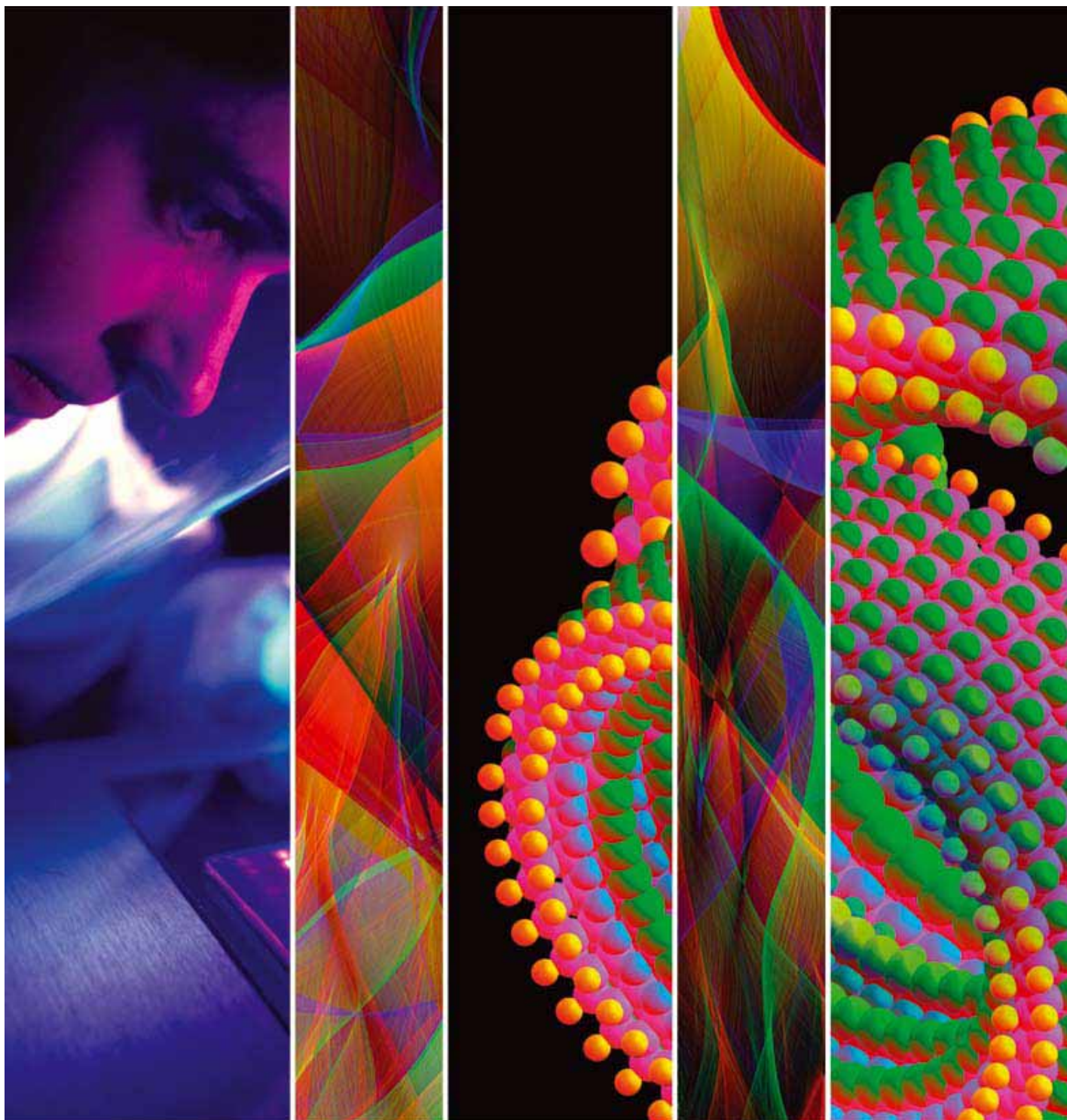

EPSRC ANNUAL REPORT AND ACCOUNTS

2007–2008



EPSRC

Engineering and Physical Sciences
Research Council

ABOUT EPSRC

The Engineering and Physical Sciences Research Council (EPSRC) is the UK's main agency for funding research in engineering and the physical sciences. Our specific targets are set out in our Delivery Plan and Scorecard. The Delivery Plan provides EPSRC's funding priorities and outlines the activities that EPSRC intends to undertake over each spending review period.

EPSRC invests in high-quality basic, strategic and applied research and related postgraduate training to help the nation exploit the next generation of technological change. The areas covered range from information technology to structural engineering, and mathematics to materials science. This research forms the basis for future economic development in the UK and improvements in everyone's health, lifestyle and culture. EPSRC also actively promotes public engagement in science and engineering. EPSRC works alongside sister Research Councils with responsibility for other areas of research. The Research Councils work collectively on issues of common concern as Research Councils UK (RCUK). For more information about EPSRC, including copies of our reports and plans, visit: www.epsrc.ac.uk



INVESTOR IN PEOPLE

EPSRC ANNUAL REPORT AND ACCOUNTS
2007–2008



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and Technology Act 1965, c.4, s.2(2)

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CHAIRMAN'S FOREWORD

JOHN ARMITT



The Engineering and Physical Sciences Research Council (EPSRC) is the main UK Government agency for funding world-class research, innovation and skills development in engineering and the physical sciences. We invested over £690 million in 2007-2008 spanning a broad range of subjects from mathematics to materials science, and information technology to structural engineering.

Our investment has become increasingly important as the world faces a number of major challenges from climate change to global threats to our security. The Government's Comprehensive Spending Review has been positive in supporting funding for such strategic areas, and EPSRC is leading major research programmes in energy, the digital economy and nanoscience through engineering to application. It is also contributing to programmes related to ageing, security and climate change. The EPSRC Delivery Plan for 2008-2011 outlines our priorities for the next three years and how we will spend the funding allocated to us by Government across our remit.

The achievements for the year 2007-2008 described in this report demonstrate both our continued support for a healthy research base, and the many successes that lead to economic and wider societal impact for the UK. There are many examples of initiatives that build on the knowledge transfer component already embedded in our portfolio to realise the required step change improvement in this area. The major partnerships we have formed with organisations in the public sector and industry will be crucial to

achieving this goal. The Report also shows our commitment to a continued flow of skilled people for the UK and that high-quality postgraduate training remains a top priority.

I would like to acknowledge the contribution of Dr Randal Richards, who was Interim Chief Executive of EPSRC from November 2006 to 1 September 2007, and to welcome Professor David Delpy who took up his appointment as Chief Executive on 1 September 2007.

As the new Chairman of EPSRC I look forward to the Research Council working with its many partners to build an increasingly vibrant research and training environment.

A handwritten signature in black ink, appearing to read 'John Armit'. The signature is stylized and written in a cursive-like font.

John Armit
Chairman

CHIEF EXECUTIVE'S INTRODUCTION

DAVID DELPY



In my new role as Chief Executive of EPSRC, I see an increasing need to demonstrate the impact of science and engineering research on the economy and its benefits to society as a whole. Our achievements this year clearly show that we are setting the pace towards fulfilling these requirements. But it is important to recognise that supporting the highest quality research and ensuring better impact, encapsulated in the Government's Science and Innovation Investment Framework 2004-2014, are mutually achievable goals.

The forging of major partnerships during the year show how we are supporting research to deliver greater economic impact. One with great potential is that with the Technology Strategy Board, set up by Government to stimulate innovation in areas with the greatest scope for boosting UK growth and productivity. EPSRC has moved quickly to become a leading partner with the Board and we plan to invest at least £45 million in joint projects over three years. This will support cutting-edge technologies with exciting promise for take up by business.

One of my personal highlights for the year was the announcement of the agreement between EPSRC and the Wellcome Trust to invest £45 million of joint funding to boost innovation in medical engineering in the UK. The 'Engine for Healthcare Innovation' initiative will help meet one of our priority challenges - to drive the development of highly innovative solutions in healthcare that will be of great benefit to society and business.

Another highlight was signing an agreement between EPSRC and Arup to jointly fund research in design and engineering for the built environment. This

was an example of our drive to forge Strategic Partnerships with private and public sector bodies leading to major support for research and skills. Ten new university/industry Partnerships were formed this year, with over £40 million research funding from EPSRC and £69 million from the partners. In the case of Arup, joint research arising from the world's first sustainable city project in China is an exciting possibility.

The exploitation of outcomes from the programme of energy research has clearly become of great strategic and economic significance. We continue to lead this cross-Research Councils programme and have contributed, jointly with the Technology Strategy Board, to establishing a very powerful partnership with the Energy Technologies Institute LLP. This is a potential £1 billion collaboration over 10 years between the public and private sector, supporting the Institute's aim of accelerating deployment of new energy technologies.

As part of our portfolio of knowledge transfer activities, EPSRC has built on the success of its first competition for 'Knowledge Transfer Challenge Awards' reported last year. This challenges research teams to bid for awards with compelling proposals that could transform knowledge into economic benefits. Five finalists competed for the awards at an event in 2007, and Ian Pearson MP, Minister of State for Science and Innovation, presented the prizes with the top award going to the University of Sheffield.

The launch in 2008 of 'HECToR', the largest and most advanced supercomputing facility in the UK, has greatly improved computing support for researchers engaged in cutting edge projects across all science and engineering disciplines. EPSRC

Key highlights of the year

- Over £250 million allocated to create new postgraduate training centres
- £45 million multidisciplinary healthcare research programme
- Ten new university/industry Strategic Partnerships worth over £100 million
- Largest UK supercomputer 'HECToR' launched
- EPSRC invests £12 million in collaboration with the Technology Strategy Board
- EPSRC builds 10 year partnership with Energy Technologies Institute LLP
- New Science and Innovation awards of £25 million made to nine universities
- Knowledge Transfer Challenge awards made to five universities
- International review of UK materials research
- Fellowships rationalised to focus on early stage careers and tomorrow's research leaders
- Public dialogue on Energy Research completed

funded and managed the procurement of this new £113 million facility on behalf of the Research Councils.

Our role in funding the training of the next generation of world-class researchers was highlighted by two EPSRC announcements this year – a step change in funding for new centres for postgraduate training, and new Science and Innovation programmes. We are committing over £250 million to create new postgraduate training centres to give a boost to high quality doctoral training spanning our remit of disciplines – one of our largest single funding schemes for many years. The six new Science and Innovation programmes announced have the important focus of boosting research capacity in areas of importance to the UK considered to be 'at risk'. The injection of resources into the programme will contribute by increasing the output of people skilled in such areas. Our investment in the Science and Innovation programmes has risen to a total of over £85 million over four years.

Another aspect of skills shortages is our concern to help redress the decline in the numbers of young students taking up some of the subjects important to our remit. Our 'Science in Society' programme contributes to overcoming this problem, for example by sponsoring role model scientists and engineers to inspire the young, and Senior Media Fellowships to develop high-profile champions of research in the media. An inorganic chemist, Professor Andrea Sella of University College London, was appointed to our cohort of Senior Media Fellows in 2007.

At the EPSRC Open Meeting in March 2008, we presented our future vision and new organisational structure for the

Research Council. This will position us to focus on research and skills for the key challenges facing society. All communities have a part to play and I encourage researchers to explore how they can contribute and to be even more ambitious.



David Delpy
Chief Executive

“I see an increasing need to demonstrate the impact of science and engineering research on the economy and its benefits to society as a whole. Our achievements this year clearly show that we are setting the pace towards fulfilling these requirements.”

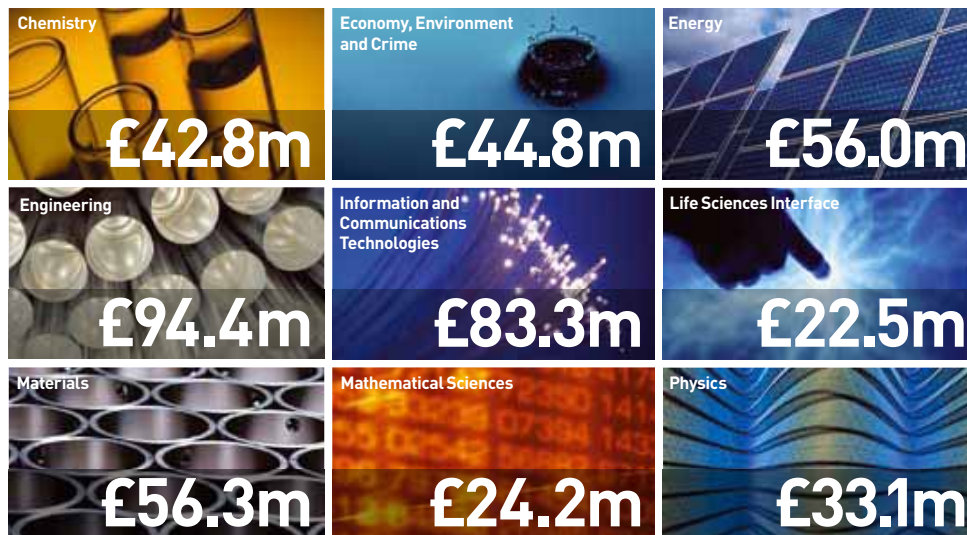
Engineering and physical sciences research is vital to the UK's future. It is exciting and challenging in its own right, it fuels the economy with knowledge and trained people and it provides an essential platform for the rest of science.

Healthy Research Base



EPSRC portfolio 2007-2008

Financial values quoted are for funds committed in 2007-2008



RESEARCH

1,442

During the year we funded 1,442 research grants worth over £500 million

The year in context

A healthy research base in engineering and the physical sciences is vital for future prosperity and quality of life in the UK. The process of discovery is inspirational and challenging in itself, but it also fuels the economy with knowledge and highly skilled people providing a crucial platform for the range of other sciences and technologies.

Continuing to sustain and stimulate this core research base through funding support is therefore a fundamentally important role for EPSRC. During the year we funded 1,442 research grants, worth over £500 million, through our range of support modes.

We retain a strong commitment to providing grant support through our 'responsive mode', a flexible and rapid route to enabling talented researchers to pursue their own initiatives in pushing the boundaries of knowledge and responding to emerging opportunities.

EPSRC is encouraging a culture of greater flexibility in research programmes that can deliver high-impact outcomes for the benefit of the UK. This calls for the support of research which may be highly innovative and possibly risky, and ideas which have potential to transform an area of science or technology. Areas identified for growth such as the digital economy, complexity, nanotechnology and next generation healthcare rely strongly on responsive mode.

Our 10-year vision, outlined in the EPSRC Delivery Plan for 2005-2008, is to improve and maintain international quality across all

disciplines of engineering and the physical sciences in the UK through:

- building and strengthening the research community, particularly in priority areas where there may be a shortage of support for strategically important research activity;
- promoting agility and flexibility in pursuing exciting new research opportunities;
- encouraging the best UK researchers to collaborate with the best international research groups to ensure a globally competitive context;
- promoting the transfer of knowledge which aligns with real societal issues and business needs, and maximises its economic impact;
- developing the skills of talented people without whom there cannot be a healthy research base.

Faced by the many current challenges posed by government, society and the economy, EPSRC's Delivery Plan for 2008-2011, published during the year, retains the thrust of this vision and its goals, but re-emphasises the importance of its leading role in ensuring that research aligns with the real-world needs of UK and worldwide business.

Our portfolio

Over £500 million was invested by EPSRC during the year to fund high-quality research spanning a range of disciplines. Our portfolio encompasses areas such as **physics, chemistry** and the **mathematical sciences** – fundamental areas of science but ones which often lead to breakthroughs

Seeing below the skin

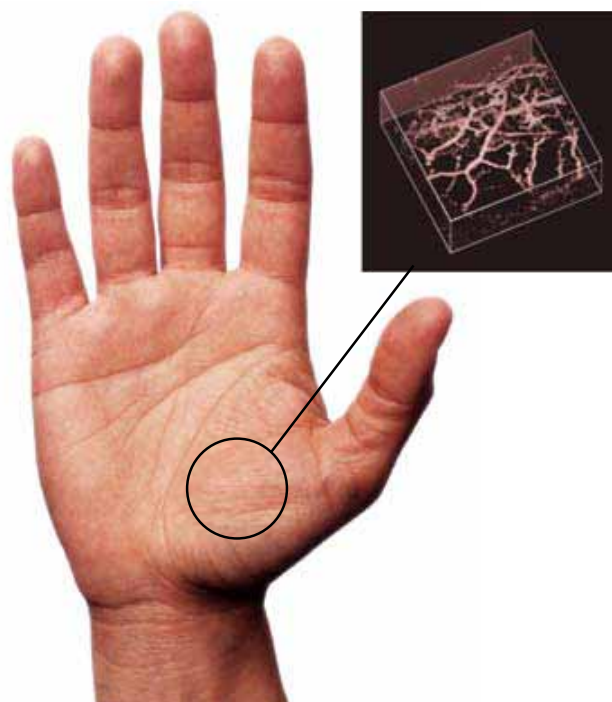
Early diagnosis can mean the difference between sickness and health in many diseases. A new medical imaging system, developed by medical physicists and bioengineering experts at University College London, with funding from EPSRC, takes advantage of photoacoustic imaging. Absorption of light is used to generate ultrasonic waves to improve the detection, monitoring and treatment of tumours, diseased blood vessels and other soft-tissue conditions.

In the new system the ultrasonic waves are recorded using a novel type of detector and converted to reveal high resolution 3D images of tissue structure. A prototype device is now being evaluated for clinical use, and the technology could be

deployed in the healthcare sector in just five years.

“The new system,” says Dr Paul Beard, the leader of the Photoacoustic Imaging Group at UCL, “offers the prospect of completely safe, non-invasive medical imaging of unprecedented quality using an extremely versatile, relatively inexpensive and even portable imaging option.”

Photoacoustic image of the vascular anatomy in the palm of the hand.



RESEARCH CONTINUED

HECToR

HECToR, the most advanced supercomputing facility in the UK, is capable of a breathtaking 63 million, million calculations a second.

that provide stimulus for other fields of science and technology. Thus, basic research in physics not only provides an underlying understanding that may have benefit to the UK over the long term but can also ‘spin off’ more quickly into areas such as the life sciences contributing, for example, to the development of medical imaging techniques. Chemistry research too makes possible advances in pharmaceuticals based on developments in chemical synthesis methods.

As part of our funding commitment to areas of research in **information and communications technology** and **materials**, we have expanded essential support to underpin the rapidly developing ‘digital economy’ in particular focused on health care, transport and the creative industries.

Major funding has been sustained to encourage blue skies, adventurous **engineering** research across a wide spectrum, the translation of basic science and technology into applications, and the fostering of emerging areas of engineering. This has been complemented by funding for user-led applied research in the **economy, environment and crime**, a programme which was formed by merging three EPSRC programmes: Innovative Manufacturing, Infrastructure and Environment and Crime Prevention and Detection.

Energy research is a major cross-council activity led by EPSRC. It has become of increasing significance to the UK economy during the year receiving major funding to support research in helping develop supply infrastructure, improve efficiency, promote sustainable consumption

and minimise environmental impacts.

Support for high-quality research at the boundary between engineering and the physical sciences and the **life sciences** has been sustained.

Sustaining disciplines

A highlight of our commitment to sustaining disciplines is the ‘signposting’ of the physics-life sciences interface during the year. This recognises that responsive mode should remain the main funding route for fundamental physics, with managed programmes in a supporting role. The findings of an international review together with the consensus of the physics community supported this policy.

In 2008, the physics-life sciences interface is being signposted for responsive mode research with up to £8 million funding for high-quality bids. The ambition is to stimulate the submission of more innovative proposals which span the boundaries between physics and the life sciences. Other signposted areas are in plasmonics, an area which offers great potential for fundamental advances in physics, and quantum coherence where there is an internationally recognised need to build up work on cold atom physics.

Boosting strategic capacity

Much of the UK research base is of world-class quality. In some areas supported by EPSRC, the UK unquestionably leads the world – for example in organic based electronic devices, optical fibre communications technology, and

HECToR

£113 million for access to the best

Capable of a breathtaking 63 million, million calculations a second, the largest and most advanced supercomputing facility in the UK was launched by the UK Research Councils in 2008. The new machine was officially inaugurated by the Chancellor of the Exchequer, Alistair Darling, in Edinburgh at an event hosted by EPSRC and the University of Edinburgh.

The £113 million 'HECToR' provides access for researchers to a facility four times faster than its predecessor, opening up wider horizons for innovative and world-leading research. Based at the University of Edinburgh, the procurement of the facility was funded and managed by EPSRC on behalf of the Research Councils.

The machine's awesome power can be understood by the fact that HECToR is capable of 10,000 calculations a second for every person on the planet. As one of the largest and most advanced supercomputers in Europe it will play a key role in keeping researchers at the forefront of their fields.

HECToR provides UK researchers with the means of undertaking increasingly complex computer simulations across a range of disciplines. This will encompass work such as forecasting the impact of climate change, fluctuations in ocean currents, projecting the spread of epidemics, designing new materials and developing new medicinal drugs.

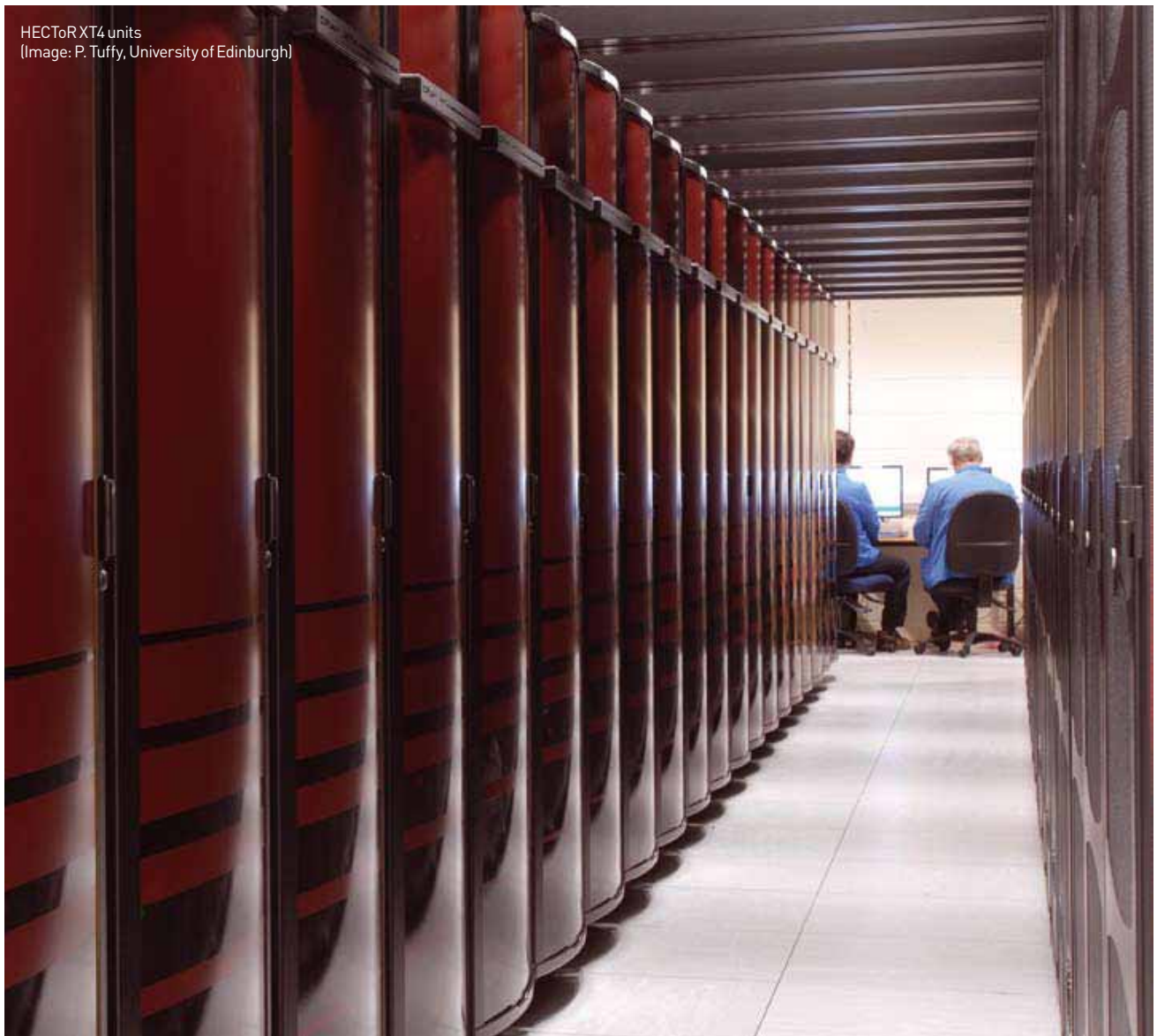


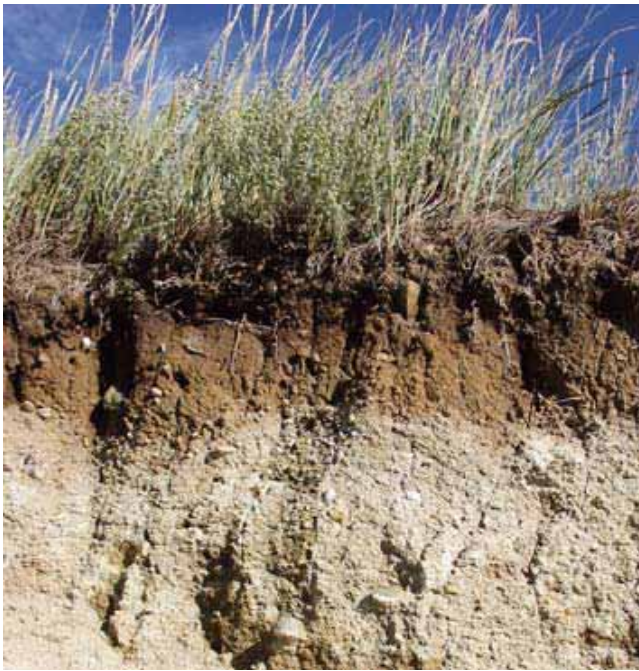
First users

HECToR is already delivering UK firsts. One of the early users, the University of Southampton, has harnessed the machine's intense computing power to carry out the largest known direct numerical

simulation of turbulent fluid flows in the UK. These studies are crucial to the aerospace industry, helping researchers understand the flows across aerofoils.

HECToR XT4 units
(Image: P. Tuffy, University of Edinburgh)





Soils as sinks

Soils are the greatest land-based reservoir for carbon on the planet. So why not explore the possibilities for engineering soils to maximize the amount of CO₂ they take up and then use soils as a passive and cheap form of carbon abatement? This novel approach to carbon emission abatement is the rationale behind an ambitious multidisciplinary research project funded by EPSRC and led by David Manning, Professor of Soil Science at the Department of Civil Engineering and Geosciences at Newcastle University.

“No one else has tried to design soils expressly for the purpose of removing and permanently locking up carbon,” notes Professor Manning. “But once we’ve confirmed the feasibility of this method of

carbon sequestration, we believe that the scope for incorporating calcium-rich, carbon-locking soils in land restoration, land remediation and other development projects is significant.”

In this Canadian prairie soil, a brown organic layer overlies gravel containing natural calcium-bearing carbonates, which could aid the fight against global warming.

RESEARCH CONTINUED

£99m

Over £99 million for Science and Innovation programmes, building capacity in key areas.

synthesis of pharmaceuticals. But there is also powerful evidence that some areas of strategic research in the UK may be compromised in their ability to deliver the capacity required in the future. Worrying symptoms can be a shortfall in the numbers of highly trained researchers and also the lack of inspiring individuals to provide the dynamic leadership needed for world-class programmes.

EPSRC has responded to this in partnership with the funding councils through its well developed Science and Innovation Awards initiative. These focus on building capacity in areas of scientific and economic significance where there is evidence of a particularly high risk of weakness. A total of 25 awards have now been made.

During the year six new Science and Innovation awards (described on page 12) were announced. Involving nine universities, they will boost research capacity in analytical science, energy, operational research, structural ceramics and tribology. A crucial element of their role is to increase the output of trained scientists in their respective ‘at risk’ areas. This brings the total joint funding for 25 awards to over £99 million over four years – from EPSRC, the Higher Education Funding Council for England, the Scottish Funding Council, the Department for Employment and Learning for Northern Ireland and the Higher Education Funding Council for Wales. In general each award supports three lecturers, three post-doctoral Research Assistants and three PhD students.

Progress has also been made to develop

further a drive to support and nurture outstanding engineering researchers at an early stage of their careers who demonstrate the talents for independent research leadership. Under the banner of ‘Challenging Engineering’, funding has provided individuals with leadership potential with grants of up to £1 million to build their research groups. During the year, £7.3 million has been made available for seven awards to support the development of research groups that will increase the creative linkages of engineering research to more basic mathematical, physical, chemical, biological and social sciences, as well as to end-users, so that novel scientific and engineering research may stimulate even more and broader discoveries and their applications. This brings the total value of Challenging Engineering awards made since 2005 to £16.4 million.

Challenging Engineering has also held three ‘Exploring the Future’ events to enhance the skills and career development of early career engineering researchers. The latest event took place in March 2008 and explored the role of collaboration in research with 40 selected engineers.

Critical mass

‘Critical mass’, research areas with strong teams that retain key personnel, is essential to a healthy research base. It is especially needed in multidisciplinary research which normally requires larger teams and a wide range of expertise and disciplines. EPSRC has signalled

Statistical answers to real questions



Real data about ecological processes can be very messy, and from the statistical point of view, very hard to handle. Datasets often incorporate a wide range of different elements and types of data, and individual values that play an important role in driving the system are often missing. As a result it can be difficult for ecologists to interpret the information they collect in a meaningful way.

But help is at hand. New statistical techniques being developed with EPSRC funding by Dr Ruth King of the Department of Mathematics and Statistics and Dr Paddy Pomeroy of the Sea Mammal Research Unit at the University of St Andrews are being tested on existing rich and complex datasets of the UK grey seal population and are providing a more

general framework for analysing complex ecological data. “The new techniques,” says Dr King, “will not only help statistical ecologists. They will also benefit scientists in general, and lead to an increased awareness of the value and potential of advanced statistical techniques to answer real questions.”

Grey seals provide help for statistical ecologists (Image: Dr Paddy Pomeroy).

RESEARCH CONTINUED

£77m

£77 million on EPSRC-led energy research in 2007-2008.

the importance of critical mass through its support for 10 Interdisciplinary Research Collaborations (IRCs), portfolio partnerships and platform grants. These grants provide our top researchers with stability of funding for a long period of time giving them flexibility to tackle important research challenges often through collaborations.

The current IRCs are in nanotechnology, bio-nanotechnology, quantum information processing, tissue engineering and proteomics, together with five in IT-related areas. The IT-related IRCs and our ‘Portfolio Partnership’ funding mechanisms were reviewed in 2007 to advise EPSRC on their value in meeting our critical mass strategy. Both reviews noted the many successes of the approach. The IRC Mechanism Review Panel considered this to be more successful than similar initiatives in other OECD countries and an effective means of supporting interdisciplinary research challenges. This was because the mechanisms avoided the issues associated with engrained academic structures and the conservatism in peer review. The caveat was that such research programmes required effective management and leadership to ensure results were delivered and the resources were used creatively.

These reviews, together with that of the platform grant mechanism have been instrumental in the development of future EPSRC critical mass strategy through platform grants and the new Programme grants to be launched in April 2008.

Secure and sustainable energy

EPSRC continues to lead the joint Research Councils’ major energy programme resulting in £77 million worth of research in 2007-2008. The backdrop of global concerns about climate change, and the rapidly escalating demand for scarce energy resources, makes a ‘whole systems’ approach to energy research – engineering, technology, economics, social, environmental and biological sciences – of immense significance. The programme encompasses sustainable energy supply, energy demand reduction, and understanding the uncertainties of markets, regulation and policy. We are playing a key role in shaping a healthy research base by identifying strategic areas at risk from lack of skilled people.

A comprehensive EPSRC portfolio of research to contribute to the sustainable energy economy and low carbon technologies has been established. A highlight of the year was the £4.2 million funding of a multidisciplinary consortium consisting of six universities in partnership with industry to tackle the pressing challenge of dealing with nuclear waste. This will focus on future nuclear waste management, including decommissioning and waste disposal. The consortia represent most of the UK academic nuclear research community and significant industry partners.

A novel element of our sustainable energy activity arose from a partnership with Sustrans, the sustainable transport charity. Three university

RESEARCH NEW SCIENCE AND INNOVATION AWARDS

Science and Innovation Awards were introduced by EPSRC to boost support for strategic areas of research that are particularly at risk. The six awards made in 2007 went to projects that will create new centres of research activity and encourage and support innovative approaches in existing research environments.

Analytical scientists unite

The best forms of knowledge transfer involve human interaction. A new centre for analytical science being developed at the University of Warwick is designed to promote just that. The centre will bring together broad-range academics and industrialists to pool their expertise to promote analytical science and promote advances in applications ranging from drug development to plastics and nanoscale sensors – and beyond.

New analytical sciences laboratory under construction at Warwick.



Energy efficient cities – with a human touch

Improved energy efficiency in towns and cities will bring great environmental benefits. An Energy Efficient Cities interdisciplinary research initiative is being established at the University of Cambridge to bring together design and technologies for buildings, transport and distributed power generation. It aims to find ways to reduce energy demand, while at the same time bearing in mind the factors that make cities pleasant places for people to live and work.

Smooth operation

Tribology – the science of friction, lubrication and wear of all interacting surfaces in relative motion – affects nearly all areas of industry, as well as anyone living with damaged or replacement joints. A new multidisciplinary UK Centre for Advanced Tribology being established at the University of Southampton, will develop partnerships with industry and academics in a wide range of disciplines to increase the understanding of tribological processes at all scales.

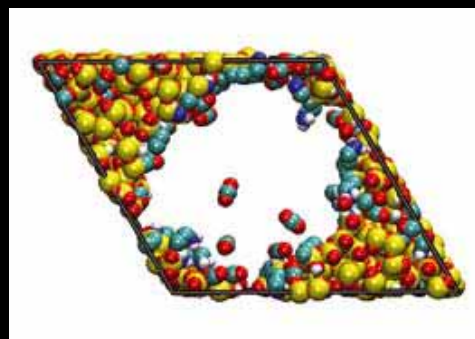
Theories for practice

Healthcare, industry, finance and defence are just a few of the areas that rely heavily on the insights gained from operational research – a discipline that draws on advanced analytical methods to arrive at the best solutions to complex problems. In the LANCS initiative the universities of Lancaster, Nottingham, Cardiff and Southampton will team up to advance and maintain the UK's leading position in this important application-oriented area of research.

Capturing CO₂

CO₂ emissions linked to energy use are raising alarm bells in areas ranging from climate change to ocean acidification. The Carbon Capture Centre, based at the University of Edinburgh, will draw on a wide range of existing expertise and create multidisciplinary networks to mount a two-pronged attack for reducing atmospheric CO₂. The Centre will focus on developing new technologies for CO₂ separation at power plants and the use of biomass to extract CO₂ already emitted.

Molecular model of CO₂ adsorption
(Image: Professor N Seaton, University of Edinburgh)

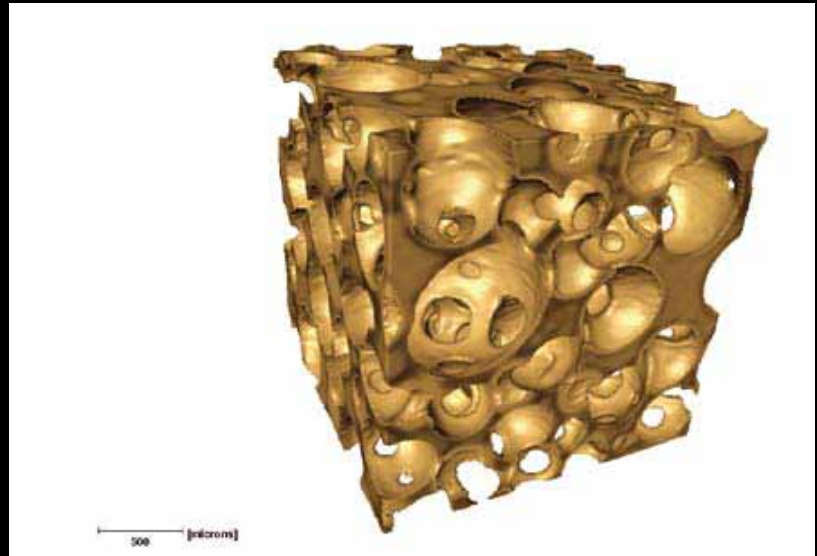


Extreme innovation

Structural ceramics are highly complex materials used in applications ranging from energy generation and environmental clean-up to transport, aerospace, defence and healthcare. A new UK Structural Ceramics Centre being established at Imperial College London, will be drawing on multidisciplinary 'muscle' to dramatically improve the strength and durability of structural ceramics to meet industrial demands for materials that can withstand extreme environments.

Right: X-ray microtomography image of a bioactive glass scaffold for bone regeneration. Image: JR Jones, G Poologasundarampillai, PD Lee

Below: View from inside a Secondary Ion Mass Spectrometer (SIMS). Image: Neville Miles





Sensitive giant probes atomic world

EPSRC funding has enabled the London Centre for Nanotechnology to buy the UK's only mono-chromated analytical electron microscope. The £2.4 million Titan instrument is not only capable of imaging objects measuring just 0.14 nanometres¹ in diameter; it also provides spectroscopy capabilities that allow the identity of an atom and its local environment to be determined. This allows researchers to probe the atomic structure and chemistry of materials.

Housed deep under the streets that surround the Royal Albert Hall, Titan is kept in near silent conditions because of its sensitivity, as even the vibrations caused by talking too loudly can cause a sample to drift and ruin an experiment. The microscope is being used to examine everything

from new materials for ultra fast computers to tissue samples that may shed light on diseases such as Alzheimer's. Medical researchers are also hoping to use the equipment to study the microscopic and chemical changes at interfaces in healthy and diseased biomineralised tissue, to gain a better understanding of osteoporosis.

The London Centre for Nanotechnology (LCN) is an interdisciplinary research centre that combines nanotechnology expertise at both Imperial College London and University College London.

¹One nanometre is a billionth of a metre

The Titan Transmission Electron Microscope housed deep beneath the streets around the Albert Hall. (Image: Neville Miles)

RESEARCH CONTINUED

£6.8m

£6.8 million awarded to UK-based researchers to work with their counterparts in China on renewable energy technologies.

based consortia were chosen to investigate the modal shift and health benefits of walking and cycling.

The Energy Senior Research Fellow, Professor Nigel Brandon, appointed to help shape our energy programme has contributed to our engagement with the Ministry of Science and Technology (MOST) in China. Collaborative research with China was given added impetus by an EPSRC funding package of £6.8 million awarded in 2008 for UK-based researchers to work with their counterparts in China on renewable energy technologies including hydrogen and fuel cells.

The multidisciplinary initiative SUPERGEN, led by EPSRC, supports a range of research into sustainable power generation and supply, helping the UK to meet its environmental emissions targets. In the year, awards were renewed for two research consortia – 'Conventional power plant lifetime extension' and 'Photovoltaic materials' with total funding of over £10 million.

Real world problems

Research that tackles real world problems of national importance is being supported by EPSRC. We target funding on research priorities in the areas of complexity, nanotechnology, and healthcare.

We continue to build on our early lead for the UK in supporting complexity science. This tackles the behaviour of the complicated systems that increasingly characterise the real world and which sometimes defy accepted methods of analysis

leading to occasional spectacular failures.

Power supply networks, where there are multiple sources and widely fluctuating demand provide an example. Systems like the internet, the climate system and even the brain are also subjects for complexity science. A particular example of our support is a £5 million commitment which focuses on supporting the Large Scale Complex IT Systems Research Centre. Our strategy for support in this area is also to nurture and grow the complexity science research community to produce research leaders and training to ensure a supply of skilled people and the transfer of knowledge.

Our forward approach to next generation healthcare has been to shift the healthcare model away from treating sickness towards maintaining health, for example through better monitoring and early intervention. Multidisciplinary feasibility studies and a workshop with key stakeholders in healthcare have been held to initiate targeted research that will meet these policy needs. In 2008 EPSRC, in partnership with the Wellcome Trust, announced a major new multi-million, cross-disciplinary programme which promises major breakthroughs in the technologies needed to advance UK healthcare in the future (see below).

Global reach

The global reach of UK research in engineering and the physical sciences is impressive. The current value of EPSRC research grants involving collaboration with overseas companies is over £400 million. Around 35% of 700,000 catalogued

RESEARCH ENGINE FOR HEALTHCARE INNOVATION

£45 million boost for healthcare innovation

“

'Innovation will be a necessity if we are to have a successful economy and society in the future' said Ian Pearson MP, Minister of State for Science and Innovation, welcoming the initiative. **'We want to establish creative alliances such as the medical engineering initiative to support innovation.'**

”

A £45 million boost for innovation in medical engineering was launched in March 2008. The 'Engine for Healthcare Innovation' joint initiative between EPSRC and the Wellcome Trust will provide the funding for a limited number of multidisciplinary centres of excellence in the UK. The focus will be on developing highly innovative solutions to healthcare challenges, bringing together the expertise of researchers in engineering and physical sciences and those in clinical and life sciences.

Major advances in healthcare are frequently underpinned by the development of new technology, such as magnetic resonance imaging, reconstructive surgery and non-invasive diagnostic tests. Such advances depend on a multidisciplinary approach, but increasing specialisation within disciplines needs to be matched by exciting and innovative research across these interfaces. The initiative will also improve integration of expertise in the public and private sectors so that innovations arising from academic work are harnessed effectively by the healthcare industry.

With £30 million from the Wellcome Trust and £15 million from EPSRC, the two organisations hope to build on their track records of achievement in funding innovations in healthcare. An example of an outcome from an EPSRC-funded project was the development by researchers at the University of Leeds of models of the spine. This has led to a collaboration with Queen's University Belfast to develop biological cements to repair 'burst fractures' of the spine.

Dr. Ruth Wilcox, an engineer from the University of Leeds, one of the researchers developing biological cements to treat the kinds of spinal injuries caused by car crashes.



From killer to cure

Carbon monoxide (CO) gas has a reputation as a silent killer. But innovative CO releasing molecules (CO-RMs) could have huge potential as lifesavers for patients undergoing heart surgery, organ transplants or suffering from high blood pressure. Developed by chemists at the University of Sheffield, working in partnership with Dr Roberto Motterlini at Northwick Park Institute for Medical Research (NPIMR), the EPSRC funded the research leading to this molecular advance.

CO-RMs can be dissolved in water then swallowed or injected to safely release small controlled amounts of CO inside the body. The molecules could also be redesigned so they target a particular place.

"This is an excellent example of how chemistry can underpin important advances in healthcare," says Professor Brian Mann, of the Department of Chemistry at the University of Sheffield, who led the chemical research. He may not have to wait long to see the group's discovery put into practice. A spinout company 'hemoCORM', set up in 2004 by the University of Sheffield and NPIMR, is now taking the research towards commercialisation. Phase 1 clinical trials could begin in two years.

Nutrition for the ageing population

Malnutrition in older people is a significant medical and social problem. The challenges for research in this area are wide ranging, requiring an innovative and trans-disciplinary approach. To explore new approaches, one of the series of EPSRC IDEAS Factories was held on the topic in 2008. These events are interactive workshops called 'sandpits', held over five days with up to 30 participants to stimulate highly innovative and risk-accepting research activities.

The nutrition sandpit involved a multidisciplinary mix of participants ranging from active researchers to potential end users. They focussed on topics such as kitchen design, shops,

packaging, and waste handling. Other issues such as the funding of health and social care, causes of loss of appetite, and medication compliance were also included.



RESEARCH CONTINUED

RCUK

RCUK has established offices in the US and China

research articles published by UK-based researchers over the last 10 years have a co-author from another country.

EPSRC recognises the importance of building on this excellent record of working across borders, reinforced by the findings of the Government Science and Innovation Forum international strategy which concluded that a primary role of the Research Councils was 'to ensure that the UK could benefit from international collaboration'.

Our strategy for maximising international engagement has two key goals:

- stimulating and supporting interactions between the best researchers in the UK and their best counterparts overseas – 'best with best';
- seeking to promote and build the influence of UK research performers globally.

During the year, a step change in fostering these aims was achieved through EPSRC working with the Research Councils UK (RCUK) to establish offices in the US and China. These will advance our international research interests greatly in these globally significant countries. EPSRC played an active role in the launch of the offices in Washington and Beijing, and is now the managing partner of the US office. A highlight of our collaboration with China this year was the excellent response to a call for research proposals on renewable energy technologies.

In the context of the launch of the Washington

office, EPSRC Chief Executive, Professor David Delpy, explored the potential for closer working with our main counterpart in the US, the National Science Foundation (NSF). A successful outcome – joint working in the area of transformative research – was achieved. He also held constructive discussions on strategies and joint working with the US research bodies concerned with health, biomedical imaging and bioengineering, and homeland security.

Plans for the opening of a RCUK office in Delhi, India during 2008 are well advanced, promising to further advance international engagement for EPSRC in this fast developing economy. An example of collaboration this year was an EPSRC-led meeting with the Indian Department of Science and Technology in Delhi. The outcome was an agreement in principle to jointly fund a proof of concept for a virtual centre of excellence in 'next generation networks'.

A barrier to international collaboration can be the 'hurdles' encountered when applying for support when working with overseas funding bodies. EPSRC is in the forefront of working with agencies around the world to seek lower peer review barriers to collaboration.

International spotlight on materials

The EPSRC series of international reviews of engineering and physical science themes focused on materials research this year. The review panel, comprising 14 leading academic and industry experts from around the world, was chaired

RESEARCH CONTINUITY AND COLLABORATION

The two highlights featured here demonstrate how EPSRC provides top research teams with larger, more responsive grants aimed at research continuity and collaboration.



LATEST transport developments

Light alloys – alloys of aluminium, magnesium or titanium mixed with other metals – hold out the potential for reducing weight and greenhouse gas emissions, as well as enhancing the safety of a new generation of cars, trucks, trains, ships and aircraft. But to make them competitive with materials currently used, more research is needed to improve the performance and handling of light alloys in manufacturing applications.

By bringing together a large and diverse range of research projects in the field of light alloys, the EPSRC-funded £6 million Light Alloys for Environmentally Sustainable Transport (LATEST) Portfolio Partnership is designed to do just that. The research portfolio includes research to develop structures that are lighter, stronger, perform better and are more recyclable for transport applications.

Since its launch in 2005, the five-year partnership, which is based at the University of Manchester, has already invested in state-of-the-art equipment and is supporting a diverse range of research. It has also hosted and participated in international workshops and meetings to discuss research developments in light alloys, and LATEST researchers are producing important publications and participating in public awareness events.

“The portfolio’s breadth is providing a one-stop-shop for expertise on alloy design, processing, joining, forming and surface technology,” explains Professor George Thompson, of the School of Materials at The University of Manchester, and coordinating principal investigator for LATEST. “This expertise and the highly trained researchers who work on the projects are of great value to industry as well as for joint research projects with industry and other universities.”

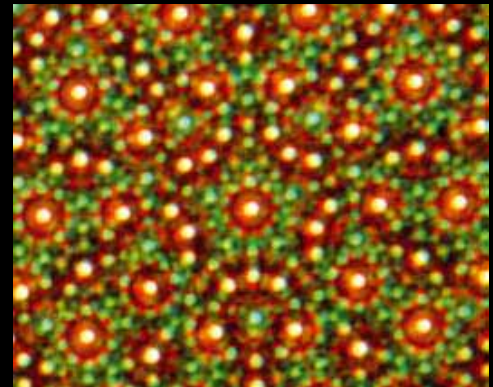
Crossing the quantum bridge

Crossing the ‘quantum bridge’ between nanotechnology – which involves materials engineered at scales of just 10^{-9} m – and photonics – the study and application of photons, the elementary particle responsible for electromagnetic phenomena – could lead to a remarkable range of new materials and phenomena. “It’s an exciting journey”, says Professor Nikolav Zheludev, of the Optoelectronics Research Centre at the University of Southampton, who, along with Professor Jeremy Baumberg of the Department of Physics at the University of Cambridge, is a principal investigator for the EPSRC-funded Nanophotonics Portfolio Partnership.

The £4 million project began in 2004 and continues until 2009. With a wide range of its own projects on the go, the Partnership has already published more than a hundred research papers and given more than a hundred invited talks at leading international conferences. It also works with a number of partners in the US and Asia, as well as on EU-based collaborative projects.

“Nanophotonics promises captivating new fundamental physics, and new mind-blowing applications in low power, ultra-small devices performing at the quantum edge in a wide range of technologies ranging from information processing and telecommunications, to defence, security, medicine and biotechnologies,” explains Professor Zheludev. “Our aim is to develop concepts of optical functionality on the smallest possible size scale, at the lowest possible energy level and on the shortest possible timescale.”

Colourful diffraction pattern of a Penrose-like photonic quasicrystal when illuminated with white light. The image (35x35 μ m) shows very bright hot spots which concentrate most optical energy, and sub-wavelength spots with weak intensity.



Terahertz technology heats up



Portable, battery powered terahertz devices with potential applications ranging from detecting diseases to locating explosives in luggage are moving a step closer to reality, thanks to EPSRC-supported research.

Terahertz quantum cascade lasers are being used for the research carried out by a team led by Professors Edmund Linfield and Giles Davies from the Faculty of Engineering at the University of Leeds, working in collaboration with a group headed by Professor Federico Capasso of Harvard University in the US.

Terahertz quantum cascade lasers, which currently operate at maximum temperatures of -95°C , could hold the key to unlocking the potential of the terahertz

frequency range and open up a wide range of opportunities in many fields – but only if they can be made to operate closer to room temperature. Now that the group has succeeded in raising the laser's operating temperature by over 10°C , this goal looks more achievable. "We have some radically new design ideas," says Professor Linfield, "and hope to obtain further advances by optimising the methods we use to create the devices."

Giles Davies, Edmund Linfield and Suraj Khanna by the molecular beam epitaxy growth system used to grow the terahertz quantum cascade lasers.

RESEARCH CONTINUED

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The Panel was generally impressed with the calibre and intellectual strength of the young scientists. (International Review of Materials Research)

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by Professor JC Williams, Honda Professor of Materials from the Ohio State University. The aim was to provide long-term, strategic recommendations that would sustain and improve the excellent materials research being carried out in the UK.

The Panel's overall conclusion was that the health of UK materials research was good and they were 'generally impressed with the calibre and intellectual strength of the young scientists and engineers' that they encountered. But the panel noted that several industrial representatives considered that the supply of classical materials engineers was inadequate, and that the reduction in the number of materials departments in the UK was related to this shortage.

The closeness of university research to industrial interests was seen as a long term threat: 'In the near term this is a major strength for UK companies but longer term fundamental innovation must come from university research'. However, the panel were pleasantly surprised to discover that, unlike in the US, intellectual property rights were seldom a barrier to industry/university cooperation in the UK.

Among the many wide ranging recommendations, was that the EPSRC should reaffirm its unambiguous commitment to supporting world-class quality materials research in all its programmes.

The theme for the next international review will be Chemistry.

Software for champions

New computer software being developed with EPSRC funding by sports scientists at the University of Edinburgh's Centre for Aquatics Research and Education and colleagues at Sheffield Hallam University, could help British swimmers glide to gold in major championships.

Gliding more efficiently with reduced drag can cut vital fractions of a second from a swimmer's time, and make the difference between winning or missing out on an Olympic medal. The user-friendly software provides in-depth and very accurate feedback on a swimmer's glide technique instantly. "Both the speed and accuracy of the feedback the software provides will add to the value of the

advice that coaches give their swimmers," says Professor Ross Sanders of the Department of Physical Education, Sport and Leisure Studies at the University of Edinburgh, who is leading the project. "And because it will show which young swimmers naturally move easily through the water, the software could even help to identify the champions of tomorrow".

Making light work of oil

The volatile market for crude oil directly affects the UK and world economy, but it also means that an opportunity of securing access to a long-term and stable supply would be 'black gold'. New research to improve an oil extraction method called 'toe-to-heel air injection' (THAI) developed at the University of Bath opens up this exciting possibility.

The technique is already being used to extract heavy oil from a massive oil field in Canada's Athabasca oil sands region by Petrobank Energy & Resources in their WHITESANDS field pilot. But the huge potential of around 1.5 trillion barrels has yet to be realised and the rise in oil prices has made extraction even more cost effective.

With funding from EPSRC and Petrobank, Bath and Birmingham universities are looking to make the process even more efficient using a catalyst 'add-on' process called CAPRI. Also developed at Bath, this is intended to turn heavy oil into more desirable light oil while still underground. This promises to reduce costs and provide a more marketable end product.



RESEARCH FACTS AND FIGURES

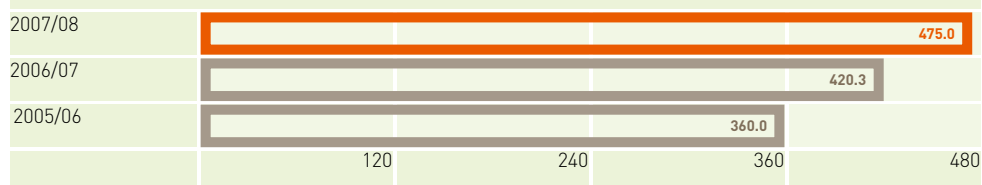
Net research grant expenditure by programme (£m)

Programme	2005/06	2006/07	2007/08
Chemistry	37.8	47.6	46.7
Engineering	63.8	70.2	79.7
Information and Communications Technologies	52.1	63.0	75.0
Infrastructure and Environment	21.5	14.9	14.3
Innovative Manufacturing	24.8	27.2	31.9
Life Sciences Interface	15.1	18.5	20.6
Materials	38.3	41.0	48.3
Mathematical Sciences	10.0	11.6	14.3
Physics	31.1	35.6	33.1
Energy (including Fusion)	15.9	30.1	41.5
Public Engagement	2.9	3.9	3.5
Total	313.3	363.6	408.9
Joint programmes with other Research Councils			
Core e-Science	10.3	10.2	3.7
Basic Technology	22.2	28.1	33.2
Total	32.5	38.3	36.9
Other activities			
Other activities	14.2	18.4	29.2
Total	14.2	18.4	29.2
Grand total	360.0	420.3	475.0

£475.0m

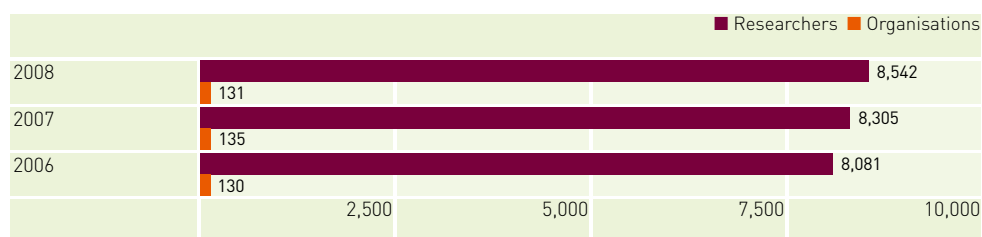
Our net research grant expenditure in 2007/08 was £475.0m

Net research grant expenditure (£m)



In the above table grant expenditure is shown on a net basis (i.e. after deducting receipts). The annual accounts show grant expenditure on a gross basis (i.e. before deducting receipts).

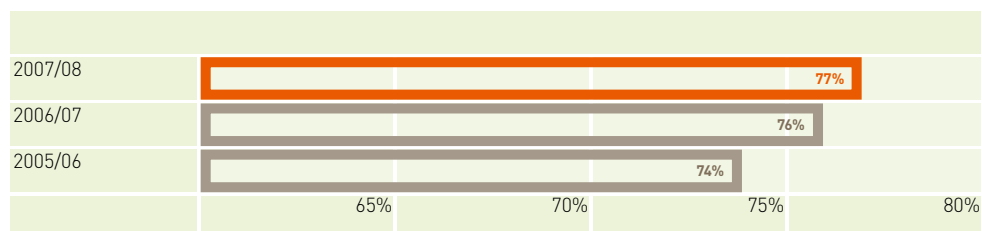
Total number of researchers and organisations with current funding on 1st April each year



3,266

The research grants announced in 2007/08 funded 3,266 researchers in 95 organisations

Trends in final reports achieving the highest approval rating* (%)



*Tending to outstanding and outstanding

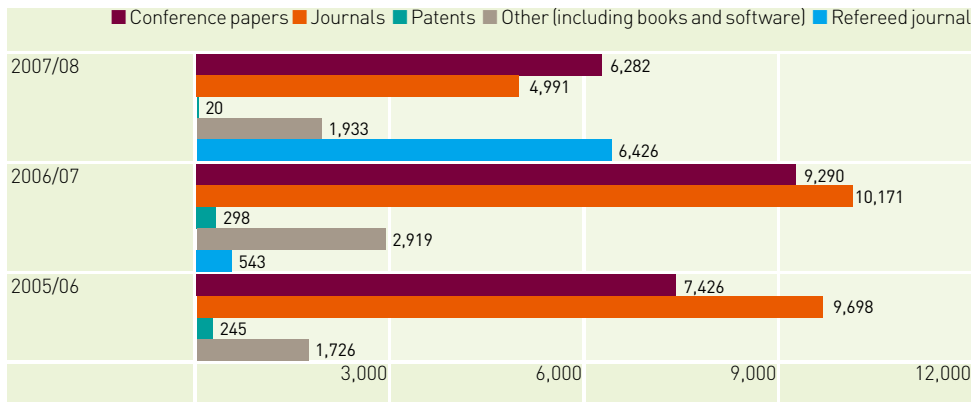
Until April 2008 a Final Report was required to be produced at the end of every grant. The report was then peer reviewed and graded. This process was changed from 1 April 2008 and narrative reports are no longer required.

RESEARCH FACTS AND FIGURES

19,652

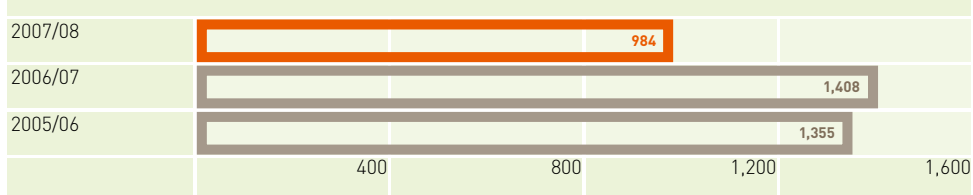
19,652 publications were reported on grants assessed in 2007/08

Trends in publications

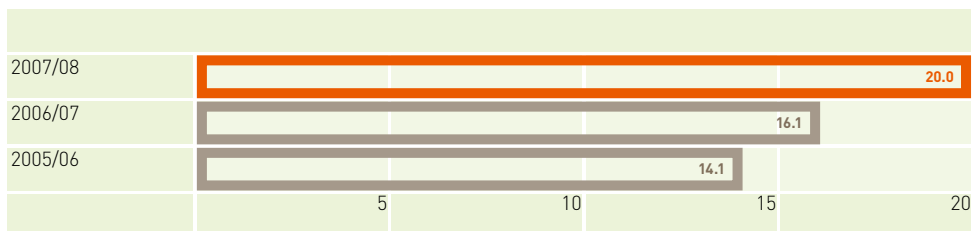


Other includes books and software. Until 2006/07 researchers were asked via the final report to indicate total numbers for the following types of publications: conference papers, journals, patents, books and Software. The publication types collected changed during 2006/07 and now include conference proceedings, journals, refereed journals, books and other.

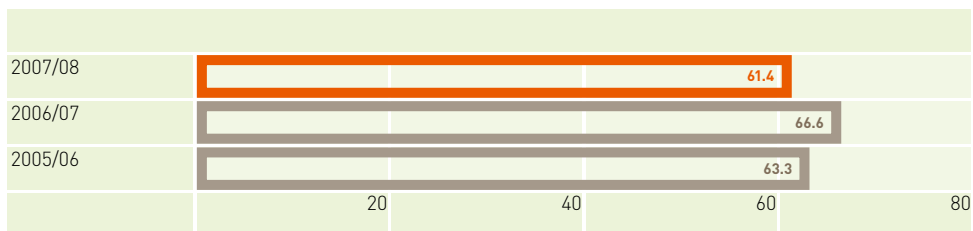
Number of assessed Final Reports reporting publications



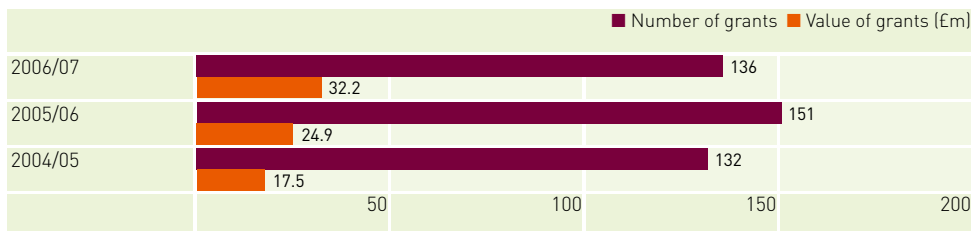
Average number of publications per assessed Final Report



Trends in equipment investment – capital grants (£m)



Number of first grant scheme research grants announced



Improving the uptake and exploitation of research is very important to EPSRC and it is our vision to make the UK equally renowned for knowledge transfer and innovation as it is for research discovery.

Economic Impact



Fuel cells hit home

By 2015 the owners of up to 30% of the central heating boilers installed each year in the UK could generate cheap, reliable and low carbon electricity themselves - thanks to a new wall mountable fuel cell combined heat and power (CHP) unit developed by Ceres Power. The original research underlying the technology was carried out at Imperial College and supported with EPSRC funding.

Ceres Power was spun out in May 2001 to develop and commercialise the technology, and the company has since raised over £25 million through two rounds of private equity, an AIM IPO in November 2004 and a deal with Centrica

that includes a trialling programme and a volume forward order for residential CHP units.

Fuel cells offer a highly efficient, quiet way of producing electricity and heating with fewer emissions than traditional power-generating products. But up until now the technology has proved difficult to adapt for domestic use because the fuel cells available operated only at either very high, or very low, temperatures. Ceres Power's new fuel cell CHP unit operates at intermediate temperatures and is designed to produce electricity and meet all the hot water and central heating needs of a typical UK home, while substantially reducing energy bills and carbon emissions.

"Fuel cell technology has the potential to transform more than

just the domestic central heating market," says Ceres co-founder and Chief Scientist, Professor Nigel Brandon, Shell Professor of Sustainable Development in Energy at Imperial College and an EPSRC Energy Senior Research Fellow. "It shows great potential

for other applications, such as powering vehicle auxiliary power units and efficient off-grid power generation."

Model of future combined heat and power unit



ECONOMIC IMPACT

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Polymer science, information and computer technology, and sensor technology, revealed major economic spin off.

(Economic Impact Study)

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The year in context

The research communities supported by EPSRC are widely recognised for their many successes in converting the outcomes of their work into genuine improvements in products and processes that are leading to economic and wider societal impact for the UK. Knowledge transfer is already embedded in EPSRC's portfolio of support for research and training, and we have been highly active during the year building on previous successes to achieve a 'step change' in this area.

Among our key developments was the publication of a new strategy on knowledge transfer. This supports the Government's drive, as set out in the 10-year Science and Innovation Investment framework, to boost economic growth through a stronger flow of ideas and talented people into the UK economy. Our strategic approach is to stimulate a shorter time to market for the fruits of research and encourage wider recognition that knowledge transfer contributes to a vibrant research base.

The commitment to demonstrate clearly the effectiveness of the strategy has been carried forward in collaboration with the other Research Councils in response to the Worry report 'Increasing the Economic Impact of the Research Councils'. EPSRC has contributed to the work of the RCUK Knowledge Transfer and Economic Impact group, set up by the Research Councils to respond to Worry recommendations. The group commissioned an Economic Impact Study of unprecedented scale and depth focused on outputs from a range

of Research Councils' investments. The EPSRC-related topics surveyed in depth, for example in polymer science, information and computer technology, and sensor technology, revealed major economic spin off. A public presentation highlighting these and the outcomes of the KTEI group's work was held by the RCUK in 2008.

The EPSRC has also responded to another influential report, the 'Sainsbury Review of Science and Innovation', published in 2007. The Research Council is working closely with the Technology Strategy Board which was set up by the Government as the Report's recommendations emerged. EPSRC is one of the leading Research Councils in the scale of its commitment to co-funding the university component of collaborative R&D projects with the Board. Also, the Sainsbury report drew attention to the effectiveness of the Knowledge Transfer Partnerships scheme which is supported by EPSRC and several Government departments to help businesses improve their competitiveness and productivity through transferring skills available within the UK. The recommendation that it be doubled in size is being actively considered by the scheme's sponsors.

Visions and plans

In the face of a rapidly developing global economy, the EPSRC is continuing to pursue vigorously its 10 year vision for delivering growth through innovation in the UK. The challenging goal is for the UK to be renowned not only for our excellence in quality research but also for the strength of our ability to

A real winner



Even before completing her EngD – EPSRC's flagship doctoral qualification – Carol Marsh, has proved herself to be a real winner. Now a final year student studying for an EngD at the Institute for System Level Integration (ISLI) in Livingston, Scotland and sponsored by Algotronix, Carol won the 2007 Elektra Award for Student Engineer of the Year, in the face of stiff competition from engineering students from all over Europe.

Carol already had an enviable track record. With a Higher National Diploma in Electrical and Electronic Engineering from Napier University, Carol undertook an MSc in Digital Techniques from Heriot Watt University, raised a family and worked as an electronics engineer for 20 years before returning to

full time education.

"I'm enjoying the EngD immensely," she says. "I hope that in winning this award it will encourage other engineers, and especially women, to return to education and further their engineering careers."

Right to left;
Sir Trevor McDonald, winner Carol Marsh, Paul Baker (Director of Rapid Electronics) and Richard Wilson (Editor of Electronics Weekly).

ECONOMIC IMPACT CONTINUED

£45m

£45 million over three years to support activities in partnership with the Technology Strategy Board.

maximise the benefits of research innovations.

For EPSRC, knowledge transfer is an integral feature of all that we support. For example the stimulus for knowledge transfer arises from our portfolio of collaborative research projects which involve over 2000 partnerships with research user organisations from the industrial, business and service sectors. The Economic Impact Study, initiated by RCUK, has shown that this is bearing fruit in some impressive improvements in market impact in the UK and abroad. One example from its analyses of a range of case studies showed that basic polymer research supported by EPSRC had led to direct and indirect impacts amounting to around £200 million in the field of display applications.

The pathway to boosting economic impact is complex. But EPSRC is confident that it can play a distinctive role in helping to raise the appetite of business for research and high-level skills by acting as a catalyst for business-academic interaction. Key ambitions for realising this include:

- Enhanced routes for business/university collaboration for example through increasing levels of collaboration in research and training.
- Responsive postgraduate skills for business and the economy, in particular by promoting collaborative training and ensuring such training is more demand-led.
- Strengthening partnerships to improve knowledge transfer, for example through the development of strategic partnerships with research intensive companies.

By building further the richness and scale of engagement with business, EPSRC will seek to ensure that many more companies and organisations find it natural to interact with the science base. The EPSRC portfolio has many of the tools for such interactions, and universities deploy them well and imaginatively in general. We are making the opportunities for collaboration more visible to UK businesses, and sharing an informed picture of the 'demand side' with the university sector from our engagement with several industrial sectors.

Accelerating wealth creation

The aim of accelerating the commercialisation of research in the UK has been greatly enhanced by the creation of the Technology Strategy Board in 2007. EPSRC has already established a substantial partnership with the Board in co-funding cutting edge technologies with exciting potential for take up by businesses. We plan to allocate funding of at least £45 million over three years to support activities in partnership with the Board. During the year, EPSRC's contribution to the UK Technology Programme was £12 million providing support for themes ranging from lightweight materials and structures to sensors and imaging, and biosciences and healthcare to low carbon energy and oil and gas technologies. Funding of £3.5 million from EPSRC was also agreed for projects proposed in the areas of materials for energy, high value manufacturing and cell therapy.

EPSRC funding mechanisms have been 'joined up' to co-fund major projects with the

ECONOMIC IMPACT SPIN-OUT SUCCESSES

Winning solutions for young company

Chemical solutions are essential in many of the processes used to make pharmaceuticals, coatings, agrochemicals and other products. But many organic compounds that could be valuable ingredients do not dissolve easily. This rules them out for many commercial applications. EPSRC-supported researchers at Liverpool University have devised a way to convert such materials so that, when added to water, they rapidly create dispersions of 'nanoparticles' in a liquid.

'Our aim was to find ways to create porous nanoscale polymer particles capable of trapping substances and releasing them rapidly on demand,' says researcher Professor Andy Cooper. 'In an inspired moment, my post-doctoral researcher, Haifei Zhang, realised that it might be possible to achieve this more simply, without needing novel manufacturing equipment.'

The resulting technology, including a new porous encapsulation technique, led to collaboration with Unilever and a plan for commercialisation through Professor Steve Rannard (now at the University of Liverpool and Chief Scientific Officer of IOTA). IOTA NanoSolutions Limited was formed in 2005 with financial backing from Unilever Ventures. The company has 10 full-time employees including Dr Dave Duncalf and Dr Alison Foster, two co-founders originally from Unilever. IOTA NanoSolutions Limited has collected several awards such as the 2007 Northwest Regional

Insoluble unprocessed dye added to water (top left) and the formation of a nanodispersion after processing by IOTA NanoSolutions but without chemical modification (second top left to bottom right).



Development Agency's first 'Science and Technology Business of the Year' award.

'This has been a model of technology/knowledge transfer with a strong industry-university partnership' says Professor Steve Rannard. IOTA sees applications for its technology in a wide range of industries, including agrochemicals, biocides, cosmetics, flavours and fragrances, and pharmaceuticals.



Laying the foundations for new bone graft technology

A spin-out company that grew out of research funded by the EPSRC has been named Business Initiative of the Year in the 2007 Times Higher Education Supplement Awards.

Apatech was spun out from the Interdisciplinary Research Centre in Biomedical Materials at Queen Mary, University of London following initial research to engineer the optimum structure and chemistry for a safe, effective bone-graft material that can be used instead of natural bone.

The material that the company developed, ApaPore, has many clinical uses, including orthopaedic and spinal applications, and unlike natural bone, comes in unlimited supply. Apatech's products are used in 18 countries worldwide.

Above: Apatech CEO, Simon Cartmell

EPSRC-supported skills get motoring



A company that designs and manufactures electric motors for a worldwide market, Infranor Ltd, was not achieving its sales targets in 2001. To add value to the existing product line the company collaborated with the University of Portsmouth on research to jointly develop an appropriate system. The research skills of an EPSRC CASE student, Dr Lewis Hibell, contributed to a highly successful outcome.

Electromechanical machinery, such as that used in food and textiles manufacturing, usually operates continuously. To reduce down-time of production lines, it was decided to develop an internet-based system to monitor the performance of motors and thus optimise performance and predict failures.

The project led to a sales boost in existing markets with turnover in the textiles sector increasing by 22%. Opportunities in new markets arose resulting in increased sales to Germany, France, Spain, US and China.

Dr Hibell, who graduated in 2007, now deploys his skills as a senior design engineer for Bridge Works Ltd.

Textiles turnover improved by EPSRC-supported research student.

ECONOMIC IMPACT CONTINUED

£40m

£40 million for low carbon vehicle initiative.

Technology Strategy Board which focus on 'societal challenges'. These projects bring together a range of technologies and policy levers to deliver innovative new products and services for which there are real customers in a potentially large global market. For example, the EPSRC's 'IDEAS Factory' which brings together a multidisciplinary mix of researchers and end users has been used to develop exciting research opportunities for two hot topics – transport and network security. The output from these has informed our 'Innovation Platforms' investment programme. The 'Future intelligent transport systems' programme, in total worth around £12 million, has been funded in partnership with the Technology Strategy Board and Department for Transport, including £3 million from EPSRC.

EPSRC is allocating funding to a new £40 million initiative, announced by the Technology Strategy Board in 2007, for research that aims to transform the market for low carbon vehicles within the next five to seven years. Other partners are the Department for Transport, Department for Business, Enterprise and Regulatory Reform. Other planned Innovation Platforms will focus on advanced technologies to meet the demand for independent living by the elderly and chronic illness sufferers, and the development of low environmental impact buildings.

Nanomaterials and devices promise to revolutionise society. In 2007, Professor Richard Jones of Sheffield University was appointed by EPSRC as a senior strategy advisor on nanotechnology. His role is to help coordinate

a focused programme that will 'pull through' nanoscience into real world engineering and applications. Partnership with the Technology Strategy Board will be a key component in this. The intriguing potential for nanotechnology to enable cheap, efficient and scalable ways to harvest solar energy was the topic for an EPSRC invitation for research proposals in 2007. Funding of £6 million has been committed by the EPSRC for research on such nanomaterials.

Promoting early commercialisation of world-class research is also getting a boost from EPSRC's partnership with the Board and BBSRC to support two new Innovation Knowledge Centres in universities. Bids from universities to host centres that can deliver the best research with the best business development, market analysis and commercialisation skills were invited this year.

Interim reviews of the two Innovation and Knowledge Centres (IKCs) set up in 2007 have already shown encouraging progress in the world-class science and technology capability they are bringing to bear on real industry problems. These IKCs are in advanced manufacturing technologies for photonics and electronics, led by the University of Cambridge, and ultra-precision and structured surfaces led by Cranfield University.

Raising visibility

EPSRC has continued to expand the number of Strategic Partnerships with private and public sector bodies. This raises the visibility of our activities with these sectors and provides

Healthy turnover



Products that allow wounds to heal more quickly are the speciality of the company First Water Ltd. The potential benefits are improvement in patients' well being and helping reduce the cost of treatment incurred by healthcare providers. In the UK alone, the bill for chronic wound care products currently total around £100 million a year.

EPSRC CASE students working with the company through a collaboration with Aston University's Biomaterials Research Unit, have made a significant contribution to First Water's operation. The students, Darren Campbell, Muriel Nasso, Charlotte Henley, Raminder Bahia and Sally Bateman have helped the company devise new products, install improved process technology and

boost manufacturing efficiency.

During the two-year period of the collaboration, turnover at the company increased by over 50%.

ECONOMIC IMPACT CONTINUED

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This partnership formalises our already strong relationship with EPSRC. It will facilitate mutual benefits including sharing research priorities and specific academic research into technologies with application to design and engineering for the built environment. (Director of Global Research, Arup)

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opportunities for formal agreements to support research and skills development in universities. During the year ten new partnerships were formed, involving organisations from the public and private sectors, with research funding of over £40 million from EPSRC and over £69 million from the partners. As well as bringing focus and relevance to our research portfolio, such partnerships deliver substantial extra funding for the research community. The new partners, whose interests range from cancer imaging to power networks, and materials science to advanced digital communications are:

- Arup
- BAE Systems
- CNRS (The Centre National de la Recherche Scientifique)
- Cancer Research UK
- DfT (Department for Transport)
- Institute of Engineering and Technology
- Dstl (Defence Science and Technology Laboratory)
- Sustrans
- VCE Mobile
- Wellcome

An example of one of these new partnerships was an agreement to jointly fund research by EPSRC and Arup. In December 2007, a Memorandum of Understanding was signed by David Delpy, Chief Executive of EPSRC and Terry Hill, Chair of Arup, to develop a jointly funded and executed strategic partnership for design and

engineering in the built environment.

Jeremy Watson, Director of Global Research at Arup said: "This partnership formalises our already strong relationship with EPSRC. It will facilitate mutual benefits including sharing research priorities and specific academic research into technologies with application to design and engineering for the built environment."

Claire Tansley, Senior Sector Manager for Construction, Environment and Water at EPSRC, emphasises that, "The new relationship will help Arup to access the best research and postgraduate skills in UK universities, whilst contributing to EPSRC's objective of increasing the UK's economic impact and quality of life."



Arup and EPSRC have already pursued collaborative opportunities for UK academics and Chinese researchers arising from Arup's Dongtan eco-city project in China. As a result a number of networks have subsequently been funded by EPSRC and supported by Arup.

Right: David Delpy, Chief Executive of EPSRC and Terry Hill, Chair of Arup

ECONOMIC IMPACT REWARDING KNOWLEDGE TRANSFER



Above: Sheffield's mobile technology demonstrator.

Below: Yvonne Beach and John Baragwanath, members of the winning team from the University of Sheffield with Ian Pearson, the Minister of State for Science and Innovation (on the left), who presented the awards.

Rewarding and celebrating innovative approaches to knowledge transfer in UK universities was the aim of the EPSRC Knowledge Transfer Challenge 2007. With £1 million in prize money at stake, five university finalists competed for the awards that would help them respond to major new knowledge transfer challenges.

The winner of the top award was the University of Sheffield which received £500,000 and an EPSRC CASE PhD award. This will enable them to reach out to a much wider range of companies, especially SMEs, by taking the outcomes of the latest advanced manufacturing research to them on a mobile technology demonstrator.

The four other finalists each awarded £100,000 were:

Aston University: to build on its world-class research in photonics engineering to create a new centre to provide a 'two-way bridge' to further stimulate the turning of their research into commercial products.

University of Nottingham: to support three areas they identified for significant knowledge transfer potential- aerospace, medical imaging and industrial microwave processing.

University of Reading: to resource three activities to break down barriers to knowledge transfer and improve relationships with industry, focusing on 'innovation incubator' forums with industrialists, knowledge transfer accelerators involving six month projects to test the feasibility of innovative projects, and enterprise training for postgraduate researchers on how to work with business.

University of Surrey: to support a series of activities to build on its strong research base in the area of provision of safe water worldwide by providing training to give access to better water and sanitation.



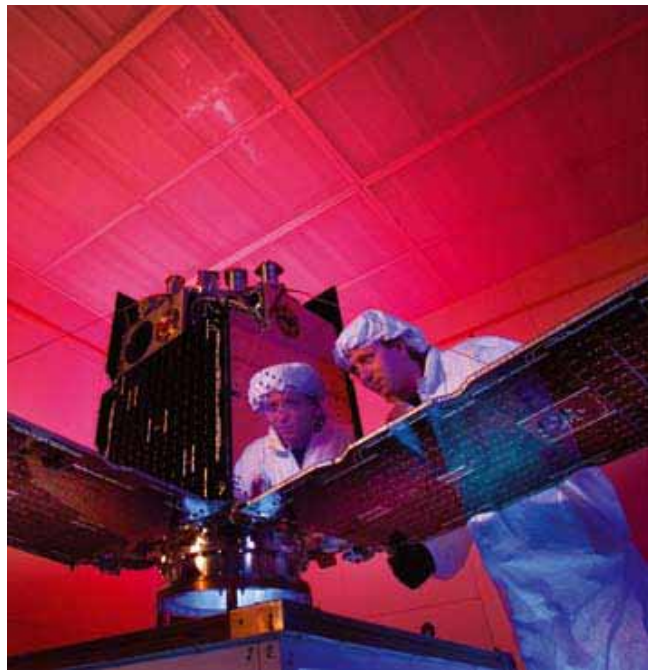
Spin-out goes stellar

EPSRC engineering research grants have been credited with making a significant contribution to the success of the British satellite maker, Surrey Satellite Technology Ltd (SSTL). The company, which now employs 270 people in Guildford, has entered into an agreement to be acquired by Europe's largest space company EADS Astrium.

SSTL was spun out from the University of Surrey in the 1980s and has become a world leader in the design, manufacture and operation of high-performance small satellites. Since then 27 satellites have been launched including one for the European Space Agency's Galileo navigation system.

Professor Chris Snowden, Vice Chancellor of the University of

Surrey said, 'The success of SSTL has much to do with the founding engineering research grants from EPSRC worth £700,000, which clearly helped to initiate the enterprise and ultimately meant that it will be the largest cash spin-out of any university.'



ECONOMIC IMPACT CONTINUED

£17.8m

£17.8 million a year for Industrial CASE awards.

During the year, EPSRC has been closely involved in establishing an effective partnership with the Energy Technologies Institute LLP (ETI LLP). A potential £1 billion partnership over 10 years between the public and private sector, the ETI LLP aims to accelerate the deployment of new energy technologies. EPSRC and the Technology Strategy Board will provide public sector funding, focusing on a small number of highly targeted major projects. ETI LLP provides huge potential for the exploitation of outputs from the Research Councils' energy programme.

Digital economy

The 'Digital Economy', which aims to facilitate early adoption of information technologies that can deliver transformational benefits to society and the economy, has been identified as a key cross-Council priority. EPSRC in partnership with AHRC, ESRC and MRC has agreed to commit significant funding over the next three years to this area, with around £100 million coming from EPSRC itself. In taking this forward, we are forming a 'sector based' approach to delivering information technology research outputs, for example healthcare and transport.

In 2007, a workshop for researchers from a range of academic and end users was held to kick-start cross-disciplinary collaborations to tackle the Digital Economy challenge. Proposals for emerging research ideas were invited from workshop participants to build on the new collaborations formed at the event. EPSRC has committed up to £4 million to support the outcomes

and other proposals on this theme. The topics include ICT research to support the needs of future creative industries (University of Nottingham), preventative and early healthcare (The University of Manchester), and innovative and technology development for new media (University of Oxford).

Skills for the economy

The availability of an effective supply of highly qualified engineering and physical scientists for the UK workforce is crucial to realising the Government's ambition of achieving better exploitation of research results. The best form of transmitting advances in knowledge arises from a flow of talented researchers throughout the economy. As the largest sponsor of postgraduate research training in engineering and the physical scientists in the UK, EPSRC plays a leading role, supporting over half of all UK doctoral students in many leading departments – around 8000 students.

The EPSRC Industrial CASE scheme, which allocates a postgraduate award to a company and enables it to take the lead in a project with an academic partner of their choice, has been expanded and improved during the year. The number of awards has been raised, with an annual commitment of over £20 million, an increase of more than £4 million from 2007. After consultation with major users of the scheme, a move to a three-year allocation is being introduced. This will allow companies to forward plan projects more effectively and give collaborators more time to find the most appropriate students. Also, company agents,

Pre-eclampsia breakthrough could save £500 million

A new way of diagnosing the potentially fatal pregnancy condition pre-eclampsia has been discovered by researchers at the University of Leeds with funding from EPSRC. The condition affects almost one in ten pregnant women and accounts for up to 15% of all premature deliveries.

The research, carried out by Dr Julie Fisher and PhD student Elizabeth Turner with Professor James Walker, uses a technique like MRI scanning. But this operates on fluids taken from the body and is able to identify chemicals in the blood plasma of pregnant women that reveal whether they are healthy or have the condition.

The breakthrough opens up the potential for a user-friendly diagnostic kit which, within five

years, could be used all over the world to safely and speedily test all pregnant women. For the NHS alone, an accurate diagnostic could save an estimated £500 million a year by reducing medical care. The research could also potentially lead to a way of predicting whether a woman will develop pre-eclampsia.

The discovery has led to the formation of a spin-out company, MetaBio Ltd, which has received funding from IP group and the White Rose Health Innovation Partnership.



ECONOMIC IMPACT CONTINUED

A new EPSRC programme structure was introduced in April 2008 to help meet the challenges set out in our delivery plan.

the Regional Development Agencies and Knowledge Transfer Networks, have been awarded an allocation of studentships that they will distribute to companies on EPSRC's behalf.

A highlight of EPSRC support for improved expertise in an area of growing economic importance to the UK was the progress in appointing Engineering Doctorate students to the Nuclear Engineering Centre announced in 2007. Eleven students are now in place at the Centre which is fully operational. Our target is 40 EPSRC-funded nuclear engineering doctoral students over four years.

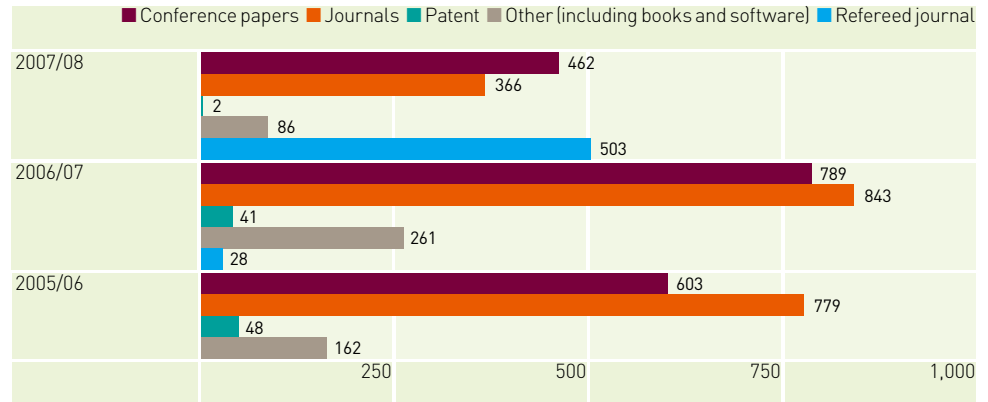
New programme structure

A new EPSRC programme structure was introduced in April 2008 to help meet the challenges set out in our delivery plan. The changes, announced by EPSRC Chief Executive David Delpy at our Open Meeting in March 2008, will create a more effective organisation focused on the needs of the academic community, business and society. The four new Directorates created are 'Business Innovation', 'Research Base', 'Communications and Information', and 'Corporate Services'. These replace the former Directorates and will work alongside a new Chief Executive Office Strategy and Planning Unit.

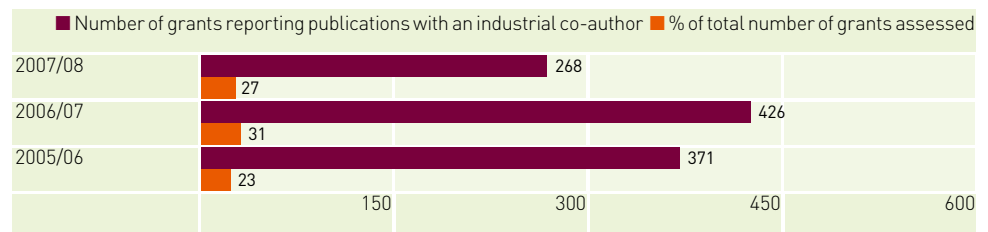
The new Business Innovation directorate is responsible for our priority research themes, referred to in the Chairman's foreword, and for maximising the economic and social impact of the research and training we fund. Our Research Base directorate focuses on investigator-led research and training. We remain committed to investigator-led research across the whole of our remit.

ECONOMIC IMPACT FACTS AND FIGURES

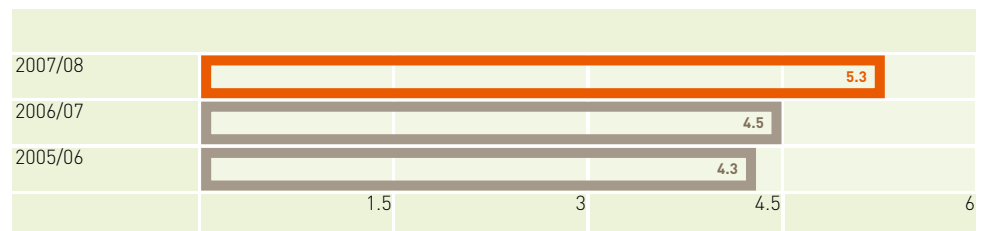
Number of co-publications with industry



Number of assessed Final Reports reporting publications with industrial co-authors



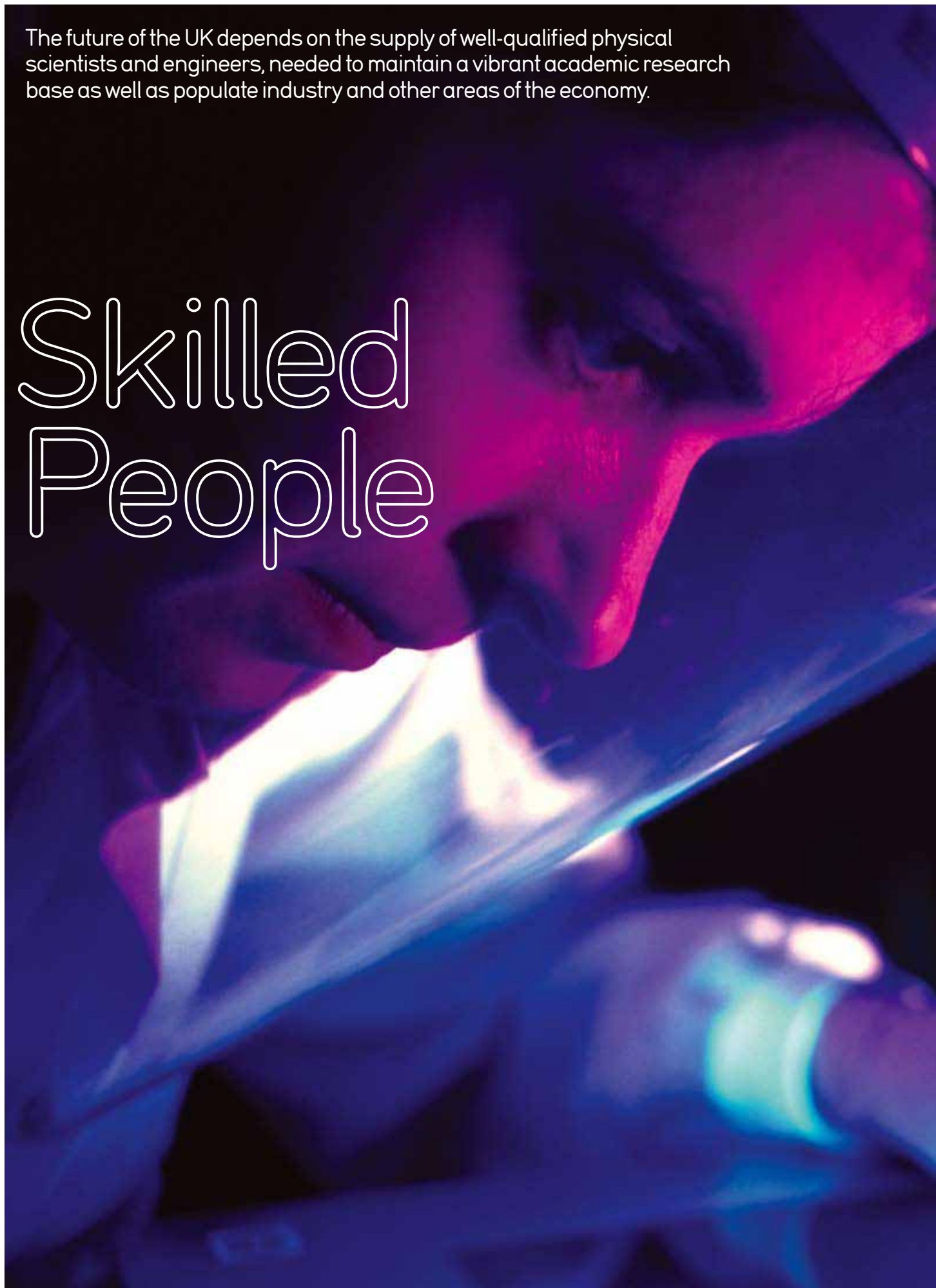
Average number of publications with an industrial co-author per assessed Final Report



Until 2006/07 researchers were asked via the final report to indicate total numbers for the following types of publications: conference papers, journals, patents, books and software. The publication types collected changed during 2006/07 and now include conference proceedings, journals, refereed journals, books and other.

The future of the UK depends on the supply of well-qualified physical scientists and engineers, needed to maintain a vibrant academic research base as well as populate industry and other areas of the economy.

Skilled People



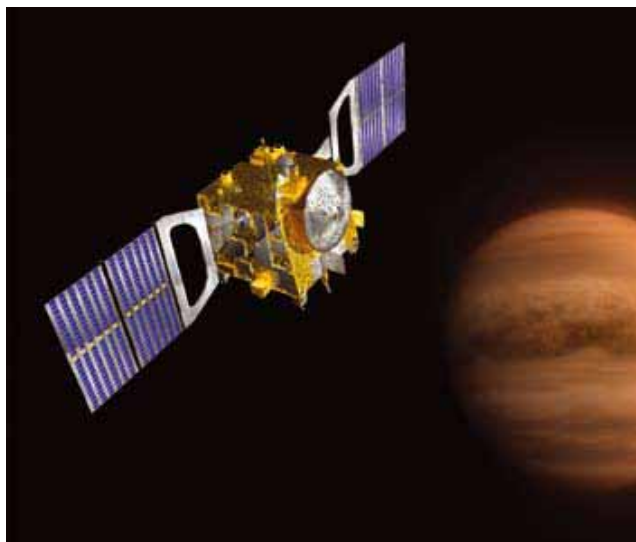
High flyer

When it comes to research results, Simon Pope, an EPSRC-funded PhD student in the Department of Automatic Systems and Control Engineering at the University of Sheffield, does more than simply aim for the sky. MAG, the magnetometer experiment he contributed to, formed part of the European Space Agency Venus Express mission. Launched in 2005, the spacecraft reached Venusian orbit in 2006. Within its first year MAG revealed previously unknown information about how fast plasma flow emitted by the Sun interacts with an unmagnetised planet. The results were published in the 29 November 2007 issue of *Nature*.

Simon was given the status of full co-investigator for MAG in

recognition of his work to develop techniques to separate natural magnetic fields from spacecraft-generated interference. "Working on the problem was a fantastic opportunity," says Simon. "And the results show that Venus has many interesting and exciting phenomena still to study!"

Right: The Venus Express spacecraft.
Image: ESA/C. Carreau.
Below: Simon Pope



SKILLED PEOPLE

£250m

£250 million for new centres for postgraduate training.

The year in context

The role of EPSRC in training the next generation of world-class scientists is central to meeting the Government's aim of improving the flow of skilled people into the economy who are educated in science, engineering and technology subjects. The announcement in 2008 of one of our largest single funding schemes for many years - the investment by the Research Council of over £250 million for new centres for postgraduate training - underlines our commitment to the challenge.

To achieve the required workforce equipped with the high-level skills for the UK, EPSRC's overall vision for the 10 year period of the Government's Science and Innovation Framework is to:

- develop postgraduate training provision as part of an integrated approach to strengthening the UK science base;
- develop features to attract sufficient numbers of high quality students into postgraduate training and increase the attractiveness of research careers in the UK;
- expand relationships with business and public sector employers to make the system more demand led;
- continue to work with schools and others to enthuse young people about science and engineering.

A further element of the vision is to identify and nurture the next generation of world leaders. This has seen significant progress during the year, for example with the new emphasis placed on research leadership for our Fellowship support.

While EPSRC is not the only sponsor of postgraduate research training in engineering and the physical sciences in the UK it is by far the largest, supporting a population of over 8000 students. Most of our support for postgraduate training has continued to be through Doctoral Training Grants and Collaborative Training Awards (CTAs). An important feature of these is the flexibility they offer universities in, for example, allowing them to vary the duration and level of stipend for students. This helps them to respond quickly to market needs.

A review of the outcomes of CTAs to assess their success in delivering the scheme's aims is in progress and due for completion in 2008. This also responds to the Government's need for an increased emphasis on knowledge transfer, and the outcome will be used to identify new approaches that empower universities to further develop their knowledge transfer portfolios. We also continue to fund studentships in association with our research grants and awarded over 2000 project studentships in 2007-2008.

The EPSRC Engineering Doctorate Centres which help deliver a strategic aim of providing high-quality knowledge transfer through people was also reviewed during the year (see page 34). A further tranche of postgraduate studentships has been included in our capacity building in areas of science and engineering deemed to be 'at risk', by their association with six new Science and Innovation Awards made in 2007 (see page 12).

No jams tomorrow?

In this world nothing can be said to be certain, except death and taxes, wrote Benjamin Franklin in 1789. Today many would add a third phenomenon to this list – traffic jams. With UK road traffic forecast to increase by 30% between 2000-2015 finding solutions to traffic congestion are much sought after. Particularly frustrating are those jams that appear to have no cause.

Understanding the mechanisms that control these phantom stop-go jams lies at the heart of research being carried out by Dr Eddie Wilson, an EPSRC Advanced Research Fellow and Reader in Engineering at the University of Bristol. "In busy conditions, the action of just one driver is enough to cause a ripple which can magnify into a wave of traffic chaos," he

explains. "The key to predicting and preventing these is to understand drivers' behaviour in detail."

To model driver behaviour more accurately, Dr Wilson is applying the ideas of non-linear dynamics and taking advantage of data collected as part of the Highways Agency's M42 Active Traffic Management system to develop mathematical models of driver behaviour. His ultimate aim is to predict the initiation and propagation of stop-go waves in motorway traffic.

"Traffic engineers have not looked at the problem in this way before," he explains, "But this mathematical approach could ultimately lead to better automatic control systems for motorways. Tackling real-world engineering

problems where advanced mathematical techniques make a difference is the real driver for my research – and projects like this one are a good example of that."

Dr Eddie Wilson, an EPSRC Advanced Research Fellow and Reader in Engineering at the University of Bristol.



SKILLED PEOPLE CONTINUED

1,230

1,230 Research Engineers enrolled.

Creating world-class researchers

Our plans to commit over £250 million to create new centres for doctoral training supports the EPSRC ambition of creating the next generation of world-class scientists and engineers. The funding will be used to establish at least 40 centres with five cohorts of students across the EPSRC remit.

The EPSRC already supports a number of thriving Engineering Doctorate centres and Doctoral Training Centres in complexity science, systems biology and at the life sciences interface. The new funding will build on the success of this model by the creation of a strong cohort of centres which will rapidly establish a pre-eminent international reputation for doctoral training within excellent research environments.

Our invitations for bids for centres, issued in 2008, is seeking proposals for highly innovative and exciting training environments that draw on research excellence, and which will produce highly skilled and talented researchers for the benefit of the UK economy.

Review of flagship programme

EPSRC's well established flagship postgraduate training programme, the Engineering Doctorate scheme, was reviewed in 2007 by a panel chaired by John Robinson, chairman of George Wimpey plc. The EngD is a work-based alternative to the traditional PhD, enabling students to spend about three quarters of their time working with their collaborating company. Industry partners play a key role in sponsorship and joint supervision. The

number of centres has risen from 22 to 24 since the review, these involve 21 universities.

The review panel concluded that it had a major beneficial effect on a wide range of companies and sectors since its introduction. Around 1,230 Research Engineers (REs) had been enrolled, sponsored by over 510 different companies. Their overall conclusion was a conviction of the value and performance of the scheme as delivered through the EngD Centres, and the quality of the intake and outputs. This favourable view also applied to the contribution the scheme makes to EPSRC strategic objectives 'by providing high quality knowledge transfer through people'.

One of the review's recommendations was to work with relevant professional bodies for accreditation of the EngD as a clear pathway to registering for Chartered Engineer status. Another was to increase the resource for EngD programmes including giving consideration to new programmes in sectors not currently involved and monitoring the overall EngD portfolio to ensure that it continues to meet national needs and priorities.

We have responded initially by opening up the EngD model to other research programmes through a call for centres for doctoral training. As part of this we are looking to support some industrial doctorate advocates who will spread best practice and act as champions of the scheme. EPSRC also continues to work with professional institutions to seek accreditation for the centres.

The edge of understanding

"New discoveries in mathematics," says Martin Bridson, Whitehead Professor of Pure Mathematics at the University of Oxford and an EPSRC Senior Research Fellow, "will ultimately influence the world of science in ways that cannot readily be conceived." And his own studies provide a good example of the value of venturing into the unknown.

Professor Bridson believes it is a mathematician's duty to separate the essence of naturally arising phenomena from their disguises. His own work on geometric group theory is driven by a desire to understand all forms of symmetry – a goal that might, at first, sound more philosophical than mathematical. But, in fact, working in this way offers real potential for

extending mathematics into new and exciting areas. "My work sits right at the edge of what anyone can hope to understand, and involves a wide range of mathematics," he explains. "I'm always looking for ways to incorporate insights from other fields into my work, and am particularly interested – among other things – in the interplay between geometry and algorithmic complexity."

But although many of the objects he studies are on the edge of what can hope to be understood, his research can have astonishingly practical scientific applications. "I was surprised and delighted to find that some of my work on non-positively curved geometries had an impact on the study of phylogenetic trees in biology,"

he says. "And I hope that in the future the mathematical discoveries funded by my Senior Research Fellowship will prove useful to other sciences too."

Below: Professor Martin Bridson



SKILLED PEOPLE CONTINUED

An early taste of real research
Around 150 undergraduate students from 15 universities took part in the EPSRC Vacation Bursary Programme in summer 2007. This provides students in the middle years of a first degree to gain first hand experience of research in a UK university. Many participants worked with internationally – leading research teams, fulfilling our aim of helping them consider a career in advanced research. One participant, Iain Wilson at Strathclyde University, spent 10 weeks on a project to analyse statistics on the performance of Search and Rescue operations. 'It gave me a good insight into what future research within a university environment would be like.'

Leadership and career acceleration

The rationalisation of our suite of fellowships in 2007 addressed the element of the EPSRC vision concerned with identifying and nurturing the next generation of world leading researchers. The outcome was the refocusing of our fellowship schemes to create Leadership Fellowships and Career Acceleration Fellowships. These will be focused on our 'mission' areas – energy, towards next generation healthcare, nanosciences through engineering to application, and the digital economy.

Leadership Fellowships are for academics prepared and qualified for a major challenge. The expectation is that they will have established themselves as leading researchers of international standing in their area by the end of their five year award. It is also anticipated that they will demonstrate leadership within their institution and research community, and contribute to the uptake of research outputs for economic and social impact.

The fellowships provide an opportunity for talented mid-career researchers to concentrate

on research for the period of the award, as well as supporting all the costs of the associated research for the full duration of the fellowship. The 2007 call received 303 outline proposals from applicants. Leadership Fellowships are intended for academics at a slightly earlier stage of their career than the Senior Research Fellowship scheme and in part replace the Advanced Research Fellowship.

Career Acceleration Fellowships are for researchers at an early stage of their career, enabling them to focus on research for the five-year period of the award. The expectation is that they will have established an independent career of international standing by the end of the award. The 2007 call attracted 450 outline proposals. Career Acceleration Fellowships in part replace the Advanced Research Fellowships scheme.

EPSRC intends to award up to 50 of the two kinds of Fellowships this year, the numbers of each type depending on the quality of proposals and resources requested.

We continue to offer up to 30 three-year Postdoctoral Fellowships to enable the most talented new researchers to establish an independent research career, shortly or immediately after completing a PhD. From the 180 proposals received 28 awards were agreed during the year. These are targeted at four specified areas of our remit – theoretical physics, theoretical computer science, mathematical sciences, and at overseas awards at the life sciences interface. Ten awards were also made in engineering, jointly with the Royal Academy of Engineering.



PEOPLE

FACTS AND FIGURES

Net training expenditure (£m)

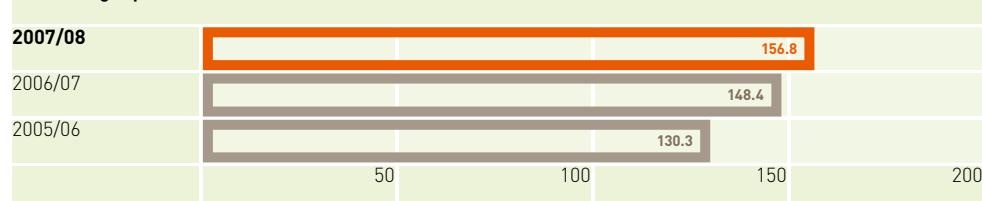
	2005/06	2006/07	2007/08
Doctoral Training Grants/Accounts	73.3	75.2	78.1
Life Sciences Interface Doctoral Training Centres	3.4	5.0	6.9
Collaborative Training Grants/Accounts	44.4	47.7	49.3
Graduate schools	0.9	1.3	1.5
International Doctoral Scholarships	0.9	1.4	1.7
Dorothy Hodgkin Awards (EPSRC only)	0.5	0.7	2.1
Roberts Skills Payments	6.9	12.3	12.8
Other training	–	4.8	4.4
Total	130.3	148.4	156.8

In the above table training expenditure is shown on a net basis (i.e. after deducting receipts)
The annual accounts show training expenditure on a gross basis (i.e. before deducting receipts)

£156.8m

Our total training expenditure
in 2007/08 was £156.8m

Net training expenditure (£m)



Training commitment (£m)

	2005/06	2006/07	2007/08
Doctoral Training Grants/Accounts	75.7	78.4	86.0
Industrial Case Training Grants/Accounts*	–	–	–
Collaborative Training Accounts	87.4	25.0	21.3
CASE for New Academic Appointees	–	–	–
Dorothy Hodgkin Awards (EPSRC only)	2.2	2.7	2.7
Total	165.3	106.1	110.0
Academic Fellowships (All Research Councils)	–	50.0	–

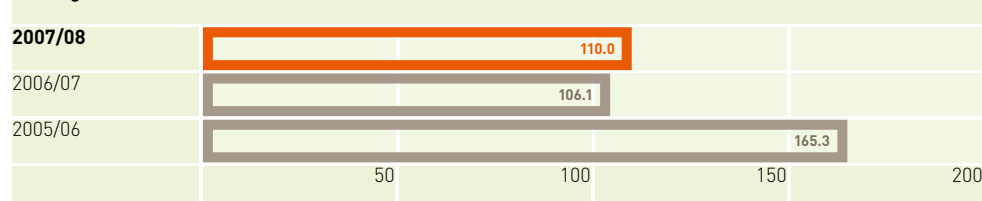
*In addition, a further £8.6m relating to Industrial CASE 2004/05 was committed in May 2005.

Academic Fellowships are administered on behalf of all Research Councils.

Commitment is made on a biennial basis.

In 2006/07, Collaborative Training Accounts included £4.9m relating to CASE for New Academic Appointees and £16.0m relating to Industrial Case Training Grants/Accounts.

Training Commitment (£m)



PEOPLE FACTS AND FIGURES

Estimated number of studentships supported by EPSRC programmes at 31st March 2006, 2007 and 2008

	Doctoral students ^{1,3}			Project students ²		
	2006 (est'd)	2007 (est'd)	2008 (est'd)	2006	2007	2008
Core e-Science	-	-	-	23	20	-
Basic Technology	-	-	-	99	116	111
Total	-	-	-	122	136	111
All Engineering	784	729	712	515	617	601
Mathematics	507	499	500	43	60	61
Physics	421	389	376	157	178	195
Chemistry	726	677	668	297	294	311
Materials	620	619	604	218	245	264
Information and Communications Technologies	672	651	608	358	469	478
Life Sciences Interface ⁴	220	308	354	4	11	11
Energy	-	-	-	-	-	124
International Studentships ⁵	99	159	181	-	-	-
IDEAS Factory	-	-	-	7	17	38
Other activities ⁶	31	50	58	79	121	131
Total	4,080	4,081	4,061	1,678	2,012	2,214
Grand total	4,080	4,081	4,061	1,800	2,148	2,325
Number of organisations with funding from Collaborative Training Accounts	-	-	93			
Number of organisations with funding from Doctoral Training Accounts	-	-	74			
Number of institutions with Studentship support ⁷	-	-	97			

8,129

We supported an estimated 8,129 postgraduate students during 2007/08.

EPSRC leads the Research Councils' Energy Programme in which BBSRC, ESRC, EPSRC, NERC and STFC work together to develop and deliver energy research and training within a common strategic framework. EPSRC administers the core e-Science and Basic Technology programmes on behalf of RCUK.

1 In October 2001 EPSRC introduced Doctoral Training Grants to Universities to replace individual studentships.

Exact student numbers for each EPSRC programme cannot be given under this system. In order to preserve continuity with previous data an estimate for the number of 2006, 2007 and 2008 starts based on the funds allocated by each programme has been used.

2 Project studentship posts are at doctoral level and supported through research grants.

3 EPSRC monitors the incidence of collaborative doctoral studentships – typically between 10-15% of standard DTA studentships are converted per annum. This is in addition to the specific collaborative schemes shown below.

4 The number of Doctoral Studentships supported at Doctoral Training Centres has been re-estimated, from 187 to 220 for 2005/06, and 203 to 308 for 2006/07. The overall totals have been amended accordingly.

5 EPSRC acts as a scheme sponsor and administers the Dorothy Hodgkin Postgraduate Award (DHPA) Scheme on behalf of DIUS (40 core plus 20 additional students in 2005/06 and 2006/07 and 42 core plus an additional 19 in 2007/08). In addition during 2004 the International Doctoral Scholarship scheme was introduced to allow leading research teams to recruit students from anywhere in the world. Universities with EPSRC supported Portfolio Partnerships or Interdisciplinary Research Collaborations (IRCs) have been given the flexibility to transfer up to 10% of their Doctoral Training Grants into the new scheme. Funding to support around 33 students in 2005, 15 students in 2006 and 23 students in 2007 was provided.

6 Other Activities includes: Science and Innovation Awards, Crime Prevention, Partnerships for Public Engagement and High Performance Computing.

7 As institutions may receive funding for both Collaborative Training Accounts and Doctoral Training Accounts this figure reflects the total number of organisations that have received funding from either or both schemes.

Estimated number of PhD students supported by Collaborative Schemes as at 31st March 2006, 2007 and 2008

	2006	2007	2008
Engineering Doctorate*	660	735	810
Industrial Case Training Grants	898	847	774
Case for New Academic Appointees	254	259	270
Total	1,812	1,841	1,854

1 As a result of introducing Collaborative Training Accounts (CTA), data concerning masters students and courses is currently not available. As the CTA mechanism develops, more data will become available.

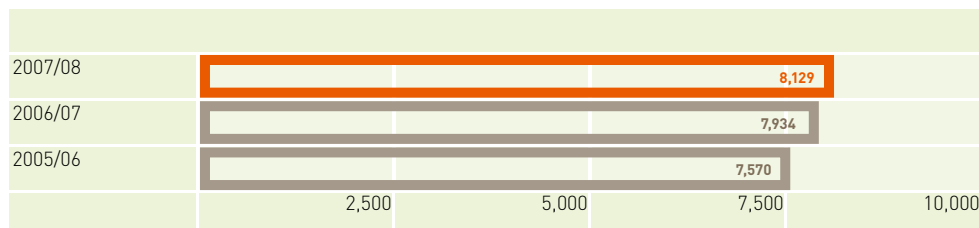
2 All the above schemes are now delivered through Collaborative Training Accounts.

3 The estimates for Industrial Case and Case for New Academic Appointees are based on training awards of 3 years duration. The estimates for Engineering Doctorates is based on a 4 year training programme and support for 10 students per centre.

* The estimate of Engineering Doctorate students has been revised to 660 for 2006 (previously 604), and 735 for 2007 (previously 620). This is due to 4 new Doctoral Training Centres starting in this period.

PEOPLE FACTS AND FIGURES

Total estimated PhD students supported



The total estimated PhD students supported in 2005/06 has been re-estimated (previously 7,481) and 2006/07 (previously 7,714). See notes above.

EPSRC Fellowships current at 31st March 2006, 2007 and 2008

340

340 Fellowships were current in 2007/2008

Current Fellowships	Calendar year		
	2006	2007	2008
Postdoctoral ¹	33	49	49
Overseas Postdoctoral ²	9	17	32
Springboard ³	6	5	6
Statistics Mobility	–	5	5
Advanced	219	211	216
Senior	18	21	20
Senior Media ⁴	3	6	7
EURYI ⁵	4	5	5
Total	292	319	340

1 Postdoctoral Fellowships are available in mathematical sciences, theoretical computer science, and theoretical physics.

2 Overseas Postdoctoral Fellowships support research in appropriate physical sciences and engineering disciplines outreaching to the Life Sciences. Fellows spend up to half of their 3 year Fellowships working in overseas laboratories.

3 Springboard Fellowships provide short-term support (12 months in duration) to enable researchers in the mathematical sciences to work at the interface with another discipline, with business or industry or on an innovative project.

4 EPSRC awards Senior Media Fellowships through its Public Engagement Programme.

5 The European Young Investigator (EURYI) Awards Programme is a European scheme that EPSRC makes a financial contribution to (in 2004/05 EPSRC contributed 360k Euros and 2005/06 EPSRC contributed 720k Euros). Funds are awarded from a central resource comprising contributions from 20 participating organisations across Europe. From 2006/07 EPSRC will no longer be a participating organisation in this scheme, however the annual contribution will be continued until 2010/11.

6 In addition to the activities shown in the table, EPSRC is involved with the following fellowship schemes:

- Administering the Academic Fellowships Scheme on behalf of RCUK;
- Jointly administering the Engineering Postdoctoral Fellowships in collaboration with Royal Academy of Engineering;
- Contributing to Royal Society Industrial Fellowships (£250k in 2007/08);
- Contributing to the Daphne Jackson Memorial Fellowship Trust (£14,600 for one fellowship in 2007/08).

PEOPLE

FACTS AND FIGURES

First destination of Research Council PhD Students whose funding finished or who qualified in 2004/05 and 2005/06

RC Reporting Category from 2006	2004/05	%	2005/06	%
Engaged in study	131	15	35	4
Government and public sector – not research related	31	4	46	5
Government and public sector – research related	11	1	6	1
Higher education – academic (Research and Teaching)	30	4	36	4
Higher education – mainly research	209	25	235	27
Higher education – other	14	2	13	1
Industry and commerce – not research related	206	24	269	31
Industry and commerce – research related	39	5	46	5
Not employed	88	10	66	8
Other employment	26	3	6	1
Research & Development, sector unknown	43	5	60	7
School (education other)	6	1	12	1
School teaching or teacher training	14	2	41	5
Grand total	848		871	

1 Data source is the HESA Destinations of Leavers from Higher Education (DLHE) Survey.

2 'Not knows' have been removed from the tables above.

3 Other employment includes 'Self employed voluntary and unpaid work'.

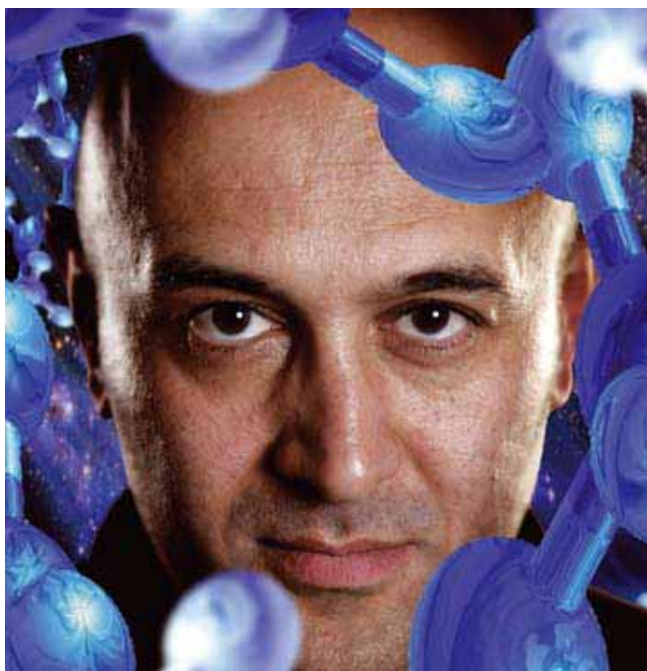
New research developments in the physical sciences and engineering can impact on all aspects of society. EPSRC is committed to fostering engagement between researchers and the public to provide members of the general public with better opportunities to understand, comment on and influence developments in engineering and the physical sciences.

Science in Society

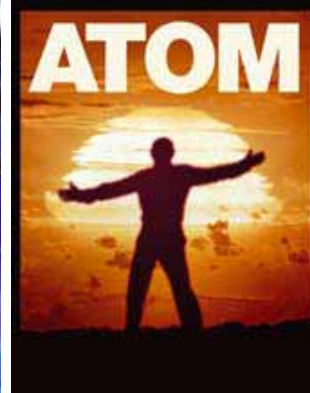


Atom on TV

'Atom', a three-part BBC4 television series was presented by EPSRC Senior Media Fellow, Professor Jim Al-Khalili of Surrey University, in 2007. He appears regularly on television and radio and has published several popular science books. In episode one of 'Atom' entitled 'Clash of Titans', he told the story of the greatest scientific discovery ever - the fact that everything is made of atoms, and the role of geniuses like Albert Einstein and Werner Heisenberg. In the second he showed that in our quest to understand the atom we unravelled how the universe was created. In the last he included the possibility of parallel universes in which different versions of us exist and also explained how empty space is in fact seething with activity.



A MAJOR NEW TV SERIES



SCIENCE IN SOCIETY

£9.2m

£9.2 million for the RCUK Beacons for Public Engagement initiative.

The year in context

EPSRC has remained in the forefront of support for activities which engage the research community and the public, with funding of £4 million in 2007-08. We have played a leading role in shaping the agenda for emerging public engagement issues such as the ethical implications of research. Significant progress has also been made in ensuring that EPSRC and the researchers it funds are better informed of public attitudes to science and engineering issues.

Working with other partners on public engagement to maximise impact, coherence and the sharing of expertise, has grown in importance during the year. For example, the £9.2 million Beacons for Public Engagement initiative brings together the Research Councils, through the RCUK Science in Society Unit, the UK higher education funding councils and the Wellcome Trust. The Beacons project tackles the major obstacles encountered by many researchers such as the pressure to publish and attract research funding which makes it difficult to take time for public engagement.

This partnership has made significant progress towards achieving the required step change in recognition for public engagement across the higher education sector. In 2008, six regional centres were launched around the UK, bringing together universities and other partners such as media, museums and industry. These are based in Newcastle, Manchester, Norwich, London, Cardiff and Edinburgh. A National Coordinating

Centre in Bristol was also set up to develop the initiative and promote best practice. It will work strategically with key national partners such as the BBC, the Museums, Libraries and Archives, which can contribute to professionalising how higher education engages with the public.

A partnership between the Research Councils UK and, the Department for Innovation, Universities and Skills provided major support for our aim of ensuring that our thinking is informed by public attitudes. The outcome was the publication of 'Public Attitudes to Science 2008, A Guide'. Its primary purpose was to update information from 2000 and 2005 about what the public thinks about science, scientists and science policy in the UK. A key revelation was that the public felt that there was a genuine need for scientists to communicate their process and research at an earlier stage than is happening currently. Another significant survey finding for the Research Councils was a lack of knowledge and sometimes cynicism about the governance of science.

The EPSRC Societal Issues Panel (SIP), chaired by Professor Lord Robert Winston, gave high priority during the year to formulating a strategy for helping EPSRC and its research community gain a better understanding of, and develop appropriate responses to, ethical and societal concerns, issues and aspirations. SIP is aware that the development of the societal engagement strategy represents only the start and that further work will be required to develop and take this forward. SIP therefore proposes to work with particular research areas

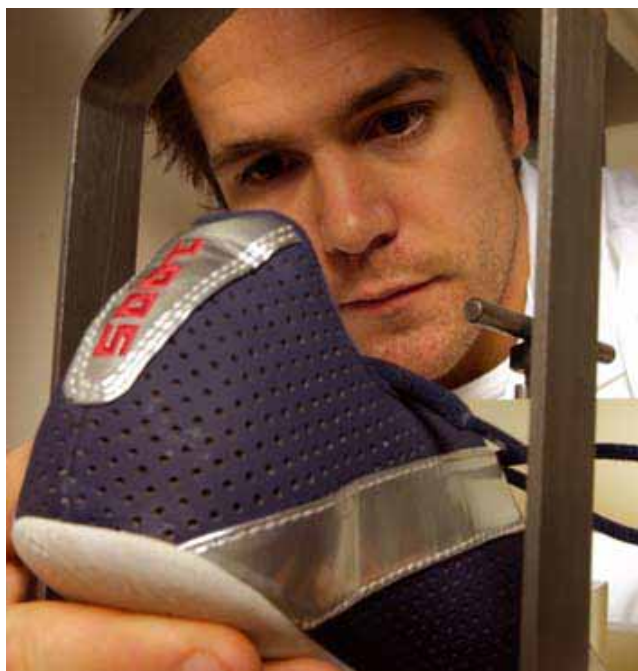
Science cabaret

As part of EPSRC's NOISE (New Outlooks in Science and Engineering) campaign, early-career role models, or 'NOISEmakers' from a range of science and engineering professions are enlisted to show young people how interesting and rewarding these careers can be. Nine of them made a noise at the 2007 BA Festival of Science by presenting their 'science cabaret'. Among the interactive experiments witnessed by a highly engaged audience were the creation of an 'invisibility cloak', a revealing look at the secrets of a top athlete's sporting equipment, and a demonstration of the importance of mucus by producing slime.

NOISEmaker Nic Harrigan won the 2007 NESTA FameLab,

science's answer to Pop Idol. Nic, of Imperial College London, wowed hundreds of people at the final at the Cheltenham Science Festival, by making a light bulb glow in a microwave oven to help explain how it creates heat 'like rubbing your hands together'.

Dan Toon revealing the secrets of sporting equipment



SCIENCE IN SOCIETY CONTINUED

200

200 researchers return to the classroom to inspire the next generation of researchers.

and to develop them as exemplars. It is anticipated that by following this approach more generic outcomes which might inform the wider thinking can be developed and applied. SIP has identified the areas of nanotechnology, the digital economy and synthetic biology as good areas to start with.

SIP has also initiated training which is designed to raise awareness of societal and ethical issues. Two pilot training modules were held in 2008, with co-funding from RCUK, one aimed at EPSRC staff and another for early career researchers. These were in partnership with the Royal Society and the Open University and are now being evaluated and the scope for making such training more widely available is being explored.

Inspiring researchers

The Researchers in Residence scheme aims to enrich the experience of school students by placing a young cutting-edge researcher in their classrooms. Initiated by EPSRC in 1994, it now delivers around 200 placements a year, about 14% from EPSRC disciplines, through a consortium led by Edinburgh University and funded by the Research Councils UK and the Wellcome Trust. It offers early-stage postdoctoral and PhD students, funded by the Research Council, the opportunity to engage in science outreach that can inspire the next generation of researchers.

Our well established Partnership for Public Engagement awards which support a wide range of public outreach activities, made 22 awards worth £2.3 million to researchers supported

by EPSRC during the year. A PPE roadshow of regional workshops was introduced in 2007 to help researchers thinking of applying for awards. The workshops, run in partnership with the British Association for the Advancement of Science (BA), enable participants to meet current award holders to share good practice, hear about individual projects and get tips on how to apply. This flagship public engagement scheme, now in its 10th year, will be the subject of a major evaluation in 2008 to review its impact and how well it meets our aims.

High profile champions

We award Senior Media Fellowships (SMFs) to leading researchers to free them up to be high profile champions of science and engineering through the mass media both locally and nationally. Leading researchers in engineering, mathematics or the physical sciences with a keen interest in advancing their public engagement activity are eligible. One aim of the Fellowships is to redress the lack of 'explainers' of engineering and the physical sciences appearing regularly in the media.

The six current Senior Media Fellows were joined by Andrea Sella in 2007. He is an inorganic chemist at University College London and a Visiting Professor at the University of Alberta, Canada. Andrea's many public appearances include regular spots on TV and he has also been a consultant on a range of science programmes including the BBC2 'What the Victorians did for us' and the BBC4 documentary 'Absolute Zero - Quest for Gold'. His missions as an SMF include raising awareness

Rights for robots?

Would a conscious robot need the same rights as a human being? Could robots one day take over the care of our ageing population? Will robots be our soldiers of the future? These were some of the tantalising questions tackled at a public debate facilitated by EPSRC Senior Media Fellow, Professor Noel Sharkey, held at the Dana Centre, London in April 2007. A lively discussion was stimulated by expert speakers from the 'Walking with robots', EPSRC-funded network led by the Universities of the West of England, Essex and Sheffield. This brings together key robotics researchers with leading science communicators to promote wider public engagement with contemporary robotics research.

Millions of the public beyond

the debate itself were reached by extensive media coverage spanning BBC News bulletins, the Today Programme and many leading national and regional newspapers. Noel Sharkey drew attention to the possibility that 'conscious' robots could be required to make decisions within 50 years from now, raising ethical questions for society: 'We need to initiate proper public consultation and informed public debate now'.

Professor Noel Sharkey with Skeletron on the set of Bright Sparks which he co-presented for BBC N. Ireland.



SCIENCE IN SOCIETY CONTINUED



Above: Andrea Sella
(Image: James Wilton-Ely)

of what energy is and 'to convey the excitement of chemistry to a wider audience.'

One of the many highlights of 2008 was Senior Media Fellow Professor David Howard's BBC TV programme 'The Voice'. The programme, which explained how the voice works and why replicating it is such a challenge, also involved the comedian Jeremy Hardy and impressionist Rory Bremner.

The latest call for new SMFs received an excellent response and two new appointments will be announced in May 2008.

Reaching the young

Informing and inspiring young people and those who teach them about cutting edge science is vital for the EPSRC if skills shortages in the future are to be avoided. Our approach is to ensure coherent, carefully targeted activity by working through the RCUK Science in Society Unit in partnership with curriculum bodies, government departments and Science Learning Centres.

Reaching the young through busy science teachers has proved an outstanding success. Courses in the latest findings from research, held at the Government funded Science Learning Centres, are among the most effective run at the Centres. EPSRC is supporting this scheme which contributes to meeting a requirement in the Government's Science and Innovation Framework.

In addition to the flagship RCUK Researchers in Residence scheme, EPSRC contributes through RCUK to initiatives like the CREST and Nuffield Bursaries which reward young people for innovation and achievement.



Above: David Howard working with Rory Bremner to assist his impersonation of Tony Blair.

Public dialogue

The completion of a dialogue with the public on energy research was a major contribution to our aim of promoting a free flow of information between researchers, the public and policy makers. The Research Councils UK project was commissioned to inform decision-making by the EPSRC-led Energy Research Programme, and provide researchers with information on issues of concern to the public. The programme of dialogue

Good coverage for naked scientists

Chris Smith of 'The naked scientists', the UK's only live weekly science radio talk show, won the 2007 Joshua Phillips award for Innovation in Science Engagement. Chris is the principal investigator of an EPSRC Public Engagement award which helped fund the show broadcast on BBC local radio stations across the east of England and syndicated internationally. The show, with around one million listeners each week around the world, is also available as a podcast becoming one of the world's most downloaded science programmes. Over 50,000 downloads of podcasts are made each week. A further spin off from the show is that it is reaching many young students through BBC Bitesize which provides podcast revision aids.

On receiving the award, Chris Smith praised the Manchester Museum of Science and Industry for launching the award and said 'The award is absolutely critical for helping establish a career in science communication'. The Wellcome Trust and UKFast co-sponsored the initiative with EPSRC.

Image: Perry Hastings



SCIENCE IN SOCIETY CONTINUED

“

Climate change was central to public perceptions of energy research.

(Public dialogue on energy)

”

conducted by Ipsos MORI included a series of one-day regional workshops involving a cross section of the local communities. Among the many findings were that climate change was central to public perceptions of energy research and that key energy technologies like biofuels and nuclear tended to polarise opinions. There was strong support for research into energy efficient buildings, hydrogen fuel cells and tidal power. But carbon capture got the thumbs down from most participants who viewed it as unreliable and not a long-term option. A guide for the energy research community and others on the outcomes of the dialogue is to be published in 2008.

Holmes Hines Memorial Fund

This charitable fund, administered by the EPSRC, was set up following a bequest which stated that it should provide annual prizes, scholarships, exhibitions or research grants, the incidental expenses of visiting scientists, the purchase of scientific apparatus and equipment, and funds for 'such other purposes for the advancement of scientific knowledge as the Council shall see fit'. The Holmes Hines Memorial Fund can be used to help individuals or organisations and offers awards for activities relating to science and engineering for which public funds

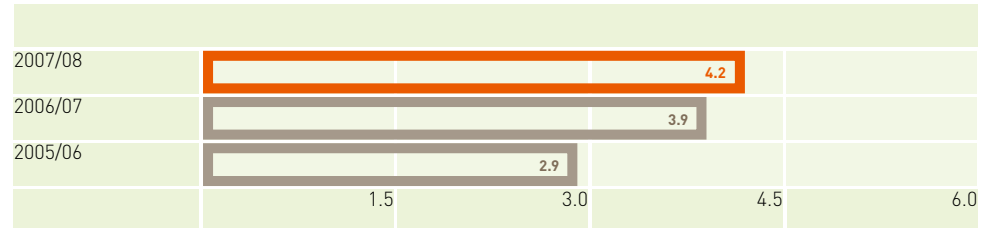
are not available. Although the fund is administered by the EPSRC, awards are not restricted to subjects falling within the EPSRC remit and applications can cover any area of science or engineering.

Examples of awards made during 2007/08:

- Support for students to attend the International First Lego League Robotics Competition.
- Funding towards the cost of materials for a renewable energy watering system for a school garden.
- Funding towards the cost of running a primary school science fair.
- Support for students to take part in a Mars Rover Challenge as part of Science Week 2008.
- Funding towards the costs of running science workshops.
- Support for Science and Engineering Open Days.
- Funding towards the costs of a school science competition.

SCIENCE IN SOCIETY FACTS AND FIGURES

Science in Society Programme expenditure (£m)

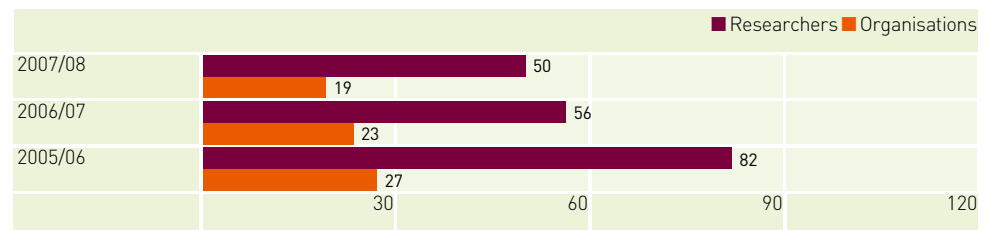


Proposals considered and funded

	PROPOSALS CONSIDERED					
	2005/06		2006/07		2007/08	
	Number	Value (£m)	Number	Value (£m)	Number	Value (£m)
Partnerships for Public Engagement	95	8.1	47	5.9	69	9.1
Senior Media Fellowship	3	0.3	3	0.4	6	0.5
Engineering Stage Awards	3	0.5	1	0.3	-	-

	PROPOSALS FUNDED					
	2005/06		2006/07		2007/08	
	Number	Value (£m)	Number	Value (£m)	Number	Value (£m)
Partnerships for Public Engagement	31	2.3	27	2.7	22	2.3
Senior Media Fellowship	-	-	3	0.4	1	0.1
Engineering Stage Awards	3	0.5	1	0.3	-	-

Number of researchers and organisations receiving Science in Society Programme funding by financial year



The data for 2005/06 is now higher than that reported in the 05/06 Annual Report due to the addition of Engineering Stage Awards data. The decrease in the number of researchers is due to the fluctuation of the numbers of coinvestigators on the grants but the funding has remained at the same level of approximately £3m.

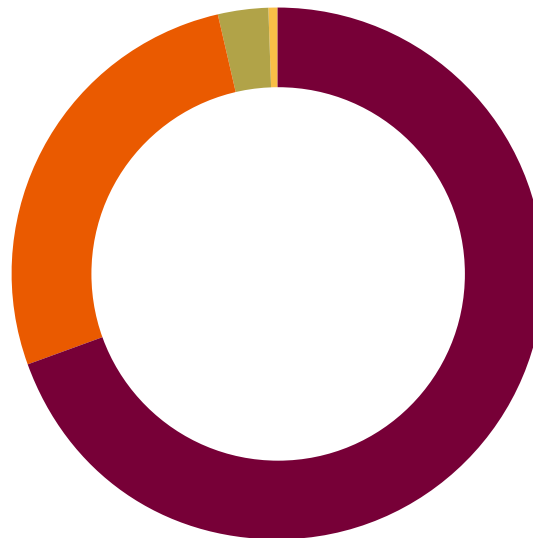
Facts and
Figures

Corporate
Activities

SUMMARY

EPSRC expenditure by category (%)

	%
■ Research grants	69.6
■ Postgraduate training and fellowship awards	26.8
■ Administration and restructuring	3.1
■ STFC facilities	0.5



EPSRC research grant commitment by programme (£m)

	£m
■ Chemistry	42.8
■ Engineering	94.4
■ Information and Communications Technologies	83.3
■ Economy, Environment & Crime	44.8
■ Life Sciences Interface	22.5
■ Materials	56.3
■ Mathematical Sciences	24.2
■ Physics	33.1
■ Energy (Includes TSEC)	56.0
■ Core e-Science	5.4
■ Basic Technology	13.8
■ Other activities (Includes PPE of £3.9m)	60.7
	537.5



SUMMARY

RESEARCH GRANT INVESTMENT BY PROGRAMME

Research grant proposals considered and funded

Financial year 2007/08	Proposals considered ¹		Proposals funded ²		% funded		2005/2006	2006/2007
	Number	Value (£m)	Number	Value (£m)	Number	Value (£m)	Value (£m)	Value (£m)
EPSRC core programme								
Basic Technology	32	28.4	15	13.3	47%	47%	33.5	28.3
Chemistry	545	161.2	149	42.4	27%	26%	49.2	49.2
Complexity	3	0.9	3	0.9	91%	93%	1.0	2.3
Core e-Science	36	10.4	10	4.3	28%	41%	15.5	0.2
Crime Prevention	8	4.1	3	1.7	38%	41%	3.4	8.0
Digital Economy	60	8.2	33	5.3	55%	65%	–	–
DTI Technology Programme	24	6.3	23	6.1	96%	96%	4.5	10.2
Energy	368	136.9	117	59.1	32%	43%	13.2	27.0
Engineering	1,238	407.0	296	93.3	24%	23%	81.5	91.2
Engineering and Physical Sciences Research Council ³	51	5.5	–	–	–	–	–	15.2 ⁴
High Performance Computing	141	19.1	46	5.1	33%	27%	0.7	–
IDEAS Factory	3	0.8	3	0.8	100%	100%	2.6	4.2
Information and Communications Technologies	903	290.9	258	87.5	29%	30%	90.2	84.6
Infrastructure and Environment	23	38.0	13	21.4	56%	56%	10.1	9.2
Innovative Manufacturing	24	17.4	21	17.1	87%	99%	14.0	79.5
Integrated Knowledge	2	5.7	–	–	–	–	–	4.8
Life Sciences Interface	108	42.4	28	11.0	26%	26%	15.9	14.8
Materials	548	175.1	201	58.3	37%	33%	47.1	53.2
Mathematical Sciences	232	52.5	93	22.2	40%	42%	14.0	18.2
Nanoscience through Engineering to Application	47	21.0	14	6.5	30%	31%	–	–
Physics	342	110.0	108	33.7	32%	31%	37.8	46.6
Public Engagement	0.3	0.2	0.3	0.2	100%	100%	–	0.4
Science and Innovation	21	59.3	9	22.9	43%	39%	32.2	25.6
Grand total	4,758	1,601.4	1,442	513.3	30%	32%	466.4	572.7

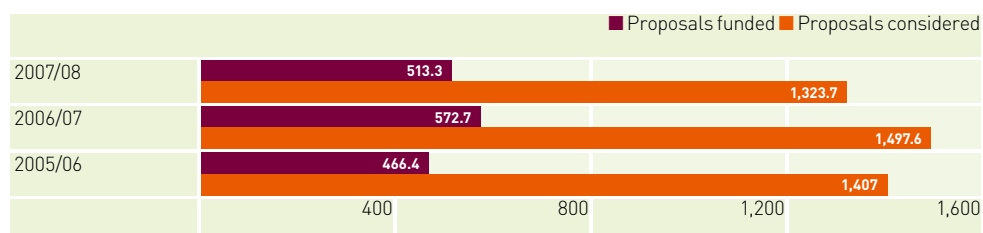
1 ie on which a final decision was made between 1st April 2007 and 31st March 2008.

2 The value of proposals funded excludes other non-grant research funding. The values are gross figures and therefore exclude contributions from other bodies e.g. Defence Science and Technology Laboratory (Dstl), Ministry of Defence (MOD) and other Research Councils.

3 Proposals for two calls were considered by the EPSRC programme but were announced by the relevant programme.

4 Includes proposals submitted to Climate Change and Towards a Sustainable Economy (TSEC) during 2006/07.

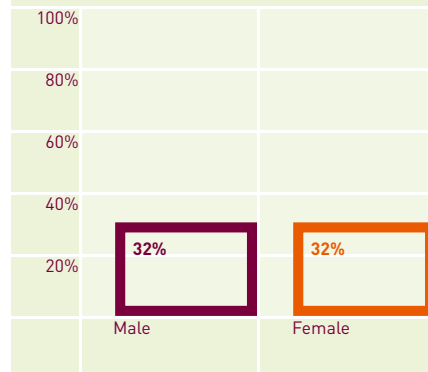
Value of research grant proposals considered and funded (£m)



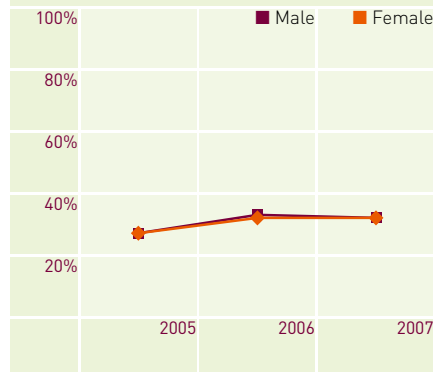
SUMMARY

SUCCESS RATES – BY GENDER

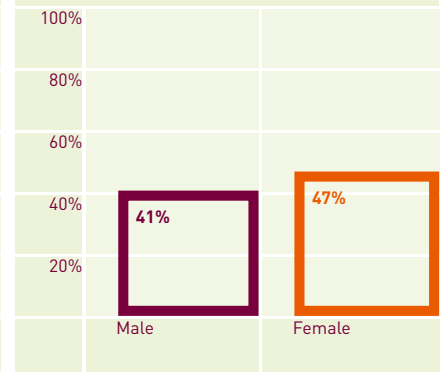
Standard research grants awarded 2007



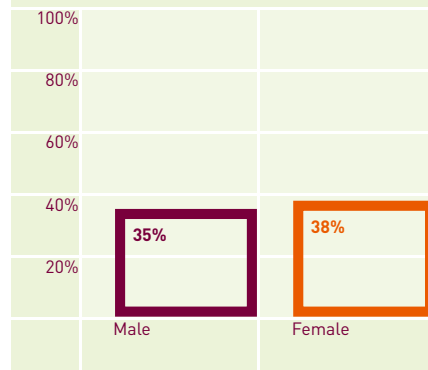
Standard research grants awarded between 2005 and 2007



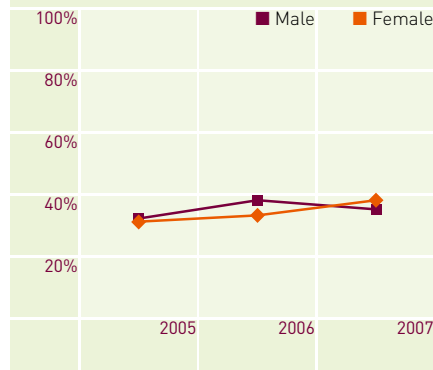
First Grant Scheme grants awarded in 2007



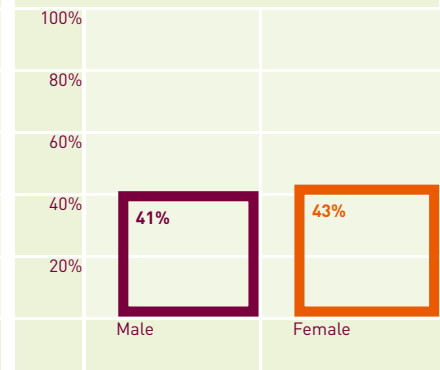
Research grants awarded to young researchers (under 35 years) 2007



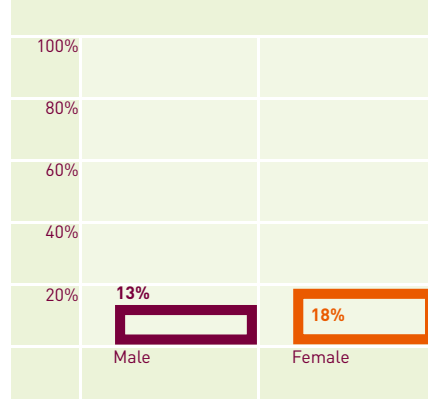
Research grants awarded to young researchers between 2005 and 2007



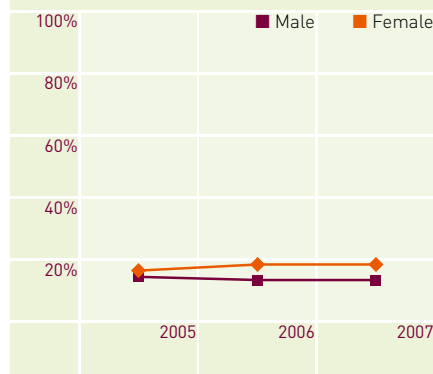
Partnerships for Public Engagement Awards (PPE) awarded in 2007



Advanced Fellows awarded 2007



Advanced Fellowships awarded between 2005 and 2007



Data is by calendar year

Ethnic origin of research grant Principal Investigators – where known (%)

	2005	2006	2007
Asian and Asian British	3.1	2.5	2.8
Black and Black British	0.2	0.2	0.2
Chinese or other	4.9	5.7	5.3
Mixed	0.5	0.9	0.5
Not disclosed	4.6	5.4	7.2
Unknown	2.0	2.4	0.9
White	84.7	82.9	83.1

CORPORATE ACTIVITIES

The Engineering and Physical Sciences Research Council (EPSRC) was established by Royal Charter on 16th December 1993 and began operations on 1st April 1994. The EPSRC inherited part of the programme previously funded by the Science and Engineering Research Council (SERC).

The EPSRC receives its principal funding through the Grant in Aid from the Department for Innovation, Universities and Skills (DIUS). The amount received in 2007/08 was £739 million (2006/07 £637 million). Funding was also received from other Research Councils, Government Departments and other bodies.

The Accounts have been prepared in accordance with the Science and Technology Act 1965 and the Secretary of State for the Department for Innovation, Universities and Skills directions made thereunder.

Mission

The mission of the EPSRC as set out in the 1993 Government White Paper on Science, Engineering and Technology 'Realising our Potential' is:

"to promote and support high quality basic, strategic and applied research and related postgraduate training in engineering and the physical sciences (Chemistry, Physics and Mathematics), placing special emphasis on meeting the needs of the users of its research and training outputs, thereby enhancing the United Kingdom's industrial competitiveness and quality of life".

The EPSRC's objectives, as defined in its Charter, are:

- a) to promote and support high quality basic, strategic and applied research and related post-graduate training in engineering and the physical sciences;
- b) to advance knowledge and technology and provide trained scientists and engineers to meet the needs of users and beneficiaries (including the chemical, communications, construction, electrical, electronic engineering, information technology, pharmaceutical, process and other industries), thereby contributing to the economic competitiveness of the United Kingdom and the quality of life of its citizens; and
- c) to provide advice, disseminate knowledge and promote public understanding in the fields of engineering and the physical sciences.

Review of the year

The Statement of Net Expenditure records net expenditure after reversal of cost of capital for the year of £751.9m (2006/07 £654.9m). There was an increase in expenditure on research grants, with annual expenditure totalling £486.0m (2006/07 £422.6m) and an increase in expenditure on postgraduate and fellowship awards, with annual expenditure of £210.4m (2006/07 £186.3m).

During the year the EPSRC paid a total of £89k to the Consolidated Fund (2006/07 £8k).

Transfers to and from reserves are shown in Note 24 to the Accounts.

Full details of the activities in the year and future plans are shown in the Management Commentary.

We report on the extent we are exposed to financial risks in Note 2 to the Financial Statements.

Research and development

As an organisation wholly engaged in research, the EPSRC does not classify research and development separately in the Accounts.

Shared Services Centre

The seven Research Councils have agreed to establish a Shared Services Centre (SSC), to be based in Swindon. The SSC will provide finance, grants, human resources, information systems, procurement and payroll operational services to each of the Councils and their institutes. The Councils are setting up the SSC with the aim of achieving procurement benefits through sharing and standardising processes. The SSC has been incorporated during the year as RCUK Shared Services Centre Limited and is in the process of establishing itself to be ready for the transfer of services. There is a phased implementation plan for transferring the Councils' services during 08/09.

EPSRC is currently acting as 'host' for the shared services centre project on behalf of all Councils and has contracted for the development and establishment of the Shared Service Centre. The Councils have agreed to share all these costs and EPSRC's agreed share is 8.24%. The 2007-08 costs have been accounted for in EPSRC's books as £384,000 as expensed, £316,000 as provisions for redundancy and system termination costs and £1,294,000 as Assets in the course of construction.

The transition to a Shared Services Centre is regarded as a business critical project and is referred to in our Statement of Internal Control.

Payment policy

In accordance with Government guidelines, it is the policy of the EPSRC to seek to comply with the CBI Prompt Payers' Guide that states that commercial invoices should be paid within 30 days of the presentation of a valid demand for payment.

During 2007/08 the majority of payments by the EPSRC were made to predetermined scheduled dates. Payment of commercial invoices, as defined by the CBI, was monitored throughout the year and 97% of those invoices were paid within 30 days of receipt.

The remittance advice, which accompanies payable orders, gives a point of contact within Finance for queries or complaints from suppliers on payment performance. No complaints, under the terms of the CBI code, were received during the reporting year.

In November 1998, the Late Payment of Commercial Debts (Interest) Act came into force, providing small businesses with a statutory right to claim interest from large businesses (and all public sector bodies) on payments that are more

than 30 days overdue. Amended legislation (the Late Payment of Commercial Debts Regulations 2002) came into force on 7th August 2002 providing all businesses, irrespective of size, with the right to claim statutory interest for the late payment of commercial debts. No such claims were received during the reporting year.

Details of the Prompt Payers' Guide can be found at www.payontime.co.uk.

Personal Data

There have been no personal data related incidents in 2007-08 or in previous financial years. EPSRC will continue to monitor and assess its information risks in order to identify and address any weaknesses and ensure continuous improvement of its systems.

Resource Audit Committee

The Resource Audit Committee (RAC) includes three members of Council together with other members from the commercial and academic communities. RAC meets three times a year to review corporate governance, risk management, internal and external audit matters, efficiency and the Council's Accounts.

Financial Risk Management

Accounting policies in respect of financial risks and going concern are considered in notes 2 and 1b respectively.

Equality of opportunity

The EPSRC has a policy of non-discrimination against people on the grounds of gender, age, religion, religious beliefs, disability, race or sexual orientation. This applies in recruitment, training, promotion and to all aspects of employment within EPSRC.

The EPSRC has published its Race, Disability and Gender Equality Schemes. An Equality Group has been formed to monitor progress against its published Action Plan.

EPSRC gained accreditation as a Disability Symbol user in 2004 approved under the scheme operated by the Employment Service.

EPSRC continues to be a member of the Research Councils' Equality and Diversity Advisory Group.

Learning and Development (L&D)

EPSRC sought re-accreditation of Investors in People (iP) in February 2008 and attained 'retained recognition' status. A review will take place in November 2008. The management of EPSRC's L&D policies and delivery of L&D solutions was praised by the iP assessment team. In particular, the iP assessors noted:

- The effectiveness of the L&D coordinators
- The sound induction processes
- The usefulness of EPSRC's L&D plans and reviews
- The use of Training Needs Analysis as a way of identifying training needs of individuals

- The development and use of a People Management Model to assist in management development
- The development and use of a Competency Framework
- The support of a range of learning solutions (including training courses, job shadows and support of professional qualifications)
- A Training Management System that enables EPSRC to record and evaluate training

EPSRC's L&D policies were subjected to an independent Research Council audit. The report concluded that "EPSRC may consider that they lead the field in this area".

Health and safety

The EPSRC complies with all relevant legislation and regulations concerning health and safety at work. Comprehensive programmes of inspections, tests, risk assessments and training are carried out to ensure that safe and healthy working conditions are provided for all employees.

Employee involvement

Employee involvement in management and policy matters has continued through meetings between management, staff and the trade unions.

The Joint Pay Committee agreed the 2007 pay award which also introduced a restructured pay system with effect from 1 July 2007. This pay system has been designed to meet the future strategic aims of the Council and to facilitate pay convergence as well as addressing issues surrounding equal pay and age discrimination legislation.

Environmental policy

The Research Councils are committed, both individually and collectively, to adopting and promoting environmental good practice in all their operations. We have identified a number of operational areas where environmental good practice is important to us. To achieve those objectives, the Research Councils recognise that they must have a good understanding of the environmental impacts of their operations, and must develop realistic objectives and targets for the reduction of any adverse impacts.

Auditors

The Accounts of the EPSRC are audited by the Comptroller and Auditor General under the terms of Paragraph 3(3) of Schedule 1 of the Science and Technology Act 1965. The cost of the statutory audit in 2007/08 was estimated to be £43k (2007/08 £43k). There was no auditor remuneration for non-audit work.

So far as the Accounting Officer is aware, there is no relevant audit information of which the EPSRC's auditors are unaware. The Accounting Officer has taken all the steps that he ought to have taken to make himself aware of any relevant audit information and to establish that EPSRC's auditors are aware of that information.

CORPORATE ACTIVITIES

MEMBERSHIPS

Council Membership

Mr J Armit, CBE, FREng, Chair	Olympic Delivery Authority
Dr R Richards, Interim Chief Executive (until 31.08.07)	Engineering and Physical Sciences Research Council
Professor D Delpy, FRS, Chief Executive (from 01.09.07)	Engineering and Physical Sciences Research Council
Professor Sir Roy Anderson, FRS (until 30.09.07)	Ministry of Defence
Professor J N Chapman, FRSE	University of Glasgow
Dr D A Clarke (until 31.10.07)	Rolls-Royce Plc
Professor L F Gladden, OBE, FRS, FREng	University of Cambridge
Dr C R Harrison	Independent
Mr D A Hendon, CBE, FREng	Department for Business Enterprise and Regulatory Reform
Dr A J Herbert, FREng, CEng	Microsoft Research Ltd
Dr S E Ion OBE, FREng	Independent
Dr M Roberts	Guidance Ltd
Mr D Rutherford	Parsons Brinckerhoff
Professor C M Snowden, FRS, FREng	University of Surrey
Professor M J Taylor, FRS	University of Manchester
Professor W A Wakeham, FREng	University of Southampton
Professor Lord Robert Winston	Imperial College London

In attendance:

Dr A M Hodge, QinetiQ, attended Council from November 2007 as acting Chair of the User Panel.
Representative from Science and Innovation Group, Department for Innovation,
Universities and Skills: Mr J Neilson.

Technical Opportunites Panel
(TOP) Membership

Professor L F Gladden, OBE, FRS, FEng, Chair	University of Cambridge
Professor J Fisher	University of Leeds
Professor N Halliwell, FEng, CEng	Loughborough University
Professor D A Rand	University of Warwick
Professor T Rodden, FRSC	University of Nottingham
Professor R Silva, CEng	University of Surrey
Professor R H Templar, FRSC	Imperial College London
Professor H Thomas, FICE, CEng	Cardiff University
Professor D Tildesley	Unilever Research
Professor R Wallace, CEng	University of Edinburgh
Professor I Walmsley	University of Oxford
Professor N Weatherill	University of Birmingham
Professor P Withers, FEng	University of Manchester

User Panel
(UP) Membership

Dr DA Clarke, Chair (until 31.10.07)	Rolls-Royce plc
Eur Ing Dr A M Hodge, MBE, CPhys, FInstP, CEng, FIET, Acting Chair (from 01.11.07)	QinetiQ
Dr J Allis	GE Healthcare
Dr J Cooper	National Grid
Dr C H Luebkeman	Ove Arup & Partners
Dr WA MacDonald	DuPont Teijin Films
Mr C Mottershead	British Petroleum plc
Dr DW Prest	Johnson Matthey plc
Dr D Watson	IBM UK Labs Ltd
Mr DJ Way, CEng	Technology Strategy Board (until 29.02.08)
Mrs J Wilbraham	AstraZeneca
Mr D Wright	Manufacturing Advisory Service W. Midlands
Mr S Wright	BT Group

Societal Issues Panel
(SIP) Membership

Professor Lord Robert Winston, Chair	Imperial College, London
Dr D Bruce	Edinethics Ltd
Professor D Burke, CBE	Independent
Professor R Jones	University of Sheffield
Mr D Jordan, CBE, CEng, FIEE, FCMA	Independent
Professor G Laycock	University College London
Baroness Onora O'Neill, CBE	The British Academy
Professor J Petts	University of Birmingham
Mr N Ross (from 01.11.07)	Independent
Professor K Sykes	University of Bristol
Professor M Taylor FRS (from 01.10.07)	University of Manchester

Resource Audit Committee
(RAC) Membership


Professor WA Wakeham, FEng, Chair	University of Southampton
Mr S Buckingham	Lloyds TSB Bank plc
Professor J N Chapman	University of Glasgow
Mr P Douglas (from 01.01.08)	Independent
Mr A Neal	Lancaster University
Mr D Rutherford	Parsons Brinckerhoff

CORPORATE ACTIVITIES

EPSRC COUNCIL MEMBERS' REGISTER OF INTERESTS

Name	University interest	Industry interest	Other Government departments	Other
Mr J Armitt , Olympic Delivery Authority	Professor J Petts Birmingham University (Sister) Professor G Petts Westminster University (Brother-in-Law)	Network Rail (CEO) until 31 March 07 Non-executive post with Berkeley Homes Chairman – Olympic Delivery Authority	None	None
Professor Sir Roy Anderson , Ministry of Defence (to 30 September 2007)	Imperial College (Professor) – Rector Elect from 1 July 2008 London School of Hygiene and Tropical Medicine (Council)	GlaxoSmithKline – Non- executive board member (From 1/10/07)	Chief Scientific Officer, Ministry of Defence	None
Professor J Chapman , University of Glasgow	Department of Physics & Astronomy	Research collaborations with Seagate, Siemens and Thales.	DTI Link Assessor	Fellow of the Royal Society of Edinburgh Fellow of the Institute of Physics Senior Member of the IEEE
Dr D Clarke , Rolls-Royce Plc (to 31 October 07)	Visiting Professor in Engineering – Strathclyde University Industrial Advisory Boards: Surrey – Engineering Manchester – Mechanical and Aero Engineering Imperial College – Electrical Engineering Steering Committees – Manchester/Strathclyde DTI Distributed Generation Centre NATEC	Policy definition: Rolls-Royce University Technology Centres Industrial advisory board: Diamond Synchrotron source	None	None
Professor D Delpy , Chief Executive, EPSRC (from 1 September 2007)	Vice Provost for Research at UCL until 1 November 2007	Shareholdings in Respiroincs Inc	Member of Healthcare Innovation Council from 2007	Chair: Royal Society URF Panel (Aii) Board member: Energy Technologies Institute from 2008
Professor L Gladden , Cambridge University	Department of Chemical Engineering	Unilever (Consultant) Johnson Matthey (Major sponsor) Schlumberger (Major sponsor) Holds Shell Chair of Chemical Engineering. (Dept has no links with Shell anymore)	None	National Physical Laboratory (member of NPL Royal Society/Royal Academy of Engineering Advisory Group to NPL)
Dr C Harrison , Uniqema	Newcastle University – Molecular Engineering Industrial Advisory Board. Surrey University – Industrial Advisory Board	Shareholdings in Imperial Chemical Industries Plc (until 01 January 2008), Astra Zeneca Plc	None	Non-executive director of the Centre for Process Innovation Non-executive director of the Centre for Nanotechnology Micro and Photonic Systems Chair of the Chemistry Innovation Knowledge Transfer Network
Mr D Hendon , BERR	None	None	Director Business Relations BERR (full-time employee)	Trustee, Radio Communications Foundation Member, Institute of Engineering & Technology Communications Sector Panel
Dr A Herbert , Microsoft	Member 2008 RAE Assessment Panel for Computer Science and Information Technology Industry advisor board member for University of Lancaster 'InfoLab21'. Fellow, Wolfson College, Cambridge Life member, Cambridge University Computer Laboratory 'Cambridge Ring' alumni network	Managing Director, Microsoft Research Ltd Non-executive board member, Skinkers Ltd Non-executive board member, Cambridge Network Non-executive board member, Greater Cambridgeshire Partnership Member CBI Eastern Regional Council	Member 'Information Security Board' Defence Scientific Advisory Committee	Member UK Computer Science Research Committee Independent expert, UK Defence Scientific Advisory Committee

Name	University interest	Industry interest	Other Government departments	Other
Dr S Ion , Independent	University of Manchester – Member of Board of Governors. UCLAN, Honorary Professor Imperial College – Visiting Professor – Possible recipient of EPSRC grants and other awards	BNFL consultant – Possible receipt of EPSRC case awards or other funds (until 31/3/08) Member of AWEML Science & Engineering Technical Cttee	Council for Science & Technology – Policy Issues HSE HSL policy advice	Vice President Royal Academy of Engineering – Possible link with EPSRC awards and policy Member of Euratom Science & Technology Cttee
Dr R Richards , Interim Chief Executive, EPSRC (to 31 August 2007)	None	Scientific Advisory Council of DEFRA	Technology and Industrial Advisory Group of Plastic Electronics Technology Centre (PETeC) Strategic innovation Board of the Chemical Innovation Knowledge Transfer Network	None
Dr M Roberts , Guidance Ltd	Collaborations with Oxford University & Liverpool University	Managing Director, Guidance Ltd, Guidance Monitoring Ltd, Guidance Navigation Ltd, Guidance Navigation Ltd have a collaboration with QinetiQ	Guidance Monitoring Ltd have RDA award (East Midlands)	None
Mr D Rutherford , Parsons Brinckerhoff	None	Iberdrola Shareholder	None	None
Professor Christopher Snowden , University of Surrey	Vice-Chancellor	Intense Ltd – Non-executive director Filtronic Plc – Part-time executive (Corporate Advisor) Board member of UUK (Non-executive director)	Member of DSAC of the MoD (Defence Scientific Advisory Council)	Chair of Hero Ltd
Professor Martin Taylor , University of Manchester	None	None	None	Vice-President and Physical Secretary of the Royal Society
Professor Bill Wakeham , University of Southampton	Vice-Chancellor (£170,000) Universities & Colleges Employers Assoc – Board Member, Chair: September 2007- Southampton University Development Trust – Trustee Worldwide University Network Group – Board Member Worldwide University Network Trading – Board Member Worldwide University Network Foundation – Trustee Research collaboration (CASE award) Schlumberger Cambridge Research	COGENT – Non-Executive Director Southampton Asset Management Ltd – Director	South East England Development Agency – Director (£7,931)	Southampton & Fareham Chamber of Commerce – Board Member Higher Education South East – Board Member
Professor Lord Robert Winston , Imperial College	Professor Science & Society Imperial College London Principal Investigator Reproductive Medicine Imperial College London Chairman, Royal College Music Chancellor, Sheffield Hallam	Director of Atazoa Ltd – company making large transgenic animals	Member, House of Lords Science & Technology Committee	Trustee of Stem Cell Foundation



Professor D Delpy Accounting Officer
13th June 2008

Accounts

REMUNERATION REPORT

Unaudited information

Remuneration policy

The remuneration of the Chief Executive of EPSRC is decided by a Remuneration Panel chaired by the Director General of Science and Research and approved by the DIUS Permanent Secretary.

EPSRC's Council has established a Remuneration Committee to assess, annually, the individual performance of the EPSRC Directors, and decide, in the light of these assessments, the remuneration they shall receive. The Committee members are the Chair of EPSRC, Chair of the Resource Audit Committee and EPSRC's Chief Executive.

The remuneration of members of EPSRC's Council is reviewed annually by the Department for Innovation, Universities and Skills (DIUS). Details of the service contracts of the Chief Executive and Directors are given in the table below.

Directors do not have any specific contractual rights for compensation on termination of their contract as a Director.

	Contract start date	Contract end date	Notice period
Dr R Richards, Interim Chief Executive	Temporary contract from 27 November 2006	31 August 2007	3 months
Professor D Delpy, Chief Executive	1 September 2007	31 October 2011	3 months
Mrs C Coates, Director	Permanent Contract	–	3 months
Mr A Emecz, Director	Permanent Contract	–	3 months
Dr L Thompson, Director	Permanent Contract	–	3 months
Mr S Ward, Director	Permanent Contract	–	3 months

Audited information

Salary and pension entitlements

The following section provides details of the remuneration and pension interests of the Chief Executive, Directors and EPSRC Council Members.

Remuneration

	2007-08 Salary £k (a)	2007-08 Performance related bonus (b)	2006-07 Salary £k (a)	2006-07 Performance related bonus (b)
Chief Executive and Directors				
Dr R Richards, Interim Chief Executive (5 months to 31 August 2007)	100-105	To be decided	100-105	5-10
Professor D Delpy, Chief Executive (7 months from 1 September 2007)	105-110	To be decided	–	–
Mrs C Coates, Director	75-80	To be decided	70-75	0-5
Mr A Emecz, Director	60-65	To be decided	55-60	0-5
Dr L Thompson, Director	55-60	To be decided	50-55	0-5
Mr S Ward, Director	75-80	To be decided	75-80	0-5

(a) 'Salary' is per full year equivalent, includes gross salary; overtime; recruitment and retention allowances and any other allowance to the extent that it is subject to UK taxation.

(b) Performance related bonuses are determined by the Remuneration Committee on an annual basis. In the case of the Chief Executive, it is decided by a Remuneration Panel chaired by the Director General of the Research Councils and approved by the DIUS Permanent Secretary.

(c) There were no benefits in kind during either 2006/07 or 2007/08.

(d) The average annual earnings increase for these members of staff was 9.7%.

(e) Professor Delpy was employed on a part-time contract between 01.09.07 to 31.10.07.

REMUNERATION REPORT CONTINUED

Pension benefits

A Cash Equivalent Transfer Value (CETV) is the actuarially assessed capitalised value of the pension scheme benefits accrued by a member at a particular point in time. The pension figures shown relate to the benefits that the individual has accrued as a consequence of their total membership of the pension scheme, not just their service in a senior capacity.

The real increase in CETV reflects the increase in CETV effectively funded by the employer. It takes account of the increase in accrued pension due to inflation, contributions paid by the employee (including the value of any benefits transferred from another pension scheme or arrangement) and uses common market valuation factors for the start and end of the period.

	Dr R Richards Interim Chief Exec (to 31.08.07) £'000	Prof. D Delpy Chief Executive (from 01.09.07) £'000	Mrs C Coates Director £'000	Mr A Emezc Director £'000	Dr L Thompson Director £'000	Mr S Ward Director £'000
Chief Executive and Directors						
Accrued pension at age 60 as at 31.03.08 or at date of leaving	50-55	0-5	25-30 plus 75-80 lump sum	10-15 plus 40-45 lump sum	15-20	35-40 plus 110-115 lump sum
Real increase in pension at age 60	5-10	0-5	0-5 plus 0-5 lump sum	0-5 plus 0-5 lump sum	0-5	0-5 plus 0-5 lump sum
CETV at 31.03.08 or at date of leaving	1,118	44	563	242	320	938
CETV at 31.03.07	857	–	470	216	264	807
Real increase in CETV	149	40	25	-6	13	28

The Research Councils' Pension Schemes (RCPS), of which most of the Council's employees are members, are unfunded multi-employer defined benefit schemes, but EPSRC is unable to identify its share of the underlying assets and liabilities. A full actuarial valuation was carried out at 31st March 2002 and details can be found in the Research Councils' Pension Schemes Account at www.bbsrc.ac.uk. Financial information is made available through the Research Councils' Joint Superannuation Scheme.

For 2007/08, normal employers' contributions of £1,631,594 were payable to the RCPS (2006/07 £1,678,256) at a rate of 21.3% (2006/07 21.3%). Employer contributions are to be reviewed every four years following a full scheme valuation by the Government Actuary. The contribution rates reflect benefits as they are accrued, not when the costs are actually incurred, and reflect past experience of the scheme.

There were no EPSRC members of the RCPS who retired on ill-health grounds during 2007/08.

REMUNERATION REPORT CONTINUED

Council Members' remuneration

The Chairperson and the Council Members are appointed by the Department for Innovation, Universities and Skills (DIUS) on behalf of the Secretary of State for Innovation, Universities and Skills. The contract terms vary between individual members, but the terms and conditions of appointment are standard. EPSRC provides each member of Council with a Code of Practice which sets out a framework in which they are expected to operate.

Council members receive an honorarium in recognition of their service to EPSRC, together with a refund of their reasonable expenses. Council members are not employees of EPSRC and the appointments are not pensionable. Members of Council who are civil servants are not entitled to receive an honorarium.

Remuneration	2007-08 £	2006-07 £
Mr J Armitte CBE, FEng (Chairman)	15,595	-
Professor Dame Julia Higgins FRS, FEng (Chair to 31 March 2007)	-	15,275
Professor Sir Roy Anderson FRS	-	-
Professor J Archer CBE, FEng (to 30 September 2006)	-	3,140
Professor J N Chapman FRSE	6,490	6,345
Dr DA Clarke (to 31 October 2007)	6,405	8,455
Professor L Gladden OBE, FRS, FEng	8,645	6,345
Dr C Harrison	6,490	6,345
Mr D Hendon CBE, FEng	-	-
Dr A Herbert, FEng	6,490	6,345
Dr S Ion OBE, FEng	6,490	6,345
Mr D Jordan CBE, CEng, FIEE, FCMA (to 31 March 2007)	-	6,345
Dr M Roberts	6,490	-
Mr D Rutherford	6,490	6,345
Professor C Snowden FRS, FEng	6,490	6,345
Professor M J Taylor FRS	6,490	6,345
Professor W Wakeham FEng	8,645	8,455
Professor Lord Robert Winston	8,645	-



Professor David Delpy Accounting Officer
13th June 2008

STATEMENT OF ACCOUNT

Statement of the responsibilities of the Engineering and Physical Sciences Research Council and of its Chief Executive with respect to the Financial Statements

Under Paragraph 3 of Schedule 1 to the Science and Technology Act 1965, the Secretary of State for the Department for Innovation, Universities and Skills has directed the EPSRC to prepare for each financial year a Statement of Accounts in the form and on the basis set out in the Accounts Direction. The Accounts are prepared on an accruals basis and must give a true and fair view of the state of affairs of the EPSRC and of its income and expenditure, recognised gains and losses and cash flows for the financial year.

In preparing the Accounts the Accounting Officer is required to comply with the requirements of the *Government Financial Reporting Manual* and in particular to:

- observe the Accounts Direction issued by the Secretary of State for the Department for Innovation, Universities and Skills, including the relevant accounting and disclosure requirements, and apply suitable accounting policies on a consistent basis;
- make judgements and estimates on a reasonable basis;
- state whether applicable accounting standards as set out in the *Government Financial Reporting Manual* have been followed, and disclose and explain any material departures in the financial statements; and
- prepare the financial statements on a going concern basis.

The Secretary of State has appointed the Chief Executive as the Accounting Officer for the EPSRC. The responsibilities of an Accounting Officer, including responsibility for the propriety and regularity of the public finances for which the Accounting Officer is answerable, for keeping proper records and for safeguarding the EPSRC's assets, are set out in the Accounting Officers' Memorandum, issued by HM Treasury and published in *'Managing Public Money'*.

STATEMENT OF ACCOUNT CONTINUED

Accounting Officer's
Statement on Internal
Control**1. Scope of responsibility**

As Accounting Officer, I have responsibility for maintaining a sound system of internal control that supports the achievement of the EPSRC's policies, aims and objectives, whilst safeguarding the public funds and organisational assets for which I am personally responsible, in accordance with the responsibilities assigned to me and described in *'Managing Public Money'*.

2. The purpose of the system of internal control

The system of internal control is designed to manage risk to a reasonable level rather than to eliminate all risk of failure; it can therefore only provide reasonable and not absolute assurance of effectiveness. The system of internal control is based on an ongoing process designed to identify and prioritise the risks to the achievement of organisational policies, aims and objectives, to evaluate the likelihood of those risks being realised and the impact should they be realised, and to manage them efficiently, effectively and economically. The system of internal control has been in place in the EPSRC for the year ended 31st March 2008 and up to the date of approval of the annual report and accounts, and accords with Treasury guidance.

3. Capacity to handle risk**Executive Management Group**

The Executive Management Group (EMG), comprising the Chief Executive and the four Directors, is the executive body for the EPSRC, providing top-level leadership and guidance on risk management issues. EMG has agreed a corporate risk management policy. EMG regularly considers risk matters, and reviews the corporate and Directorate risk registers for changes in risk status and for issues requiring consideration and action. Business-critical projects are reviewed at least every three months and, should problems arise, EMG will consider appropriate actions at one of its twice-monthly meetings.

Business Assurance

The Associate Director, Finance and Shared Service Centre Interface is responsible for the Business Assurance function within the EPSRC, including the coordination of risk management activities. These activities include: maintaining the corporate risk register; providing advice and guidance to Directorates; ensuring that Directorate risk registers are kept up-to-date; obtaining quarterly business-critical project progress reports and providing these to EMG; and liaising with internal audit on its audit activities.

Performance and Risk Management System

EPSRC implemented the Performance and Risk Management (PRM) System from 1st April 2006. PRM is based on the balanced scorecard model and brings together performance measures, actions and risk under EPSRC objectives.

Management of risk

EPSRC implemented the Management of Risk (MoR) framework in April 2007. MoR is a framework, promulgated by the Office of Government Commerce, which creates a structured approach to risk management.

Staff training

All staff undergo an induction process that involves a risk awareness element, familiarising them with the need for risk management activities within the Council. Mandatory seminars on risk management are held for all new staff. Further training is provided for the owners of risks and of mitigation plans on how to identify, evaluate, monitor and control risks.

The EPSRC risk register is accessible to all staff through the PRM intranet site. Other documents, such as the EPSRC risk policy, are linked to PRM. The 'Research Councils' Internal Audit Service Good Practice Bulletin on Risk Management' is also available for guidance.

If it is decided, by an individual or their line manager, that an individual requires further formal training in risk management, perhaps as a result of responsibility for one or more risks, then this can be undertaken.

Good practice

The Research Councils' Internal Audit Service (RCIAS) regularly carries out audits relevant to the Council's risk management activities. In 2007/08 relevant audits were carried out for the business critical High End Computing Terascale Resource project (HECToR); Delegated Financial Authority; IS/IT Governance and the Use of Consultants.

STATEMENT OF ACCOUNT CONTINUED

Accounting Officer's
Statement on Internal
Control continued**4. The risk and control framework****The Council of the EPSRC**

The Council of the EPSRC has a responsibility to ensure that high standards of corporate governance are observed at all times. Council periodically receives information about risk management. It also receives a report at each meeting and an annual report from the Resource Audit Committee, which includes comment on risk management and business-critical projects. Council has responsibility for decisions on major capital projects, after having reviewed the business case and the risks involved in the venture.

Directors and Directorates

EMG delegates responsibility for each of the corporate risks to one or more of the Directors. Each Director bears a responsibility for these and the risks associated with his/her Directorate's activities. A Director may choose to delegate responsibility for the day to day management of risk and associated mitigation or contingency plans to a member of the Directorate staff. Directors and relevant staff regularly review the Directorate risks: for new elements to a risk; for changes in status (changes in the likelihood of occurrence or in the impact that would be felt should the risk be realised) as a result of factors internal or external to the Council; for progress in mitigating risks; to determine whether or not the existing controls are adequate; and to determine whether further actions are required. Proposed projects or initiatives are considered at an early stage to assess risk management and to determine the balance of benefits and risks. The Director or delegated staff member responsible will then make a decision on whether or not to proceed, or will seek a decision from EMG.

Each Directorate has an individual responsible for co-ordinating risk management activities.

The Resource Audit Committee

The Resource Audit Committee (RAC) is a committee of Council tasked with monitoring standards of internal control and propriety, economy, efficiency and effectiveness, and for evaluating the extent to which systems and procedures are appropriate to allow the EPSRC's objectives to be met. The Resource Audit Committee's responsibilities include: examining the manner in which management ensures and monitors the adequacy of the nature, extent and effectiveness of internal control systems; paying particular attention to risks and contingency plans on all business-critical projects; and monitoring the nature and scope of the work of Internal Audit. RAC makes recommendations to EMG and reports to Council following its meetings.

Research Councils' Internal Audit Service

The Research Councils' Internal Audit Service (RCIAS) and EMG work together to agree the range of audits to be carried out each year. The Resource Audit Committee confirms the annual audit plan. The report of this audit is used by EMG in its decision-making on what actions are necessary to maintain high standards in the EPSRC's corporate governance and risk management procedures.

In addition to the advice resulting from audits, Internal Audit guidance is welcomed as a source of updated best practice.

Controls

EPSRC has in place a system of controls which includes:

- annual Directors' Internal Control Statements;
- a programme of visits by officials to Higher Education Institutions and office-based tests which seek assurance that research grant funds are used for the purpose for which they are given and that grants are managed in accordance with the terms and conditions under which they are awarded;
- ongoing review of risks and the necessary resulting actions;
- responsibility for managing risks delegated to the appropriate level within the organisation;
- regular management review of risks and business-critical projects;
- regular external review of risk management procedures.

EPSRC currently has two projects designated as business-critical – the Shared Service Centre (SSC) project and the EPSRC Change Management Project.

The SSC implementation project will deliver a single administrative support service for all UK Research Councils. Initially the SSC will provide HR, Finance, Procurement and IS services, however in the longer term it is also planned to add Grants Processing. This project is business critical for EPSRC as it fundamentally changes the way back-office services are provided, effectively through outsourcing them to the new SSC organisation.

The project operates across all seven Councils and is directed by a Project Board comprised of representatives of each Council, the SSC itself and a number of independent members, the Board is chaired by the Chair of the RCUK Executive Group. The principal risks for the Project, and therefore for the seven Councils, are the potential for cost and time overruns and these are a clear focus for the Project Board. In June 2008 there is an exercise in hand to revisit plans for shared services implementation that will result in delays in the previous timetable.

STATEMENT OF ACCOUNT CONTINUED

**Accounting Officer's
Statement on Internal
Control continued**

As a stakeholder in the Project EPSRC has its own Group who manages its participation and associated risks in the Project. The high level risks and mitigation strategies are regularly scrutinised by EPSRC's Executive Management Group. Governance arrangements are regularly monitored by EPSRC's Audit Committee.

During the year the High Performance Computing (HECToR) project was completed and removed from the business critical list.

5. Review of effectiveness

As Accounting Officer I have responsibility for reviewing the effectiveness of the system of internal control. My review of the effectiveness of the system of internal control is informed by the work of the internal auditors and the executive managers within the EPSRC who have responsibility for the development and maintenance of the internal control framework, and comments made by the external auditors in their Management Letter and other reports. I have been advised on the implications of the result of my review of the effectiveness of the system of internal control by the Council and the Resource Audit Committee, and a plan to address weaknesses and ensure continuous improvement of the system is in place.

The internal control system provides confidence that the risk is managed to a reasonable level and I can provide assurance that it supports the achievement of the EPSRC's policies, aims and objectives.



Professor David Delpy Accounting Officer
13th June 2008

STATEMENT OF ACCOUNT CONTINUED

The Certificate and Report of the Comptroller and Auditor General to the Houses of Parliament

I certify that I have audited the financial statements of the Engineering and Physical Sciences Research Council for the year ended 31 March 2008 under the Science and Technology Act 1965. These comprise the Statement of Net Expenditure, the Balance Sheet, the Cashflow Statement, Statement of Recognised Gains and Losses, and the related notes. These financial statements have been prepared under the accounting policies set out within them. I have also audited the information in the Remuneration Report that is described in that report as having been audited.

Respective responsibilities of the Council, Chief Executive and Auditor

The Council, and Chief Executive as Accounting Officer, are responsible for preparing the Annual Report, the Remuneration Report and the Financial Statements in accordance with the Science and Technology Act 1965 and Secretary of State for the Department for Innovation, Universities and Skills directions made thereunder and for ensuring the regularity of financial transactions. These responsibilities are set out in the Statement of Council and Chief Executive's Responsibilities.

My responsibility is to audit the financial statements and the part of the Remuneration Report to be audited in accordance with relevant legal and regulatory requirements, and with International Standards on Auditing (UK and Ireland).

I report to you my opinion as to whether the financial statements give a true and fair view and whether the financial statements and the part of the Remuneration Report to be audited have been properly prepared in accordance with the Science and Technology Act 1965 and Secretary of State for the Department for Innovation, Universities and Skills directions made thereunder. I report to you whether, in my opinion, information given within the Management Commentary included within the Annual Report is consistent with the financial statements. I also report whether in all material respects the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them.

In addition, I report to you if the Engineering and Physical Sciences Research Council has not kept proper accounting records, if I have not received all the information and explanations I require for my audit, or if information specified by HM Treasury regarding remuneration and other transactions is not disclosed.

I review whether the Statement on Internal Control reflects the Engineering and Physical Sciences Research Council's compliance with HM Treasury's guidance, and I report if it does not. I am not required to consider whether this statement covers all risks and controls, or form an opinion on the effectiveness of the Engineering and Physical Sciences Research Council's corporate governance procedures or its risk and control procedures.

I read the other information contained in the Annual Report and consider whether it is consistent with the audited financial statements. I consider the implications for my report if I become aware of any apparent misstatements or material inconsistencies with the financial statements. My responsibilities do not extend to any other information.

Basis of audit opinion

I conducted my audit in accordance with International Standards on Auditing (UK and Ireland) issued by the Auditing Practices Board. My audit includes examination, on a test basis, of evidence relevant to the amounts, disclosures and regularity of financial transactions included in the financial statements and the part of the Remuneration Report to be audited. It also includes an assessment of the significant estimates and judgments made by the Council and Accounting Officer in the preparation of the financial statements, and of whether the accounting policies are most appropriate to the Engineering and Physical Sciences Research Council's circumstances, consistently applied and adequately disclosed.

I planned and performed my audit so as to obtain all the information and explanations which I considered necessary in order to provide me with sufficient evidence to give reasonable assurance that the financial statements and the part of the Remuneration Report to be audited are free from material misstatement, whether caused by fraud or error and that in all material respects the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them. In forming my opinion I also evaluated the overall adequacy of the presentation of information in the financial statements and the part of the Remuneration Report to be audited.

STATEMENT OF ACCOUNT CONTINUED**Opinions**

In my opinion:

- the financial statements give a true and fair view, in accordance with the Science and Technology Act 1965 and directions made thereunder by the Secretary of State for the Department for Innovation, Universities and Skills, of the state of the Engineering and Physical Sciences Research Council's affairs as at 31 March 2008 and of its net expenditure for the year then ended;
- the financial statements and the part of the Remuneration Report to be audited have been properly prepared in accordance with the Science and Technology Act 1965 and Secretary of State for the Department for Innovation, Universities and Skills directions made thereunder; and
- information given within the Management Commentary included within the Annual Report is consistent with the financial statements.

Opinion on Regularity

In my opinion, in all material respects the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them.

Report

I have no observations to make on these financial statements.

T J Burr

Comptroller and Auditor General
27th June 2008

National Audit Office
151 Buckingham Palace Road
Victoria, London SW1W 9SS

STATEMENT OF ACCOUNT CONTINUED

Statement of net
expenditure
for the year ended
31st March 2008

	Notes	2008 £'000	2007 £'000
EXPENDITURE			
Research	6	485,963	422,577
Foresight Link 3	7	–	318
Energy Technologies Institute LLP	8	481	–
Public Engagement Programme	9	4,167	3,897
UK research facilities	10	26,903	18,673
International subscriptions	11	179	174
Postgraduate awards	12	165,368	155,481
Research Fellowships	13	45,047	30,867
Staff costs	14	13,319	13,422
Other operating expenditure	15	15,185	13,836
Total operating expenditure		756,612	659,245
INCOME			
Foresight Link 3	7	–	318
Other operating income	4	4,708	4,073
Total operating income		4,708	4,391
NET OPERATING EXPENDITURE		751,904	654,854
Non-operating income	5	(89)	(8)
Amounts payable to the Consolidated Fund	5	89	8
Notional cost of capital (credit)	22	(857)	(1,160)
NET EXPENDITURE FOR THE YEAR		751,047	653,694
Reversal of notional cost of capital	22	857	1,160
NET EXPENDITURE FOR THE YEAR AFTER REVERSAL OF NOTIONAL COST OF CAPITAL		751,904	654,854

All activities are continuing.
The notes on pages 69 to 80 form part of these Accounts.

STATEMENT OF ACCOUNT CONTINUED

Balance sheet
as at 31st March 2008

	Notes	2008 £'000	2007 £'000
FIXED ASSETS			
Tangible fixed assets	16	33,960	13,794
Other investment	17	-	-
		33,960	13,794
CURRENT ASSETS			
Debtors	18	36,909	22,157
Cash at bank and in hand	19	6,546	2,213
		43,455	24,370
CREDITORS DUE WITHIN ONE YEAR	20	(88,793)	(66,618)
Net current liabilities		(45,338)	(42,248)
Total assets less current liabilities		(11,378)	(28,454)
CREDITORS DUE AFTER MORE THAN ONE YEAR	21	(290)	(218)
PROVISION FOR LIABILITIES	23	(316)	-
NET LIABILITIES		(11,984)	(28,672)
CAPITAL AND RESERVES			
Revaluation reserve	24	2,566	2,566
Income and expenditure account	24	(14,550)	(31,238)
Deficit on Government funds	24	(11,984)	(28,672)

The notes on pages 69 to 80 form part of these Accounts.



Professor David Delpy Accounting Officer
13th June 2008

STATEMENT OF ACCOUNT CONTINUED

Cash flow statement
for the year ended
31st March 2008

	Notes	2008 £'000	2007 £'000
CASH FLOW STATEMENT			
Net cash outflow from operating activities		(738,408)	(652,334)
Capital expenditure:			
Payments to acquire fixed assets	16	(25,494)	(6,999)
Net cash outflow before financing		(763,902)	(659,333)
Financing:			
Grant-in-Aid received	3,24	739,499	637,134
From other Research Councils	24	15,429	8,086
From Government departments, executive agencies and EU	24	5,880	5,689
From other bodies	24	7,427	7,043
INCREASE/(DECREASE) IN CASH	19	4,333	(1,381)
RECONCILIATION OF NET OPERATING EXPENDITURE BEFORE FINANCING TO NET CASH OUTFLOW FROM OPERATING ACTIVITIES			
Net operating expenditure		(751,904)	(654,854)
Depreciation charge/losses on disposal of assets	15	5,685	1,026
Increase in debtors	18	(14,752)	(14,036)
Increase in creditors	20,21	22,247	15,530
Increase in provisions	23	316	-
Net cash outflow from operating activities		(738,408)	(652,234)
RECONCILIATION OF NET CASH FLOW TO MOVEMENT IN NET FUNDS			
Cash at 1st April		2,213	3,594
Increase/(Decrease) in cash in year	19	4,333	(1,381)
Cash at 31st March	19	6,546	2,213

Statement of
recognised gains
and losses
for the year ended
31st March 2008

		2008 £'000	2007 £'000
Net expenditure for the year		(751,047)	(653,694)
Surplus on revaluation of fixed assets in the year	16	357	163
Recognised gains and losses relating to the year		(750,690)	(653,531)

The notes on pages 69 to 80 form part of these Accounts.

NOTES TO THE ACCOUNTS

1. Accounting policies

(a) Accounting convention

These Accounts have been prepared under the historical cost convention, adjusted to include the revaluation of certain fixed assets, complying with the Accounts Direction of 27th November 2001 given by the Secretary of State for the Department for Innovation, Universities and Skills, in accordance with section 2(2) of the Science and Technology Act 1965.

The Accounts conform, in so far as is practicable and appropriate, with the Accounting Standards, Companies Acts, Financial Reporting Manual and specific Treasury guidance.

(b) Going concern

The Balance Sheet at 31st March 2008 shows net liabilities of £12.0m. In addition, note 25 shows costs to completion of £1,668m arising from research and training grants already committed. This reflects the inclusion of liabilities falling due in future years which, to the extent that they are not to be met from the EPSRC's other sources of income, may only be met by future grants or Grant-in-Aid from the EPSRC's sponsoring department, the Department for Innovation, Universities and Skills (DIUS). This is because, under the normal conventions applying to parliamentary control over income and expenditure, such grants may not be issued in advance of need.

Grant-in-Aid for 2008/09, taking into account the amounts required to meet the EPSRC's liabilities falling due in that year, has already been included in the Department's Estimates for that year, which have been approved by Parliament.

The negative balance sheet essentially reflects a timing difference between recognising a liability in our accounts and the subsequent receipt of Grant in Aid to meet this liability. A letter of comfort has not been issued by DIUS as they fully expect the recorded deficit on the Income and Expenditure Reserve to be extinguished over time, having regard to the resource and capital budgets to which EPSRC can be expected to have access. FRS18 also states that for non-trading entities the anticipated continuation of the provision for that service is normally sufficient evidence of going concern. It has accordingly been considered appropriate to adopt a going concern basis for the preparation of these financial statements.

(c) Fixed assets and depreciation

Capital expenditure includes the purchase of land and/or buildings, construction and services projects, and equipment valued at £3,000 or more. Individual items valued at less than the threshold are capitalised if they constitute integral parts of a composite asset that is in total valued at more than the threshold. Individual items valued at less than the threshold and not forming part of a composite asset are not capitalised.

Tangible fixed assets are included at cost or at valuation. The basis of valuation is Open Market Value for existing use where this can be established, otherwise Current Depreciated Replacement Cost.

Land and Buildings and major items of equipment are professionally valued at least every five years, at which time the remaining useful life of each revalued asset is also reassessed. The last valuation was in January 2006, conducted by Powis Hughes and Associates, Chartered Surveyors. The basis of the valuation was Open Market Value. Appropriate indices are used in between formal professional valuations.

Surpluses or deficits on revaluation are taken to the Revaluation Reserve, except that any permanent diminution in value is charged to the Statement of Net Expenditure in the year in which it arises. Increased depreciation charges arising from the revaluation are matched by annual transfers from the Revaluation Reserve to the Income and Expenditure Reserve. On the disposal of a fixed asset, that element of the Revaluation Reserve which thereby becomes realised is transferred directly to the Income and Expenditure Reserve.

Tangible fixed assets are depreciated at rates calculated to write off the costs or the valuation of each asset evenly over its expected useful life, as follows:

Freehold land	not depreciated
Freehold buildings	62 years
Specialist scientific equipment	3 – 15 years
IT equipment	3 years
Software (third party licences)	the lesser of 5 years or the term of the licence
Software (not third party licences)	5 years
Fixtures and fittings	5 years
General office equipment	5 years
Vehicles	4 years

Assets in the course of construction are not depreciated until the asset is brought into use.

NOTES TO THE ACCOUNTS CONTINUED**(d) Ownership of equipment purchased with EPSRC research grants**

Equipment purchased by an organisation with research grant funds supplied by the EPSRC belongs to the organisation and is not included in the EPSRC's fixed assets. Through the Conditions of Grant applied to funded organisations, the Research Council must be informed if, during the life of the research grant, the need for the equipment diminishes substantially or it is not used for the purpose for which it was funded. The Research Council reserves the right to determine the disposal of such equipment and to claim the proceeds of any sale.

(e) Equipment located elsewhere

EPSRC owns assets with a combined net book value of £23.3m which are located elsewhere but are included in the Balance Sheet.

The HECToR supercomputing facility came into operation in October 2007. At the balance sheet date the combined net book value of assets held at the facility in Edinburgh was £21.2m.

A pool of scientific equipment is provided and updated by the Science and Technology Facilities Council (STFC) on behalf of the EPSRC, specifically for loan to research organisations. Wherever located, this equipment remains the property of the EPSRC and is therefore included in the Balance Sheet.

(f) Grant-in-Aid

Grant-in-Aid received for revenue purposes has been regarded as a contribution from a controlling party giving rise to a financial interest in the organisation. Hence, Grant-in-Aid has been accounted for as financing, not income i.e. credited to the Income and Expenditure Reserve rather than being recognised in the Income and Expenditure Account for the year. The same treatment has been adopted for other sources of financing. Grant-in-Aid for capital purposes is only credited to the Government Grant Reserve if it is for the purchase of a specific asset, with all other Grant-in-Aid credited to the Income and Expenditure Reserve.

(g) Research and development

As a research organisation, all the EPSRC's research and development expenditure is charged to the Statement of Net Expenditure when it is incurred. Intellectual property rights arising from research and development funded by the EPSRC are passed to the organisations performing the research.

(h) Foreign exchange

Transactions denominated in foreign currencies are translated into sterling at the rate of exchange ruling at the date of transactions. Any exchange differences arising in the ordinary course of business are taken to the Statement of Net Expenditure. Assets and liabilities in foreign currencies in existence at the balance sheet date are translated at the rates ruling at that date.

(i) Research grants

Subject to the terms and conditions under which research grants are awarded, the EPSRC makes payments for grants on the basis of pre-determined quarterly profiles. Profiles are arranged, in overall terms, to reflect the rate and incidence of expenditure at the grant holding organisation. Payments are normally made in the period to which they relate, although the EPSRC retains some latitude in timing. Grant expenditure is accounted for on an accruals basis to reflect the usage of grant funds on work carried out. Future commitments at the balance sheet date are disclosed in note 25.

(j) Value Added Tax

As the EPSRC is partially exempt for VAT purposes, all items of expenditure and fixed asset purchases are shown inclusive of VAT where applicable. Residual input tax reclaimed under the partial exemption scheme is taken to the Statement of Net Expenditure as other income.

(k) Superannuation schemes

The employees of the Council are members of the Research Councils' Pension Schemes (RCPS) which are defined benefit schemes funded from annual grant-in-aid on a pay as you go basis. The benefits are by analogy to the Principal Civil Service Pension Scheme, except that while the schemes provide retirement and related benefits based on final emoluments, redundancy and injury benefits are administered and funded by the Council.

The scheme is administered by the Research Councils' Joint Superannuation Services with the associated grant-in-aid managed by the Biotechnology and Biological Sciences Research Council (BBSRC). The schemes' accounts are prepared by BBSRC, on behalf of the BBSRC Chief Executive as the Accounting Officer for the RCPS. A separate Account is published for the Pension Schemes. Employees' contributions to the scheme are set at 3.5%. The employer's contribution is agreed by the RCPS Board of Management on the recommendation of the Government Actuary's Department and is set at 21.3% of pensionable pay.

NOTES TO THE ACCOUNTS CONTINUED

The RCPS is an unfunded multi-employer defined benefit scheme. The Council is unable to identify its share of the underlying assets and liabilities of the scheme on a consistent and reasonable basis and therefore, as required by FRS 17 'Retirement benefits', accounts for the scheme as if it were a defined contribution scheme. As a result, the amount charged to the income and expenditure account represents the contributions payable to the scheme in respect of the accounting period. A full actuarial valuation was carried out on 31st March 2006 with results expected to be announced in August 2008. The valuation carried out on 31st March 2002 which changed the rate from 10.1% to 21.3% from 1st April 2005 therefore applies to these accounts. Details are available in the accounts of the Research Councils Pension Scheme.

For 2007/2008, employer's contributions of £1,631,594 were payable to the RCPS (2006/2007 £1,629,290) at 21.3% of pensionable pay, based on the salary bands. Employer contributions are to be reviewed every three years following a full scheme valuation by the Government Actuary. The contribution rates reflect benefits as they are accrued, not when the costs are actually incurred, and reflect past experience of the scheme.

(l) Notional cost of capital

In line with HM Treasury requirements, the EPSRC has included a non-cash credit in respect of cost of capital charged at 3.5% (2006/07 3.5%).

(m) Provisions

Provisions have been made in accordance with FRS 12 for redundancy costs and system termination fees arising from the transition to the Shared Service Centre. See note 23 for further details.

(n) Other operating income

Other operating income is recognised on a receivable basis and mainly represents income from other Research Councils for services provided.

2. Financial instruments

FRS 13, "Derivatives and Other Financial Instruments", requires disclosure of the role which financial instruments have had during the year in creating or changing the risks an entity faces in undertaking its activities. Because of the largely non-trading nature of its activities and the way in which the EPSRC is financed, the EPSRC is not exposed to the degree of financial risk faced by business entities. Moreover, financial instruments play a much more limited role in creating or changing risk than would be typical of the listed companies to which FRS 13 mainly applies. The Council's financial assets and liabilities are generated by day-to-day operational activities and are not held to change the risks facing the department in undertaking its activities.

As permitted by FRS 13, debtors and creditors which mature or become payable within 12 months from the balance sheet date have been omitted from the currency profile.

Liquidity risk

The Council's net revenue resource requirements are financed by resources voted annually by Parliament, as is its capital expenditure. The EPSRC is not therefore exposed to significant liquidity risks. As described in Note 1(b), EPSRC is dependent on funding from the Department for Innovation Universities and Skills to meet liabilities falling due in future years, but there is no reason to believe that this funding will not be forthcoming.

Interest-rate risk

None of the Council's financial assets or liabilities is subject to interest, and the Council is not therefore exposed to interest-rate risk.

Currency profile

At the balance sheet date the EPSRC held no significant foreign currency assets or liabilities.

Foreign currency risk

The Council's exposure to foreign currency risk is not significant. Foreign currency expenditure and income during 2007/08 were negligible. In November 2007 Research Councils UK opened an office in Washington, USA, which is administered by EPSRC. Although foreign currency transactions will inevitably increase as a consequence, it is not believed that the exposure to risk will increase significantly.

NOTES TO THE ACCOUNTS CONTINUED

3. Parliamentary Grant-in-Aid

The grant was provided under the Department for Innovation Universities and Skills Request for Resources 2 for the financial year 2007/08.

4. Other operating income

	2008 £'000	2007 £'000
Income for services provided	4,708	4,073
Total other operating income	4,708	4,073

5. Non-operating income

	2008 £'000	2007 £'000
Unanticipated receipts this financial year relating to amounts paid or claims registered in previous year	89	8
Total payable to Consolidated Fund (CFER)	89	8

In February 2007 EPSRC opened an Escrow account in order to facilitate the implementation of the HECToR facility. Interest credited to this account was surrendered as CFER.

6. Research

Total gross expenditure on research grants shown by programme:

	2008 £'000	2007 £'000
Basic Technology	33,232	27,971
Chemistry	47,357	48,273
Core e-Science	3,737	8,495
Engineering	83,452	73,447
Energy	42,198	30,605
High Performance Computing	1,820	548
Information and Communications Technologies	76,501	62,852
Innovative Manufacturing	32,138	27,254
Infrastructure and Environment	15,343	16,685
Life Sciences Interface (LSI)	21,697	19,050
Materials	49,613	41,683
Mathematical Sciences	14,331	11,699
Physics	33,671	36,029
Other activities	30,873	17,986
Total expenditure on research	485,963	422,577

Gross expenditure on the Energy programme is inclusive of £19,122k with regard to Fusion (2006/07 £20,616k).

Gross expenditure on the Physics programme in 2006/07 included £5,126k with regard to Nuclear Physics. With effect from 1st April 2007, responsibility for Nuclear Physics was transferred to Science and Technology Facilities Council (STFC). The transfer has had no impact on the 2007/08 financial statements.

7. Foresight Link

EPSRC has acted as a managing agent for Foresight LINK 3 (FLA3) awards on behalf of the former Department of Trade and Industry. A final FLA3 claim was made in 2006/07 to recover costs incurred.

8. Energy Technologies Institute LLP

During the year Energy Technologies Institute LLP (ETI LLP) was incorporated and commenced to trade during January 2008.

ETI LLP has been established as a joint initiative between the public and private sectors to encourage research and investment in new and emerging energy technologies. The Secretary of State is a member of ETI LLP together with a group of private sector organisations. EPSRC together with the Technology Strategy Board (TSB), is responsible for providing the Secretary of State member's capital contributions.

NOTES TO THE ACCOUNTS CONTINUED

EPSRC and TSB jointly contribute the members' capital on behalf of the Secretary of State.

EPSRC acts on behalf of the Secretary of State and does itself not have an investment in ETI LLP.

ETI LLP has been established with the aim to accelerate the development, demonstration and eventual commercial deployment of a focused portfolio of energy technologies, which will increase energy efficiency, reduce greenhouse gas emissions and help achieve energy and climate change goals.

ETI LLP has requested £481,000 during the period as members' contributions. The members' contributions have been expensed as EPSRC have no rights of investment in ETI LLP.

9. Public Engagement Programme

The EPSRC has a Public Engagement Programme (PEP) for its research grant holders and Fellows.

	2008 £'000	2007 £'000
PEP awards	2,839	2,176
PEP Fellowships	280	205
PEP additional programme expenditure	1,048	1,516
Total expenditure on PEP	4,167	3,897

10. UK Research facilities

	2008 £'000	2007 £'000
High Performance Computing:		
CSAR	–	1,919
University of Edinburgh (HPCx)	7,397	7,020
University of Edinburgh (HECToR)	12,796	–
Total High Performance Computing	20,193	8,939
STFC facilities	3,412	3,786
Other expenditure on research facilities	3,298	5,948
Total expenditure on UK research facilities	26,903	18,673

EPSRC provides facilities to enable world class research. The provision of high end computing support for research via the Computer Services for Academic Research (CSAR) facility ended in June 2006. A new high end computing facility, HECToR was introduced in October 2007. At the balance sheet date, EPSRC held assets with a combined net book value of £21.2m at the HECToR facility.

11. International subscriptions

Total amounts paid in the year for current operations:

	2008 £'000	2007 £'000
European Science Foundation (ESF)	179	174

12. Postgraduate awards

	2008 £'000	2007 £'000
Collaborative Training Accounts	48,739	48,217
Doctoral Training Grants	78,072	75,152
Dorothy Hodgkin Postgraduate Awards	7,700	5,893
International Doctoral Scholarships	1,718	1,425
LSI Doctoral Training Centres	7,534	5,408
Roberts Skills Training	12,837	12,342
Other awards	8,768	7,044
Total expenditure on Postgraduate Awards	165,368	155,481

Roberts Skills Training is not an EPSRC Postgraduate Award; rather it is expenditure to deliver enhanced training for postgraduate and postdoctoral award holders. Roberts Skills Training expenditure has been separated out to reflect the significant level of expenditure.

EPSRC acts as a manager for the Dorothy Hodgkin Awards on behalf of Research Councils UK (RCUK). Funding toward Dorothy Hodgkin Awards is provided by the Research Councils and by industrial collaborators.

NOTES TO THE ACCOUNTS CONTINUED

13. Research Fellowships

	2008 £'000	2007 £'000
Academic	17,803	11,054
Advanced	14,998	11,581
European Young Investigator (EURYI)	799	653
Postdoctoral	6,019	3,691
Senior	2,177	1,476
Other Fellowships	3,251	2,412
Total expenditure on Research Fellowships	45,047	30,867

Gross expenditure on Fellowships in 2006/07 included £305k with regard to Nuclear Physics. With effect from 1st April 2007, responsibility for Nuclear Physics was transferred to STFC. The transfer has had no impact upon the 2007/08 financial statements.

14. Staff**(a) Staff costs**

	2008 £'000	2007 £'000
Salaries and wages:		
Permanent staff	8,076	8,007
Agency staff and contract personnel	2,387	2,584
Social security costs	575	589
Other pension costs	1,720	1,643
Council and Panel Members' fees and honoraria	473	525
Current staff costs	13,231	13,348
Net early retirement costs (see note (b) below)	88	74
Total expenditure on staff costs	13,319	13,422

(b) Staff early retirement costs

Staff Early Retirement costs are stated net of a refund of pension funds amounting to £146k.

(c) Staff numbers

Average numbers of full-time equivalent employees during the year:

	2008	2007
Senior management	43	39
Managerial and supervisory	185	180
Administrative support	90	89
Average number of staff employed	318	308
Contract staff	31	32
Agency staff	5	4
Total average number of staff	354	344

Staff numbers in 2007/08 include 20 staff (2006/07: nil) who are employed by EPSRC but are on secondment to the RCUK Shared Service Centre.

NOTES TO THE ACCOUNTS CONTINUED

(d) Remuneration of senior employees

The following numbers of senior employees, including Directors, received remuneration falling within the ranges shown:

Full year equivalent remuneration	2008	2007
£100,000 and above	2	2
£90,000 – £99,999	1	–
£80,000 – £89,999	1	–
£70,000 – £79,999	1	2
£60,000 – £69,999	2	–
£50,000 – £59,999	12	6

(e) Remuneration of Council and Panel Members

The total emoluments of the Chairperson, Mr John Armitt, were £15,595 including taxable benefits.

The standard honorarium paid to Council members was £6,570 (2006/07 £6,345).

The standard daily attendance allowance paid to Panel members was £160 (2006/07 £160).

	No	2008 £'000	No	2007 £'000
Council Members' annual honoraria:				
£5,001 to £10,000	12	84	12	77
Daily attendance fees paid to Panel Members		373		433
Social security costs		5		3
		462		513
Chairman's emoluments		16		15
Total expenditure on Council and Panel Members		478		528

15. Other operating expenditure

	2008 £'000	2007 £'000
Services	6,049	8,347
Travel and subsistence	1,969	1,671
Equipment and supplies	238	307
Consultancies	442	924
External auditors' remuneration	40	43
Rent, rates and maintenance	427	694
General administration	318	823
Write-offs and recoveries	17	1
Depreciation and loss on disposal of assets	5,685	1,026
Total other operating expenditure	15,185	13,836

NOTES TO THE ACCOUNTS CONTINUED

16. Fixed assets

	Freehold land & buildings £'000	Assets in the course of construction £'000	Office & scientific equipment £'000	Totals £'000
Valuation				
Balance as at 1st April 2007	8,046	5,875	7,909	21,830
Additions (see note below)	–	1,294	24,200	25,494
Transfer of constructed assets	–	(5,875)	5,875	–
Revaluation for year	472	–	122	594
Disposals	–	–	(2,170)	(2,170)
Valuation at 31st March 2008	8,518	1,294	35,936	45,748
Depreciation				
Balance as at 1st April 2007	2,930	–	5,106	8,036
Charge for the year	131	–	5,160	5,291
Revaluation adjustments	172	–	65	237
Disposals	–	–	(1,776)	(1,776)
Depreciation at 31st March 2008	3,233	–	8,555	11,788
Net book value:				
at 31st March 2008	5,285	1,294	27,381	33,960
at 1st April 2007	5,116	5,875	2,803	13,794

These assets are funded solely from Grant-in-Aid. Additions for the year include £22,110k for the implementation of HECToR the new supercomputing facility which came in to operation in October 2007. As at 31st March 2008, the total cost to EPSRC of the facility which was under construction in 2006/07 was £27,985k, and transferred in the year to Office & Scientific Equipment at £5,875k.

Other purchases include assets valued at £1,993k purchased for the Engineering Loan Pool at STFC. The asset in course of construction represents the EPSRC's agreed share (8.24%) of the capital costs to date of the Research Councils UK Shared Service Centre.

In 2006/07 EPSRC owned equipment, with a net book value of £363k, for Fusion research at Culham. The equipment was gifted to UKAEA in 2007/08 and is included in Disposals.

Included in Freehold Land and Buildings is £960k (2006/07 £907k) in respect of Freehold Land which is not depreciated.

The last professional valuation of land and buildings was in January 2006, conducted by Powis Hughes and Associates, Chartered Surveyors. The basis of the valuation was Open Market Value for existing use. The valuation was made in accordance with RICS Appraisal and Valuation Manual or a named alternative. Between formal professional valuations appropriate indices are used.

17. Investment

	2008 £	2007 £
Other investment	1	–

During the year, the Council acquired one 'A' ordinary share of £1 in RCUK Shared Services Centre Limited (RCUK SSC Limited). Each of the seven research councils acquired one share and are all joint investors in the project. RCUK SSC Limited was incorporated on 1st August 2007 and has commenced setting up the shared service centre. For the period ended 31st March 2008 the draft financial statements of RCUK Shared Service Centre Limited shows revenue of £1,225,593 and administration costs of £1,225,593 with a nil profit/loss result. The balance sheet totals are £7 from the share capital issued to the research councils and £7 cash. The investment has been classified as 'other investment' as each council's individual share is 14%.

NOTES TO THE ACCOUNTS CONTINUED

18. Debtors

	2008 £'000	2007 £'000
Debtors:		
Other Central Government Bodies	19,839	3,723
Public Corporations and Trading Funds	–	651
Debtors held in Escrow	34	5,875
Other debtors	4,460	4,410
Prepayments and accrued income:		
Other Central Government Bodies	2,721	5,335
Public Corporations and Trading Funds	873	617
Other prepayments and accrued income	8,982	1,546
Total debtors	36,909	22,157

Other debtors includes the sum of £143k (2006/07 £82k) relating to debtors due after more than one year. Amounts held in Escrow in 2006/07 related to £5,875k paid into an escrow account with regard to HECToR. The payment of £5,875k from Escrow was made to Cray Inc on achievement of project milestones.

19. Cash at bank and in hand

	2008 £'000	2007 £'000
Office of the Paymaster General (OPG) account balance	6,470	2,139
Commercial account balance	76	74
Total cash at bank and in hand	6,546	2,213

20. Creditors due within one year

	2008 £'000	2007 £'000
Creditors:		
Other Central Government Bodies	389	1,355
Other creditors	5,188	27,373
Accrued expenditure:		
Other Central Government Bodies	6,291	1,879
Other accrued expenditure	68,675	29,015
Deferred income:		
Other Central Government Bodies	1,662	2,287
Other deferred income	6,588	4,709
Total creditors	88,793	66,618

21. Creditors due after more than one year

	2008 £'000	2007 £'000
Early retirement costs	290	218

22. Notional cost of capital

	2008 £'000	2007 £'000
Notional cost of capital	857	1,160

The EPSRC is not funded for interest-bearing debts, but to ensure that the Statement of Net Expenditure bears an appropriate charge for the use of capital employed, a notional interest charge has been included. In accordance with HM Treasury guidance, the cost of capital is calculated as 3.5% of the average of net assets or liabilities during the year. Because the net assets of EPSRC are negative, the cost of capital is a credit rather than a charge, and has been included in the Statement of Net Expenditure.

NOTES TO THE ACCOUNTS CONTINUED

23. Provisions for liabilities

	2008 £'000	2007 £'000
Contribution to other Research Councils' severance costs	234	–
Contribution to system termination charges	82	–
Total provision	316	–

The Research Councils and the Research Council Shared Service Ltd are in the process of developing a Shared Service Centre to carry out the central functions of HR, Finance and IT across the Councils. As a result some research councils will incur redundancy costs, particularly where existing staff live a distance away from Swindon where the Centre will be situated.

The Research Councils have collectively agreed that they will be jointly liable for all necessary redundancies. The Councils have calculated their likely redundancy liabilities in order to make a 2007/08 provision. A funding allocation model was developed and agreed by all the Research Councils and this identified the proportion of SSC project spend and liability that each individual Council would incur. The total provision for redundancies has been apportioned using this model. The table below shows, for each Council, the amount that they need to provide for redundancies of their own staff. Some Councils will incur a cost for terminating their existing systems, and these costs are also being shared. It then notes the proportion of the total liability it will incur and the amount of provision that that represents. The figure below this denotes the contributions that an individual Council has from the other Research Councils. The bottom line shows the net provision they have recorded in each Council.

	AHRC £'000	BBSRC £'000	ESRC £'000	EPSRC £'000	MRC £'000	NERC £'000	STFC £'000	Total £'000
Provision required for the council's own redundancies	68	152	–	–	999	1,620	–	2,839
System termination fee	–	–	–	–	1,000	–	–	1,000
Total provision	68	152	–	–	1,999	1,620	–	3,839
% of liability to be borne by the Council	1.33%	20.54%	1.83%	8.24%	26.98%	20.54%	20.54%	100%
Amount borne by the Council	(1)	(31)	–	–	(540)	(333)	–	(905)
Contributions toward councils redundancy and system termination provision received from/provided to other councils	(16)	668	70	316	(423)	(499)	789	905
Net provision required for each Council	51	789	70	316	1,036	788	789	3,839

Further costs may be incurred in future years.

24. Reconciliation of movements in Government funds

	Revaluation Reserve £'000	Income and Expenditure Reserve £'000	Government Funds £'000
Opening balance	2,566	(31,238)	(28,672)
Transfer from revaluation reserve to income and expenditure reserve	(357)	357	–
Net surplus on revaluation of tangible fixed assets	357	–	357
Grant-in-Aid financing received in year	–	739,499	739,499
Funding from other Research Councils	–	15,429	15,429
Funding from Government Departments, Executive Agencies and the EU	–	5,880	5,880
Funding from other bodies	–	7,427	7,427
Net Expenditure for the year after reversal of notional cost of capital	–	(751,904)	(751,904)
Closing balance	2,566	(14,550)	(11,984)

NOTES TO THE ACCOUNTS CONTINUED

25. Research and training grant commitments

The future costs to completion of research and training grants at 31st March 2008 are estimated to be £1,668 million. It is anticipated that this expenditure will be spread over the following four years in the proportions 4:3:2:1.

26. Capital commitments

Capital commitments, at the end of the financial year, for which no provision has been made, are as follows:

	2008 £'000	2007 £'000
Shared Service Centre (Fujitsu Services Ltd)	24,000	–
HECToR (Cray Inc/University of Edinburgh HPCX Ltd/ National Algorithms Group)	47,000	57,600
	71,000	57,600

The Fujitsu Services Ltd capital commitment represents commitment on behalf of all of the Research Councils for the future committed spend on the shared service centre. After the other Councils' share has been taken into account, EPSRC's capital commitment will be reduced to £1.98m. Costs incurred by EPSRC to 31st March 2008 have been recognised through the Statement of Net Expenditure and the Asset in the Course of Construction.

Contractual commitments of £25.5m existed at 31st March 2008 with regard to the supply and service provision of the supercomputer HECToR, the first phase of which was delivered in September 2007.

There is also a contractual commitment of £21.5m with Numerical Algorithms Group for the provision of Systems Engineering Support for the supercomputing facility for the remainder of the service.

27. Contingent liabilities

The EPSRC had no contingent liabilities as at 31st March 2008.

28. Related party transactions

(a) The EPSRC is a Non Departmental Public Body (NDPB) sponsored by the Department for Innovation, Universities and Skills (DIUS). It complies with the Financial Reporting Standard on Related Party Transactions (FRS 8) issued by the Accounting Standards Board, as amended for Central Government use by HM Treasury.

DIUS is regarded as a related party. During the year, the EPSRC had a number of material transactions with DIUS and with other entities for which the DIUS is regarded as the parent Department (viz. the Economic and Social Research Council, the Biotechnology and Biological Sciences Research Council, the Science and Technology Facilities Council, the Natural Environment Research Council, the Medical Research Council, the Arts and Humanities Research Council and the Technology Strategy Board). In addition, the EPSRC had material transactions with other Government Departments and with other Central Government Bodies (viz. the Ministry of Defence, HM Treasury and the Department for Environment, Food and Rural Affairs).

(b) During the year the EPSRC announced the following grants to organisations in respect of proposals from members of the EPSRC Council:

Organisation	Proposer	Grant reference	Value £000
University of Cambridge	Professor L Gladden	EP/F047991/1	820
University of Cambridge	Professor L Gladden (co-proposer)	EP/F041772/1	452
University of Southampton	Professor M Taylor (co-proposer)	EP/E057705/1	390
University of Southampton	Professor M Taylor (co-proposer)	EP/F032994/1	419

The relevant Council members were not involved in the approval of these grants.

NOTES TO THE ACCOUNTS CONTINUED

28. Related party transactions continued

(c) During the year the EPSRC announced the following numbers and cumulative values of grants and postgraduate and fellowship awards to organisations where Council members occupied senior positions in the organisation:

Organisation	Research grants		Partnership for Public Engagement Awards		Postgraduate Awards		Research Fellowships	
	No.	£'000	No.	£'000	No.	£'000	No.	£'000
Imperial College, London	118	49,431	–	–	2	6,444	5	1,564
Newcastle University	27	7,255	–	–	2	1,692	–	–
University of Manchester	77	25,671	–	–	4	5,808	7	2,869
University of Cambridge	84	46,915	1	100	3	6,393	6	3,385
University of Glasgow	35	11,729	–	–	3	5,470	4	1,983
University of Southampton	56	21,502	1	16	3	4,137	1	506
University of Strathclyde	36	10,439	–	–	1	1,543	–	–
University of Surrey	18	5,930	1	30	3	1,119	1	596
Sheffield Hallam University	6	1,706	–	–	–	–	–	–

No Council member was involved in the approval of grants or awards to the organisation where he/she is a member of staff.

(d) The EPSRC operates a process of peer review of proposals for research grants, as part of which 'Colleges', panels formed of senior members of the academic and industrial communities, evaluate grant proposals for technical merit and then propose a ranking for funding. The EPSRC receives their recommendations but is not bound by them, taking as it does other significant factors into account, such as the availability of funds and Government policy. These panel members are not therefore regarded as Related Parties within the context of FRS 8.

(e) The EPSRC has adopted a Code of Practice for all those who assist the work of the Council, which embraces the 'Seven Principles of Public Life' drawn up by the Nolan Committee and endorsed by Parliament. This is designed to remove any staff member from any decision-making process under which he/she or any of his/her close family may benefit.

During the year, the EPSRC identified those members of staff who could be regarded as being in positions of financial influence, and required a declaration from each of any financial transactions with the EPSRC under which the staff member or a member of his/her immediate family was in receipt of a significant amount of money from the EPSRC, and where the staff member was able to exercise any influence over the transaction.

During the year the EPSRC announced the following grants to organisations in respect of proposals from related parties of EPSRC staff members:

Organisation	Proposer	Grant Reference	Value £000
University of Oxford	Professor I Thompson	EP/F016727/1	200

Such a declaration was also required from members of Council, the Resource Audit Committee, the Technical Opportunities Panel and the User Panel. A Council Members' Register of Interests is available for viewing on the EPSRC website.

29. Post balance sheet events

There were no post balance sheet events between the balance sheet date and the 30th June 2008, the date when the Accounting Officer dispatched the Accounts to the Department for Innovation, Universities and Skills. The Financial Statements do not reflect events after this date.

Feedback

We welcome feedback on all our publications. Comments on this Annual Report should be sent to:

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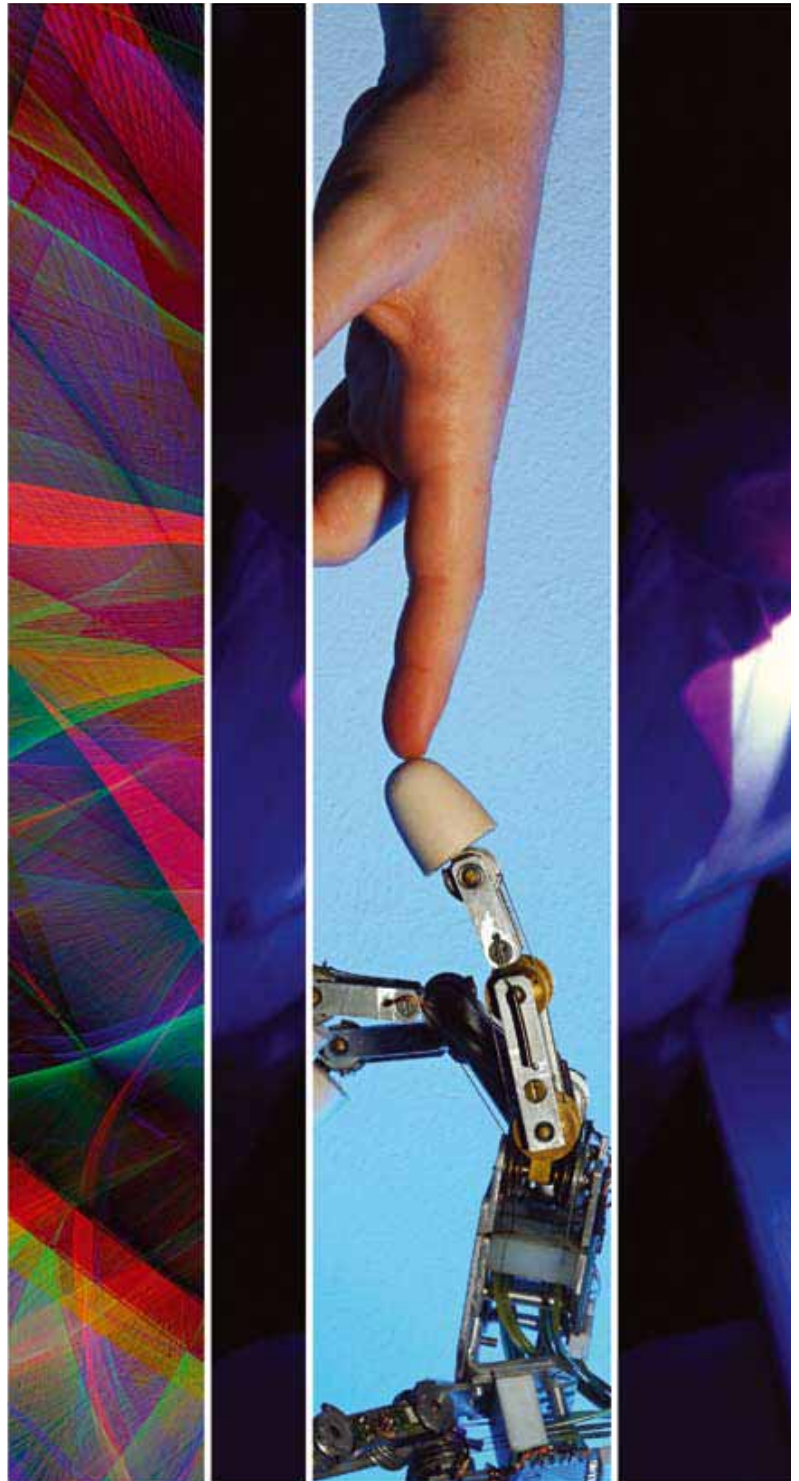
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