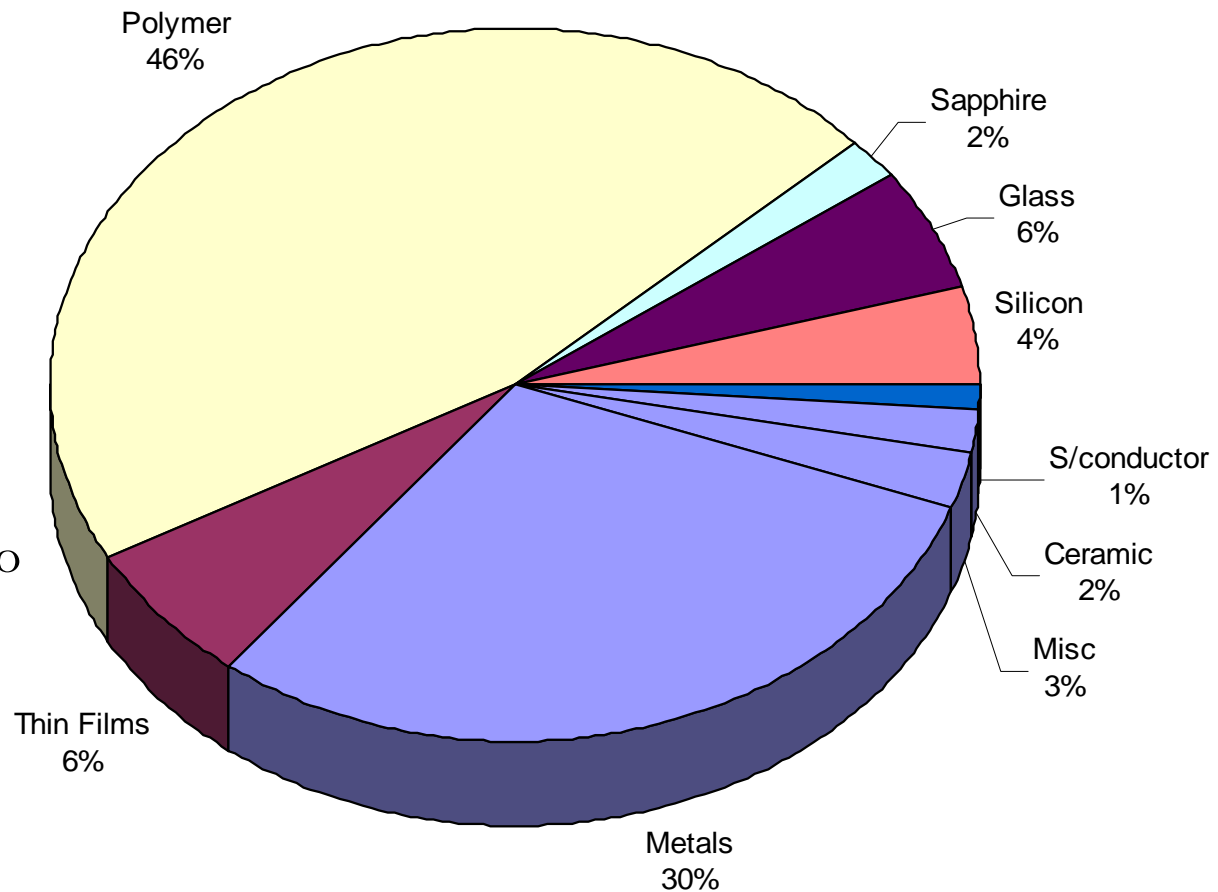
## MNT-PRECISION

- Relatively new.
- ~6 in UK.
- Niche expertise areas.
- Diverse customers.
- Work gained by level of expertise.
- Delivery governed by complexity and novelty.
- Any material.

**Operating model for traditional job shops can be applied to MNT-Precision sectors as demand grows.**

# MNT INDUSTRIAL DEMANDS

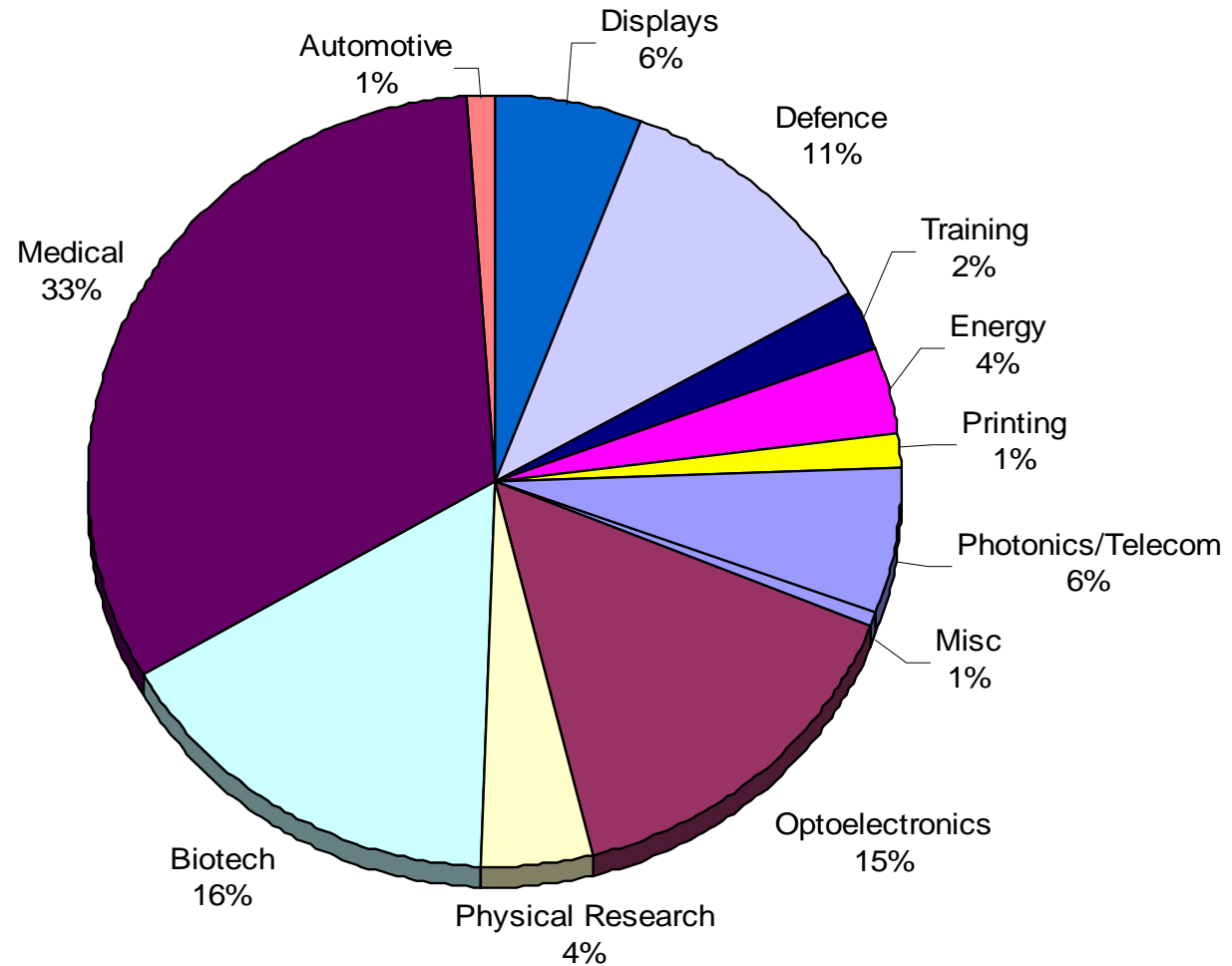
- ❖ Primary focus on polymers and (thin) metals.
- ❖ Material requirements drive laser choices.
- ❖ Have to balance wide capability with ability to cater for demand.



UK-LMC data, 2005-2007

# MNT SECTORS

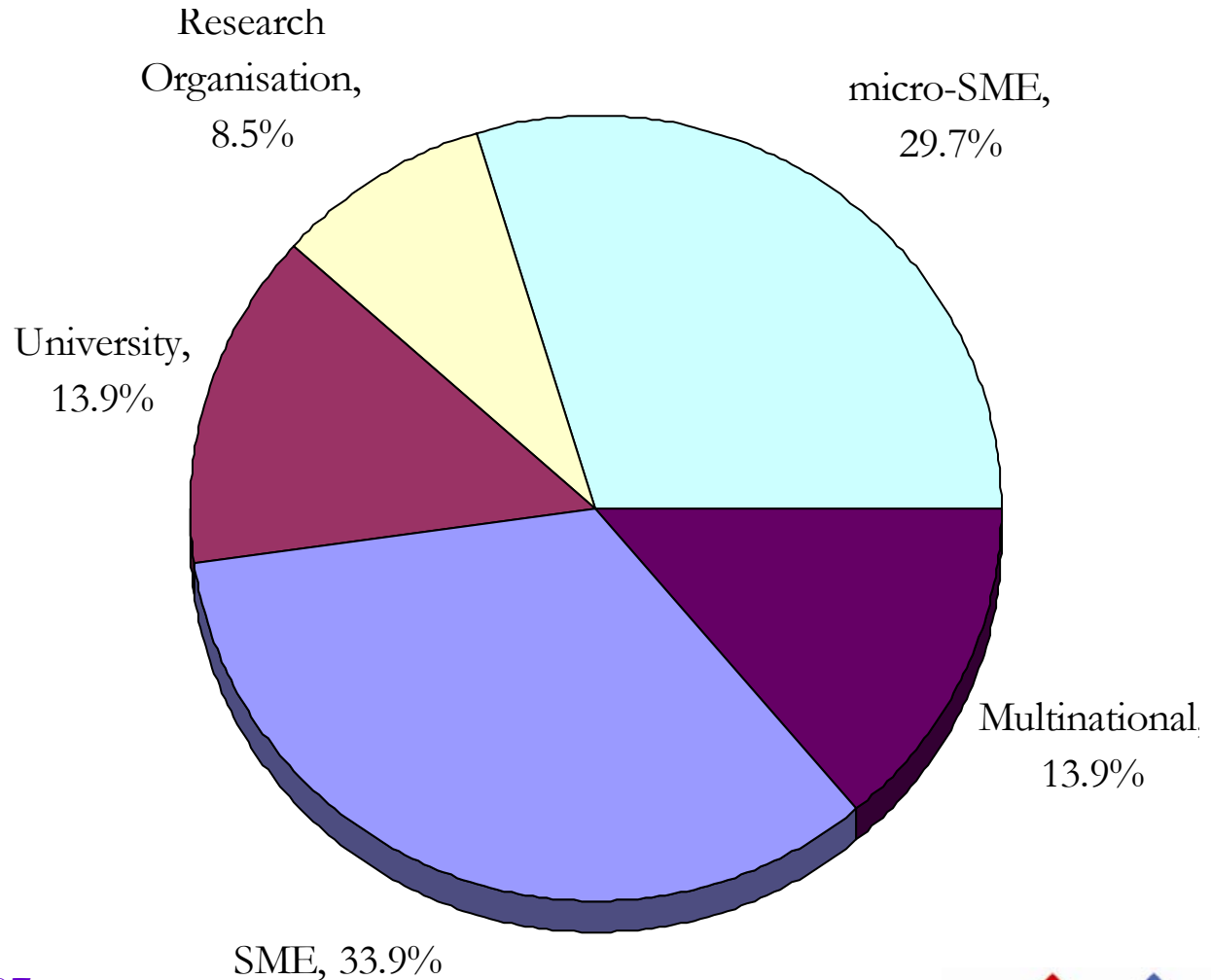
- ❖ Nearly 50% of clients from Medical & Biotech sectors.
- ❖ Provides useful insight for business development.



UK-LMC data, 2005-2007

# MNT COMPANIES

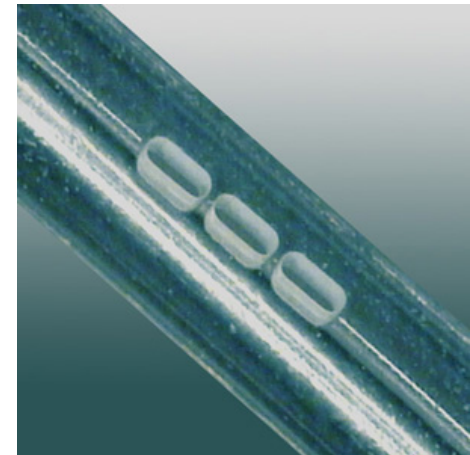
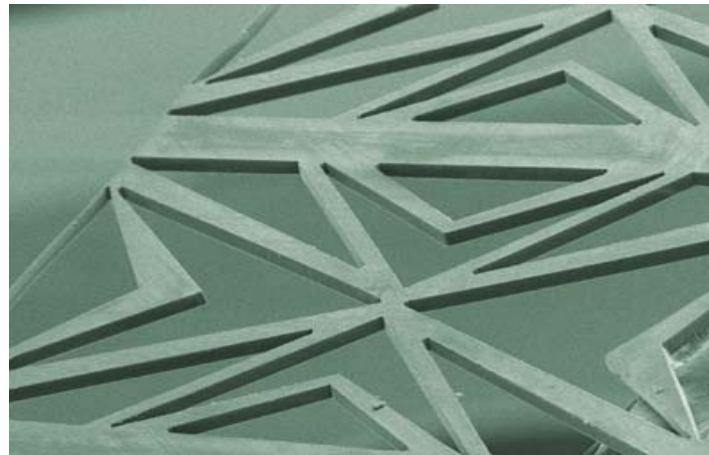
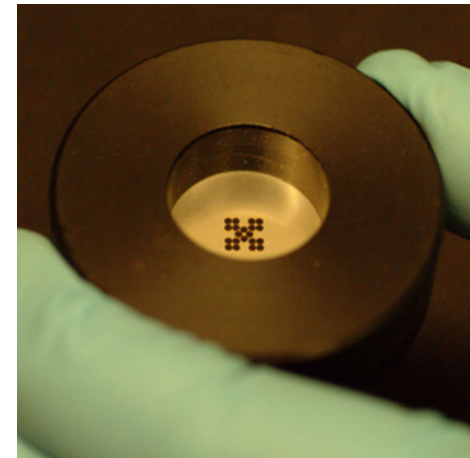
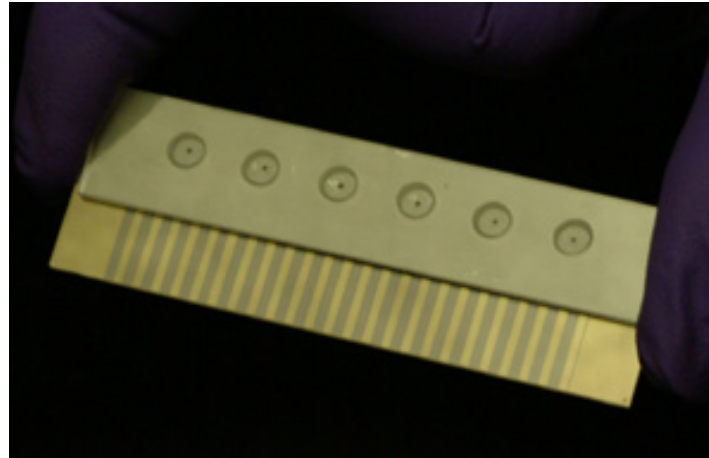
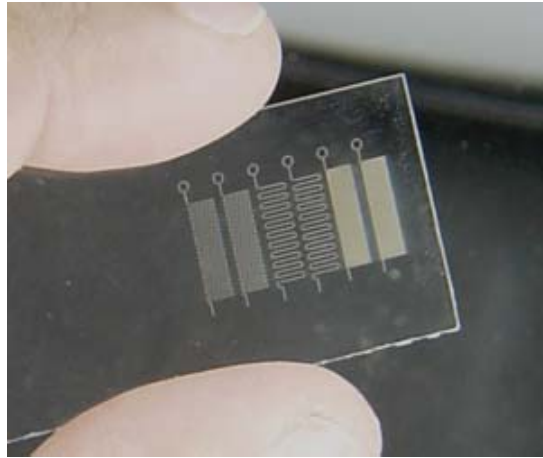
- ❖ Large proportion of small companies.
- ❖ A lot of development work underway in R&D centres.
- ❖ Large companies outsourcing R&D.

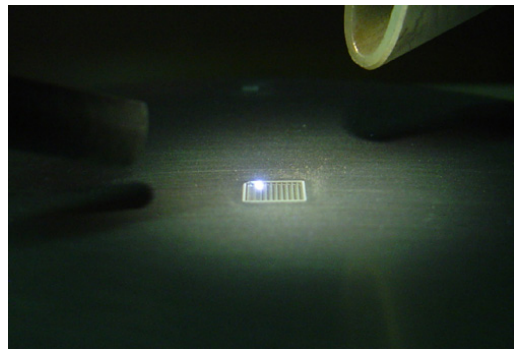
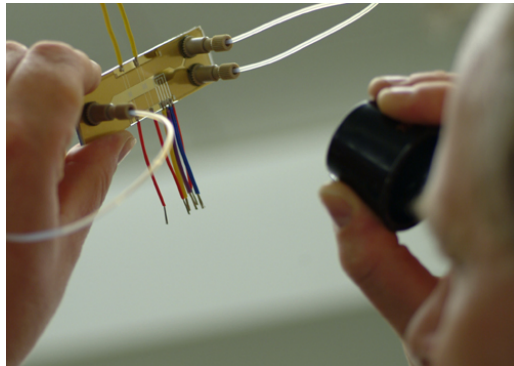


UK-LMC data, 2005-2007

# LASER MICROMACHINING

High quality micromachining services, fast turnaround, flexible approach.





*New premises in St. Asaph, North Wales*

## SUMMARY

- ❖ Growing demand for MNT 'job shops'.
- ❖ Different demands, same disciplines as other businesses.
- ❖ Provision of government funding is extremely helpful if managed properly.
- ❖ UK-LMC continues to grow in providing high precision laser services to clients.



## CONTACT

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