

Booking form

Modern Optical Technologies

18 - 22 January 2010

Course fees:

3 day: £885 **5 day:** £1380

Discounted rates are available for members of professional bodies/trade associations, and group bookings. Details available on request.

Surname

First name

Prof Dr Mr Mrs Miss

Position

Company

Address

Telephone no

Fax no

E-mail address

Payment

- Please find enclosed a cheque for
£
payable to Cranfield University
- Please invoice my company for the full
amount £
- Please debit my credit card Visa /
Mastercard

Card no

Start date

Expiry date

Issue no

Three digit security code (on reverse of card)

Amount £

Name of cardholder

Signature

Date

Please state any special dietary requirements

Course fee

The fee covers attendance, lunch, delegate coffee breaks and full meeting documentation. The fee does not cover travel or accommodation.

Cancellations and substitutions

It is regretted that cancellations and refunds cannot be made. However, the organisers will accept substitutions provided that written notification is received.

- Data protection** Please tick this box if you do not wish your details to be held by Cranfield University for the purpose of marketing courses, conferences, research programmes and other associated activities.

For further information contact the Academic Operations Unit:

T: +44 (0) 1234 754176

F: +44 (0) 1234 751206

E: shortcourse@cranfield.ac.uk

Please detach and return this form to:

Academic Operations Unit, Cranfield University,
FREEPOST BF463, Bedfordshire, MK43 0AL
UK.

Speakers

David Allen

Professor of Microengineering at Cranfield University. David is the author of the book entitled "Principles and Practice of Photochemical Machining and Photoetching".

Andy Carter

Vice President Research and Development at Bookham Inc., a global leader in optical components, modules and subsystems.

Peter Doel

Lecturer in Astronomy at University College London. His main focus is astronomical and industrial adaptive optics, carbon fibre composite optics, atmospheric and adaptive system modelling, stellar coronagraphy and adaptive X-ray optics.

Mike Dunne

Professor Mike Dunne is the Director of the Central Laser Facility at the Rutherford Appleton Laboratory.

Isidro Durazo

Research Fellow within Cranfield's Precision Engineering Centre. Isidro's current research interests are the wear of diamond tools and the material characterisation and performance of porous bearings.

Eli Atad-Etchedgui

Senior Optical Specialist at the UK Astronomy Technology Centre at the Royal Observatory, Edinburgh.

Silvia Marson

Research Officer at Cranfield University. Silvia's particular specialisation is on the development of plastic microfluidic devices for medical diagnostics.

Ralph Tatam

Professor (Personal Chair) and Head of Engineering Photonics at Cranfield University. Ralph's current research includes fibre optic sensors and instrumentation for strain, temperature, pressure, chemical and resin cure measurements.

Contact

For further details including registration information please contact:

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Modern Optical Technologies

3 and 5 day Industrial short courses, Cranfield University

18 - 22 January 2010

Introduction

Cranfield University offers this five day short course (also available as a three day option), which aims to cover, through lectures, laboratory visits and case studies, the science, applications and manufacturing techniques for modern optical systems. The five day course covers adaptive optics, optical sensors, optical telecoms, modern display systems, micro and nanoscale optics, x-ray optics and astronomy. Practical issues will be emphasised.

Course content

- Theoretical review of adaptive optics; curvature and Shack-Hartman sensors; linked to practical laboratory demonstrations
- State-of-the-art technology of optical display devices and devices based on Micro Optical Electro Mechanical Systems (MOEMS)
- Modern optical technologies applied to different industrial sectors such as astronomy, laser fusion and telecommunications.

Three day programme

Delegates have the option of attending days two to four as a three day short course. Further details available on request from the Academic Operations Unit.

Programme (five day)

Day one

- 09.00 **Fundamentals of micro-optics** – Isidro Durazo
- Principles of micro-optics
 - Applications of micro-optics
- 10.55 Break
- 11.10 **Silicon microfabrication** – David Allen
- Lithography and photoresists
 - Silicon etching techniques
 - LIGA and micromoulding
 - Examples of typical MEMS components fabrication.
- 13.05 Lunch
- 14.15 **Polymer micro-optics** – Silvia Marson
- Materials for polymer micro-optics
 - Processes: embossing, lithography, diamond cutting, injection moulding
 - Testing of polymer optics
 - Applications of polymer micro-optics.
- 16.25 **Polymer processing lab tour**

Day two

- 09.00 **Adaptive optics I** – Peter Doel
- Principles of adaptive optics
 - Deformable mirrors
 - Wave front sensors including Shack-Hartmann and curvature sensors.
- 10.55 Break
- 11.10 **Adaptive optics II** – Peter Doel
- 12.10 **Modern optics for astronomy I** – Eli Atad-Ettedgui
- Large mirror manufacture and test
 - Large deformable mirrors
- 13.05 Lunch
- 14.15 **Modern optics for astronomy II** – Eli Atad-Ettedgui
- Telescope disturbances
 - Sub-mm telescope design (CCAT)

Day three

- 09.00 **Optical fibre sensors** - Ralph Tatham
- Introduction to waveguides and optical fibers
 - Handling and connecting optical fibers
 - Sensors including interferometric and fibre grating
 - Applications and future developments.
- 10.55 Break
- 11.10 **Optical fibre sensors lab tour**
- 13.05 Lunch

Day four

- 09.00 **HiPER I** – Mike Dunne
- Inertial fusion and clean energy
- 10.55 Break
- 11.10 **HiPER II** – Mike Dunne
- Optical components requirements including:
 - non linear optical materials
 - optical components lifetime
 - alignment issues
 - large optics for high damage threshold
- 12.10 **Optical MEMS (MOEMS) technology I** – Chris Sansom
- MOEMS fabrication
 - Actuation techniques
- 13.05 Lunch
- 14.15 **Optical MEMS (MOEMS) technology II** – Chris Sansom
- MOEMS components and devices including mirrors and shutters.

Day five

- 09.00 **Optical telecom** – Andy Carter
- Optical networks including:
 - Laser-fiber couplers
 - Optical cross connectors
 - Tunable filters
- 10.55 Break
- 11.10 **Visit to Bookham Technology I**
- 13.05 Lunch
- 14.15 **Visit to Bookham Technology II**

