

About this workshop

Laser technology is vitally important in the micro and emerging nano-engineering fields, providing high-resolution, accuracy, speed and flexibility; in particular, its utilisation in the engineering of micro features is key to the technical and commercial success of many mass-produced components ranging from photovoltaic cells and panels, inkjet print heads and flat panel displays, to MEMS components, circuit fabrication and micro-hole drilling.

In this annual workshop, industrial users of laser processing technology, suppliers of laser-based equipment and researchers in new laser technology come together to present their applications. This year's workshop is run in collaboration with both the newly-formed Photonics and Plastic Electronics Knowledge Transfer Network (KTN) and the Nanotechnology KTN and seeks to bring together researchers and industrialists to review the latest innovations in micro and non-scale laser processing and the opportunities that they create.

Malcolm Gower Workshop Chair



Malcolm Gower has had a long career in applied laser research, first in the USA and then at the Universities of Oxford and Reading and the Rutherford Appleton Laboratory. From 1984 to 2006 he was Chairman and Technical Director of Exitech. In 2007 he founded Nanophoton Technologies, providing expert consultancy services to the micro/nano community worldwide, and is currently Visiting Professor of laser micro and nano-fabrication at Imperial College, London. In 1993 he was awarded an MBE for his services to industrial laser development.

Who should attend?

One of the key features of an AILU workshop is the opportunity it provides for delegates to meet with the presenters and with one another: a comfortable environment, generous lunch and refreshment breaks, a table top exhibition and a clinic service.

The wide scope of this event means that there is something for everyone in the laser user and supplier micro:nano community, from beginners to experts. The workshop nature of the meeting provides many opportunities for delegates to discover the interests and concerns of others in the community and to establish valuable links.

Tour

Two tours are being offered for delegates to choose from:

The Micro and Nanotechnology Centre at the Harwell Science and Innovation Campus provides open access services and develops underpinning processes which serve the needs of STFC Facilities and Futures Programme (Healthcare, Energy, Environment and Defense and Security). The tour will include: Nanofibre synthesis by electro-spinning, Electron Beam Lithography, wafer scale metrology, the UK's National Micro and Nanotechnology prototyping service (run by Qudos Technology Limited) and the UK's BondCentre for wafer to wafer bonding (run by Applied Microengineering Limited).

The Astra-Gemini laser facility is based in the Central Laser Facility at the Rutherford Appleton Laboratory. At its heart is a state-of-the-art dual beam high brightness petawatt laser system with the capability of providing literally astronomical focused intensities (perhaps 10,000 the intensity at the centre of the sun). The system generates 15 J, 30 fs pulse duration pulses on target in each of two 800 nm laser beams with near diffraction-limited beam quality, providing a total peak power of 1 PW. The facility presents many state-of-the-art features both in short pulse generation, amplification and control and in the diagnostics associated with the extreme plasma effects that are created by the focused beams.

About this workshop

Venue

The workshop will be held in the Pickavance lecture theatre on the Rutherford Appleton Laboratory site near Didcot, Oxfordshire



Delegates

On arrival at the RAL site all delegates should report to the Security Lodge at the main gate. Those arriving by car should first park in the overflow car park (sign posted) near to the Security Lodge. The lecture theatre is only a short walk from the Lodge.

At the lecture theatre 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 lunch and mid-morning and afternoon refreshment breaks, will take place in an area close to the lecture theatre.

On arrival, park at the Security Lodge at the main gate, obtain a parking permit and then drive through the gate. Temporary parking is available outside the lecture theatre for loading and unloading and there is a visitors car park nearby. Access to the site is available from 07:30 on the day. You can bring your own display stand and backboard; however, you can opt to have a table and backboard provided. 240V mains power will be available.

Registration

To register for the event AILU members need only give their name by phone or email (courses@ailu.org.uk). Non members should return a completed registration form. Late registration may be possible, but to guarantee a place the booking must be made by **16 September**.

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 and look for the link to 'about us'.

Clinic

As part of the mission of the Photonics and Plastic Electronics KTN, AILU Secretary Mike Green 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: Rutherford Appleton Laboratory, Didcot OX11 0QX.

Air: The nearest airport is Heathrow, 53 miles away.

Rail: The nearest railway station is Didcot Parkway, 10 minutes from the site by taxi.

Car: The site is close to the A34. For full directions by road visit the event page on the AILU web site.

Accommodation

Please see the AILU web site page for this event for a list of nearby hotels and guest houses. Rooms have been held until **21 August** at The Cosener's House in Abingdon (coseners@rl.ac.uk, 01235 468309) at a special rate of £71 B&B. Please quote ref: 60786

AILU reserves the right to alter the programme or cancel the meeting at short notice and accepts no responsibility for the views expressed by the speakers or delegates.

Courtesy of STFC Rutherford Appleton Laboratory



www.ailu.org.uk
the association of
AILU
laser users

Meeting future manufacturing needs with laser-materials innovations at the micro and nano level

Presentations, exhibition & tour

Tuesday 22 September 2009

STFC Rutherford Appleton Laboratory, Oxfordshire

Supported by:

Photonics & Plastic Electronics

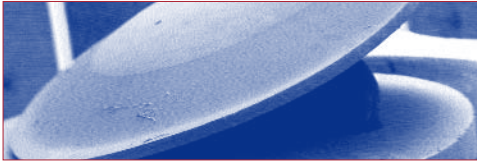
Nanotechnology

IOP Institute of Physics

Knowledge Transfer Network

Knowledge Transfer Network

Programme



Micro-machined lens Courtesy Imperial College

08:30 - 09:20 Registration and refreshments

09:20 - 10:50 **Session 1**

Welcome

Malcolm Gower Chair, Nanophoton Technologies

Keynote presentation

Micro manufacturing and nano surface functionalization with ultra short pulsed lasers

Arnold Gillner Fraunhofer ILT, Germany

The use of lasers for fabricating MEMS devices

Andrew Holmes Imperial College London

Nano-applications in healthcare and life sciences

Bob Stevens Rutherford Appleton Laboratory

10:50 - 11:20 Refreshment break



Silicon MEMS Courtesy: Laser Micromachining Ltd

11:20 - 12:40 **Session 2**

Ultrafast laser micro/nano processing research at the NCLA under the Inspire nanoscience platform

Alan Conneely National Centre for Laser Applications, Ireland

Ultrafast laser patterning of OLEDs & plastic electronics

Dimitris Karnakis Oxford Lasers

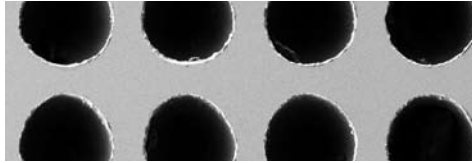
Laser manufacturing – reducing the time to market for micro-technology products

Nadeem Rizvi Laser Micromachining

Funding opportunities in micro and nano laser processing

TBC Technology Strategy Board or Nanotech KTN

12:40 - 13:40 Lunch & **EXHIBITION**



50 µm percussion-drilled hole array Courtesy: SPI Lasers Ltd

13:40 - 14:40 **Session 3**

Ultrafast fibre lasers for materials processing

John Clowes Fianium

Micromachining with nanosecond pulsed fibre lasers

Jack Gabzdyl SPI Lasers

The laser micromachining of sapphire and diamond

Neil Sykes Micronanics

14:40 - 15:00 Refreshment break



Close up of stent Courtesy Swiss Tec

15:10 - 16:00 **Session 4**

Enhancing laser microprocessing applications with smart control systems

Paul Apte Rideo Systems

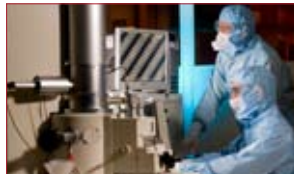
Laser processing systems to meet future manufacturing needs

Alan Boor Swiss Tec

Use of precision beam positioners in electronics manufacturing

Paul Marsden Electro Scientific Industries Europe

16:00 - 17:00 **TOUR:** (i) Micro and Nanotechnology Centre or (ii) Astra-Gemini laser facility



Micro and Nanotechnology Centre



Astra-Gemini laser facility

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 (= £163.30 incl. VAT)
 I am a member of AILU and/or one of the supporting organisations:
- PPE KTN Nanotechnology KTN 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 (= £201.25 incl. VAT)
- I wish to register as an exhibitor. Please reserve me:
- Space only A table A table and backboard
- The applicable rate is:
- GBP 135.00 (= £155.25 incl. VAT)
I am a member of AILU or one of the supporting organisations ticked above.
- GBP 175.00 (= £201.25 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.