

**Call for papers**



**OFS-20**

Edinburgh, Scotland

The Twentieth International Conference on  
Optical Fibre Sensors  
5–9 October 2009

**Co-located with Sensors & their Applications XV  
Edinburgh Conference Centre,  
Heriot-Watt University, Scotland, UK**

**Submission deadline:**

**15 April 2009**

[www.ofs20.org](http://www.ofs20.org)



The International Conference on Optical Fibre Sensors was first held in London, in 1983. Since then it has become established as the leading forum for all research into optical fibre and guided wave optical systems for instrumentation, sensing and imaging, and their applications in physical, chemical and biological measurement. The conference is held approximately every eighteen months, rotating between the Americas, Europe, and Asia and the Pacific. For OFS-10 in 1994 the conference returned to the United Kingdom, and was held in Glasgow. It will return to the United Kingdom again in 2009, when it will be held in Edinburgh. The conference will be held in association with the Optics and Photonics Division of the Institute of Physics and is co-sponsored by the SPIE. For the first, time, the IOP's Sensors and their Applications conference will be co-located with OFS (see [www.iop.org/conferences](http://www.iop.org/conferences)). OFS-20 will offer invited and contributed paper presentations – both in oral and poster sessions – special workshops, a commercial product exhibit, as well as social and cultural events. We look forward to welcoming you to OFS again, and to Scotland.

*Professor Julian Jones*  
**OFS-20 Chair**

## Important dates

<b>Conference dates:</b>	5-9 October 2009
<b>4-page paper submission deadline:</b>	15 April 2009
<b>Early registration deadline:</b>	3 September 2009
<b>Post deadline papers:</b>	14 September 2009
<b>Registration deadline:</b>	21 September 2009

### For more information please contact:

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### Organisers

**IOP** Institute of Physics

### Sponsors





## Conference Chairs

### Conference Chair

**Professor Julian Jones**, Heriot-Watt University, UK

### Conference Co-Chairs

**Professor Jose Miguel Lopez Higuera**, University of Cantabria, Spain

**Professor Reinhardt Willsch**, IPHT Jena, Germany

### Technical Programme Committee Co-Chairs

**Professor Brian Culshaw**, University of Strathclyde, UK

**Dr Wolfgang Ecke**, IPHT Jena, Germany

### Local Organising Committee

**Dr William MacPherson**, Heriot-Watt University, UK

**Dr Robert Maier**, Heriot-Watt University, UK

### IOP Optics and Photonics Division Chair

**Professor Allan Boardman**, University of Salford

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**Dr. Ryoza Yamauchi** (Fujikura, Ltd., Japan)

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Provisional

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**Prof. Luc Thevenaz** (EPFL, Switzerland)

**Prof. Moïshe Tur** (Univ. Tel Aviv, Israel)

**Mr. Akira Wada** (Fujikura Ltd., Japan)

**Prof. Shinji Yamashita** (Univ. of Tokyo, Japan)

## Workshop

The conference will also feature a workshop on photonic crystal fibres and their application in sensing. This workshop was stimulated through an association between many of the UK OFS community and their counterparts in India.

## Plenary Speaker

**Prof. Philip Russell FRS** (University Erlangen-Nuremberg, Germany)

Recent Developments in Photonic Crystal Fibres

## Special Session “Biophotonic Instrumentation & Sensing”

Bio-photonics is a rapidly developing multi-disciplinary research area that utilises light-based technologies in medicine and life sciences. Because of its economic and socio-political importance for biology, physiology, health-care diagnosis and therapy, bio-photonics has stimulated enormous growth of research and industry. World leading scientists in bio-photonics will present their research areas in the following invited lectures (provisional):

**Prof. Juergen Popp** (University & IPHT Jena, Germany)

Photonic instruments for molecular imaging and bio-diagnostics

**Dr. Frank Vollmer** (Harvard University, USA)

Whispering-gallery-mode biosensing: label-free detection down to single molecules

**Prof. Tanya Monro** (University of Adelaide, Australia)

New soft-glass fibre-based biosensors

**Prof. Seok-Hyun Yun** (Harvard Medical School, USA)

Brillouin imaging for biomedical applications

**Prof. Jon Cooper** (University of Glasgow, UK)

Bio-nanotechnology and micro-fluidics for lab-on-a-chip systems

### Invited Speakers

Invited speakers will include:

**Prof. Francis Berghmans** (Vrije Universiteit Brussel, Belgium)

Photonic skins for optical sensing

**Prof. Kevin P. Chen** (Pittsburgh University, USA)

Applications of hollow-core photonic crystal fiber in bio- and chemical sensing

**Prof. Young-Geun Han** (Hanyang University, Korea)

Long-distance remote sensors for simultaneous measurement of strain and temperature based on multi-wavelength fiber lasers



**Dr. Alan Hsu** (*Sandia National Laboratories, USA*)

Optical current sensors based on localized domain effects

**Dr. Gang-Ding Peng** (*University of New South Wales, Australia*)

Spectrally coded multiplexing for fibre grating sensor systems

**Dr. Johan Vlekken** (*FOS&S, Belgium*)

FBG sensor system fitted for in-flight aircraft structural monitoring

Additionally, exceptional submitted papers may be presented as invited talks

## Topics and Scope

The conference embraces all research into guided wave optics and photonic systems for instrumentation, sensing and imaging, and their applications in physical, chemical and biological measurement, with emphasis on optical fibre and guided wave technology, and where 'optics' includes the spectrum from infra-red to ultra-violet. The scope extends from relevant theory and fundamental science to engineering realisation. Example fields of application include:

- Fundamental metrology and research;
- Medicine and the life sciences;
- Environmental monitoring and earth observation;
- Defence, security and public safety;
- Structural engineering and civil infrastructure;
- Aerospace;
- Oil, gas and mining;
- Renewable energy;
- Industry: metrology, process monitoring and machine vision.

The conference will include, but is not restricted to, the following topics:

### 1. Physical, Mechanical, Acoustic and Electromagnetic Sensors:

Temperature; pressure; strain; vibration; acceleration; flow; rotation; displacement; generation and detection of ultrasound; magnetic field; electric field; current; and voltage.

### 2. Chemical, Environmental, Biological, Biochemical and Medical Sensors, and Biophotonics:

Remote and fibre-addressed spectroscopy; environmental monitoring; photonic principles, devices and instruments for biochemical sensing; in-vivo imaging and monitoring; optical coherence tomography; agent detection; trace analysis.

### 3. Interferometric and Polarimetric Sensors:

Gyroscopes; hydrophones; geophones; and acoustic sensor arrays.

### 4. Micro and Nano-Engineered Sensors and Devices

Photonic crystals; hollow core fibres; nano-materials and nano-optical devices; micro-fluidic devices; diffractive optics.

### 5. Security and Defence Applications

Bioagent and biohazard sensors; intrusion detection; perimeter security; coastal and underwater sensors.

### 6. Smart Structures and Materials:

Structural health monitoring; strain and deformation sensors; fibre embedding techniques; condition monitoring algorithms.

### 7. Distributed Sensing:

Time, frequency and coherence domain reflectometry; Rayleigh; Raman and Brillouin detection techniques; sensing

cable systems and designs.

### 8. Multiplexing and Sensor Networking:

Topologies and theories; multiplexing techniques; applications.

### 9. Passive and Active Devices for Photonic Sensing:

Sources; detectors; modulators; specialty fibres; integrated optics devices; fibre Bragg gratings; MEMs; micro-optical components.

### 10. Systems and Field Tests:

Installations and field demonstration of photonic-based sensing systems; metrology projects; commercialisation activities and marketing.

## Paper Submission Process

Original papers reporting on new research and development results, practical implementations and novel applications in any of the technical areas described in the Conference Scope are solicited.

### 4-page Paper

A 4-page paper must be submitted electronically via the website [www.ofs20.org](http://www.ofs20.org), where you will be re-directed to the MySPIE paper submission centre. Please follow the paper formatting instructions posted on the OFS-20 web site. The submitting author should supply contact information (full names, affiliations, addresses, phone numbers, and emails) for all authors listed on the paper. Also, you will be asked to select a topic from the preceding "Topics and Scope" listing, and to give your preference for oral or poster presentation when submitting your paper.

### 100-word Abstract

The submitting author should also supply a separate 100-word abstract on-line. If accepted, this abstract text will be published on the OFS-20 web site and in the printed Final Programme.

### Submission Due Date

The 4-page paper, the 100-word abstract, and the Author Copyright agreement must be submitted electronically to the OFS-20 submission site no later than 15 April 2009. Adherence to the formatting instructions for preparation of the paper and abstract is imperative; faxed submissions will not be considered. All submissions will be peer reviewed by the Technical Programme Committee.

Accepted conference papers will be published in a printed conference Proceedings book, and in the SPIE Digital Library.

### Post-Deadline Papers

For a limited number of late submissions, a Post-Deadline Paper session will be arranged in the course of the conference.

### Student Awards

It is intended to make awards for the best student-authored papers. Students should therefore indicate their wish to be considered for an award when submitting their paper.



## Special issue of the Journal of Measurement Science and Technology

Contributors to OFS-20 are invited to submit their expanded papers to a Special Issue of papers from the conference to be published in *Measurement Science and Technology*.

Papers will be subject to the same high standards of peer review as regular submissions to the journal. The deadline for submissions to the Special Issue is 31 December 2009.

We expect authors to take the opportunity to expand their papers to the length and standard required for a full journal article.

## Conference Registration

The registration fee for the conference includes admission to all technical sessions and the exhibition, a copy of the conference papers, coffee breaks, lunches, welcome reception and the conference dinner at Prestonfield House.

The early registration deadline is 3 September 2009. Early registration is strongly encouraged to avoid delays during the conference and to benefit from the discounted fee.

### Payment

The preferred method of registration and payment is via the conference website by credit card. All credit card on-line payments must be made in Pounds Sterling. On acceptance of on-line payment, an automatic receipt will be issued. The OFS-20 Conference Secretariat will issue a confirmation receipt. A registration form (available from the OFS-20 website) must accompany payment. Forms without payment will not be processed. Register online at: [www.ofs20.org](http://www.ofs20.org)

### Refund Policy

Requests for refunds should be made in writing and must be received no later than 21 September 2009 to be honoured. An administration charge of 20% will be levied for processing refunds. Correspondence requesting the refund should state the registrant's name and to whom the refund should be made payable.

## Conference Location

Visit Edinburgh and you will discover the perfect balance between old and new. Under the shadow of its famous national monuments, Scotland's capital hides a wealth of quality restaurants, café bars, art galleries, shops, museums and is famous for playing host to the world's largest arts festival. Edinburgh offers the excitement of a modern and thriving cosmopolitan city, whilst managing to retain all its historic splendour. With its stunning Georgian and Victorian architecture, and winding mediaeval streets, it's easy to see why Edinburgh has been listed as a World Heritage Site.

The conference and exhibition will take place at the Edinburgh Conference Centre on the Heriot-Watt University campus. Set in secluded parkland seven miles west of Edinburgh, the Edinburgh

Conference Centre is ideally located within ten minutes from Edinburgh Airport and central to Scotland's motorway network with easy access to Glasgow and the north. 300 free car parking spaces are available for conference delegates, in addition to a frequent bus service to and from the city centre

## Visa Requirements

Some international conference attendees will be required to obtain an Academic Visitor visa for entry to the UK. A list of nationalities that require visas can be found at:

**<http://www.ukvisas.gov.uk/en/doineedvisa/visadatvnationals>**.

Of those attendees who do need a visa some will be able to apply on-line; please go to

**<http://www.visa4uk.fco.gov.uk/CountrySupport.aspx>** for a current listing of countries which allow on-line applications. The current cost of an Academic Visitor visa is GBP 65.00. The conference secretariat will be able to supply a standard letter of invitation to those participants who require it.

## How to get to Edinburgh

### By Air

Edinburgh Airport: +44 (0)870 0400 007

Web: **[www.edinburghairport.com](http://www.edinburghairport.com)**

Edinburgh airport benefits from over 40 airlines serving over 100 destinations, including New York, Atlanta, Amsterdam, Brussels, Frankfurt, Geneva, Hamburg, Paris and Stockholm. There are over 150 flights between Edinburgh and London Airports every day. For more information on the airlines that fly to Edinburgh airport please visit the website listed above (from the home page click on the **Plan and book your trip** at the top, and then select **Destinations and airlines** from the left hand menu). The airport is on the west of the city, just 3 miles from the campus. The journey by taxi takes about 10 minutes.

### By train

National Rail Enquiry Service (24 hours): +44 (0)8457 48 49 50

Web: **[www.nationalrail.co.uk](http://www.nationalrail.co.uk)** or **[www.thetrainline.com](http://www.thetrainline.com)**

The mainline rail network serves the centre of Edinburgh. Edinburgh Waverley is at the east end of Princes Street and Haymarket station is at the west end. Onward travel to Heriot-Watt University can then be made either by taxi or local bus from either rail station, please see web pages above for further information.

## Hotel Accommodation

Single en-suite university accommodation will be available on site. However, many participants will prefer to be accommodated in the centre of Edinburgh. Information on suitable hotels and booking instructions will be published on the web-site in due course.



*See you in Edinburgh!*

## **Exhibition Information**

**Wednesday 7 – Thursday 8 October**

A vibrant technical exhibition is a long-standing feature of the OFS conference series. Companies wishing to exhibit or demonstrate their products and technology can do so at the Conference Exhibition, to be held Tuesday-Thursday. If you are interested in exhibiting at OFS-20 please email

**[chris.gracie@optoelectronics.org.uk](mailto:chris.gracie@optoelectronics.org.uk)**

## **Social Events**

A welcome reception for conference attendees and accompanying guests will be held on Monday 5 October at the Hub, on Edinburgh's Royal Mile. The Hub, one of Edinburgh's iconic landmarks, dominates the skyline on the Royal Mile between Edinburgh Castle and Holyrood Palace.

The conference dinner will be held at Prestonfield House on Thursday 8 October. Set in parkland just moments from the Royal Mile, Prestonfield House creates a memorable backdrop. The dinner will be held in the hotel's ballroom, once Prestonfield's original Georgian stable-block. The Stables at Prestonfield boasts its own dedicated kitchens under the personal supervision of Chef Gavin Elder; his team delivers what is now widely recognised as the finest banqueting food in Scotland. A ticket for the conference dinner is included with registration; however, accompanying guests will be required to purchase tickets to attend.