

Connect

Keeping you in touch with opportunities from the Engineering and Physical Sciences Research Council

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Engaging the public

Outcomes from our Public Engagement programme support.

IF YOU'RE worried that the public ignore research or are concerned that not enough young people pursue research career paths then EPSRC's Public Engagement Programme is your opportunity to do something about it. The programme aims to support and encourage our research community to engage with the general public, schools and young people.

For example, support is available for Senior Media Fellowships, a scheme which frees up the time of leading researchers to enable them to develop a higher media profile. Senior Media Fellows (SMFs) are expected to act as high profile champions, bringing science, engineering and technology to a wider audience.

Professor David Howard, Head of the Media Engineering Research Group at the University of York was recently appointed as a SMF. In January he gave the annual lecture of the Swindon branch of the Institution of Electrical Engineers 'Making music with technology'. In the talk he explained that the way we can play music and create sound effects for performances in the future will be very different from today. The new technology will work with the human body acting as the sound control, in the same way that a conductor uses his baton to direct an orchestra. So, for example, one hand gesture could play and control a saxophone sound, the other a guitar and the feet could act as the drums and percussion.

Another scheme run by the programme is 'Partnerships for Public Engagement' (PPE), supporting a very wide range of our researchers' public engagement projects, which have included: displays in shopping centres, on buses and in railway stations; interactive exhibitions for science centres; competitions for school pupils; curriculum resources; debates and events for the general public.

One example of a PPE project is the *Body Parts: New for Old* exhibition at the Thackray Museum, Leeds, running until December 2006, which investigates the science and engineering of replacement body parts. Researchers at the Institute of Medical and Biological Engineering at the University of Leeds joined forces with the Thackray Museum to display the exhibition with support from a PPE grant and sponsorship by DePuy International. The science, engineering and design of joint replacements is brought alive in the exhibition, demonstrating how developments in prostheses are assisting people in achieving amazing things. See page 2 for another PPE project, *Biojewellery*.

There is an annual call for proposals for Senior Media Fellows, but proposals can be submitted throughout the year.

There are two calls per year for PPE awards, which are published on our website together with information on other available schemes.



Left: *Body Parts* – Jamie Andrew is a quadruple amputee following a climbing accident, however he continues to ski, run marathons and climb. He is pictured with a prosthetic leg that he uses for sprinting.



Making music with technology, Senior Media Fellow Professor David Howard in action.

Top: *Biojewellery* an initial model of a ring using a combination of cow marrow-bone and etched silver. The inscription reads *Ab Intra*, from within.

Our Public Engagement activity is run in close collaboration with RCUK's Science in Society unit, which was set up in April 2005 to bring together all the Research Councils' activities to raise public awareness and engagement in science and innovation.

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Bridging the gaps

"We build too many walls and not enough bridges"

Isaac Newton (1643-1727)

LUCKILY more than 75 academics agreed with this, and spent two days discussing the challenges of interdisciplinary working at the 'Bridging the Gaps' workshop held in Birmingham in January. The workshop brought together researchers from a range of backgrounds spanning mathematical sciences, ICT and engineering.

The workshop was held as a prelude to the 'Bridging the Gaps' call for proposals and was designed to stimulate creative thinking and to assist universities in their strategic approach to interdisciplinary research. Under the call institutions are invited to submit a single bid for funding to set up an internal environment that nurtures interdisciplinary working, with the aim of developing new collaborative research programmes. The support available allows flexibility in approach, with the inclusion of innovative activities strongly encouraged.



At the workshop a series of talks gave insights into a range of experiences, providing food for thought and stimulating much debate on the do's and don'ts for interdisciplinary working. These discussions formed the basis of a number of interactive sessions where participants considered solutions to barriers and scoped innovative activities that would create an environment capable of nurturing interdisciplinary research. A large number of creative ideas were generated.

The 'Bridging the Gaps' call closes on 26 April.

Contact: bridgingthegaps@epsrc.ac.uk

Further information: www.epsrc.ac.uk under calls for proposals.



Meeting of HPC users

Meeting focused on outputs from international review.

LAST December High Performance Computing (HPC) users met in London to hear the outputs from the International Review of Science using HPC in the UK. The meeting was chaired by Professor Ron Perrot, the Chair of the UK High End Computing Steering Committee.

As reported in Connect 37 the international review was carried out in conjunction with the Deutsche Forschungsgemeinschaft (DFG), and their President, Professor Ernst-Ludwig Winnacker, made the opening address. The Chairman of the International Review Panel, Professor Horst Simon (Lawrence Berkeley National Laboratory) then presented the findings of the review. This was followed by a discussion session with a panel including Research Council representatives.

Topics raised in the international review and discussed included: the need for more investment in software development; bridging disciplines and building a computer science community by increasing interactions and fostering collaborations between disciplinary groups nationally and internationally; and a recommendation to strengthen the computational infrastructure by systematically deploying leading-edge capability systems, large-scale capacity computing, and resources deployed widely at universities.

In the afternoon delegates heard a presentation from Dr Dario Alfe (UCL), on his research for which he had been awarded a prize by HSC for the category of the best utilisation of a machine. Delegates were updated on the HECTOR procurement, plans for European HPC and the HPC applications roadmap.

The international review report is available on our website.

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Further information: www.epsrc.ac.uk

Biojewellery

Promoting tissue engineering to the public.

AS reported on Connect's front page, *Biojewellery* is another example of a Partnerships for Public Engagement project. It aims to promote awareness of the issues surrounding tissue engineering, and share the new advances in biotechnology with the public in an exciting and relevant way. The project uses human bone tissue cultured from human cells to create bespoke jewellery. *Biojewellery* launched at the Dana Centre in the Science Museum in January with a lively evening debate to introduce the project to a wide audience.

Biojewellery began with two inconspicuous adverts in New Scientist and Bizarre magazine inviting couples to take part in the process and design rings using precious metals and lab grown bone-tissue cultured from their own cells. Four couples were selected, and their cells will be prepared and seeded into a bioactive scaffold (a structure made from

living tissue). This pioneering material encourages the cells to divide and grow rapidly in a laboratory environment, so that the scaffold disappears and is replaced by living bone tissue. The bone will be combined with traditional precious metals so that each has a ring made with the tissue of their partner. The rings will be displayed as part of an exhibition later in 2006 at Guy's Hospital. For the launch at the Dana Centre the space was split into four zones, each focusing on a different set of processes or issues. Attendees circulated between each area, seeing a short presentation, then having the chance to chat and find out more about processes like cell biology and see the latest work on the ring designs.

Biojewellery aims to engage individuals in the hidden technologies of tissue engineering. It brings together materials scientists from Kings College London with designers based at the Royal College of Art.

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Justification of resources

A reminder to include full justification with requests for resources.

AS reported in the last Connect, from May 2006 everyone submitting proposals to EPSRC will be asked to provide a distinct one page justification of the resources they require for their project. This will ensure that the peer review system has the information to judge whether the resources

requested are appropriate for the project. This then enables us to fund research sustainably.

Please consult our Funding Guide for further information. Where proposals do not contain sufficient justification of resources they may be rejected, without being submitted to peer review.

Contact: Adrian Paul, adrian.paul@epsrc.ac.uk

Further information: www.epsrc.ac.uk

Events

College Launch Days

A series of Launch Days are being held around the country, from February, for members of our new College who were not members of the previous College, and who wish to attend a Launch Day.

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Dissemination Event on Crime Prevention and Detection Technologies: Forensic Science

30 March 2006 – Thistle Barbican Hotel, London
Dissemination event, showcasing research funded by EPSRC in the areas of forensic science and chemical detection technologies. The event is primarily aimed at potential end users of the research funded through the programme.

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Calls

Research Councils' Basic Technology Research Programme (BTRP) – Call Six

Closing date: 4 April 2006

Research Councils UK is inviting proposals for the development of new basic technologies to address the needs of British Science in the 21st Century. BTRP proposals will either combine or adapt existing technologies requiring innovative or fundamental developments; or develop fundamental new technologies that will radically change the way that the science is researched.

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Physics at the Life Sciences Interface – Second Call for Feasibility Studies

Closing date: 5 April 2006

A call for feasibility studies at the interface between physics and the life sciences. Each feasibility study can request up to a total of 18 months full time research staff effort. A total of £1.5m is available for this call subject to the quality of the proposals received.

Contact: Alex Hulkes, alex.hulkes@epsrc.ac.uk and Talit Ghaffar, talit.ghaffar@epsrc.ac.uk

Designing for the 21st Century: Call for Research Projects

Closing date: 6 April 2006

The joint AHRC-EPSRC initiative Designing for the 21st Century is calling for applications for multidisciplinary research projects in the area of design. This call will be administered by the AHRC and will not use the Je-S submission system. Further guidance and application materials are available on the AHRC website.

Contact: http://www.ahrc.ac.uk/apply/research/sfi/ahrcsi/designing_for_the_21st_century.asp

Material for Energy Supply

Closing date: 6 April 2006

EPSRC invites outline proposals for the Materials for Energy call. Proposed projects should be collaborative in nature, with a 'problem solving' approach, and a defined route to user exploitation. In addition, projects should address one of the two fundamental themes of the call: Materials Research for New Energy Generation Technology, and, Materials Research to Improve Current Energy Generation Technology. £5.5m has been allocated towards this call and it is intended that four full projects will be funded at the conclusion of the call.

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Energy Research and International Development Scoping Workshop

Closing date: 26 April 2006

EPSRC is looking to support an initiative in energy research and international development. We are seeking participants to attend a scoping workshop that will be held on the 10th May at Scarman House, Warwick University.

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Physical Organic Chemistry

Closing date: 27 April 2006

The Chemistry Programme has allocated up to £2.5m of funding in 2006/2007 for a specific call to strengthen and encourage the research base in physical organic chemistry and to provide opportunities for technology and knowledge transfer between academia and industry. Applications must be wholly or mainly within the remit of EPSRC, and proposals should demonstrate a quantitative analytical approach, central to the fundamental mechanistic understanding of chemical processes at a molecular level. Research staff on successful grants will be expected to attend and participate in a summer school, complementary to this call, which is expected to commence in 2007, aimed at exchanging and broadening knowledge in all areas of physical organic chemistry.

Contact: Zoe Brown, zoe.brown@epsrc.ac.uk

Array Chemistry – Reactions, Design and Interpretation

Closing date: 3 May 2006

This call addresses three areas of array chemistry. These are the development of reactions for arrays, the process used to design the components of an array and finally the interpretation of the resultant data from the array. The aim of the call is to increase the volume of research and training in these key areas and to provide opportunities for technology and knowledge transfer between academia and industry.

Contact: Emma Jones, emma.jones@epsrc.ac.uk

Call for Taught Course Centres for PhD Students in the Mathematical Sciences

Closing date: 25 May 2006

The Mathematical Sciences Programme has issued a call to establish, via pump-priming support, a number of taught course centres for PhD students in the mathematical sciences. The courses should provide a breadth of training that will complement the more specialised training provided elsewhere. It is expected that, although preference should be given to EPSRC-funded students, courses would also be available to students not funded by EPSRC but that the costs of their attendance will be found from other sources.

As this initiative provides resources for student training, it does not come under the full economic cost model.

Contact: Anne Farrow, anne.farrow@epsrc.ac.uk

Maths for Industry and Business – Open Call

The Mathematics for Industry and Business call by the Mathematical Sciences Programme aims to encourage high quality research in mathematics, statistics or mathematical foundations of operational research in collaboration with industry, business or other non-academic users of research. The aim of the call is two-fold: to generate innovative research in the mathematical sciences and to utilise this research to give industry and business a competitive edge by developing dynamic collaborations outside the academic community.

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See www.epsrc.ac.uk for the latest information.

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ICT multidisciplinary grants

Examples of recently supported multidisciplinary projects.

THE Information and Communications Technology Programme is keen to encourage multidisciplinary research, and has modified its peer review processes to help facilitate this, as reported in Connect 38. The ICT Programme has already supported many multidisciplinary projects, as illustrated by some recent major awards.

SEBASE: Software Engineering by Automated Search, a large-scale project spanning several institutions has recently been funded. The total award is over £2.6m, making this one of the largest projects funded in recent times. The project, led by Professor Mark Harman involves King's College London, Birmingham, York and Brunel and a number of industrial stakeholders. It builds on an earlier EPSRC funded project which established the fundamental research proposition that software engineering problems can be reformulated very naturally as automatable search problems.

The SEBASE project aims to provide a new approach to the way in which software engineering is understood and practiced. It will move software engineering problems from human-based search to machine-based search. As a result, human effort will move up the abstraction chain to focus on guiding the automated search, rather than performing it. This project will address key issues in software engineering, including scalability, robustness, reliability and stability. It will also study theoretical foundations of search algorithms and apply the insights gained to develop more effective and efficient search algorithms for large and complex software engineering problems. Such insights will have a major impact on the search algorithm community as well as the software engineering community.

Another recently funded major project *Next Generation Decision Support: automating the heuristic design process* is led by Professor Edmund Burke from Nottingham. This project, funded for over £2.6m, aims to advance and explore the boundaries of automated intelligent systems design. The aim is to develop systems which can operate upon a wider range of problems and problem instances than is possible with today's technology by automatically tailoring heuristics to particular problems and problem instances. The project will explore risky and unconventional ideas across a range of disciplines.

Further information: www.epsrc.ac.uk

New training centre in targeted therapeutics

Unique centre established.

EPSRC is supporting a new Doctoral Training Centre (DTC) in the area of Targeted Therapeutics – the science of delivering drugs where they are most needed; at the right time, in the right place, and at the right dose. The Centre will be based at the University of Nottingham's School of Pharmacy, and is being set up in partnership with pharmaceutical company AstraZeneca. This is the first time that EPSRC has partnered with industry to establish a DTC. The DTC will start in October 2006, when the first 5 PhD students start, and aims to produce the doctoral scientists that will be needed by the pharmaceutical industry as a whole.

EPSRC's first DTCs were launched in 2002. They offer a multidisciplinary approach to postgraduate training, bridging the gap between the medical, biological and physical sciences. The centres produce a new type of scientist with the skills needed to meet the challenges of interdisciplinary research in strategically important areas.

This is the ninth DTC supported by EPSRC's Life Sciences Interface programme, with each centre funded to support up to five annual cohorts of up to ten students. Students are supported for four years and receive a formal programme of taught coursework integrated with a challenging research project.

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