

Industrial Laser Applications Symposium (ILAS) 2011

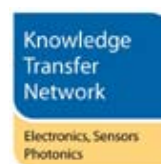
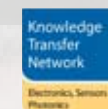
New developments in laser technology and the processing of materials for industrial applications

**PROGRAMME
and
REGISTRATION FORM**

15 - 16 March 2011

The Centre, Birchwood Park, Warrington

Supported by:



The Electronics, Sensors and Photonics (ESP) Knowledge Transfer Network (KTN) encompasses plastic electronics, embedded systems, displays, lighting, instrumentation, control systems and lots more. The ESP is currently one of 18 KTNs; it is a government-sponsored initiative managed by the Technology Strategy Board. The objective of a KTN is to improve the UK's innovation performance by increasing the breadth and depth or the knowledge transfer of technology into UK-based businesses and by accelerating the rate at which this process occurs.

Organising Committee for ILAS 2011

Malcolm Gower	Imperial College, London
Mike Green	AILU (Secretary)
Mark Greenwood	JK Lasers, GSI Group
Duncan Hand	Heriot-Watt University
Paul Hilton	TWI (Chair)
Gerry Jones	Trumpf UK
Martin Sharp	Liverpool John Moores University
Lin Li	University of Manchester
John Powell	Laser Expertise
Stewart Williams	Cranfield University

Registration as a delegate

AILU members need only give their names to the AILU office (E: events@ailu.org.uk; T: +44 (0)1235 539595). Otherwise a registration form should be completed.

Delegates

Delegates will receive a name badge and a pack including a list of delegates and extended abstracts for the presentations. A password will also be provided to access and download key slides of presentations after the event. The cost also includes a buffet lunch together with refreshment breaks throughout the day. Please advise us of any special dietary needs.

Reductions

Concessions are given to retired and unemployed persons and special rates apply for students. AILU members receive a 15% discount. Delegates who are not members but who 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.

For more information on AILU, please visit www.ailu.org.uk and follow the 'about us' link.

Facilities

The registration desk, exhibition area, refreshment and lunch breaks are all located in a screened off area of The Centre's Garden Restaurant. The body of technical papers will be presented in parallel, in the tiered lecture theatre and in the adjacent Astley meeting room.



The building layout makes it easy for delegates to move between the presentation and the refreshment/exhibition areas. A lake walk, terrace and a coffee bar, all adjacent to the Garden Restaurant, are ideal for delegates wishing to meet outside of the programme schedule.

Technology dissemination

The association is driven by a passion for lasers and their applications in manufacturing and delegates will find help at hand at the AILU desk throughout the symposium. As part of AILU's technology dissemination mission, every effort will be made to make informal introductions with appropriate experts at the symposium to discuss any technical or business matter you may wish to raise.



Registration as an exhibitor

To book a space or table complete the registration form or contact the AILU office (E: events@ailu.org.uk; T: +44 (0)1235 539595). Spaces are limited so early booking is recommended. Power is available but not backboards.

Additional events

Evening meals

An informal evening meal will take place on the evening of 15 March in the Garden restaurant for symposium delegates and their partners.

Presentations of the AILU Award and Young UK Engineer's Prize

The presentation of the AILU Award and UK Young Laser Engineer's Prize for 2011 will take place after the closure of the afternoon session on 15 March. To find out more, visit the AILU site and take the links to 'Awards and Prizes'.

AILU AGM

The Annual General Meeting of the Association will take place in the conference centre on 15 March after the afternoon presentations. All symposium delegates are invited to attend and learn about AILU activities over the last year.

Registration form

Delegate contact information

Title First name Surname

Position:

Organisation:

Address:

Post Code:

Tel: Fax:

E-mail:

Delegates

I wish to register as a delegate for the following (tick all that apply):

- 15 March 16 March

Exhibitors

I wish to reserve an exhibition table for the following (tick all that apply): 15 March 16 March

Please note that if you are an exhibitor and wish to attend the technical sessions then you also need to register as a delegate; but there is a substantial discount for this - see over.

Symposium dinner

- I wish to reserve a place at the dinner (15 March)
Special dietary requirements

Additional persons

Additional persons you wish to register (see costs over)

1. _____ Delegate
 Exhibition
 Other

2. _____ Delegate
 Exhibition
 Other

Please complete the payment details on the other side. See also details in the 'Registration information' panel

AILU, 100 Ock St, Abingdon, Oxon OX14 5DH UK.

T: +44 (0)1235 539595 F: +44 (0)1235 550499

E: events@ailu.org.uk

Overview of events

■ = Garden restaurant ■ = Lecture theatre ■ = Astley room

15th March

- 08:30 - 09:30 Registration and exhibition
- 09:30 - 10:30 **Plenary Session (1)**
- 10:30 - 11:00 Refreshments and exhibition
- 11:00 - 13:20 **Sources and systems**
- 11:00 - 13:20 **Beam Manipulation**
- 13:20 - 14:20 Lunch and exhibition
- 14:20 - 16:10 **Additive manufacturing (1)**
- 14:20 - 16:10 **Cutting and Drilling (1)**
- 16:10 - 16:40 Refreshments
- 16:40 - 17:40 **Additive manufacturing (2)**
- 16:40 - 18:00 **Cutting and Drilling (2)**

Additional events

- 18:10 - 18:40 **Presentation of the 2011 AILU Award and the Young Laser Engineer's Prize.**
- 18:40 - 19:10 **The AILU AGM**
All conference delegates are invited to attend
- 20:00 Conference meal in the Garden Restaurant

16th March

- 08:30 - 09:15 Registration and exhibition
- 09:15 - 10:00 **Plenary Session (2)**
- 10:00 - 10:30 Refreshments and exhibition
- 10:30 - 13:00 **Micro-joining**
- 10:30 - 13:00 **Surface modification (1)**
- 13:00 - 14:00 Lunch and exhibition
- 14:00 - 15:30 **Macro-welding (1)**
- 14:00 - 15:20 **Surface modification (2)**
- 15:20 - 15:50 Refreshments and exhibition
- 15:50 - 17:30 **Macro-welding (2)**
- 15:50 - 17:30 **Surface modification (3)**
- 17:30 Departures

Travel and accommodation



Venue

Birchwood Park is in Warrington, about 10 miles from Manchester and 15 miles from Liverpool. The symposium takes place in The Centre, which provides the main restaurant and conference facility for the Park.

A map of the Birchwood Park site showing the location of The Centre and the other main buildings in the Park can be downloaded from the events page on the AILU website.

Travel

Road: Birchwood Park is within a mile of the M62 and M6 motorways junction and is therefore very easily accessible by road. A map showing the local road network and nearby railway stations can be downloaded from the events page on the AILU website.

Address: The Centre, Birchwood Park, Warrington WA3 6YN (T: 01925 282 940)

There is plenty of free parking adjacent to The Centre and a low cost pay and display car park across the road. The Ramada hotel is only a short walk away (see below) and has free parking for guests.

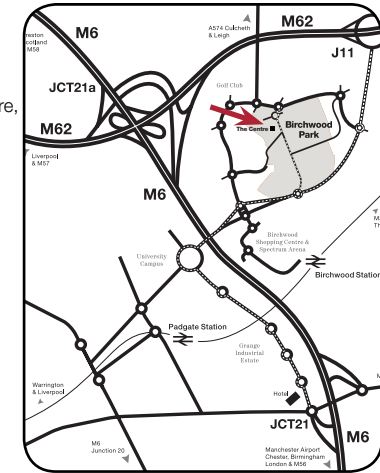
Rail: Birchwood station is on the Liverpool Lime Street to Manchester Piccadilly Line and is only 1 mile from The Centre.

Air: Manchester and Liverpool are both served by international airports.

Accommodation

Ramada Encore, Birchwood Park
Aston Road, Warrington WA3 6ZN
T: +44 (0)1925 847 050
<http://www.encorewarrington.co.uk>
Located only 400 m from The Centre. (discounted rooms may be available - contact T: 0844 8013690 and quote discount event number: 18775)

There are other hotels within and nearby to Birchwood Park. A full list can be found on the AILU website events page for this event.



Introduction

Objective of ILAS

To be the premier event for the UK laser community of researchers in laser materials processing and laser users in manufacturing, to disseminate technology and explore opportunities.

Aims

- To present current laser-related materials processing technologies and applications to UK manufacturers.
- To showcase UK laser materials processing activities.
- To provide an opportunity for the laser materials processing research community to come together to identify opportunities from recent developments.
- To enhance technology transfer from the research community to laser users and current non-users in the manufacturing sector.

Scope

Presentations will address laser equipment and industry applications of laser materials processing, from macro to fine scale. Topic areas include:

- Processes: cutting, drilling and surface processing (including marking and texturing), joining (including welding, brazing and soldering) and additive manufacture.
- New 21st century applications in areas such as transport, energy generation and supply, healthcare, bioscience and high value manufacturing.
- Equipment: new laser sources, beam modification, measurement & monitoring and delivery, and integration in machines.
- Case studies and reviews: government funded projects, collaborative research projects, strategic planning.

The presentations will be a mix of research and practical papers at all levels of specialisation, from the newcomer to the experienced researcher.

Who should attend?

- Senior managers, engineers and designers from manufacturing industry
- UK researchers in academia and industry
- Those new to lasers and laser materials processing as well as experienced practitioners

An opportunity

One of the key features of an AILU event is the opportunity it provides for networking and for discussing technical matters: a comfortable environment, generous lunch and refreshment breaks, an exhibition and help at hand to answer questions.

A personal invitation

ILAS is primarily a technology dissemination activity centred on the UK laser community of researchers and end-users. The first ILAS, a two day event held in early July 2009, proved a great success. Intended for all who share an interest in laser use in manufacturing, it attracted over 110 delegates. ILAS 2011 has a similar strong industrial orientation and presentations include practical as well as research papers.

Of course, to make this event a success, the speakers need an audience. Earlier this year I myself attended two short, laser related conferences in Germany: both of these conferences attracted audiences of over 300 people. I would really hope we could attract similar figures here in the UK. After all, we still claim to be a major force in laser materials processing research and development.

This symposium provides an ideal opportunity to find out about what's happening and who's who in the UK laser materials processing community. Do come yourself and please spread the word.

Paul Hilton AILU President



Day 1

09:30 - 10:30 Plenary Invited Papers

Innovation and invention with high brightness lasers
Eckhard Beyer Fraunhofer IWS

Innovation and Invention: future challenges for wealth creation in a developed economy
Bill O'Neill University of Cambridge

11:00 - 13:20 Sources and systems

Chair

Martyn Knowles Oxford Lasers

Keynote Presentation

Overview of current and future laser machine technology
Christian Föhl Trumpf

Materials processing versatility of ns pulsed fibre lasers
Jack Gabzdyl SPI

Fibre amplified microchip lasers, a new tool for micromachining
Jean-Edouard Communal Teem Photonics

Recent advances in fibre lasers for laser applications
Mark Richmond JK Lasers, GSI Group

Applying industrial laser innovation to modern manufacturing
Andrew May ES Technology

Laser markers and their integration into production environments
Neal Croxford ElectroX

14:20 - 16:10 Additive manufacture (1)

Chair

Lin Li University of Manchester

Keynote

The potential use of powder bed direct laser deposition technologies for the manufacture of aero engine parts
Jeff Allen Rolls-Royce

Concept laser, the new m1lab additive manufacturing solution
Colin Cater ES Technology

EOS' new micro laser sintering technology
Hannes Horst et. al. EOS GmbH

Development of compact lightweight structures in titanium 6-4 using SLM
Choon Yen Kong TWI

Industrial applications of laser cladding
Paul Goodwin Laser Cladding Technology Ltd

16:40 - 18:00 Additive manufacture (2)

Chair

Rob Scudamore TWI

Additive CAM: a new paradigm in additive manufacturing
Seshagiri Raso Vaddadi TATA Consultancy

Study of the mechanical properties of inconel 718 processed by selective laser melting
Sozon Tsopanos TWI

Laser deposition of white metals to hard facing materials
Adam Clare University of Nottingham

Day 1

11:00 - 13:20 Beam modification

Chair

Paul Hilton TWI

Keynote Presentation

Beam shaping – the spatial parameter
Martin Sharp Liverpool John Moores University

Diffraction shaping of a 3µm laser beam for skin drilling
Daniel Lloyd Laser Optical Engineering

Adaptive aberration correction for 3D laser material processing
Martin Booth EPSRC – University of Oxford

Diffraction Optical Element (DOE) beam shaping for high power industrial laser applications
Matthew Gibson Laser Optical Engineering

Benefits from laser beam analysis in the process zone for production and development
Otto Märten et.al. PRIMES

Ultrafast laser parallel processing of materials
Walter Perrie et. al. University of Liverpool, Coherent Scotland, Oxford Lasers

14:20 - 16:10 Cutting and drilling (1)

Chair

John Powell Laser Expertise

Keynote

Searching the way to innovation: 25 years of success and failure in developing laser processes as simple as cutting
Dirk Petring Fraunhofer ILT

Micromachining abrasive waterjets and lasers
Don Miller Finecut UK

Laser percussion drilling of aerospace materials with a high beam quality and high peak power lamp pumped pulsed Nd: YAG laser
Mohammed Naeem JK Lasers, GSI Group

Focus control for fibre laser material processing applications
Stephen Keen JK Lasers, GSI Group

The fibre laser: a new tool for processing carbon fibre reinforced plastic
Paul French Liverpool John Moores University

16:40 - 18:10 Cutting and drilling (2)

Real time process control solutions: the new frontier of laser machining
Valter Manuello et. al. Prima Industrie SpA/Finn-Power Oy

The fibre laser as a tool for dismantling
Ali Khan and Paul Hilton TWI

Burn, Slash, Scorch and Stick
Janet Stoyel The Cloth Clinic

Finishing and garment construction of recycled textiles using laser beams
Kate Goldsworthy et. al. The University of Arts, London/TWI

To download the complete current programme visit

A history of the laser
Malcolm Gower Imperial College, London

10:30 - 13:00 Micro-joining

Chair
Duncan Hand Heriot-Watt University

Keynote Presentation
Laser microjoining - an introduction to a variety of processes
Alexander Olowinsky Fraunhofer ILT

Laser welding methods for polymer microfluidic devices
Ian Jones TWI

Laser joining of dissimilar materials
Mohammed Naeem JK Lasers, GSI Group

Approaches to welding of thin copper with different wavelengths (Green and IR)
Paola De Bono TWI

Progress in pulsed laser welding of brittle and dissimilar metallic materials
Wolfgang Hemmer-Girod et. al LASAG/Rofin-Baasel/PRIMES

Hermetic packaging of micro-devices using selective laser bonding
Norbert Lorenz, Duncan Hand et. al. Heriot-Watt University

Gaussian or flat top beam profile for laser spot welding applications
Mohammed Naeem JK Lasers, GSI Group

14:00 - 15:30 Macro-welding (1)

Chair
Alan Thompson Tata Steel

Keynote
The industrial benefits of using fundamental material interaction parameters for laser welding processes
Stewart Williams Cranfield University

Increasing the application of laser welding using conduction mode
Eurico Assuncao Cranfield University

Self optimising and pre-emptive scanning system reduces processing times for welding applications
Simon Caiger JK Lasers, GSI Group

The output of gap control trials to guide clamping methodology on sheet metal with remote laser welding
Nic Blundell and Paul Meeson University of Warwick/Stadco

15:50 - 17:30 Macro-welding (2)

The evaluation of remote fibre laser welding to replace automated mig welding on automotive sub-frame assemblies
Richard Hewitt and Roger O'Brien University of Warwick/ThyssenKrupp Tallent

Hybrid laser-arc welding of ship building steel
Esa Lappalainen et. al. LUT

Application of hybrid laser-arc welding in line pipe steel
Supriyo Ganguly et. al. Cranfield University

Adaptively controlled high brightness laser-arc hybrid welding
CM Allen et. al. TWI

Seam tracking for deep narrow groove welding
Wolfgang Kölbl Meta Vision Systems

10:30 - 13:00 Surface modification (1)

Chair
Malcolm Gower Imperial College, London

Keynote
Laser opportunities within the solar industry: revenues on offer, technologies being pursued and how to access them
Finlay Colville Solarbuzz

Pico Second laser ablation: A practical approach
Georg Dobler Swiss Tec

Online monitoring of industrial laser cleaning process by probe beam reflection and plume emission spectroscopy
Clive Grafton-Reed Rolls-Royce

Long-pulse CO₂ laser interactions with weakly absorbing polymers
Abigail Marchant and Howard Snelling University of Hull

Ultrafast imaging of rewriteable lithographic plates
Martin Sharp et. al. Liverpool John Moores University (+ 6 others)

Surface deformation monitoring during laser processing
Janez Možina University of Ljubljana

High-power direct diode laser heat treatment for aerospace components
Keith Parker and Walt Bosenberg Coherent Inc

14:00 - 15:20 Surface modification (2)

Chair
Jack Gabzdyl SPI Lasers UK

Development of a 5-axis laser engraving machine for producing functional textures on 3D surfaces
Rahul Kuchimanchi Gravutex Eschmann International Ltd

Generation of surface features using single mode lasers
Jonathan Blackburn and Paul Hilton TWI

The use of high power lasers in two applications related to nuclear decommissioning
Paul Hilton and Ali Khan TWI

High speed laser structuring with short and ultra-short pulses
Sascha Weiler, Trumpf

15:50 - 17:30 Surface modification (3)

Chair
Julian Burt Bangor University & Laser Micromachining Ltd

Fabrication of coronary stent by picosecond laser cutting of platinum
Noorhafiza Muhammad University of Manchester

YAGboss - laser micro-sculpting of metal surfaces for the manufacture of high precision optical encoder scale
Stephanie Giet et. al. Heriot-Watt University

Laser machining of hard coatings from micro-tools and in-process monitoring
Marimuthu Sundar University of Manchester

Laser-textured sub-nm elliptical bumps arrays on NiP/Al data storage disks
Ana Pena-Alvarez et. al. University of Manchester

Repeatable use of CPLA for optical micro/nanopatterning
Ashfaq Khan et. al. University of Manchester

All prices shown below exclude VAT (20% in UK from 4/1/2011)

Delegate registration

Please register me as a delegate Cost (£)

1 day ordinary delegate @ £175

2 day ordinary delegate @ £320

1 day student [1] delegate @ £40

2 day student [1] delegate @ £75

1 day concession [2] @ £70

2 day concession [2] @ £120

Symposium dinner (15 March) @ £30 _____

Sub total (A) _____

AILU member discount [3] A x 15% off - _____

Total (B) _____

Exhibition stand registration

The cost includes one person managing the stand but not attending the presentations

Please reserve me a stand

1 day @ £250

2 day @ £450

Additional persons on stand [4] @ £30/person/day

Symposium dinner (15 March) @ £30/person

Discount for joint delegate & exhibitor [5] @ £100 per day - _____

Sub total (C) _____

AILU member discount [6] C x 15% off - _____

Total (D) _____

Grand total excl. VAT (B + D) _____

[1] Full time student only.
 [2] Unemployed or retired.
 [3] To qualify for a discount, the delegate must be an AILU member or a nominated representative of an AILU member. Non members: see 'discounts' deal in 'Registration information' panel.
 [4] The charge covers refreshments and lunch and attendance at all other activities except the technical sessions. The first person on the stand is free. See other side for listing of additional stand-only persons.
 [5] This discount applies where the person registering the stand also registers as a delegate.
 [6] Only for organisations that have Corporate AILU membership.

Payment options

Please invoice me

I wish to pay in advance by:

Bank/Euro cheque in £ Sterling or EURO, payable to AILU

Visa/Mastercard: Name on Card: _____

Number _____ Exp _/ _/ _

Please debit my account

Signed: Date:

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