A Silicon photonic crystal nanocavity light-emitting diode based on defect luminescence. The electrons and holes (green and red circles) become trapped at the defects created by hydrogen plasma treatment as shown in the zoomed-in circle. The trapped carriers recombine radiatively to emit light in the wavelength range 1300 to 1600 nm. (A. Shakoor et al, Laser & Photon. Rev. 7, 114, Jan 2013).

Contents

- Chair’s report 2
- Main Article: Inside the Fraunhofer Centre for Applied Photonics 3
- QEP News 5
- Conference reports 7
- Forthcoming Events 8
- Prizes and Bursaries 11
- Notices 12
Chair’s report
Welcome to the first QEP Newsletter!
The Quantum Electronics and Photonics Group of the Institute of
Physics has been around for over 40 years but unlike some other
groups, has not had a Newsletter
before, at least as far as I am aware.
Whilst we all get regular e-mails from
the IOP notifying us of meetings and
events, it seemed to us, the QEP
Committee that is, that there was a
place for a Newsletter for the group
that would help us gel better as an
identified community.
Dr Jason Smith at Oxford University
has very kindly agreed to take on the
task of editing and producing the
Newsletter – but of course he needs contributions from you! You can
share news about recent conferences, feature ‘hot topics’ in our field,
and post notices relevant to the community. The idea is foster a free
flow of news between academia and industry, between students and
professors. Please email suggestions for content to Jason at
jason.smith@materials.ox.ac.uk.

In this first edition you will find an article by Prof. Martin Dawson, who
describes the Fraunhofer Centre for Applied Photonics in Glasgow,
which will provide valuable and much-needed support for the
 photonics industry in the UK. Dr Dave Binks tells us about the
upcoming International Conference on Quantum, Atomic, Molecular
and Plasma Physics (QuAMP), and we include an extract from a
report on the recent Sino-UK workshop on Nanophotonics and
Metamaterials organised by Dr Beth Taylor. Plus much more!
Please let me know what you think of the first edition
(m.mccall@imperial.ac.uk), and also if you have any suggestions for
how we can develop this forum. We would particularly like to include
contributions from industry, currently a bit under-represented on the
Committee!
Main Article: Inside the Fraunhofer Centre for Applied Photonics

Last year the Institute of Photonics at the University of Strathclyde established the UK’s first Fraunhofer Centre, offering new opportunities for the photonics community in Scotland, the UK and beyond. This new Centre for Applied Photonics is firmly based on the proven and sustainable Fraunhofer model. The Fraunhofer Society is highly regarded for delivering industry-driven, commercial outcomes from high quality research, development and engineering. The inaugural Head of Centre, Professor Martin Dawson, remains as Research Director at the Institute of Photonics, in keeping with the model, ensuring close links to the research community.

Currently in newly refurbished offices and laboratories, Fraunhofer CAP looks forward to being based in the university’s Technology and Innovation Centre, which is due to open in 2014. It has grown quickly to 14 members of staff, has a number of TSB and EU projects established already and has direct contract work with industry in place. In the first six months of operating, Fraunhofer CAP had secured more than £1.4M of project support.

Ambitious plans to grow to 80 staff and postgraduate students are supported by Fraunhofer and the university, the Scottish government, Scottish Enterprise and the Scottish Funding Council over the first five years of its business plan. It is expected to be the model for more Fraunhofer research centres around the UK, in a range of technical areas. The UK headquarters for all future centres has also been established in Glasgow.

Technical expertise includes solid-state and semiconductor disk lasers, OPO’s, and research staff have worked on laser, sensing and
imaging systems for a wide range of markets. The aim is to grow interests in manufacturing and imaging and also to recruit for skills and expertise in those areas with strongest industrial needs.

The new laboratories were officially opened on the 18th of April. Education Secretary Michael Russell said: "Scottish universities are known around the world for their excellence and Glasgow has a global reputation for advanced research and technology. It's great news that this success has helped to attract Fraunhofer to Scotland."

University of Strathclyde principal Prof. Jim McDonald commented: "It is fitting that the UK's first Fraunhofer Centre is dedicated to lasers, a thriving industry Scotland has excelled in for decades. The plans have already been endorsed by our partners in industry and we look forward to working together to innovate, design and develop the products and services of tomorrow."

Fraunhofer-Gesellschaft executive board member Ulrich Buller said the university had an excellent reputation for industrial engagement and specifically for photonics research and commercialisation via its Institute of Photonics and other research groups."Consequently, Fraunhofer has been eager, for some time, to create a research centre in Glasgow in conjunction with Strathclyde," he added.

The UK headquarters and the Fraunhofer Centre for Applied Photonics will join a growing community of Fraunhofer centres globally. Fraunhofer has more than 22,000 employees in more than 80 research units in Germany alone with research ongoing in USA, Italy, Austria, Portugal and Chile. Fraunhofer research has formed the basis of a wide range of technologies for industry and products in everyday use, such as the MP3 player and apps for mobile phones, including customised weather reports and music identification systems like the iPhone app, Shazam.
ICT pioneers winners announced

The winners of a prestigious national competition for pioneering information and communication technology (ICT) researchers were announced on Nov 28th at The Sheraton Park Lane Hotel, London. Researchers showcased their work before being awarded cash prizes of £2,000 in the competition’s four categories. The overall winner was David Beesley from the Plastic Electronics Doctoral Training Centre at Imperial College London who was presented with a bonus prize of an extra £1,000 by Minister for Universities and Science, David Willetts.

Photonics Companies Win Queen’s Award for Enterprise

Three photonics companies have received the Queen’s Award for Enterprise, the UK’s most coveted award for business success. Edinburgh Instruments of Livingston, a photonics and electro-optical scientific instrumentation manufacturer, was honored for its sustained international growth. The solid-state laser manufacturer Laser Quantum of Cheshire was recognized for providing equipment and services to the aerospace, medicine, research and biomedical sectors. Fianium of Southampton received the award in the innovation category for its development of the WhiteLase supercontinuum fiber laser. The awards are made each year by the queen on the advice of the prime minister and an advisory committee.
Photonics Leadership Group re-forms

The Photonics Leadership Group (PLG) has announced that it has been reformed with backing from over 50 leading UK photonics manufacturers, associations and research institutes. At a meeting in London on 8 May the PLG voted Dr Christopher Dorman, of Coherent Scotland to act as Chairman and Dr John Lincoln of Harlin Ltd as Chief Executive, with the vision to lead the growth of the dynamic UK photonics industry. The Photonics Leadership Group aims to:

1. Increase the **UK’s position** from its current place as one of the top 5 photonics manufacturers and innovators globally.

2. Enhance a strong and competitive photonics **supply chain** from basic components to high value integrated systems for applications from healthcare to defence and advanced manufacturing.

3. Provide a clear **voice** for the UK photonics industry emphasising the value of photonics as an essential element in solutions to societal challenges and as a rapidly growing manufacturing industry driving significant economic growth.

4. Maximise new photonics innovation and its commercialisation, strengthening UK industry to enhance exports and attract inward investment improving the competitiveness and growth of the UK economy.

Welcoming the Technology Strategy Board’s identification of Photonics as an enabling technology in November 2012, and acknowledging the significant investment of the Engineering and Physical Sciences research Council (EPSRC) in photonics over many years, the group aims to maximise growth of an industry that was described by Neelie Kroes, Vice-President of the European Commission, as essential to keeping over 10% of the European economy competitive.

2013 IEEE Photonics award announced

Peter F. Moulton, Vice-President and CTO of Q-Peak, Inc., Bedford, MA, USA, has been awarded the 2013 IEEE Photonics award “For the discovery of the Ti:Sapphire laser and the development of many novel solid-state laser systems and applications.” [www.ieee.org](http://www.ieee.org)
Conference reports
Photon 12

September 3-6, 2012
Photon12 was the largest optics conference in the UK and the sixth in the series; following Photon02 (Cardiff), Photon04 (Glasgow), Photon06 (Manchester), Photon08 (Edinburgh) and Photon10 (Southampton). Photon12 was held in Durham and was chaired by Professor Allan Boardman, University of Salford, Chair of the IOP Optics and Photonics Division [OPD] and Vice-President of the UKCPO.
The next conference in the series, Photon 14, will be held at Imperial College on Sept 1-4, 2014. The conference chair will be Professor Gordon Love FInstP.

Sino-UK workshop on Nanophotonics and Metamaterials

December 7-8, 2012
This workshop was organised jointly by the Institute of Physics (IOP) and the Chinese Physical Society (CPS), and held at Peking University. The aim of the workshop was to enable UK and Chinese researchers in the field to present their work to one another, with a view to identifying opportunities for future collaboration.

The workshop was attended by 8 UK and 10 Chinese participants who presented their work and discussed areas of potential collaboration. As a result of the meeting, enjoyed by all, several new links have been formed. The UK participants were:

Professor Mervyn Miles  
Professor Alan Shore  
Dr Brian Gerardot  
Dr Kevin MacDonald  
Dr Eric Plum  
Dr Jason Smith  
Dr Alexander Tartakovskii  
Dr Qiandong Zhuang  

Bristol University  
Bangor University  
Heriot Watt University  
Southampton University  
Southampton University  
Oxford University  
Sheffield University  
Lancaster University
The workshop was supported by a grant from the Department for Business, Innovation and Skills, through the Global Partnerships Fund (GPF). The Engineering and Physical Sciences Research Council (EPSRC) and the Science and Technology Facilities Council (STFC) were consulted on the development of the workshop, including the provision of advice on the choice of topic. A full report has been submitted to the Research Councils to highlight the further opportunities for strengthening links between UK and Chinese science.

Forthcoming Events

Nanolight13: Control and applications of light at the nanoscale

McCance Building, University of Strathclyde, 16 Richmond St, Glasgow G1 1XQ, September 2-3, 2013

This interdisciplinary conference will include invited talks given by distinguished international speakers on topics including surface enhanced spectroscopy, nonlinear nanophotonics, surface plasmon resonance and near field optical detection and excitation. There will also be opportunity for contributed presentations. There is no registration fee to attend this meeting.

Ssd.phys.strath.ac.uk

Photonics Ireland

Wellington Park Hotel, Belfast, September 4-6, 2013

Photonics Ireland is the premier event for scientists and engineers working in optical science and industry on the island of Ireland. The 2013 conference will be hosted by Queen’s University Belfast following the highly-successful events held in Galway (2007), Kinsale (2009) and Dublin (2011).

The conference programme covers a wide range of topics in Science and Technology including: Photonic Materials, Photonic Devices, Nanophotonics and Plasmonics, Biophotonics and Optical Sensing,
Imaging, Laser-material and Laser-plasma Interactions, Quantum Optics, Optical Communication Systems, and Entrepreneurship in Optics and Photonics. The conference features distinguished international speakers and representatives from local industry and research institutes. Poster sessions encourage participation of research students, junior scientists and those new to the field.

www.photonicsireland2013.co.uk

PR'13: International conference on photorefractive effects, materials and devices

The Winchester Hotel; Worthy Lane, Winchester, SO23 7AB, UK, September 4-6, 2013

This conference on photorefractive effects and materials will be held in the UK for the first time, and will offer the opportunity for presentations on enhancement and applications of photorefractive nonlinearities, as well as suppressing or controlling such effects in high power optical devices. For more information visit pr13.iopconfso.org

QuAMP 2013

University of Swansea, September 8-12, 2013

The QEP group is supporting the latest international conference on Quantum, Atomic, Molecular and Plasma Physics - QuAMP 2013. The QuAMP conference series was founded in 2003 as a joint IOP/EPSRC initiative and now alternates between a Summer School and an International Conference. This year it will be a conference, and will be held at the University of Swansea. Chair of the organising committee, Prof Mike Charlton, says “The sessions will cover a wide range of topics such as: ultra-cold matter, quantum optics, quantum information and computing, plasma physics, atomic and molecular systems, ultra-fast phenomena, and antimatter physics.” The high-profile international speakers confirmed include Paul Corkum (Ottawa), David Cassidy (UC Riverside) and Paul Scheier (Innsbruck). Dr David Binks, QEP representative on the QuAMP committee, commented that the programme has much to offer QEP members: “The conference organisers have done a great job of consulting with all the relevant
groups in the IOP, including QEP, to ensure that this conference is relevant to a wide range of people. Of particular interest to the QEP group members will be the sessions on quantum dots, quantum coherent control, ultrafast and attosecond optics and nanophotonics and plasmonics suggested by the QEP committee.”

pyweb.swan.ac.uk/quamp/

Bio-Nano-Photonics 2013

Cardiff University, September 16-17, 2013

The first day of this symposium will focus on applications of nanoparticles to biology, and the second day will be on the subject of biophotonics. Each day there will be two Keynote speakers of international reputation and the rest will be contributed talks and posters. No registration fee is charged.

www.bionanophoto.org.uk

Silicon Quantum Information Processing (SiQIP) 2013

University of Surrey, September 20, 2013

The aim of this meeting is to bring together researchers interested in silicon qubits. Topics covered will include experimental and theoretical approaches to quantum coherent control, spin resonance, atomic scale lithography, device fabrication and electronic transport. For more information contact Ben Murdin (b.murdin@surrey.ac.uk)

International conferences


SPIE Optics + Photonics, San Diego, August 25 – 29, 2013. spie.org/optics-photonics.xml

4\textsuperscript{th} International Conference on Photonics (ICP 2013), Melaka, Malaysia, October 28-30, 2013. www.icp2013.net

Optics and Photonics Taiwan, December 5-7, 2013. optic2013.dop.ncu.edu.tw

SPIE Photonics West, San Francisco, February 1-6, 2014. spie.org/x2584.xml

SPIE Photonics Europe, Brussels, April 14-17, 2014: spie.org/x12290.xml

Prizes and Bursaries

QEP group Thesis Prize

Congratulations to Sebastian Wuestner of Imperial College London, winner of the 2013 QEP Group Thesis Prize for his PhD thesis entitled \textit{Gain and Plasmon Dynamics in Active Nanoplasmonic Metamaterials}. Sebastian was supervised by Professor Ortwin Hess, and has been awarded a one-year doctoral Prize Fellowship to continue his work in this area.

IOP Innovations Award

Coherent Scotland were selected for one of this year’s awards “for the development and commercialisation of a range of table-top tuneable lasers for use in research and industry.”

Dr Christopher Dorman (right), General Manager at Coherent Scotland, said “Coherent Scotland are both excited and honoured that our laser developments are held in such esteem by the Institute of Physics’ judging panel. It is a great reward and vindication of our efforts to create products that not only push the boundaries of photonics science, but employ the technologies in an accessible manner, so that they may address real world applications and problems.”

Dr Christopher Dorman of Coherent Scotland
Notices

Conference sponsorship requests to the QEP Group
Should you seek sponsorship from the QEP Group to support a conference or meeting you are organising to be held in 2014, please send your request to the QEP Group Chair and Secretary no later than the 31 August 2013. Your request should briefly outline: details of the conference, other sources of support and at what level, how many participants you expect, and an estimate of overall costs and how the QEP support would be used.

QEP Group members are invited to submit notices for inclusion in the February 2014 issue. Submissions should reach the QEP committee by January 10th 2014.

Your QEP Committee:

Dr Pascal André, University of St Andrews
Dr David Binks, University of Manchester
Professor Paola Borri, University of Cardiff
Professor Ortwin Hess, Imperial College London
Professor Martin McCall (Chair), Imperial College London
Dr Jarlath McKenna (Secretary and Treasurer), IOP Publishing
Dr Kevin MacDonald, University of Southampton
Dr Francesco Papoff, University of Strathclyde
Ms Ruby Raheem, University of Edinburgh
Professor David Ritchie, University of Cambridge
Dr Dmitry Skryabin, University of Bath
Dr Jason Smith (Newsletter Editor), University of Oxford

The contents of this newsletter do not necessarily represent the views or policies of the Institute of Physics, except where explicitly stated.

The Institute of Physics, 76 Portland Place, W1B 1NT, UK.
Tel: 020 7470 4800
Fax: 020 7470 4848