Innovations

STFC CLASP Energy Call

STFC is offering £1.5M to fund a range of projects from short feasibility studies to large developmental projects that will use STFC funded research to solve key challenges in the Energy sector. The Challenge Led Applied Systems Programme (CLASP) has previously supported projects tackling global challenges in Healthcare, Security and Environment sectors.

Funding is available to STFC supported groups however the call will fund academic partners from other academic disciplines. Industry engagement with the projects is welcome.

Information and Networking day will be held in July 2013 to enable delegates to discover more about the programme, to hear from agencies driving the energy agenda, and to meet with researchers from the STFC community engaged in developing their technologies to tackle energy challenges.

It will also be an opportunity to network and build partnerships to develop plans for project proposals. The application process will comprise two stages, with a call deadline in September 2013 for Outlines. Further information about this event and the timelines for the call will be released in May.

Innovations Club Team
UK wins major £10m Czech science contract to develop new laser technologies

UK scientists have won a major £10m Czech contract to develop new laser technologies for use by business and science.

The £10m HiLASE contract has been won by the Central Laser Facility (CLF) at the Science and Technology Facilities Council's Rutherford Appleton Laboratory. The advanced laser technology that will be supplied by CLF through the contract represents the way that public sector investment in UK science can pay real dividends in assisting economic recovery, build long term international relationships and benefit the long term science and technology base of the UK.

HiLASE is a new £30 million project under construction near Prague, with the goal of advancing new laser technologies that will be significantly more powerful, efficient, stable and easily maintained than current systems across Europe. Benefits are expected to include entirely new applications across a wide range of industries.

Minister for Universities and Science, David Willetts said: “The £10 million contract will provide the HiLASE project with the very best of British technology. It is further proof that investment in science is vital to growth and international collaboration. It is also recognition of the UK’s world-class research base, with particular strengths in laser science at the leading edge Rutherford Appleton Laboratory.”

The CLF technology chosen by the HiLASE project is called DiPOLE – or Diode Pumped Optical Laser for Experiments – and has been developed by the CLF’s Centre for Advanced Laser Technology and Applications (CALTA), based at the Rutherford Appleton Laboratory in Oxfordshire.

Director of the CLF, Professor John Collier, said: “HiLASE was specifically focussed on the exploitation of so-called diode pumped solid state laser systems (DPSSLs) and associated technologies. We have been developing new high energy DPSSL technology for our internal programme for a number of years in the form of DiPOLE and when HiLASE launched a tender for the supply of this advanced technology it was natural we would respond. Our success in winning this contract stems directly from our breakthrough in combining high energy and high repetition rates in each pulse. This came about thanks to years of ground breaking research at RAL and reinforces the UK as a world leader in laser physics.”

Lasers come in two varieties: continuous wave and pulsed. The two key criteria for a pulsed laser are the energy in each pulse, and the repetition rate at which pulses can be produced. Current state-of-the-art laser systems, such as CLF’s Vulcan, produce high energies in each pulse but are limited to repetition rates in the order of pulses per hour. Other systems can produce many pulses per second, but only at relatively low energy levels.

Until now it has not been possible to combine high pulse energy with high repetition rate but, building on decades of experience, CALTA scientists developed the DiPOLE technology which combines high energy and repetition rates - and has the potential to be scaled up to even higher energies, so unlocking a broad field of new and exciting applications and science as well as securing this contract for the UK with HiLASE.
RSE/STFC Enterprise Fellowships 2013

Applications are invited for potential entrepreneurs, who have the backing of a host institution, to commercialise the outcomes of their STFC funded research. The closing date is 17th May 2013.

Funded by STFC and delivered by the Royal Society of Edinburgh, this one year Enterprise Fellowship is designed to give the fellow both the time to develop the commercialisation idea and the training to develop their business skills. Fellows will be paired with a mentor giving them a valuable insight and connection to the business world. The aim of the scheme is to make both the technology and the fellow more competitive in business.

Applications will need to show that there is an STFC technology that has commercial potential and that the prospective fellow has the commitment to develop and utilise their business skills. Previous fellowships include using software that was initially designed to help control spacecraft systems, developed into revolutionary animation software leading to the spin out IKinema, work on hydrogen storage that lead to the spin out Cella Energy and imaging technologies, which supported the spin out Symetrica.

For further information and application forms please follow the relevant links to the RSE and STFC and for any questions please contact Anne Fraser at the RSE afraser@royalsoced.org.uk or Phillip Tait at STFC philip.tait@stfc.ac.uk

STFC Innovations Club Team
Prototype MRI magnet’s new life as a physics experiment – read about it in New Scientist

STFC’s Daresbury Laboratory is hosting the original prototype magnet that was used to develop Magnetic Resonance Imaging (MRI) in hospitals, in preparation for its use in an exciting new project to study the rarest elements known to exist.

Known as ‘TransHELIOS’, this project will result in the formation and detection of extremely rare and heavy nuclei that are normally only created momentarily in exploding stars. It will provide answers to the fundamental question, where do all the elements come from? Led by the University of York as part of a Nuclear Physics Collaboration in the UK, supported by STFC, this fascinating project has been covered in the April 6th issue of New Scientist.

Professor John Simpson, Head of STFC’s Nuclear Physics Group said: “The exciting experiments planned with this magnet will open doors for studying the most elusive elements at the furthest corners of the nuclear landscape and enable us to put to the test the theories of how elements are created when a star explodes. At an original construction cost of £452,000, this impressive magnet’s conversion from being used to develop world-changing MRI in hospitals, then back to nuclear physics for fundamental research, makes it a highly cost effective but invaluable piece of kit.”

The 13 ton magnet, an amazing 30,000 times stronger than the Earth’s magnetic field, was constructed in 1991 and was the first superconducting MRI magnet to be used in diagnostic medical imaging. The ground breaking research carried out with this magnet won British physicist Peter Mansfield a Nobel Prize in 2003.

Originally developed by Siemens Healthcare, the magnet arrived at Daresbury Laboratory from the University of Nottingham in July 2012, and this is where its new phase of life as a physics experiment has now begun. The intention is that, by 2014, the magnet could ultimately form part of a nuclear physics research facility, such as the HIE-ISOLDE nuclear physics project at CERN.

This experiment will use radioactive beams of particles to produce and study the rarest and heaviest elements thought to exist. Highly powerful and specialised detectors will analyse the by-products of the reactions induced by the beams, which are transferred to the detectors using the magnet’s extremely high magnetic field.

The ever-increasing need for early detection of potentially life-threatening conditions is driving researchers to push the boundaries of technology to the limits. As a result, innovation and blue skies thinking are playing a key role in addressing some of the challenges we face today.

It is probable that any major breakthrough in technology will come through collaborative partnerships and this event is aimed at bringing together academia and industry to address current challenges as well as to highlight some of the progress already being made. It is hoped that this event will help develop partnerships to tackle some of the more aggressive barriers to progress. All areas of detector technology are open for discussion and companies and researchers that are working on sensor or detector technology are encouraged to attend and share their vision.

During the day we will also explore some of the funding streams available and a tour of the facilities at the UK Government’s STFC Daresbury Laboratory will be offered.

The event aims to facilitate information exchange via presentations followed by an afternoon of partnering discussions where companies can discuss directly with technology providers how the technology might be used in support of new product development.

This is a major opportunity to present your work and to meet key players in the detectors and healthcare sectors - we invite academics and SMEs who are working on novel sensor or detector technology that they would like to present to contact Helen O’Connor with a short synopsis.

The delegate rate is £100+VAT for non-UKIF members or £75+VAT for UKIF members. A limited number of concessionary passes are available for full-time students, at £50. Catering is provided.

To register your interest in attending the event either as a speaker or delegate, please contact Helen O’Connor.
Accelerators for medicine

This week CERN signed a new agreement with one of its spin-off companies, ADAM SA [http://adam-geneva.com/index.html](http://adam-geneva.com/index.html) (Application of Detectors and Accelerators to Medicine), to collaborate on the construction of an accelerator for cancer treatment.

A team of experts in accelerator and detector technology from CERN founded the company with Italian entrepreneur Alberto Colussi in 2007. ADAM aimed to capitalize on the know-how and infrastructure that CERN provides to build innovative accelerators for proton therapy and for conventional radiotherapy.

Since then, ADAM’s research and development activities have focussed on two main fields: the design and construction of compact linear accelerators for conventional radiotherapy, and of compact linear accelerators for proton therapy. Both research areas were inspired by studies conducted at the TERA Foundation [http://www.tera.it/tera/](http://www.tera.it/tera/) a non-profit institution created in 1992 to develop radiotherapy techniques using hadron particles.

So far, the collaboration between CERN and ADAM has resulted in the construction of an accelerating unit that accelerates protons from 30 to 41 MeV. This next phase of the collaboration - a newly established synergy between ADAM, CERN and Advanced Oncotherapy (AVO) [http://www.advancedoncotherapy.com/](http://www.advancedoncotherapy.com/) a British company active in the field of cancer treatment - will produce other units to complete the accelerator complex for the proton-therapy centre.

“For CERN the transfer of technology and know-how in the medical field is an important part of the impact of basic science on societal issues,” says director of accelerators and technology Steve Myers. “This partnership is a pragmatic way to share our competences and know-how with industrial partners who are able to bring this innovative medical solutions to the market.”

“It is an extraordinary privilege to work with expert scientists at CERN,” says Mike Sinclair, chief executive officer of AVO. “We look forward to deploying globally affordable proton therapy machines clinically superior to cyclotron and synchrotron alternatives.”

Author: Marina Giampietro

Posted by: Cian O’Luanaigh on 11 Apr 2013
Could foot and mouth disease finally be controlled?

Foot-and-mouth disease (FMD) affects all cloven-hoofed animals, both domesticated and wild, and is one of the most contagious of animal diseases. Its threat grows every year with increasing trade in animals and animal products, and of course through growing global tourism. FMD is a huge concern for food producers, national governments and international organisations. The World Organisation for Animal Health says FMD costs farmers more than £3 billion each year, while outbreaks are much worse: the 2001 outbreak is estimated to have cost the UK almost £20 billion, while Taiwan suffered a £10 billion hit in 1997.

And simply because a country is currently FMD-free doesn’t rule out a future imported outbreak.

So the news today that scientists using the Diamond Light Source have developed a new methodology to produce an FMD vaccine will likely be global news. The new vaccine is completely synthetic - made up of tiny protein shells designed to trigger optimum immune response. It doesn’t therefore rely on growing live infectious virus and is therefore much safer to produce – potentially significantly boosting its usefulness for farmers in the developing world.

The technique pioneered at Diamond could also impact on how viruses from the same family are fought, including polio.

Professor John Womersley, Chief Executive of STFC, which funds 86% of the Diamond Light Source said: “The team at Diamond are carrying out innovative, world-leading work into the atomic level structure of this dangerous virus. It is incredibly pleasing to see this lead to a breakthrough in developing a safe way to fight it. This work on livestock viruses could also lead, one day, to a more effective way of developing vaccines to fight human diseases.”

The research was carried out by a UK partnership between The Pirbright Institute, which receives strategic funding from BBSRC and grant funding to research FMDV, and the Diamond Light Source, the UK’s national synchrotron facility, which receives funding from STFC and the Wellcome Trust, along with the Universities of Oxford and Reading. As well as vaccine development, Pirbright is a centre of excellence for foot-and-mouth diagnostics and is home to the World Reference Laboratory for FMDV virus.

For full details of the research, see the Diamond website.
External Innovations Team - Allanah Bayliss - profile

Allanah Bayliss joined STFC’s External Innovations in December as an International Business Opportunities Intern. Allanah’s role is to support Julie Bellingham, the Head of Business Opportunities for International Facilities. The work includes promoting tenders from the international facilities that STFC fund to UK companies and encouraging new companies to register on the STFC Tender Opportunities database. The overall aim is to increase the economic return for the UK from the investment in the facilities.

So far Allanah has attended the trade mission UK@CERN, where STFC partners with UKTI to take UK companies to CERN to develop new business contacts. Allanah played a big role in the organisation of North East Industry Breakfast meeting that was held during April in Durham. The meeting was to promote STFC and the tender service to new companies in the North East of England. She has also represented STFC at conferences, such as the E-ELT Meet the Buyer talk in Cardiff and the NDI conference, acting as a buyer searching for new relevant companies, as well as attending industry visits with UK companies who are interested in tendering to the large science facilities STFC fund.

Allanah recently graduated from the University of East Anglia with a degree in Biological Sciences. Part of her degree was studying abroad for a year at the University of British Columbia in Vancouver. This experience has prepared her for the international element of this job. In her final year she was elected Ethical Issues Officer for the union, this presented the opportunities to gain real life experience whilst at university, where she attended conferences and weekly meetings with the other officers. Allanah’s previous job was as an instructor at Go Ape, this role provided her with great team and communication skills for this role.

Allanah: “I am thrilled to join STFC as an intern. I have always had an interest in Science, although my background is in Biology it is great to get the opportunity to diversify. In this role I also get to learn about industry and really enjoy the element of interacting with a wide variety of UK companies.”
External Innovations Team 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 commercialization 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 and 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 Intern
Tel: + 44 (0)1793 442 056 Email: allanah.bayliss@stfc.ac.uk

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

Administration

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

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

Kim Mugford Administrative Officer
Tel: +44 (0)1793 442 650 Email: kim.mugford@stfc.ac.uk

Rachel Atkins Administrative Officer (from 1st October 2013)
Tel: +44 (0)1793 442 650 Email: rachel.atkins@stfc.ac.uk