HEPTech academia - Industry matching event on high energy lasers

DESY, Hamburg, Germany

12-13 November 2014

DESY together with the HEPTech Network, are organizing an Academia-Industry Matching event on High Energy Lasers focusing on the application of cutting-edge laser technology from science to industry and ultimately to society.

This event aims to showcase the impact that laser technology can have in various fields like material processing and characterization, medical and other applications; and also how future large HEP research projects (like XFEL, ELI, etc.) signify a potential for future Technology Transfer in this field.

Special attention will be given to success stories and case studies of technologies from HEP research institutes that resulted in successful cases of spin-offs, start-ups or general technology transfer cases.

Event Description
Contact: barbora.gulejova@cern.ch
Technology inspired collaboration nation

Save the date - 10th December 2014 - and come along to Technology Inspired Collaboration Nation. There will be approximately 81 companies presenting information from feasibility studies from the fields of Advanced Materials, Information & Communication Technology, Biosciences, Electronics, Sensors & Photonics; this promises to be an inspiring day - so save the date in your diary!

Our water, energy and food systems are interconnected. The nexus seeks to define the interdependencies between the different systems and improve our understanding and hence ability to effectively forecast and manage them. This complex area presents multidimensional research challenges that require multidisciplinary and interdisciplinary approaches.

Collaboration Nation events aim to:

• Provide a vibrant open innovation forum for the sharing of feasibility study outcomes
• To connect new companies with a variety of solution providers to move new innovations to commercialisation rapidly and efficiently
• Catalyse innovation by enabling small companies to bring ideas to potential partners or investors

Check out the recording of the 2013 highlights

Please register your place using the Register here button below.

Find out more
Global challenge exploration awards

A key enabling activity in developing the Global Challenge Programme, especially in the creation of Networks, has been exploration of challenge-led priorities and identification of where STFC-funded capabilities could be applied to help provide solutions to these. In recognition of this, a pilot call of Global Challenge Exploration Awards has been developed to provide funding for Research Organisations to support researchers to:

- Engage with potential users at the STFC-Global Challenge interface to identify their research priorities and matching STFC capabilities
- Identify existing and potential applications of STFC-funded research to the Global Challenges

These activities will contribute to the community’s and STFC’s knowledge of the Global Challenge landscape, inform strategy and provide evidence of impact.

The main aim of the Global Challenge Exploration Awards scheme is to provide a mechanism for Research Organisations to undertake early stage enabling activities aimed at identifying and exploring the potential of STFC-funded research to contribute to solutions to Global Challenges. Proposals may cover any topic of relevance to the Global Challenges but those relating to Food Security will be especially welcome. The scheme will provide funds of up to £10k to be used for one of two activities:

- Interdisciplinary workshops or other appropriate activities to help STFC-funded researchers to engage with potential users (academic or non-academic) of research in the Global Challenge Theme areas, in order to identify user priorities and matching STFC-funded capabilities
- Identification and review of past, current and potential future applications of STFC-funded capability to Global Challenge Solutions within a department or Research Organisation in order to identify potential new projects and demonstrate impact

The primary tangible output from these activities should be a report which includes, as appropriate:

- Description of users’ priorities and matching STFC-funded capability
- Potential mechanisms for developing new projects at the STFC-Global Challenge interface
- Concise narrative of existing and potential future applications of STFC-funded research to the Global Challenges
- Case studies
- A catalogue of existing and potential future applications which clearly links applications to the STFC-research from which they originate (see annex for template)

The reports will be used by STFC to identify potential case studies, inform the strategic direction of the Global Challenge Programme and contribute to our knowledge of applications at the STFC-Global Challenge interface.

Please refer to the Guidance Notes for further information and how to apply.

Global Challenge Exploration Awards

- Application form
- Annex
Securing sustainable supplies of water, energy and food is a key global issue. Increasing demands on these commodities, together with pressures on land use and the need to manage the exploitation of natural resources in the transition to a sustainable economy will present challenges on local, national and international scales.

Our water, energy and food systems are interconnected. The nexus seeks to define the interdependencies between the different systems and improve our understanding and hence ability to effectively forecast and manage them. This complex area presents multidimensional research challenges that require multidisciplinary and interdisciplinary approaches.

In response to these challenges the EPSRC is leading a sandpit in the water-energy-food nexus with the aim of enabling UK researchers to perform transformative work, potentially adopting revolutionary approaches to the complex challenges in this area. The Sandpit has the support of three RCUK cross-council programmes (Living with Environmental Change, The Energy Programme and the Global Food Security Programme) and the UK Water Research and Innovation Partnership, which is a collaboration between the water industry, policy and research communities.

An intense, five-day residential ‘sandpit’ workshop lies at the heart of the process. The group explore and deconstruct the issues before refocusing on emerging solutions.

It is expected that £4 – 5 million of Research Council funding will be made available to fund research projects arising from this sandpit. The STFC is offering support to enable sandpit projects to benefit from expertise in high-performance scientific computing originating from their community.

Full details of the sandpit are available in the EPSRC call for participants.

STFC high performance computing expertise

The Science and Technology Facilities Council (STFC) are providing optional funding to enable sandpit projects to benefit from high performance computing (HPC) and computational modelling expertise within the STFC community, which includes:

1. Sandpit participants from university groups that are currently in receipt or have in the past received funding from the STFC.

2. The Scientific Computing Department (SCD) within the STFC’s own National Laboratories.

The STFC contribution is in addition to the support that can be sought from the EPSRC. The total amount of additional support provided by the STFC to successful sandpit projects will be up to £450k.

STFC-funded researchers with expertise in computational modelling within the university community have an opportunity to participate through the normal sandpit application process. Successful sandpit participants from university groups will be funded at 80% fEC.

Detailed information about the expertise residing within STFC’s SCD will be presented during the sandpit. Contributions of SCD staff will be funded at 100% fEC.

Additional support from the STFC may not be appropriate in all cases, and participants will need to explain clearly the added value of the STFC contribution. STFC-funded researchers from the university community participating in the sandpit must also demonstrate a direct link between the expertise they are offering and their previous STFC funding in order to be eligible for this additional funding. All projects bidding for STFC funds will be assessed on their individual merits following the EPSRC’s normal sandpit assessment processes and criteria.

Innovations Newsletter
Potential STFC Involvement

The STFC funds research in astronomy, space science, particle physics and nuclear physics. The STFC also operates large experimental facilities that serve the whole of the UK scientific research base. In support of these and other activities a wide range of expertise has been developed in HPC modelling and data services. This expertise resides within the university community that STFC funds and SCD at the STFC’s National Laboratories.

With around 190 staff SCD provides large-scale HPC facilities, computing data services and infrastructure at STFC’s Daresbury Laboratory and Rutherford Appleton Laboratory. The Department develops application codes in atomic and molecular physics, band theory, computational biology, computational chemistry, computational engineering, environmental modelling and materials science. These applications are supported by R&D activities in HPC, novel architectures, numerical analysis, software engineering, data services and petascale storage and through HPC service provision. Key projects bring together academic, government and industry communities and focus on multi-disciplinary, multi-scale, efficient and effective computation. The goal is to provide a step-change in modelling capabilities for strategic themes including energy, life sciences, the environment, security and materials.

SCD has expertise in the development of large-scale application codes for high-performance systems, developments in high-performance data services, and application of novel and emerging software and hardware technologies. Specific topics include:

• new scientific methods for large-scale simulations e.g. multi-scale modelling;
• new scalable and power efficient numerical algorithms;
• exploitation of emerging hardware and software technologies e.g. many-core accelerators;
• integration of HPC applications with data intensive techniques;
• exploitation of solid state memory to benefit data intensive workloads;
• developments in software supporting HPC and data-intensive needs e.g. programming languages, tools and middleware;
• research data management and policy;
• integration of visualisation with HPC applications and experimental data.

STFC financial contribution

The maximum amount of funding available from STFC to the sandpit will be £450k. The STFC contribution may include:

• direct and indirect staff costs,
• travel and subsistence costs incurred during work with STFC investigators.

The normal research council fEC rules for grants apply.

Application Procedure

University-based researchers should apply to participate in the sandpit through the normal EPSRC procedure described in the call for participants. There will be an opportunity during the sandpit process to build SCD capabilities into project proposals. The closing date for applicants to the Sandpit is 4 November 2014.

Review

All proposals will be reviewed by the sandpit panel appointed by the EPSRC. The primary criteria for assessment will be scientific excellence and fit to the programme requirements. As fully integrated components of any proposal, STFC-funded investigators will be treated as any other partner on a project application and will be bound by the peer review process.

Contact

Further information about the sandpit is available in the EPSRC call for participants. Enquiries regarding STFC involvement should be directed in the first instance to the STFC Global Challenge Programme Manager, Katharine Hollinshead.
Innovate UK is to invest up to £2m in feasibility studies to stimulate innovation across four enabling technology areas: advanced materials; biosciences; electronics, sensors and photonics; and information and communications.

We are seeking proposals that will kick-start the delivery of genuinely new products and services, with substantial and scalable commercial potential.

The aim of this competition is to ensure that small and micro businesses in the UK are equipped to respond to market opportunities across a range of economic sectors.

Projects must be business-led and are open to small or micro companies only, working either singly or in collaboration with one other small or micro company. We expect to fund feasibility studies conducting pre-industrial research, in which a business partner will generally attract up to 75% public funding for their project costs.

We expect projects to last up to four months and total project costs must not exceed £33k.

This competition opens on 10 November 2014, and the deadline for applications is at noon on 21 January 2015. A briefing day for potential applicants will be held in London on 25 November 2014.

Click Here to Register
GNSS Antenna

Joint call from the MoD and Innovate UK is for research proposals in the area of low-SWAP GNSS Multi-frequency or Wideband Antennas.

Registration is required to enter this competition. Please note that registration will close 1 week before the competition application deadline.

Summary

Up to £650k is available for this two phase competition co-funded by the MoD and Innovate UK.

Global Positioning System (GPS) use is now ubiquitous and its success has prompted major developments in Global Navigation Satellite Systems (GNSS) generally. The current challenge is to develop solutions that can take advantage of opportunities presented by the emergence of GNSS signals for both military and civil applications. This will require assured precise Position, Velocity and Time (PVT) information for a variety of low Space, Weight and Power (SWaP) applications including navigation, targeting, guidance, situational awareness and time synchronisation.

Phase one of the competition is for proof-of-concept studies which de-risk GNSS Multi frequency or Wideband Antenna technologies, and advise the future system performance specifications. The requirement is for a modular/scalable design, maximising Open Standards for a multi constellation, multi frequency system.

It is considered that the dismounted soldier applications represent the highest priority and most challenging conditions due to their exacting SWaP requirements and the necessary resilience required by military users. However, these antenna designs have applications far beyond the military; law enforcement, civil aerospace, mobile telecommunications, logistics, emergency management and infrastructure applications all could derive benefits from low SWaP antennae array systems for GNSS.

Phase 2 funding to develop a working prototype will be available for those projects that demonstrate the greatest potential at the end of the initial 3-month Phase 1 contract.

This competition opens on Monday, 6 October and will close at 12 noon on Wednesday, 10 December, 2014.

All proposals must be submitted via the Innovate UK Portal.

Supporting documents

- Competition brief
- FAQs
- Guidance notes
- Invitation to Tender
- SBRI Agreement template

Application process

This competition is run by Innovate UK.

- Opens: 6 October 2014
- Registration closes: 3 December 2014
- Closes: 10 December 2014
- Contracts awarded: TBC
STFC to help bring on the next generation of UK bioscientists to drive the economy of the future

The Science and Technology Facilities Council (STFC) will be playing a major role in one of the bioscience Doctoral Training Programmes, announced today by Business Secretary Vince Cable, that are aimed at creating new industries and jobs.

STFC and the Harwell Oxford Campus will play a major role in the University of Oxford’s Doctoral Training Programme by running training courses and providing expert mentoring for students. The £12.5M Oxford programme will train 125 students over the next five years.

Staff and scientists at the STFC’s Central Laser Facility and ISIS Neutron Source, together with staff and scientists from the Diamond Light Source and the Research Complex at Harwell, will be providing expert assistance for the students who will train at these facilities. They are all located on the Rutherford Appleton Laboratory (RAL) site at Harwell Oxford.

Dr John Webster, who leads the Large Scale Structures Group at ISIS, said, “ISIS and the other facilities at RAL are partners in the University of Oxford’s successful bid to the BBSRC to form an Interdisciplinary Bioscience Doctoral Training Programme. We welcome the opportunity to work with the next generation of scientists and look forward to welcoming students onto our training courses and onto our beamlines.”

The funding will train students in world-class bioscience to lead the next industrial revolution and boost the economy by building on UK strengths in agriculture, food, industrial biotechnology, bioenergy and health. The investment has been made by the Biotechnology and Biological Sciences Research Council (BBSRC).
Foundation stone ceremony marks scientific importance of ESS

The UK neutron community, represented by senior members of the Science and Technology Facilities Council (STFC), gathered at the European Spallation Source (ESS) construction site in Lund, Sweden, for the ESS Foundation Stone Ceremony.

The ESS is one of the largest science and technology infrastructure projects of the decade. Using neutrons to examine the structure of matter, the ESS will help scientists in a huge array of applications – from medical research to new materials, better drugs to longer-lasting batteries, safer and more secure transport and much more.

“Joining by several hundred members of the European scientific community, the event was held to ‘lay the foundation’ both for the new facility, which has recently begun construction, and for a new generation of science in Europe. Following on two decades of increasingly sophisticated technical design work, scientists, engineers, project managers and builders have now embarked on the construction of the most powerful neutron source in the world.

“I am delighted to be present for this next step on a journey that started with a workshop at our Coseners House conference centre in 1991!” added Robert McGreevy, Director of the STFC ISIS Spallation Neutron Source in the UK. “The technologies we have pioneered at ISIS over the past 30 years, and those that we will develop in partnership with ESS over the next 10 years, will underpin the scientific discoveries and economic benefits that ESS will enable.”

First neutrons at ESS are expected by 2019 and the first experiments are scheduled to begin in 2023.

“STFC’s Chief Executive, John Womersley, speaking at the ESS site Credit: STFC"
UK leads new international solar storm tracking initiative

UK scientists have unveiled a new £2.5 million (£3.2 million) project that will improve forecasts of solar storms, including their arrival time and impact on the Earth. The three year project will provide the most comprehensive set of information to date about the Sun’s influence on interplanetary space and the effects space weather can have on the Earth. The project will enable governments to improve their strategies to lessen the potential negative impacts from the Sun.

Led by scientists at the UK Science and Technology Facilities Council’s (STFC) Rutherford Appleton Laboratory (RAL), the international HELCATS (Heliospheric Cataloguing, Analysis and Techniques Service) team is exploiting advanced visible-light imaging from NASA satellites combined with sophisticated computer modelling techniques.

The UK government already recognises the potential threat of disruption that could be caused by a severe space weather event, listing it high on the National Risk Register of Civil Emergencies.

To better monitor any potential threat the HELCATS team is tracking huge clouds of solar material as they are blown off the Sun and speed their way out into the heliosphere – the immense magnetic bubble containing our solar system, and which is influenced by the Sun.

Professor Richard Harrison, from STFC RAL Space, is the HELCATS coordinator. “Sometimes the Sun ejects billion-tonne hot plasma clouds into space,” he said. “Knowing how to understand and predict what might be impacting the region of space nearest the Earth is critical for many modern technologies.”

“The most severe solar storms could affect technological systems such as satellites, power grids and GPS signals,” said Dr Jackie Davies, the science and technical lead for the HELCATS project. “The novel imaging provided by the Heliospheric Imaging cameras on STEREO, combined with cutting-edge analysis techniques, will allow us to significantly improve forecasts of the arrival time and impact of these potentially hazardous events.”

The HELCATS project was developed in the wake of NASA’s successful STEREO mission, which features two spacecraft orbiting the Sun. On board STEREO are two Heliospheric Imagers, which can detect and record the outflow of material from the Sun.

The Imagers allow the continuous tracking and stereoscopic (3D) analysis of solar clouds ejected from the Sun. They were developed by a UK-led team, headed by STFC’s Professor Richard Harrison.

Observations from STEREO and other space missions, and from radio telescopes on the ground, will be fed into computer models developed by the HELCATS team to exploit the combined data. The project will not only study the solar storms as they travel out from the Sun, but will also give an insight into the way they interact with the solar-generated plasma winds within the heliosphere.

“The result will be an unprecedented understanding of the nature of the heliosphere through a unique set of databases and software tools,” said Professor Harrison. “These elements will be crucial for our understanding of what we now call space weather.”

HELCATS is funded through the EU Framework 7 Programme.

Innovations Newsletter
Industry forum focuses on science and technology

It is “hugely important” that actual and potential science ministers are made to understand the needs of science and industry in the run-up to next year’s general election, Andrew Miller MP told a meeting of the Industry Forum held at the IOP’s London centre on 13 October.

He said: “As the debate intensifies ahead of next year’s general election, it is obviously a good time to look at some of the key issues around science and technology.” These included the role of the science and innovation centres (known as catapult centres), “the importance of small and medium-sized enterprises (SMEs) and finding ways to get the ‘real’ economy moving,” he said.

The UK’s policy on public procurement should take more account of SMEs, and measures that fostered innovation could help to get the real economy moving. These should include the right tax and regulatory environment, funding to develop good ideas and a properly skilled workforce, he argued.

The UK remained a global leader in science and technology and the sector played a key role in the country’s economy, but it was vital that people such as the participants in the forum should engage with politicians to ensure that the issues for the sector were understood.

The IOP hosted the meeting of the forum, which is a not-for-profit organisation that promotes constructive dialogue between business and public policy leaders. Its chairman, IOP fellow Rod Dowler, chaired the event, and the IOP’s chief executive, Professor Paul Hardaker, welcomed the participants.

Andrew Miller (pictured), who chairs the Science and Technology Select Committee, took part in a question and answer session at the event.
Dark underground access tunnels, light diffraction and behind the scenes at a world-leading research centre amongst STFC Photowalk 2014 winners

STFC today announced the winners of its 2014 Photowalk competition, which showcases some of the UK’s leading-edge science and world-class technical facilities.

More than 200 amateur and professional photographers took part across four STFC sites: the UK Astronomy Technology Centre (UK ATC) in Edinburgh, Daresbury Laboratory in Cheshire, the Chilbolton Observatory in Hampshire and Rutherford Appleton Laboratory in Oxfordshire.

Dr Andrew Taylor, Executive Director National Laboratories said: “This latest series of STFC Photowalks has been a tremendous success and the images produced help to capture some of the incredible science that goes on at our sites in a fresh and exciting way. We’re sure that the winning photographs will fire imaginations and raise the profile of the fascinating work that’s carried out at our sites.”

Regional judging of the 2014 STFC Photowalk in September led to a shortlist of forty images. The public then voted online to decide which ten images were the most inspiring and spectacular. Over 1300 votes were received from members of the public and the following six winners were selected from that list by national and regional judging panels:

- **National Winner (and RAL regional winner)** – John Willoughby won £750 in vouchers with his image of the Poloref instrument, designed to give a unique insight into the properties of materials on an atomic scale, in STFC’s ISIS Target Station 2.

- **Highly Commended** – Katharine Barnes won £250 in vouchers with her image of the access service tunnel running underneath the Chilbolton Observatory in Hampshire.

- **Daresbury Winner** – Paul Worpole won £250 in vouchers of his choice with his image of a vacuum vessel with glass viewing port.

- **UKATC Winner** – Eric Begbie, a runner-up in the 2011 competition, won £250 in vouchers with his image of a light diffraction pattern.

- **Chilbolton Winner** – Mervyn Edwards won £250 in vouchers with his image of the 6.1m Antenna within the Satellite Compound at Chilbolton Observatory in action.
The overall winning photograph came from UK science facility ISIS, STFC’s world-leading centre for research in the physical and life sciences. On winning John Willoughby said “It’s a great privilege to get behind the scenes access to scientific facilities. I was carrying my wide angle lens so used it to emphasise the scale of the ISIS building. I like to look up above eye level and thought the lines and colours of the pipework would make for an interesting shot. I am glad I took it!”

Creative Director of Getty Images Anthony Holland Parkin sat on the national judging panel and said “It was a pleasure to be a national judge for the 2014 STFC Photowalk Competition. There were a number of striking photographs that made it into our shortlist, notably, Katharine Barnes’ shot taken from the tunnels below the dish array in Chilbolton, but it was John Willoughby’s image of the interior of ISIS that immediately stood out. The clever use of lighting, composition and colour were brought together expertly to depict the mind boggling complexity of the installation. A worthy winner.”

The winning photos can be viewed at: www.ukphotowalk.org.uk
Find out more about the winner and their photos at: www.stfc.ac.uk/photowalkwinners

For those who are passionate about science photography:

You can now vote online for the Biotechnology and Biological Sciences Research Council’s (BBSRC) Bioscience Image Competition, Images with Impact at: http://bbsrc2014.picturk.com/

To celebrate the International Year of Crystallography, Illuminating Atoms presents a selection of photographs by Max Alexander portraying the inspirational work of crystallographers. Through portrait and documentary photography, Max shows us the life of scientists at the cutting edge of discovery, including some of the world class facilities they use. The STFC-sponsored exhibition opens at the Royal Albert Hall on November 4.
External Innovations and Innovations Club

The External Innovations team manages the activities that aim to realise the impacts and benefits that flow from STFC’s investments in science and technology towards commercialisation through one to one brokering, events and a range of funding schemes.

If you wish to contact the teams for more information please see the following contacts and email addresses.

Innovations club: innovationsclub@stfc.ac.uk
IPS: ipsfunding@stfc.ac.uk
For Tender Opportunities: tenderopportunities@stfc.ac.uk

External Innovations – Global Challenges - International Tender Opportunities

Penny Woodman  Head of External Innovations
Tel: + 44 (0)1793 442 014  Email: penny.woodman@stfc.ac.uk

Phillip Tait  External Innovations Programme Manager
Tel: + 44 (0)1793 442 111  Email: phillip.tait@stfc.ac.uk

Julie Bellingham  Head of Business Opportunities for International Facilities
Tel: + 44 (0)1793 442 060  Email: julie.bellingham@stfc.ac.uk

Allanah Bayliss  International Business Opportunities Specialist
Tel: + 44 (0)1793 442 056  Email: allanah.bayliss@stfc.ac.uk

Vlad Skarda  Knowledge Exchange Manager
Tel: + 44 (0)1793 442 051  Email: vlad.skarda@stfc.ac.uk

Katharine Hollishead  Global Challenge Programme Manager
Tel: + 44 (0)1793 442 068  Email: katharine.hollishead@stfc.ac.uk

Gayathri Eknath  Impact Officer
Tel: +44 (0)1793 442 010  Email: gayathri.eknath@stfc.ac.uk

Administration

Andi Kidd  Office Manager
Tel: +44 (0)1793 442 059  Email: andi.kidd@stfc.ac.uk

Tracey McGuire  Grants Manager
Tel: +44 (0)1793 442 162  Email: tracey.mcguire@stfc.ac.uk

Rachel Atkins  Administrative Officer
Tel: +44 (0)1793 442 650  Email: rachel.atkins@stfc.ac.uk

Julie Gilbert  Administrative Officer
Tel: +44 (0)1793 444 532  Email: julie.gilbert@stfc.ac.uk

The Innovations Club newsletter contains a selection of articles drawn from our partner organisations that we think you will find interesting. We welcome your comments innovationsclub@stfc.ac.uk