

Laser Technology is key to the manufacture of many high precision components that contain micro and nano-features. It provides the flexibility and accuracy required to manufacture the products of tomorrow. Laser applications such as cutting, welding, micro-machining, etching, scribing and surface texturing all have commercial applications. Rapid developments in laser materials processing are continually yielding new applications and processes. The user industries are just as diverse: from general engineering through solar, electronics and semiconductor to medical – all benefit from the power of the laser.

Ongoing miniaturisation continues to push manufacturing technology to its limits, and continued developments of lasers and materials processing applications is providing the means to produce ever smaller increasingly accurate and more cost effective micro and nano-features. Staying abreast of these developments is key to maintaining a competitive edge.

This annual workshop provides an opportunity for industrial users of laser processing, laser equipment suppliers and researchers to share the latest innovations with the delegates.

**Jack Gabzdyl** Chair of the AILU Micro:Nano Special Interest Group



Dr Jack Gabzdyl is the Product Line Manager at SPI Lasers for ns pulsed fiber lasers and has over 20 years of laser materials processing experience. He obtained his PhD in laser processing from Imperial College London in 1989. He has since had a number of technical and marketing positions at BOC Gases, Advanced Laser Solutions and TWI before joining SPI in 2007.

**Who should attend?**

This annual event provides an opportunity to keep up to date with the latest developments in laser micro-manufacturing. Whether as an expert or novice, an engineer, research scientist or a manufacturing manager, it presents valuable learning opportunities. The close, informal mix of industrialists, researchers and suppliers provides every opportunity for delegates to meet presenters, to network and to discuss current, generating new ideas and valuable contacts. The broad scope of the event offers something for everybody and the chance to address a broad range of applications and end user industries.

**Tour**

The workshop includes a lunchtime tour of Laser Micromachining Ltd and, at the end of the workshop, an optional tour of the Technium

**The Technium OpTIC** (Opto-electronics Technology and Incubation Centre) at St Asaph is a specialist innovation centre. It supports young science and technology businesses involved in the development of optical and electronic technologies.

**Laser Micromachining Ltd**, based in the Technium, provides contract manufacturing services to companies in the micro, nano and precision engineering sectors, using laser tools operating from the ultraviolet through to the far infrared.

LML offers the widest range of precision laser micro-machining tools in the UK within it's state-of-the-art facilities. Demonstrations will be provided of a range of laser machining processes in excimer, DPSS and a fibre laser tools.



**Venue**

The workshop will be held in the main lecture theatre of Technium OpTIC at St Asaph, North Wales.

**Delegates**

There is ample free parking in front of the Technium OpTIC building. Delegates should use the main entrance.

At the registration desk you will receive a delegate pack containing a name badge and essential notes for the day, including a detailed programme and a delegate list. The pack will also include a name and password for downloading PDFs of the presentations, which will be made available on the AILU web site as soon as possible after the event.

A buffet lunch (including vegetarian options) will be provided together with refreshments throughout the day. Please advise us of any special dietary needs.

**Exhibitors**

The exhibition, together with the lunch and refreshment breaks, will take place in an area adjacent to the lecture theatre.

On arrival, park in the free car park in front of the building. Access to the exhibition area for set-up is available from 12:00-17:00 on 5 October or from 07:30 on the day. Loading and unloading of large items can also be made via a side entrance by request on the day. Tables will be provided but you should bring your own back boards. There are limited mains electrical points in the exhibition area.

**Registration**

To register for the event AILU members and members of the Micro:Nano Special Interest Group need only give their name by phone or email (courses@ailu.org.uk). Non members should return a completed registration form.

AILU members and members of supporting organisations for this event receive a registration discount. Delegates who pay the full price and who decide to join the Association within 10 weeks of the event will receive this discount on their first year's corporate membership subscription. For further information on membership go to [www.ailu.org.uk](http://www.ailu.org.uk) and follow the 'about us' link.

**Clinic**

AILU staff will be available throughout the day to arrange informal introductions with appropriate experts at the workshop, for discussions on any technical or business matters that delegates would like to raise.

**Travel**

Full address: Ffordd William Morgan, St Asaph Business Park, St Asaph, Denbighshire LL17 0JD  
Tel: +44 (0) 1745 535 100

**Air:** The nearest airports are Manchester International and Liverpool John Lennon International. The Technium OpTIC is approximately 1 hours drive away.

**Rail:** The nearest railway station is Rhyl, 10 minutes away by taxi.

**Car:** The site is close to Jn 26 of the A55. For full directions by road visit the event page on the AILU web site.

**Accommodation**

There are several recommended hotels within a few miles of the venue, full details of which can be found on the AILU web site page for this event, or by contacting the AILU office.



Courtesy of Micromachining Lasers Ltd



**Advanced micro-manufacturing with lasers**

**Presentations, exhibition & tour**

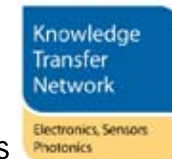
**Wednesday 6 October 2009**

**Technium OpTIC, St Asaph Business Park, North Wales**

Supported by:



**IOP** Institute of Physics



**Programme**



Panel of Dyesol cells Courtesy: Dyesol Solar

08:15 - 09:00 Registration and refreshments

09:00 - 10:15 **Session 1**

**Welcome and introduction**

Jack Gabzdyl Chair, SPI Lasers

**Keynote presentation**

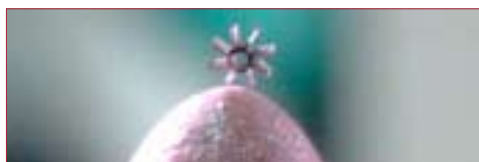
**Formation of micro components using a MOPA based Yb fibre laser**

Bill O'Neill University of Cambridge

**Laser micromachining for 3rd generation solar energy: a key enabler**

Chris Moore Dyesol

10:15 - 10:45 Refreshment break and EXHIBITION



250µm dia. polymer cog on match head Courtesy: Blueacre Technology

10:45 - 12:25 **Session 2**

**Keynote presentation**

**Micro machining and the 'energy' mega trend: applications in PV, engines and lightweight structures**

Oliver Haupt Laser Zentrum Hannover

**Laser machining of polymers for medical devices**

David Gillen Blueacre Technology

**Pulse duration effects on surface integrity and structuring capabilities**

Petko Petkov Cardiff University

**The new ESP KTN experience**

Paul Smith ESP KTN

**Programme**



Lunchtime exhibition at a recent AILU workshop

12:25 - 13:05 **TOUR** of LML laboratories

13:05 - 14:05 Lunch and **EXHIBITION**

14:05 - 15:25 **Session 3**



Excimer workstation with twin beam delivery Courtesy: Optec

**Automated balance using micro laser ablation**

Marek Mamczur DLS (Dynamic Laser Solutions)

**Laser manufacturing applications - a system integrator's perspective**

Rod Andrew Optec

**Transitioning laser micromachining into large scale production**

Mike Osborne Optek Systems Ltd

**Discussion and wrap-up**

Jack Gabzdyl

15:10 - 15:25 Refreshments

15:25 Technium tour and Departure



Removal of SiN layer from silicon wafer Courtesy: Optek Systems

**Delegate information**

Name: .....  
Title & initials First name Surname

Position: .....

Organisation: .....

Address: .....

Post Code: .....

Tel: ..... Fax: .....

E-mail: .....

**Payment options**

- Please invoice me
- I wish to pay in advance by:
  1. Bank/Euro cheque in £ Sterling or EURO, payable to AILU
  2. Visa/Mastercard (billing in GBP):  
 Name on Card

Number \_\_\_\_\_ Exp \_\_\_\_/\_\_\_\_  
 Please debit my account

**Delegate/exhibitor options**

- I wish to register as a delegate. The applicable rate is:
    - GBP 142.00 (= £166:85 incl. VAT)
    - I am a member of AILU and/or one of the supporting organisations:
      - ESP KTN  Nanotechnology KTN  XGEN  Institute of Physics
    - GBP 65.00 incl. VAT  GBP 40.00 incl. VAT
    - I am unemployed or retired. I am a full time student.
    - GBP 175.00 (= £205:63 incl. VAT)
  - I wish to register as an exhibitor. Please reserve me:
    - Space only  A table (Unfortunately, we are not able to provide backboards)
- The applicable rate is:
- GBP 135.00 (= £158:63 incl. VAT)
  - I am a member of AILU or one of the supporting organisations ticked above.
  - GBP 175.00 (= £205:63 incl. VAT)
- I wish to register as a delegate and exhibitor. Please give me a £50 plus VAT discount on the total fee.

Signed: ..... Date: .....

Cancellations will be accepted up to 1 week before the event; otherwise the full fee may be charged.

Please return completed form to the AILU office by FAX (+44 (0)1235 550499) or mail to AILU, 100 Ock Street, Abingdon, Oxon OX14 5DH, UK