

## About this workshop

Despite close to 50 years of active development, laser sources and related technologies continue to make major strides, especially in the areas of fibre delivery and high quality high power semiconductor and solid state ultra-short pulse and CW lasers, with no end yet in sight.

In 2006 AILU organised a workshop devoted exclusively to fibre lasers; it was a complete sell-out. Fibre lasers feature largely in this workshop also; indeed, a whole afternoon on the subject! But this event also addresses state-of-the-art fibre delivery and short pulse lasers. Indeed, the workshop aims to balance these topics with descriptions of the new or improved commercial applications that they make possible.

As a laser user association, AILU is keen to emphasise the importance of striking a balance between the 'technology push' of laser research and the 'user pull' of requirements for new and improved industrial applications for cutting, welding, drilling, milling applications, from micro and nano scale, from metal to polymers, from niche markets to mass manufacture.

For delegates at this workshop, we aim to challenge conventional thinking about the industrial performance and applications capability of laser technology whilst pointing the way to new opportunities for manufacturing industry.

### Bill O'Neill Workshop Chair



Bill O'Neill is a Reader in laser engineering within the Cambridge University Engineering Department. He has written over 100 scientific papers on laser-matter interactions, optical engineering and manufacturing process technologies. He is a member of a number of government and industrial advisory boards and a non-executive director of Advanced Laser Solutions Ltd.

Bill's current research interests include laser cutting, micro machining, modelling and simulation, micro and nano fabrication.

## Workshop information

### Venue

The Trinity Centre,  
Cambridge Science Park.



### Delegates

On the day the delegates will receive a name badge, essential notes for the day, together with a CD of key slides or presentation notes. A buffet lunch (including vegetarian options) will also be provided together with refreshments throughout the day. Please advise us of any special dietary needs.

### Exhibitors

The exhibition will be located on the concourse outside the meeting room, which is also where refreshments and lunch are served. Table tops of 910 x 1820 mm will be provided, but not back boards. Single phase power will be available throughout the exhibition area. The Centre will be open from 08.00 for exhibitors wishing to set up their tables before registration.

### Registration

AILU members need only give their names, by phone or email to [courses@ailu.org.uk](mailto:courses@ailu.org.uk). Otherwise a registration form should be completed.

Delegates who are not members of AILU or of a supporting organisation and who decide to join the Association within 10 weeks of the event will be reimbursed the difference between the member and non-member registration fee as a discount on their first year's corporate membership subscription.

Full details of AILU membership can be found at [www.ailu.org.uk](http://www.ailu.org.uk), taking the link to 'about us'.

### Travel

The Trinity Centre  
24 Cambridge Science Park  
Milton Road  
Cambridge  
CB4 0FN



The Cambridge Science Park is located on the outskirts of Cambridge (15 minutes from the city centre), and is easily accessible by car (close to M11 Jn 14, Postcode CB4 0FN) rail (a taxi ride from Cambridge Station) and air (Stanstead Airport).

A link to full directions to the Trinity Centre can be found on the AILU web site event page.

### Accommodation

The hotel recommended by the Trinity Centre is the Holiday Inn, Lake View (T: +44(0)870 400 9093; <http://www.HolidayInn.co.uk>), there is also a Travel Lodge and other hotels nearby.

### The Centre of Industrial Photonics (CIP)

After the workshop there will be an opportunity to attend an additional presentation about the work carried out at the CIP:

- **Bill O'Neill:** The Centre of Industrial Photonics within the Institute of Manufacturing.

Due to movement of premises there will not be a tour of CIP.

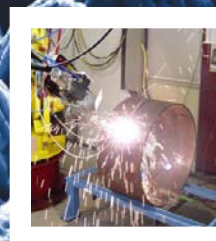
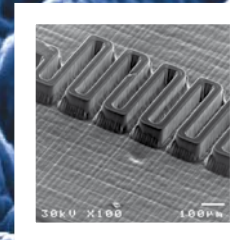
### Clinic

A selection of experts will be available for one-to-one technical and/or commercial discussions over most of the lunch period. Places can be reserved upon arrival or pre-booked by contacting the AILU office (T: +44 (0)1235 539595; E: [courses@ailu.org.uk](mailto:courses@ailu.org.uk)).

Title page pictures courtesy of (clockwise from top left) SPI Lasers; Oxford Lasers; Coherent; Bias. Background image MEC.

[www.ailu.org.uk](http://www.ailu.org.uk)

the association of  
**AILU**  
laser users



# Advances in lasers and beam delivery enabling new industrial applications

Presentations, exhibition & clinic

Wednesday 12 December 2007  
The Trinity Centre, Cambridge Science Park, UK

Supported by:

Institute of **Physics**

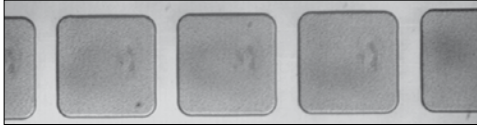


## Programme

09:00 - 09:30 Registration and refreshments  
09:30 - 10:40 Introduction and beam delivery

### Welcome

Bill O'Neill Cambridge University



Courtesy Rofin Baasel UK Ltd

### The David Greening Memorial Lecture:

#### High quality lasers and beam delivery – a user's perspective

Stewart Williams Cranfield University

#### Recent advances in fibre based high power laser beam delivery

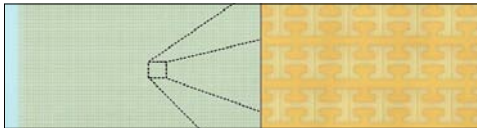
David Richardson Optoelectronics Research Centre, University of Southampton

#### Pulse length and beam shape – efficient material removal by laser

Dave MacLellan Rofin Baasel UK Ltd

10:40 - 11:10 Refreshment break

11:10 - 12:30 Short pulse lasers



Courtesy Powerlase

#### Micromachining with high average power picosecond lasers

Andrew Kearsley Oxford Lasers

#### New perspectives in the laser microdrilling

Alain Biernaux Lasag AG

#### Reducing laser processing variability in turbine engine manufacturing – three developments and their implications

Mark Barry Laserdyne

#### Applications of UV-DPSS lasers

Finlay Colville Coherent UK

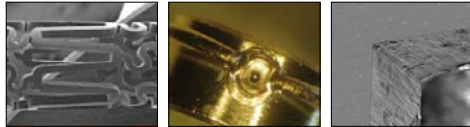
#### Kilowatt Class Q-switched Nanosecond Pulse DPSS Lasers Used In Global Manufacturing of Flat Panel Displays and Solar Cells

Matt Henry Powerlase

## Programme

12:50 - 13:50 Lunch & EXHIBITION  
13:10 - 13:40 Clinic

13:50 - 16:30 Fibre and Disk lasers



Courtesy SPI Lasers

#### High brightness cutting and welding

Bill O'Neill Cambridge University

#### Industrial multi-kW CW and QCW fibre lasers: micro- to macro-scale applications

Sergei Popov IPG Photonics

#### Pulsed fibre laser applications

Jack Gabzdyl SPI Lasers UK

14:50 - 15:20 Refreshment break

#### Novel ultrafast fibre laser source in micromachining aerospace applications

Paul French Lairds Laser Engineering Centre

#### Improvement in laser material processing with low power fibre laser with enhanced peak power feature

Mo Naeem GSI Group

#### A method of laser beam surface modification using the Surf-Sculpt® process

Paul Hilton TWI

16:30 Close

Courtesy CIP



Due to movement of premises there will not be a tour of the Centre for Industrial Photonics (CIP). However, for those of you who are interested Bill O'Neill will be making a short presentation about the Centre's work.

The Centre for Industrial Photonics (CIP) is at the forefront in the application of industrial laser systems in precision manufacturing and advanced materials processing, developing leading-edge technologies and transforming them into commercially viable processes for industry. It achieves this through strong collaborative partnerships with government, academia and industry.

The Centre is part of a global network of photonics-based research and education organisations that seek to deliver excellence in research, education, technology transfer and photonics-based business developments.

[www.ailu.org.uk](http://www.ailu.org.uk)

## Registration Form

Lasers and beam delivery enabling new industrial applications

12 December 2007

### Delegate information

Title 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

- I wish to register as a delegate. The applicable rate is:

GBP 135.00 (= £158.62 incl. VAT)

I am a member of AILU and/or one of the supporting organisations:

Photonics KTN  Institute of Physics

GBP 65.00 incl. VAT  
I am unemployed or retired.

GBP 40.00 incl. VAT  
I am a full time student.

GBP 170.00 (= £199.75 incl. VAT)

- I wish to register as an exhibitor. Please reserve me a table.

The applicable rate is:

GBP 135.00 (= £158.62 incl. VAT)

I am a member of AILU or one of the supporting organisations ticked above.

GBP 170.00 (= £199.75 incl. VAT)

- I am registering as a delegate and exhibitor.  
Please give me a GBP 50 (= £58.75 incl. 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.

Complete the form and return by fax or post.  
AILU, 100 Ock St, Abingdon, Oxon OX14 5DH UK.  
Fax: +44 (0)1235 550499