Strategic priorities

As the UK’s national academy for engineering, we bring together the most successful and talented engineers from across the engineering sectors for a shared purpose: to advance and promote excellence in engineering. We provide analysis and policy support to promote the UK’s role as a great place from which to do business. We take a lead on engineering education and we invest in the UK’s world class research base to underpin innovation. We work to improve public awareness and understanding of engineering. We are a national academy with a global outlook and use our international partnerships to ensure that the UK benefits from international networks, expertise and investment.

The Academy’s programmes are driven by four strategic challenges, each of which provides a key contribution to a strong and vibrant engineering sector and to the health and wealth of society.

Drive faster and more balanced economic growth
The strategic challenge is to improve the capacity of UK entrepreneurs and enterprises to create innovative products and services, increase wealth and employment and rebalance the economy in favour of productive industry.

Foster better education and skills
The strategic challenge is to create a system of engineering education and training that satisfies the aspirations of young people while delivering the high-calibre engineers and technicians that businesses need.

Lead the profession
The strategic challenge is to harness the collective expertise, energy and capacity of the engineering profession to enhance the UK’s economic and social development.

Promote engineering at the heart of society
The strategic challenge is to improve public understanding of engineering, increase awareness of how engineering impacts on lives and increase public recognition for our most talented engineers.

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View the online version of the Annual Review along with the full Financial Report and Accounts at: www.raeng.org.uk/about/annrev
Forewords

President

There has been a significant change of attitude within government in recognising the value of engineering in furthering wealth creation and jobs. The work of our Fellowship has made a significant contribution to this and to the wider recognition of the role of professional engineering in UK society; we must now ensure that this opportunity translates into a significant rise in the number of young people choosing engineering as a career. A more united front with EngineeringUK, supported by the professional institutions, is a must for the future.

I have also been supported by the services of a very capable and dedicated staff team, led by our Chief Executive, Philip Greenish CBE. I am grateful to them and have truly valued their support.

Our natural alignment with business and industry creates valuable partnerships that drive a programme of world-class engineering research. This in turn brings the promise of creative new technology-driven businesses. Our new Enterprise Hub provides a growing spectrum of support to entrepreneurial researchers who want to develop and commercialise their brilliant innovations. The most valuable element is access to the expertise and mentorship provided by fellows who have deep experience of successful start-ups. More than 100 of our Fellows have offered their very valuable expertise to assist in creating tomorrow’s companies.

We have continued to work with government to support the further development of a modern industrial strategy for the UK. In the aerospace sector, the need to increase the supply of highly skilled engineers has led to industry and government funding a programme of 500 MSc bursaries, which the Academy and the Royal Aeronautical Society are delivering.

Our international relations have seen significant development with active collaboration with The Chinese Academy of Engineering and a renewed focus on working with our European and US counterparts. Our work to support engineering capacity and innovation in sub-Saharan Africa has been strengthened by the creation of partnerships between universities and local industry in Zimbabwe and Dar es Salaam and the launch of our Africa Prize for Engineering Innovation.

This year, we have made great strides in developing a national forum for engineering in our refurbished headquarters building. Our programme of events and meetings has brought in a wide range of audiences, opinion leaders and policymakers as well as representatives from academia and industry.

Following a review of governance, the Council agreed recommendations to bring the Academy’s structure and ways of working into line with best practice. The Fellowship voted to amend the Academy’s Charter, Statutes and Regulations accordingly, firstly at an Extraordinary General Meeting in April 2014 and subsequently by postal ballot. The outcome of that vote means that the Academy will now move to a structure that will be in line with modern governance and support our ambitions for the future.

The implementation of a review of membership will greatly enhance our process for electing new Fellows, the lifeblood of our organisation who give the Academy some 12,000 hours of their time to provide leadership, expertise and delivery. I am deeply grateful to them all, including the Senior Vice President, Professor Sir William Wakeham FREng, the Council and standing committee.

Fellows can be justifiably proud of our role and achievements but we cannot slacken our pace. We have much more to do to ensure that engineering is recognised at the heart of society and that engineering becomes the aspirational career of choice for our young people.

In nominating Professor Dame Ann Dowling FREng to succeed me as President from September 2014, the Council has chosen an outstanding engineer to take our Academy forward into this ever-changing but fascinating world of global engineering challenges. I wish all possible success and good wishes for Dame Ann and each of our Fellows for the years ahead.

Finally, I wish to place on record my thanks to the Academy’s Senior Fellow, HRH The Prince Philip, Duke of Edinburgh. It was his deep interest in engineering that helped establish the Fellowship of Engineering in 1975; since then, his enthusiastic, unflagging support has helped transform the organisation into the fully fledged national academy it is today. It is with a great sense of pride that we named our building Prince Philip House in honour of his role as Senior Fellow.

Sir John Parker GBE FREng
President

Chief Executive

The Academy’s strengths lie in its Fellowship and the partnerships forged across the engineering profession, business and industry and the wider engineering community.

During the year, we led joint work across the profession to influence education policy in areas most relevant to the formation of engineers. We reviewed and then led the design of schools curriculum in both computing and design and technology. This has had a direct and lasting impact on young people’s connection with engineering concepts at school.

Working with some 25 partners and supporters, the Engineering for Growth campaign highlighted how engineering supports society and the economy through a series of events which received excellent media coverage. Engineering for Growth was also the theme of the 2013 annual awards dinner, which, as always, provided an excellent opportunity to celebrate excellence in UK engineering.

The Academy constantly strives to improve the processes and systems that underpin all our work and is essential to improve performance and efficiency. I am deeply grateful to those Fellows who have provided their time and expertise in key areas of management. Their leadership and support for such projects is invaluable.

A major programme to modernise the Academy’s processes for managing grants and awards has established much-improved practice through a new IT-based system and clear lines of accountability across all the schemes that involve the distribution of funds.

A root and branch review of the Academy’s main website will, later in the year, provide us with a modern platform for electronic communications and services, such as the online booking of Academy events. A new set of functions in the Fellows’ area will create new ways for Fellows to engage with the work of their Academy.

Philip Greenish CBE
Chief Executive
Drive faster and more balanced economic growth

Many of the Academy’s activities are focused on fostering a climate in which engineering can excel by transforming innovative ideas and materials into high-value products, services and infrastructure. These in turn cultivate growth not only in the economy but also in terms of the wellbeing of the nation by means of improvements in healthcare, more sustainable standards of living and the provision of fulfilling careers.

The Academy has continued to support a research portfolio of the very highest quality. The Enterprise Hub has significantly increased its efforts to promote the growth of high-potential small and medium engineering businesses, and the Academy has made key contributions to improving engineering education and increasing the quality and quantity of the skills base.

The Academy has worked with its partners to promote engineering and innovation as key drivers of wealth creation and raised awareness of the issues that are barriers to engineering making an even bigger contribution, so that these are recognised, and, more importantly, acted upon.

Over 30 partners and supporters have worked with the Academy on the Engineering for Growth campaign, which has gained considerable media coverage for its exploration of key issues and its showcase of great UK engineering. The Academy also joined with other national academies to raise political awareness of the need to maintain the UK’s status as a world leader in research through long-term planning and support. Joint activities included production of a statement, Fueling prosperity: research and innovation as drivers of UK growth and competitiveness; a political contact programme including a meeting with the Chancellor of the Exchequer, the Rt Hon George Osborne MP; and events at the party political conferences.

Awards

The MacRobert Award is presented annually to a team of engineers for an exceptional UK engineering innovation that has been both commercially successful and delivered societal benefits. In 2013, the winner was a team from RealVNC, a Cambridge software SME, established by some of the inventors of remote computer access software.

RealVNC’s technology gives computer, smartphone, and other device users the power to ‘take over’ another device remotely from anywhere in the world. This enables IT workers to solve problems on people’s computers or smartphones without having to leave their own desks.

Its technical engineering is so advanced that it is suitable for any imaginable device with a screen — even those that have not yet been invented. It is now used on over a billion devices worldwide, and VNC protocols have even become an official part of the internet. The MacRobert Award Committee Chair, John Robinson FREng, said: “For a relatively small UK company with no external investors to have grown to work with the world’s biggest technology companies is truly inspiring.”

Silver Medals

The Academy’s Silver Medals are awarded to outstanding individuals in recognition of their personal contributions to UK engineering. The awards celebrate individuals’ success in creating and bringing a particular innovation to market. In 2013, the Silver Medalists were:

Elspeth Finch

Elspeth Finch co-founded the Intelligent Space Partnership, a transport consultancy focused on incorporating the needs of cyclists and pedestrians into city design and planning. She worked on successful projects including the Boston Downtowm Crossing and Regent Street Strategy in London, Atkins acquired the practice in 2007, and Elspeth led its integration into its transport planning business. She is now the Futures Director in Atkins’ Water and Environment business.

Dr Andrew Fitzgibbon

Andrew Fitzgibbon was the primary engineering influence in converting academic research at Oxford to a commercial product that became the Boujou system, released in 2000. Boujou automatically computes 3D camera motion from image sequences without the need for external references such as GPS or pre-positioned markers. Andrew contributed his expertise to the development of machine learning for human motion capture, a core technology driving Kinect for Xbox.

Tim Morgan

Tim Morgan led the design, engineering and product development, manufacturing and commercialisation of the Mountain Trike All-Terrain Manual Wheelchair. He had identified the need for an all-terrain wheelchair that would allow users to reach places previously inaccessible to wheelchairs, such as sandy beaches, muddy festivals and even cobbled streets. It has a patented innovative drive as well as inventive steering, braking and chassis systems, and has won several accolades.

Dr Eben Upton

Eben Upton co-founded the Raspberry Pi Foundation to stimulate the teaching of basic computer science in schools and engage more children. He co-designed and developed the open architecture, low-cost single board computer, which runs the Linux operating system. He currently works as a system-on-chip architect at Broadcom, a large semiconductor company where he has led the development of next-generation high-end chips.

Research

The Academy’s Research Chairs and Senior Research Fellowships are jointly funded with industry partners to enable world-leading collaborative research. Over 40 research collaborations are currently supported, including ten new appointments made this year ranging from biomedical devices to cryogenic energy storage and satellite technology.
The SET for Britain event is a nationwide poster competition open to all early-career researchers in engineering, science and technology, celebrating innovative ideas in UK research. Run by the Parliamentary and Scientific Committee in partnership with the Academy and others, it provides an opportunity for researchers to exhibit their work to MPs and peers. For the 2014 event, 60 participants presented their research in the engineering category. Dr Stephen Hicks, Research Fellow at the University of Oxford, won the engineering gold medal and £3,000 prize for his research in developing smart glasses for partially sighted people.

International activities
The Research Exchanges with China and India scheme promotes academic collaboration between engineering researchers in the UK and China, or the UK and India, with the aim of strengthening bilateral relations and supporting the expansion of international networks of excellence. The Distinguished Visiting Fellowship scheme provides funding to enable a UK university to host a senior academic from an overseas centre of excellence for up to a month, in order to engage in mutually beneficial activities.

This year, 24 new Research Exchanges were funded and 26 new Distinguished Visiting Fellowships were awarded. The Academy also continues to act as a Designated Competent Body for the Tier 1 (Exceptional Talent) visa route, providing advice to the Home Office on the suitability and quality of applicants. It helped introduce changes to the routes to facilitate entry to the UK for researchers awarded prestigious fellowships from the Research Councils, the Wellcome Trust and other bodies.

Enterprise Hub
The Academy’s Enterprise Hub was launched in April 2013 by Universities and Science Minister, the Rt Hon David Willets MP, in front of a capacity audience of entrepreneurs, investors, businesspeople and policymakers. To date, 22 Hub members with 16 companies have raised almost £3.5 million of external investment, supporting projects that involve over 50 people.

The Enterprise Hub was developed as a national resource taking the ‘best of the best’ UK-based entrepreneurial engineering companies and providing them with pre-seed funding and a long-term package of mentoring, training and bespoke support. It is working to bring about a step change in the success of these businesses and the contribution that they make to UK economic growth.

Ian Shott CBE FREng was instrumental in the setup of the Hub, and over 100 Academy Fellows, who include some of the UK’s most successful entrepreneurs and business leaders, have volunteered to mentor entrepreneurs and growing SMEs through it. This unique access to expertise and networks is crucial for helping Hub Members to shape and then realise the visions they have for their innovative technology and engineering projects.

The first cohort of Hub Members has been drawn from the Academy’s Enterprise Fellows and RAEng ERA Foundation Entrepreneurs Award winners. Enterprise Fellows, who are business-minded engineering academics who can be awarded up to £85,000 plus training and support to enable them to spend a year focusing on commercialising their innovations: RAEng ERA Foundation Award winners are early career researchers with strong entrepreneurial promise who are awarded a cash prize of £40,000. Over the coming year, the range of Hub programmes offered will be expanded to include the LoughrinPod Competition, aimed at helping engineers between the ages of 16 and 25 to start a company, and the Pathways to Growth scheme, which will provide engineering SMEs with tailored training and capacity building to enhance their potential for growth.

The Hub also runs an events programme aimed at developing the skills of entrepreneurs, bringing the technology and finance communities together and raising awareness of policy issues that impact on entrepreneurship and growth. Events in 2013 included a briefing on crowdfunding and a workshop for Hub members on funding and finance.

Highlights of recent progress by Hub members include a £1.14 million investment in Dr Josh Reiss’ MixGenius business, a spinout of Queen Mary, University of London. MixGenius is developing groundbreaking automatic mixing tools for audio production to enable amateur musicians to produce professional quality recordings without the need for an expensive sound engineer.

Dr Daniel Elford’s novel noise barrier business, Sonobox, a spin-out of Loughborough University, has been awarded a TSB Smart Award Development of Prototype grant and secured private investment to further the development of the company. Sonobox has also completed its first commercial sale to Alstom.

Professor Janice Kiely’s company, MiAtech, a spin-out of the University of the West of England, develops testing of food for bacteria such as salmonella and listeria and has seen total investment reach over £300,000, with seven people now involved in the company.

Top: Dr Daniel Elford’s Sonobox barriers use a structural arrangement that scatters incoming sound waves so that instead of being reflected, as in conventional systems, they are cancelled out. Above: Dr Susannah Clarke is a design engineer establishing an orthopaedic surgery spin-out.
Foster better education and skills

An engineering education continues to open doors to some of the most fulfilling and best-rewarded careers. The Academy plays an active role in delivering major programmes and formulating policy on the formation of engineers. It also champions the case for more diverse, better trained engineers and technicians to meet the needs of the UK economy and industry.

The last year has seen significant input from the Academy into public policy in education. The education programmes for schools, colleges and universities, run by the Academy with many partners, continue to grow.

A key government publication in 2013 was the review Engineering Skills by Professor John Perkins CBE FREng, Chief Scientific Adviser to the Department for Business, Innovation and Skills. The Academy played a leading role in providing the report, working with Professor Perkins and his team to provide the relevant information and data to support the case for increasing the number and quality of engineers in the UK. The report considered all phases in the engineering talent pipeline and outlined short- and long-term actions to reverse a trend that threatens to leave the country without enough skilled engineers.

The report identified five key issues that need to be addressed to solve the skills crisis: inspiring the very young of all backgrounds and both genders; increasing teaching excellence in key subjects; widening vocational pathways to engineering careers; ensuring sufficient resources in universities to teach engineers effectively; and increasing retention within the sector.

The report made 22 recommendations to improve the situation, 15 of which required the full and active engagement of the engineering community, working alongside the education sector.

The Academy is now taking a lead role in implementing many of the recommendations. Through the Education for Engineering alliance (E4E) of 36 professional engineering institutions, four task groups have been established to look at increasing employer engagement to support teaching in schools, colleges and universities. These groups will report to Professor Perkins’ team in November 2014.

The Academy has also been supporting the development of new qualifications. The National Committee for 14-19 education, hosted by the Academy, held a series of seminars to develop the content and structure of a new Engineering A Level. The proposals are currently being examined by an awarding body to see if they can be implemented as a future qualification.

In December 2013, the Level 2 Principal Learning in Engineering qualifications developed by the Academy from the Engineering Diploma were approved for inclusion in school performance measures by the Department for Education. This represented a successful end to a hard-fought campaign to ensure that school students would be able to study and gain qualifications in engineering at Key Stage 4.

The Academy has also been working on a series of publications on engineering higher education which are due to be published in the spring and summer of 2014.

Activities in schools

The Barrow Engineering Project (BEP) continues to be a major part of the Academy’s effort to encourage more people, especially young women and people from a wider range of backgrounds, to become engineering technicians, graduate engineers and engineering researchers. Launched in April 2008, the BEP has provided over 25,000 STEM learning opportunities in local schools and colleges. In October, the Academy won a Cumbrian education 2013 ‘Golden Apple Award in Community Involvement’ for this BEP initiative.

Following the success of BEP, the Academy has launched the Stoke Engineering Project in November 2013. The project provides funding to enhance and enrich the STEM curriculum of six secondary schools and two further education colleges in the area. This work aims to inspire the next generation of engineers and technicians in Stoke-on-Trent and Staffordshire. A partnership of educators and representatives from local engineering employers met in early 2014 to discuss how to work together to highlight the range of career opportunities available to students both locally and nationally.

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The Academy’s remit to inspire and excite young people about careers in engineering is being taken forward through support for a project to build an engineering careers exhibition at the Science Museum in London, provisionally entitled ‘That Could Be Me’. Funded by a consortium of companies, the exhibition will focus on 11-15 year olds and will challenge both their perceptions of engineering.

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Computing in schools

The Academy launched a new voice for computing in 2013. The UK Forum for Computing Education (UKForCE) was established to provide an independent and unified voice to advise UK government and other agencies on key issues relating to computing education. The expert body was set up in response to recommendations of the joint Royal Society and Royal Academy of Engineering report Shutdown or Restart: the way forward for computing in UK schools, published in 2012.

UKForCE, chaired by Chris Mairs CBE FREng, brings together representatives from across education, computer science, digital media, IT, engineering and telecommunications to advise on matters relating to the computing curriculum, qualifications and assessment and the supply and training of computing teachers. It covers the whole of the UK and will be working on computing education issues across all devolved jurisdictions.

A new computing curriculum for all schools in England, which the Academy and BCS (the Chartered Institute for IT) advised on, represents a significant change, with much greater focus on computer science. The devolved nations are also reviewing and updating their computing curricula. The key priority for UKForCE in its first year is to ensure that teachers can access the necessary continual professional development they need. To this end, the Forum is currently researching how well-prepared schools in England are to deliver the content of the new computing curriculum.

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The Academy has produced a suite of STEM teaching and learning resources for use in schools. The suite of MSCs is a resource for teachers to use in teaching engineering. The Academy has developed these resources to support the teaching of STEM subjects in schools.

**University/industry links**

The Academy provides curriculum development and increased learning capacity through its Visiting Teaching Fellowship and Visiting Professorship programmes which bring practising engineers from business and industry into universities. These flagship schemes engage thousands of students and hundreds of academics across the UK each year, providing valuable opportunities to update curricula and improve the student experience. These programmes are complemented by the Academy's Industrial Secondment Scheme, which enables teaching staff in higher education institutions to work on collaborative projects with industry in order to improve the quality and industrial relevance of their teaching.

**Diversity**

Over the past 12 months, there has been significant progress across the Academy's work on diversity, both internally and externally.

The external programme, funded by the Department for Business, Innovation and Skills, has seen a number of developments. The majority of professional engineering institutions (PEIs) have now become signatories to the Engineering Diversity Concordat. The Concordat commits PEIs to take action to improve diversity across the engineering profession. The Engineering Diversity Concordat Group, chaired by Professor Dame Wendy Hall FREng, provides a platform for the institutions to come together, share good practice and monitor progress towards achieving concordat objectives.

Bursaries and professional development

The Academy's long-established Engineering Leadership scheme identifies and supports talented engineering undergraduates with the potential to be future leaders in industry. Over the past year, 35 Advanced Award holders each received £5,000 funding to undertake a personalised programme of professional development, overseen by mentors. Engineering Leadership Standard Awards also enabled promising engineering undergraduates to take over 100 places on a range of bespoke personal and professional development courses.

The Panasonic Trust, Sir Robert Malpas, Petrofac, and other Academy bursary schemes funded continued professional development in the form of MSCs or equivalent degree studies, with 24 recipients in full-time study awarded between £5,000 and £9,000 each in 2013, and an additional 64 recipients studying for part-time degrees awarded up to £1,000.

For students who wish to explore the possibilities of a research career, the Nuffield Foundation/Royal Academy of Engineering Undergraduate Research Bursaries provide support for undergraduate engineering students to undertake work placements in research, with 10 students receiving this bursary in 2013.

The Academy has long championed the importance of developing industrial leaders who will drive UK growth in the future. With a grant from the Gatsby Charitable Foundation, and the personal support of Lord Sainsbury, the Academy has enabled more than 300 exceptional engineering graduates to attend the world’s most prestigious business schools. A substantial portion of their fees are covered by the Sainsbury’s Management Fellowship (SMF) award, and following the completion of their MBA, they are supported by an extensive network of SMF alumni, the Sainsbury Management Fellowship Society, which has ambitious plans in supporting future industry leaders. The SMF alumni also form an important backbone to the Engineering Leadership Advanced Awards, providing mentoring and participating in selection activities.

**Foster better education and skills**

Petrofac Royal Academy of Engineering Fellowships at a Poster Day event with Martin Barnes (centre), General Manager, Petrofac Engineering Services.
Providing policy advice to government is a key role of the Academy, so it is important that the Academy has a close understanding of the complex factors that shape the context of national policy. The Academy’s unique capacity is that it can draw on the expertise of its Fellows to address policy challenges, both short- and long-term. This capability is in increasing demand by government and others to support national policy and capacity in a range of areas with an engineering dimension to delivery.

To increase engagement of expert Fellows in policy work, the Academy has begun to establish Communities of Practice. The aim is to create an environment where Fellows can engage more closely with Academy policy work and help respond to requests from government and the media. Communities of Practice have so far been established on energy and environment, medical technologies, transport, and computer systems engineering, with one planned for manufacturing.

As well as increasing impact and influence on policy, the Academy has also dramatically increased its media profile. It is vital that every piece of work maximises its impact and reaches its targeted key audiences. In addition, getting engineers and engineering into the media is important because it allows the Academy to engage the public with the implications of engineering in society.

Impact and influence

The Academy responded to a wide variety of consultations to government, parliament and other bodies over the past year. Particular highlights include Sir John Amtit FREng’s independent review of infrastructure, a joint national academies submission to the Department of Business, Innovation and Skills (BIS) consultation on the impact of EU membership on research and innovation and a House of Lords inquiry into the impact of current changes to the immigration bill on international students in science and engineering subjects. Professor Helen Atkinson CBE FREng, Chair of the Academy’s Standing Committee for Education and Training, also acted as a witness to the House of Lords committee inquiry into international students.

The Academy’s report on the potential impact of extreme solar storms on the UK’s electricity grid, satellites, GPS systems, aviation and mobile communications received widespread media attention and led to discussion at senior levels of government on implementation of the recommendations it set out.

Where a joint approach is more appropriate, the Academy utilises its alliances with the engineering profession, Engineering the Future and Education for Engineering, to provide the responses. The Academy provides an open front door into engineering expertise for government and other policymakers.

Engineering the Future responses submitted in the last year include cybersecurity, carbon capture and storage, low carbon innovation and a House of Commons Business, Innovation and Skills Committee call for written evidence on the extractive industries sector.

Energy and environment

Energy has once again been a central theme of the Academy’s policy work. Following the 2012 joint report with the Royal Society on the extraction of shale gas in the UK, there has been continued engagement with government, regulators, the media and the public on issues relating to the recommendations of the report.

Meetings have been held on the UK’s role in the next generation of nuclear energy and measurements relating to smart grids. The progress of the Energy Bill through parliament was closely followed, with input from the Academy’s energy Community of Practice and a briefing for Fellows to discuss the impacts of the legislation on wider UK energy policy. A report on GB electricity capacity margin was produced for the Council for Science and Technology – see Keeping the lights on.

A detailed study was undertaken on Future ship powering options. The report provided an assessment of alternative methods of ship propulsion such as liquified natural gas, fuel cells and nuclear power. As one of the first reports of its kind, it has already been the subject of considerable discussion within the maritime sector internationally.

Fellows were proactive in engaging with the media during the spring in response to the floods, highlighting the role of engineers and engineers in flood relief and prevention. The Academy held a public meeting and a media briefing with the David Rooke FREng and other Fellows expert in flooding resulted in national print and TV coverage.

Manufacturing and industry

The Academy published two reports on forthcoming ways of manipulating materials, from high-tech manufacturing to low-energy recycling methods. Additive manufacturing: opportunities and constraints reported on a roundtable held by the Academy on the future of additive manufacturing and 3D printing in the UK, and their potential impacts on UK industries. From the materials fed into additive manufacturing equipment to the potentially bespoke items that emerge, this report considered the reality of the technologies and their potential to open up new areas of manufacturing.

The Academy considered the sustainability of the domestic supply chain in a report entitled Made for the future. The report looked at how domestic goods are made, used and recycled. It explored the challenges of reducing both the material resources and energy used in the manufacture and use of everyday items from mobile phones to boilers. It also highlighted the importance of controlling the extraction of raw materials on the welfare and livelihoods of communities worldwide.

The Academy was invited by the Prime Minister’s Council for Science and Technology to undertake an investigation into the capacity margin of the GB electricity system. The study was led by Dr John Roberts CBE FREng. In conducting the work, a number of participants in the GB electricity system were consulted, including the major energy utilities, independent generators and other relevant stakeholders.

The report concluded that there are a number of market-based and political factors that were currently combining to bring about a reduction in the electricity capacity margin within the next five years. These factors, in the absence of intervention, would reduce the capacity margin in the short term, in a manner that would present an increasing risk to security of supply.

The report recommended that interim measures should be introduced to maintain capacity while the reform of the electricity market, including the carbon floor price, was rescheduled. More generally, it recommended that government needed to work together with industry to foster a constructive dialogue with the public on energy policy. It concluded that there was an urgent need to develop a holistic energy system strategy.

The report had a direct impact on government policy, helping to reinforce the seriousness of the issue, effect action and position the Academy as a source of constructive, expert advice on a matter of national importance. A significant amount of media coverage also resulted from the report.
Innovation... is an Academy series of events... which focus on the latest developments in sectors that will affect society in the coming decade. The focus of previous events in the series has included construction technology-based companies and automotive.

The Academy held three further events in the series during the year. Innovation in medical technologies featured discussions on areas as diverse as biological scaffolds, medical robotics and modern prosthetics. The talks included discussions about securing investment for innovative medical technologies, clinical and NHS and patient viewpoints, and examples of upcoming medical technologies.

Innovation in materials, co-sponsored by the Institute of Materials, Minerals and Mining and the Materials Knowledge Transfer Network, highlighted innovative technologies and processes. The event featured a keynote address by Professor Mark Miodownik, winner of the Academy’s 2013 Rookie Award for public engagement with engineering. Case studies illustrated advances in the fields of synthetic biology, nanotechnology and photovoltaics, as well as new emerging applications for 3D printing, graphene and biomaterials.

The third and final event of the year, entitled Innovation in energy, focused on the technological innovations being made in electricity generation as well as exploring innovations in system management. Topics highlighted included small modular reactors, tidal arrays, storing renewable energy on the gas grid and high voltage direct current. The events attracted a large and varied audience with further outreach opportunities created by online films of the events and summary reports.

In March 2014, the Academy launched the £25,000 Africa Prize for Engineering Innovation, a major new award aimed at building the connections between African universities and local industry, drawing on the Academy’s highly successful UK-based Industrial Secondment and Visiting Professor schemes. This pilot is based around two hub universities, the University of Zimbabwe and the College of Engineering and Technology, University of Dar es Salaam, and nine ‘speak’ universities in the region. The programme involves a series of professional development workshops and two-way secondments between the engineering faculty and local industry partners.

The report was discussed at meetings with the Medical Healthcare products Regulatory Agency and Parliamentary Under Secretary of State for Quality, Earl Howe. The report was set out to identify possible challenges. The event encouraged holistic, systems thinking for building design that included the wellbeing, maintenance and productivity of buildings across their full lifecycle.

A report on Public Projects and Procurement in the UK provided advice on how to take a more systems-level approach to procurement practice that would help drive efficiency in the commissioning of major government projects. The report focussed on procurement practice in the construction and ICT sectors. It highlighted the need for civil servants to become intelligent clients as well as the importance of vision, leadership and incentivising the right behaviour.

Smart buildings: people and performance reported on a roundtable that considered potential applications for smart building technologies and set out to identify possible challenges. The event encouraged holistic, systems thinking for building design that included the wellbeing, maintenance and productivity of buildings across their full lifecycle.

Biomedical engineering

The Academy’s Panel for Biomedical Engineering conducted a joint project with the Academy of Medical Sciences and the Royal Society of Medicine’s event. Recent developments in digital health, which shared best practice and latest developments in the field of digital health. Speakers considered how engineering could help people maintain their independence, living at home and staying out of hospital through applications such as mobile health, telecare and point-of-care testing.

International activities

This year, the Academy established two far-reaching programmes aimed at building teaching, research and innovation capacity across sub-Saharan Africa.

The Enhancing Engineering Education Programme in sub-Saharan Africa is designed to build the connections between African universities and local industry, drawing on the Academy’s highly successful UK-based Industrial Secondment and Visiting Professor schemes. This pilot is based around two hub universities, the University of Zimbabwe and the College of Engineering and Technology, University of Dar es Salaam, and nine ‘speak’ universities in the region. The programme involves a series of professional development workshops and two-way secondments between the engineering faculty and local industry partners.

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Promote engineering at the heart of society

The Academy aims to increase debate on engineering and its impact on society and build public recognition for our most talented engineers. It is ideally placed to raise awareness of engineering across all disciplines and bring it to where it truly belongs—at the heart of society.

Engineering for Growth

Engineering for Growth is an Academy-led partner campaign to raise awareness of the contribution of engineering to UK economic growth and quality of life and explore how engineering can make an even bigger contribution.

The campaign is delivered in partnership with a number of prominent organisations, including government and engineering industry. Since its inception in 2013, it has reached millions of people through traditional and social media, events, and ministerial engagement.

A series of topical events raised debate and discussion on key Engineering for Growth issues organised by the Academy and the campaign partners. These events have addressed key issues including entrepreneurship, apprenticeships, skills, immigration, diversity, innovation and education. For example, a breakfast panel debate: The Brain Gain—should we be importing top quality STEM skills from abroad?

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The public engagement grants scheme, Ingenious, funded by the Department of Business, Innovation and Skills (BIS), supported 24 new projects during the year, giving engineers the opportunity to engage with the public in innovative ways. Fun Kids Radio gave young engineers a chance to become children’s radio broadcasters while, in the Solent region, the University of Southampton trained engineers to become buskers on ferries, presenting marine engineering demonstrations to the travellers on board. A third opportunity turned engineers into tour guides on a travelling Routemaster bus filled with outstanding UK engineering innovations.

Another funded project was Herolab, a collaboration between the University of Central Lancashire and Marvel comic artists. They worked together to develop a new graphic novel for children featuring superheroes and villains with powers based on real-life engineering innovations. Herolab was featured in a full page article in the Metro newspaper, in October 2013, significantly increasing the reach of the project.

In November, the Academy was one of the core partners of Tomorrow’s Engineers week, a new initiative led by (BIS). The week brought together a number of partners to deliver a week-long series of events and activities to encourage more young people, in particular girls, to embark on a career in engineering. Evaluation of the week’s activities showed that there was a 6% rise in the number of 11- to 14-year-old girls who said they would consider a career in engineering.

Reaching out through the media

The Academy has increased its presence in the media, with 50% more coverage than the previous year, generating over 2,200 pieces of print and online coverage in 2013-14: a promising sign that its efforts to promote engineering and its importance to society are making progress. The Academy also provided expertise and comment for over 110 television and radio programmes.

Examples included the GB Electricity Capacity Margin report covered in nine TV interviews with Dr John Roberts FREng and Dame Sue Ion FREng, including Sky News, BBC Newsnight, Channel 4 News and BBC News at Ten. The report also received wide radio and press coverage, from outlets including The Guardian, BBC Radio 5 Live and Radio 4.

At the start of 2014, the announcement of the new Presidential nominee Professor Dame Ann Dowling was featured in a full page article in the Metro newspaper, in October 2013, significantly increasing the reach of the project.

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The Academy was also successful in raising the profile of female engineers to new audiences, with a major feature on Arup’s Director of International Development Jo da Silva OBE FREng in Vogue and smaller features in Marie Claire and Cosmopolitan.

The Academy also reaches out to a broad audience through its quarterly Ingenia magazine, which carries articles that cover the spectrum of engineering and profiles of engineers across all disciplines. This year, it published articles on how the Met Office models weather, the use of robots as surgeons, the decommissioning of North Sea oil rigs and some of the many applications of 3D printing. The printed version of the magazine has a readership of 33,000, with another 114,000 people accessing the online version each quarter.
The Academy continued to be a lead partner at the Big Bang Fair. This year, more than 70,000 visitors attended the event which took place at the Birmingham NEC in March 2014. The Academy presented a new stand at the Cheltenham Science Festival exploring: society’s relationship with the web with Dame Wendy was also a guest director for the three events at the Cheltenham Festival 2013, along with Universities and Science Minister, the Rt Hon David Willets MP and comedians Dara O’ Briain.

An eventful year

Following successful events in preceding years, the Academy staged three events at the Cheltenham Science Festival exploring: society’s relationship with the web with Dame Wendy was also a guest director for the three events at the Cheltenham Festival 2013, along with Universities and Science Minister, the Rt Hon David Willets MP and comedians Dara O’ Briain.

Later in the year, the Academy took part in the Battle of Ideas festival, held at the Barbican Centre in London. As well as supporting a panel debate on big data with Dr Martyn Thomas FREng, the Academy took part in a second event to debate whether advances in technology are always good for society.

The Academy held joint fringe events, in partnership with its sister national academies, at all three main party conferences in 2013 to raise debate on Can research and innovation fuel the UK economy? Fellows Ian Shott CBE, Professor Lionel Tarassenko CBE and Dr Martyn Thomas CBE were part of the panels alongside political party representatives, Fellows from the Royal Society, British Academy and Academy of Medical Sciences, and other commentators.

During the past year, the Academy hosted three PolicyNet events to provide a platform for STEM policy staff to exchange ideas. The events covered the topics of the role of the Parliamentary Office of Science and Technology; the impact of the Technology Strategy Board’s network of Catapult centres and the challenges of creating infrastructure for big cities.

Infrastructure was also the theme for the Academy’s two flagship lectures. Professor Dr Uwe Krueger, Chief Executive Officer, Atkins, delivered the annual Hinton Lecture on the engineering challenges and innovative infrastructure solutions to dealing with population growth and climate change. The Lloyd’s Register Foundation Lecture was given by Andrew Wolstenholme OBE FREng, Chief Executive Officer, Crossrail, about Europe’s largest infrastructure project and offered unique insight into how this colossal feat of engineering was being brought to reality.

The University of York hosted this year’s Soirée and exhibition at The Ron Cooke Hub in June 2013. Royal Fellow HRH The Princess Royal attended the event, alongside over 200 Fellows and guests. Speeches from Sir John Parker GBE FREng and the university’s Vice-Chancellor Professor Brian Cantor CBE FREng highlighted the importance of engineering in society and the crucial role that skilled engineers play.

An exhibition at the Soirée, entitled Design for Living showcased not only engineering research but also the way in which engineering has influenced work in other academic disciplines.

Academy awards

In July 2013, over 450 Fellows, engineering business leaders, innovators, opinion formers, and journalists assembled inside London’s iconic Battersea Power Station for the annual Academy Awards evening, which was themed Engineering for Growth. The highlight was the announcement of the MacRobert Award, which was presented by Royal Fellow HRH The Princess Royal. This year’s guest speaker was the Chancellor of the Exchequer, the Rt Hon George Osborne MP, who addressed the audience on the theme of engineering and its role in promoting economic growth. The evening was supported by Atkins, Petrofac, BAE Systems, Bosch, BP and Jaguar Land Rover.

Terry Hill CBE FREng was awarded the President’s Medal in recognition of his achievements in civil engineering and infrastructure. He has worked on a number of high-profile infrastructure projects including the Channel Tunnel Rail Link and led Arup during the construction of the Aquatics Centre at the Beijing Olympics and the building of Heathrow Terminal 5.

The winner of the Sir Frank Whittle Medal was Professor Lin Li FREng, University of Manchester, in recognition of his outstanding contribution in developing laser and materials processing technologies.

The Sustained Achievement Award was given to Dr H Peter Jost CBE, founding father of the field of tribology, the science and engineering of interacting moving surfaces.

Dr Michael Porton, Culham Centre for Fusion Energy, won the Sir George Macfarlane Medal for his development of safety and materials technology.

Dr Julien Reboud of the University of Glasgow and Dr Reuben Willscock and Robert Rudolf from the University of Southampton were the winners of the RAEng ERA Foundation Entrepreneurs Award.

Queen Elizabeth Prize for Engineering

On 25 June 2013, the winners of the Queen Elizabeth Prize for Engineering (QEPrize) attended a reception at Buckingham Palace to receive their award from Her Majesty The Queen in front of an audience that included the three leaders of the UK’s main political parties.

The QEPrize celebrations had started earlier in the day with a lunch at the Guildhall, hosted by the Lord Mayor of London, with guest VIP speaker, HRH Princess Eugenie of York. Later in the evening, the celebrations culminated in an engineering party with a difference at Tate Modern that showcased the wonders of modern engineering through curated installations and interactive demonstrations. Coverage of the celebrations reached an audience of 53 million in the UK with international coverage of the prize – including a feature on Voice of America - reaching 100 million people.

Following the announcement, the winners continued to be proactive throughout the year in promoting the prize through a number of events. This included an event with QEPrize winner Vinton Cerf that took place at the Royal Institution, with an audience of senior educators and young people from schools across the UK.

The opening of nominations for the second QEPrize was marked by judges Paul Westbury CBE FREng and Professor Brian Cox CBE appearing in the UK media, including BBC Radio One and BBC Radio 5 Live, and reaching over 31 million people. The nominations day itself was also successful in reaching out through YouTube and Twitter. The next prize winner’s will be announced in early 2015.

Top: Royal Fellow HRH The Princess Royal Academy President Sir John Parker CBE FREng, Professor Brian Cantor CBE FREng, Vice Chancellor of the University of York, with Dr Helena Daffern, Department of Electronics, University of York at the Academy soirée Above: Professor Dr Uwe Krueger giving the 2013 Hinton Lecture
Building organisational capacity

The Academy endeavours to find the best engineers from a wide range of backgrounds for nomination to the Fellowship. To provide a quality venue for its events and resources for its wide-ranging education and engagement work, the Academy also seeks funding and in-kind support from a wide range of partners.

Membership review
Following a root-and-branch review of the Academy’s election and membership processes led by Dame Sue Ion FREng, the Academy Council accepted all the recommendations of the review group which are now in the process of being implemented.

The principal changes are: a reformed and expanded membership panel structure for considering Fellowship proposals with 11 panels replacing the existing five; a more robust Fellow-managed assessment process; and nominations under consideration for two years instead of four years. There will also be a new timeline for the nomination and election cycle.

It is anticipated that the 11 new panels, combined with the greater number of Fellows brought onto them, will provide a better and more thorough system for the evaluation of nominations. All the changes introduced this year will be subject to an annual review by the Membership Committee.

Grants management
In the course of the past year, the Academy has undertaken a programme to modernise and strengthen its approach to grants management and administration. This has included the procurement of a new IT-based grants management system launched in summer 2014 and an extensive programme of restructuring, training and development for all staff involved in grants management.

Governance review
A comprehensive review of the Academy’s governance chaired by Professor Sir William Wakeham FREng, has been undertaken over the last two years. This had not been reviewed in depth since the Academy’s formation nearly 40 years ago. Over the intervening period, there has been a substantial amount of new legislation and the Academy’s corporate structure is now more complex following the incorporation of two subsidiaries, the Queen Elizabeth Prize for Engineering Foundation and RAE Trading Limited.

The principal aims of the review were to examine the governance mechanisms of the Academy, to research alternative models of governance and to report to Council recommendations for improvement on the current structure. The objective was to ensure a governance structure that operates effectively, now and in the future, in the pursuit of the Academy’s charitable object.

Following approval by the Council of the recommendations of the review, the Academy held an Extraordinary General Meeting on 7 April 2014 at which Fellows voted by special resolution to adopt amended Charter, Statutes and Regulations which embody the proposed changes in governance. The same resolution was put to Fellows in a postal ballot and the result was again overwhelmingly in favour of the proposed changes.

Development
The Academy’s fundraising efforts enjoyed an exceptional year, with over £3.7 million in new commitments made for education, engagement and capital projects. The continuing generosity of all donors and sponsors is greatly valued.

Fellows, as ever, led by example. Dr John C Taylor OBE FREng pledged a substantial sum towards the creation of a centre for entrepreneurship at Prince Philip House, which will provide a base for the Enterprise Hub and related activities, Fulfilment of multi-year support from Sir Robin Saxby FREng and a grant from the ERA Foundation provided the Hub with start-up funding of its own, enabling this important initiative to hit the ground running.

Fellows contributed to the 2012 and 2013 annual funds, giving extra capacity to several programmes. They also assisted by generating introductions to potential funders.

During the year, discussion dinners hosted by Fellows attracted senior figures from the transport and cybersecurity sectors, raising the Academy’s profile and helping establish new relationships. The annual Academy Awards evening provides another major opportunity for engagement, to showcase UK engineering and celebrate excellence. The Academy thanks Atkins, BAE Systems, Bosch, BP, JLR and Petrofac for making the 2013 event possible.

Multi-year commitments were received from BAE Systems and Petrofac. The Worshipful Company of Engineers has also committed significant long-term support for the MacRobert Award. The Shell Centenary Scholarship Fund and Consolidated Contractors Company provided additional support for the new Africa Prize for Engineering Innovation. Six engineering companies also provided substantial backing to a major careers exhibition being planned with, and at, the Science Museum in London, provisionally entitled That Could Be Me: the Academy is project-managing this group.

The Academy welcomed Weir Group, Bosch, GKN and URS Corporation to the Forum Partnership programme, which supports public engagement and thought-leadership events at Prince Philip House.

Throughout the year, the Development Advisory Board, chaired by Sir Richard Oliver FREng, provided expert advice and guidance in pursuit of the Academy’s continuing efforts to broaden and diversify its funding sources.

Trading company
The Academy’s trading subsidiary, RAE Trading Limited, provides catering for the Academy’s events and meetings in Prince Philip House. It has a service agreement with Harbour & Jones, who provide an onsite catering team. The trading company also markets Prince Philip House as an events venue primarily to the corporate sector. The
Academy event highlights

**April 2013**
- Designed to inspire - Role models event for students considering careers in engineering

**May 2013**
- Enterprise Hub launch

**June 2013**
- Next generation nuclear energy - the UK’s role

**July 2013**
- Academy Awards Dinner at Battersea Power Station
- The MacRobert Award winner and finalists 2013 Exhibition

**September 2013**
- Engineering Research Forum - the annual showcase of engineering research sponsored by the Academy
- Innovation Hothouse - the final Crossrail: delivering Europe’s largest infrastructure project - Lloyds's Register Foundation Lecture 2013

**October 2013**
- Battle of Ideas 2013 - featuring two Academy-sponsored events: Technology and sustainability: kill or cure? and Number crunching and ethics in the era of Big Data
- The future of manufacturing - A new era of opportunity and challenge for the UK

**November 2013**
- Apprenticeship recruitment - accessing untapped talent
- Innovation in materials - a conference highlighting the latest innovations in advanced materials
- Apprenticeships for all - challenging longstanding perceptions
- The brain gain - should we be importing top quality STEM skills from abroad?

**January 2014**
- The used car test - Fellows’ New Year reception lecture

**February 2014**
- Industrie 4.0 - what can the UK learn from Germany’s manufacturing strategy?
- Engineering and Big Science - opportunities for the UK

**March 2014**
- Carbon dioxide emissions - Are we wasting a valuable resource? Academy’s Sheffield regional lecture
- Bridging the gap between vision and experience - Joint annual lecture with the Royal Society of Edinburgh
- Innovation in energy

**April 2014**
- Innovation in medical technologies - a report highlighting the latest innovations in the medical technologies sector
- How many engineers does it take ... ? - an ebooklet co-published with WISE
- University Technical Colleges - opening up new opportunities for girls - an ebooklet highlighting the range of engineering disciplines involved in making commodities

**May 2014**
- Innovation in automotive - a summary of a conference featuring automotive original equipment manufacturers, technology advisers and motorsports groups

**June 2014**
- Smart buildings: people and performance
- Establishing high-level evidence for the safety and efficacy of medical devices and systems
- Skills for the nation: engineering undergraduates in the UK

**July 2013**
- Future ship powering options - exploring alternative methods of ship propulsion

**October 2013**
- GB electricity capacity margin - a study undertaken at the request of the Prime Minister’s Council for Science and Technology

**February 2014**
- Public projects and procurement in the UK: sharing experience and changing practice

**March 2014**
- Engineering in Society - an e-book providing students with a wider perspective on the profession of engineering

**April 2013**
- Fuelling prosperity: research and innovation as drivers of UK growth and competitiveness

**May 2013**
- Innovation in medical technologies - technology development and research in areas from nanotechnology to telecommunications

**November 2013**
- Made for the future - a report exploring future ways of making, using and recycling consumer goods

Academy publications

These reports were published during the last financial year and are available to download at: www.raeng.org.uk

- Innovation in medical technologies - Technology development and research in areas from nanotechnology to telecommunications
- Additive manufacturing: opportunities and constraints - 3D technology and its potential to open up new areas of manufacturing
- Made for the future - a report exploring future ways of making, using and recycling consumer goods
Highlights of the year by theme

**Aerospace industrial strategy**
- Aerospace MSc Bursary Scheme developed by government, the Academy and the Royal Aeronautical Society to boost the supply of aeronautical engineering skills
- Developed in partnership with 10 leading employers, there are bursaries of £9,500 available for three-year courses
- Over 100 Fellows volunteered to mentor the Hub's technology entrepreneurs
- To date, Enterprise Fellows have founded 16 companies and attracted £3.5 million additional investment

**Enterprise Hub**
- Over £700,000 committed by Fellows and supporters towards Hub activities
- Over 100 Fellows volunteered to mento the Hub's technology entrepreneurs
- Over 100 press articles generated by the campaign during the year

**Africa Prize for Engineering Innovation**
- The Africa Prize has attracted £400,000 in external funding
- Engineers from 14 countries in sub-Saharan Africa entered the first Africa Prize
- Developed industrialised countries have 20-50 scientists and engineers per 10,000 population, compared with 1 in the poorest African countries

**Engineering for Growth**
- 34 campaign partners and supporters including government, major industry professional engineering institutions and SMEs
- 5 debates, 3 references in ministerial speeches and 4,000 unique Engineering for Growth website visitors

**Queen Elizabeth Prize for Engineering**
- Media coverage of the first QE Prize winners reached 52 million people in the UK and 100 million internationally
- Prize winners met 400 young people and 300 leaders in education

**Skills for the Nation report**
- Explored the capacity to increase the number of graduate engineers being produced in the UK
- UK engineering higher education is a complex structure with 182 independent institutions
- 46 established universities that offer engineering are consistently filled to capacity
- 63 new universities offer engineering but recruit only half the number of potential students

**GB electricity capacity margin report**
- Commissioned by the PM’s Council for Science and Technology
- Electricity supply likely to stretch system close to limits during winter 2014-15
- 5 immediate recommendations to avoid blackout by 2020

**Keynote engineering lecture - Crossrail**
- Given by Andrew Wolstenholme CBE FREng, CEO, Crossrail
- 10,000 people working across 40 construction sites involving 270 apprentices
- 4.5 million tonnes of excavated material will create a new 1,500 acre RSPB nature reserve

**Prince Philip Medal**
- Winner, Dr Terry Hill CBE FREng delivered some of the UK’s most significant civil engineering initiatives
- Projects include the Channel Tunnel Rail Link (HTS); Heathrow Terminal 5; The Beijing Olympics National Stadium and Aquatics Centre
- Led an infrastructure review which could save the UK £38 billion a year

**Diversity programme**
- 40 employers and Sector Skills Councils engaged through the Diversity Leadership Group
- 30 signatories to the Engineering Diversity Concordat for Professional Engineering Institutions covering 95% of total registrant population
- 175 students attended Designed to Inspire Showcase supported by 10 BME role models

**Research**
- Supported 183 researchers including 58 Research Fellows and 42 Research Chairs
- £27.1 million in third-party funding attracted for research posts
- Researchers involved with 190 different companies
- 19% of Academy Chairs and Fellowships are women (vs 5.5% of engineering professionals)

**Flooding response**
- The wettest two months in 250 years saw coastal and Thames Barrier defences tested and mainly successful in resisting catastrophic flooding

- David Rooke MBE FREng, Executive Director at the Environment Agency gave a lecture on the engineering aspects of the UK’s flood response
- Media briefing held with 3 Academy Fellows to discuss engineering solutions to flooding

2013/14
Annex to the Annual Review

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Fellows

Fellows of the Academy are leading engineers in the UK drawn from academia, industry, and the not-for-profit sectors. Fellowship is a national honour, awarded for outstanding personal engineering achievements. Election to the Fellowship is managed by current Fellows of the Academy.

HONORARY FELLOW
Elected in 2013 was:
General Sir Peter Wall
Chief of the General Staff, British Army

INTERNATIONAL FELLOWS
Elected in 2013 were:
Khalid Al-Falih
President and Chief Executive Officer, Saudi Aramco
Professor Hans-Jürg Bullinger
Senator, Fraunhofer Society of Applied Research
Ursula Burns
Chairman and CEO, Xerox Corporation
Carlos Ghosn
Chairman and CEO, Renault-Nissan Alliance
Professor Patrick Prendergast
ProVoxt, Trinity College, University of Dublin

FELLOWS
Elected in 2013 were:
Professor Bashir Al-Hashimi
ARM Professor of Computer Engineering and Associate Dean (Research), University of Southampton
Dr Steve Allpress
Vice President and Chief Technology Officer of Modern Software, Nvidia Corporation
Professor Adisa Azapagic
Professor of Sustainable Chemical Engineering, School of Chemical Engineering and Analytical Science, The University of Manchester
Air Marshal Simon Bolomin
Chief Engineer, Royal Air Force, Chief of Materiel (Air), Defence Equipment and Support
Eur Ing Samir Brikho
Chief Executive, AMEC plc
Professor Muffy Calder
Chief Scientific Adviser for Scotland and Professor of Computer Science, University of Glasgow
Naomi Climer
President of Sony Media Cloud Services and Deputy President, IET
Garrett Copeland
Managing Director, Operations, British Airways
Janice Crawford
Formerly Director, Engineering, Procurement, Construction and ICT (EPC), Foster Wheeler Energy Ltd
Professor Zhanfeng Cui
Donald Pollock Professor of Chemical Engineering, University of Oxford, and Professorial Fellow, Hertford College, Oxford
Professor Paul Curtis
Senior Fellow, Dstl
David Eyton
Group Head of Technology, BP plc
James Fairbairn
Executive Director, Compressors, Howden Group Ltd
Dr Richard Greaves
Group Chief Technology Officer, Meggitt plc and Member of the Board of Directors, SAE International
Carolyn Griffiths
Chief Inspector and Head of the UK Rail Accident Investigation Branch
Professor Robin Grimes
Chief Scientific Adviser to the Foreign and Commonwealth Office
Professor Christopher Hall
Professor Emeritus and Senior Professorial Fellow, School of Engineering, University of Edinburgh

Garrett Copeland
Managing Director, Operations, British Airways
Janice Crawford
Formerly Director, Engineering, Procurement, Construction and ICT (EPC), Foster Wheeler Energy Ltd
Professor Zhanfeng Cui
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Professor Robin Grimes
Chief Scientific Adviser to the Foreign and Commonwealth Office
Professor Christopher Hall
Professor Emeritus and Senior Professorial Fellow, School of Engineering, University of Edinburgh
Council

The Council – which held four ordinary meetings during the year – directs and manages the Academy and governs and controls its affairs, delegating as appropriate some of its functions to standing committees, each of which reports regularly to Council. As the Academy is a registered charity, the Officers and Members of Council fulfil the role of Trustees. As at 31 March 2014, the Council consisted of those listed below.

OFFICERS AND MEMBERS OF COUNCIL

Ordinary Members

President
Sir John Parker CBE FREng

Immediate Past President (ex officio)
Lord Browne of Madingley FREng FRS

Senior Vice President
Professor Sir William Wakeham FREng

Vice Presidents
Professor H Atkinson CBE FREng
Mrs D Mitchell FREng
Professor R Parker CBE FREng
Professor R Parry-Jones CBE FREng
Dr M Thomas CBE FREng

Honorary Treasurer
Mr I Ritchie CBE FREng FRSE

Hon Sec for International Activities
Professor Sir William Wakeham FREng

Hon Sec for Education and Training
Professor H Atkinson CBE FREng

IN ATTENDANCE

Chief Executive
Mr P Greenish CBE

Director, Finance and Corporate Services
(Council Secretary)
Mr H Beeston ACIS

IN ATTENDANCE
Academy Standing Committees

AWARDS COMMITTEE
The role of the Awards Committee is to identify and to recommend to the President and Council appropriate candidates for all of the Academy’s relevant prizes and awards, with the exception of National Honours, the International Medal, the Queen Elizabeth Prize and the MacRobert Award.

Chair:
Mrs D Mitchell FREng

Members:
Dr R Buckingham FREng
Professor C Christopoulos FREng
Professor J Ciclitira FREng
Dr D Clarke FREng
Mr A Clarke FREng
Mr J M Reese FREng FRSE
Mr N J Perry FREng
Professor R Ocone FREng
Mr A M Kinghorn FREng
Professor T Ibell FREng
Dr D A Clarke FREng
Professor J Cilliers FREng
Professor C Christopoulos FREng
Dr R Buckingham FREng

SECRETARIAT:
Miss S Hampartumian

EDUCATION AND TRAINING COMMITTEE
The Education and Training Committee’s role is to oversee and be responsible for the Academy’s activities in engineering education and training and to maintain links with other bodies working in these fields.

Chair:
Professor H V Atkinson CBE FREng

Members:
Mrs J Bryant FREng
Dr M Cook FREng
Professor J K Fidler FREng
Mr J W Lazar FREng
Professor J P K Seville FREng
Professor H R Thomas FREng FRS
FLSW
Ms F Wainwright MBE FREng

Ex Officio:
Professor N M Alford MBE FREng
Professor A Finkelstein FREng
Professor P J Goodhew FREng
Professor A Hopper CBE FREng
Professor M J Norton FREng
Professor J W Hall FREng
Professor R S Collins CB FREng
Professor L Dopping-Hepenstal FREng
Professor G N Gilbert FREng
Professor A H Sherry FREng
Dr M Short CBE FREng
Ms A Glover CBE HonFREng
Dr M Thomas CBE FREng

Committee Secretariat:
Dr R Morgan

ENGINEERING POLICY COMMITTEE
The Engineering Policy Committee’s role is to advise and be responsible to Council for the engineering policy of the Academy and for all matters concerned with the application of engineering knowledge and principles (other than education and training). It should identify, monitor and promote attention to emerging and generic issues of importance to engineering in pursuit of this role.

Chair:
Professor R Parry-Jones CBE FREng

Members:
Dr P W Bonfield OBE FREng
Professor P S Cannon OBE FREng
Professor P J Clarkson FREng
Professor B S Collins CB FREng
Professor M J Norton FREng
Professor J W Hall FREng
Mr R H Maudslay CBE FREng
Professor M J Norton FREng
Professor A H Sherry FREng
Dr M Short CBE FREng
Dr L M Smith FREng
Professor J D M Watson CBE FREng
Mr N P Winser CBE FREng

Ex Officio:
Professor L Tarassenko CBE FREng

Committee Secretariat:
Dr A Walker

ENTERPRISE COMMITTEE
The role of the Enterprise Committee is to advise and be responsible to Council for the Academy’s Enterprise activities. In pursuit of this role, the Committee members oversee the successful establishment and subsequent operation of the Royal Academy of Engineering Enterprise Hub and promote and support the Academy’s Enterprise activities, including through the development of appropriate partnerships, funding relationships and marketing and communication activities.

Chair:
Mrs D Mitchell FREng

Members:
Professor S Beaumont OBE FREng FRSE
Professor R Brook OBE FREng
Professor A Hopper CBE FREng
Professor A Noble OBE FREng
Professor D A King FREng
Professor S Spurgeon FREng
Professor D A King FREng
Professor R Parry-Jones CBE FREng
Professor M J Norton FREng

Committee Secretariat:
Dr A Walker

EXTERNAL AFFAIRS COMMITTEE
The role of the committee is to provide strategic direction to the Academy’s communications activities on behalf of the Council, with particular emphasis on ensuring the soundness of the Academy’s reputation and on developing the Academy’s profile. It oversees all aspects of the Academy’s communications and public engagement activities, ensuring they are delivered in line with Royal Charter and business plan commitments.

Chair:
Mr I Shott CBE FREng

Members (Fellows):
Professor S Beaumont OBE FREng
Professor A Hopper CBE FREng
Professor A Noble OBE FREng
Professor L Tarassenko CBE FREng

Members (Non-Fellows):
Mr J Siong
Ms A Glover CBE HonFREng
Mr N Whitehead FREng

Committee Secretariat:
Mr H Beeston

FINANCE AND AUDIT COMMITTEE
The Finance and Audit Committee is responsible for all financial and auditorial affairs of the Royal Academy of Engineering. This includes management of Academy budgets, external investment fund managers, insurance policy, risk register, audit arrangements and compliance with external financial reporting standards.

Chair:
Mr I C Ritchie CBE FREng FRSE

Members:
Mr B Baxter FREng FRSE
Dr D E Cochrane OBE FREng
Mr J D Goodman OBE FREng
Professor D A King FREng
Dr J Masterton OBE FREng FRSE
Professor A H Sherry FREng
Professor M J Norton FREng

Committee Secretariat:
Mr H Beeston

SECRETARIAT:
Mr A Jullens

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Committee Secretariat:
Dr A Walker

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Committee Secretariat:
Dr A Walker

SECRETARIAT:
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Committee Secretariat:
Dr A Walker

SECRETARIAT:
Mr A Jullens

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Committee Secretariat:
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SECRETARIAT:
Mr A Jullens

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Professor S Spurgeon FREng
Professor D A King FREng
Professor R Parry-Jones CBE FREng
Professor M J Norton FREng

Committee Secretariat:
Dr A Walker

SECRETARIAT:
Mr A Jullens
INTERNATIONAL COMMITTEE
The International Committee's role is to advise and be responsible to Council for promoting the international interests of the Academy. In pursuit of this role, the Committee's interests include oversight of the Academy's relations with the Council of Academies of Engineering and Technological Sciences (CAETS) and the European Council of Academies of Applied Sciences, Technologies and Engineering (Euro-CASE).

Chair:
Professor Sir William Wakeham FREng

Members:
Mr T E A Askew FREng
Professor I D L Bogle FREng
Mr M A Brinded CBE FREng
Dr A K C Chan FREng
Mr M D Carr FREng
Panel 1
Mr A D Roche FREng
Professor A Unsworth FREng
Professor B Weiss FREng
Mr K W Burrage FREng

MEMBERSHIP COMMITTEE
The Membership Committee is responsible for considering candidates for election to the Royal Academy of Engineering and for submitting a list of not more than 60 names to Council for approval before each Annual General Meeting. Each of the five Members of the Committee chairs a Panel covering a specific area of expertise. These include:

Panel 1 (Mechanical, aeronautical, marine and manufacturing engineering)
Panel 2 (Civil, structural, public works and building services engineering)
Panel 3 (Electrical, electronic, control engineering and computing)
Panel 4 (Chemical, fuel, process, mining and materials engineering)
Panel 5 (Informatics)

Chair:
Dr J E Roberts CBE FREng

Ex Officio:
Sir John Parker GBE FREng

Panel Chairs:
Panel 1
Vice Admiral Sir Andrew Mathews KCB FREng
Panel 2
Professor T W Broyd FREng
Panel 3
Sir Patrick Haren FREng
Panel 4
Ms J Hackitt CBE FREng
Panel 5
Mr M D Carr FREng

Members:
Panel 1
Air Marshall S J Bullom CB FREng
Mrs C R Burke FREng
Professor S W Cameron MBE FREng
Dr S T Elston FREng
Professor S J Garwood FREng
Professor R J Godwin FREng
Professor E Harkin-Jones FREng
Professor T G Leighton FREng
Professor H Spikes FREng
Professor P G Wrobil FREng
Panel 2
Professor C G Bailey FREng
Professor R N Buienfeld FREng
Ms S R F Clarke CBE FREng
Dr M J Cook FREng
Professor J W Hall FREng
Professor O Hassan MBE FREng
Ms M J McDowell MBE FREng
Professor P C Robery FREng
Professor T Stephenson FREng
Professor I H Townend FREng
Panel 3
Professor C H Buckberry FREng
Mr K W Burrage FREng
Professor J A Chambers FREng
Mr D W A East OBE FREng
Dr M Grant FREng
Professor H Mccann FREng
Professor R V Penty FREng
Dr M Perkins FREng
Dr F C Saunders CB FREng
Professor T Wilson FREng
Professor G Z Yang FREng
Panel 4
Professor J Cilliers FREng
Mr M J Goulette FREng
Dr A J Hosty FREng
Dr R A Appleby FREng
Professor A Bradley FREng
Professor A Bundy CBE FREng
FRSE FRS
Professor I C Hunter FREng
Professor I Leslie FREng
Professor S H Muggleton FREng
Dr R P Whittington FREng

Panel 5
Dr S T Elston FREng
Professor S J Garwood FREng
Professor R J Godwin FREng
Professor E Harkin-Jones FREng
Professor T G Leighton FREng
Professor H Spikes FREng
Professor P G Wrobil FREng
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Professor I C Hunter FREng
Professor I Leslie FREng
Professor S H Muggleton FREng
Dr R P Whittington FREng

Chair:
Mr N Cooper FREng

Ex Officio:
President Sir John Parker GBE FREng

Members:
Dr P Bennett FREng
Professor M C Forde FREng FRSE
Dr R A Appleby FREng
Professor A Bradley FREng
Professor A Bundy CBE FREng
FRSE FRS
Professor I C Hunter FREng
Professor I Leslie FREng
Professor S H Muggleton FREng

Chair:
Mr N Cooper FREng

Ex Officio:
President Sir John Parker GBE FREng

Committee Secretariat:
Dr C Coulter

PROACTIVE MEMBERSHIP COMMITTEE
The Proactive Membership Committee is responsible for ensuring that the pool of candidates proposed for election as Fellows better reflects the society within which the Academy exists. Activities include identifying and tracking potential candidates from novel and overlooked areas, and engaging more existing Fellows in the process.

Chair:
Mr N Cooper FREng

Ex Officio:
President Sir John Parker GBE FREng

Members:
Dr P Bennett FREng
Professor M C Forde FREng FRSE
Dr R A Appleby FREng
Professor A Bradley FREng
Professor A Bundy CBE FREng
FRSE FRS
Professor I C Hunter FREng
Professor I Leslie FREng
Professor S H Muggleton FREng

Chair:
Mr N Cooper FREng

Ex Officio:
President Sir John Parker GBE FREng

Committee Secretariat:
Dr C Coulter

RESEARCH AND SECONDMENT SCHEMES COMMITTEE
The role of the Research and Secondment Schemes Committee is to advise and be responsible to Council for the supervision of research and secondment schemes other than those concerned with education and training.

Chair:
Professor R Parker CBE FREng

Members:
Professor P Bayvel FREng
Professor J Fisher CBE FREng
Professor P J Fryer FREng
Professor C A Goble CBE FREng
Dr A J Hosty FREng
Professor I Leslie FREng
Professor A G McNaughton FREng
Professor P A Nelson FREng
Professor A J Sellin FREng
Professor S M Springman CBE FREng
Professor J D M Watson CBE FREng
Professor S Williamson FREng
Professor P L Younger DL FREng

Committee Secretariat:
Dr I Forristal
Awards

The Academy recognises excellence through the presentation of awards and medals. The Academy’s wide range of awards covers every aspect of engineering.

2013 Queen Elizabeth Prize for Engineering

The Queen Elizabeth Prize for Engineering is a global £1 million prize that celebrates the engineers responsible for a groundbreaking innovation that has been of global benefit to humanity. Awarded to:

Dr Robert Kahn, Dr Vinton Cerf, Louis Pouzin, Professor Sir Tim Berners-Lee FREng and Marc Andreessen

2013 MacRobert Award

The premier award for UK innovation in engineering, with a prize of £50,000. The award recognises the successful development of innovative ideas in engineering, together with commercial success and societal benefit. Awarded to:

Real VNC for VNC Remote Access Software

2013 President’s Medal

The Medal is awarded to a Fellow of the Academy who has contributed significantly to the Academy’s aims and work through initiatives in promoting excellence in engineering. One medal will be awarded at the end of a President’s term. Awarded to:

Terry Hill CBE FREng, Chair of Arup’s Board of Trustees

2013 Sir Frank Whittle Medal

Awarded to an engineer, normally resident in the UK, for outstanding and sustained achievement which has contributed to the wellbeing of the nation. The field of activity changes annually, and in 2013 the medal was awarded for engineering innovations in manufacturing that have directly benefited the UK economy. Awarded to:

Professor Lin Li, University of Manchester

2013 Silver Medals

Awarded to individuals in recognition of outstanding and demonstrated personal contribution to British engineering, which is resulting in successful market exploitation. Up to four medals may be awarded in any one year. Awarded to:

Elspeth Finch, Director, Atkins

Dr Andrew Fitzgibbon, Principal Researcher, Microsoft Research, Cambridge

Tim Morgan, Managing Director, Mountain Trike Company Ltd

Dr Eben Upton, Trustee and Technical Director, Raspberry Pi Foundation; Technical Director, Raspberry Mountain Trike Company Ltd

2013 Sustained Achievement Award

Awarded to an engineer, normally resident in the UK, whose sustained achievements over a number of projects have had a profound impact upon their engineering discipline. Awarded to:

Dr H Peter Jost CBE

2013 Sir George Macfarlane Medal

Awarded to younger engineers working in the UK, who have demonstrated excellence in the early stage of their careers. Awarded to:

Dr Michael Porton, Technology Programme Manager, Culham Centre for Fusion Energy (CCFE)

2013 ERA Foundation Entrepreneurs Award

The £40,000 award identifies entrepreneurial researchers, working in UK universities, in the field of electro-technology, who are at an early stage in their careers. The Award is presented to an individual or small team demonstrating considerable entrepreneurial promise and the potential to benefit the UK’s future prosperity. Awarded jointly to:

Dr Reuben Wilcock and Dr Robert Rudoff, University of Southampton and Dr Julien Reboud, University of Glasgow

POLICY AND EXTERNAL AFFAIRS

Director, Policy and External Affairs

Beverley Parkin
Head of Communications and Engagement

Dr Lesley Paterson
Manager, Communications

Jane Sutton
Press and Communications Officer

Dr Giorgio De Faveri
External Relations Manager

Junia Blake
Publications and Web Editor

Dominic Joycek
Manager, Web and Publications

Emily Bick
Manager, Public Engagement

Manisha Lalloo
Head of Engineering Policy

Dr Alan Walker
Policy Advisors

Joe Chapman
Katherine MacGregor
Philippe Sheldon
Head of Events

Ivana Mackintosh
Manager, Events

Helen Berrington (maternity leave)

Jane Divito (maternity cover)

Events Administrator

Jessica Burgess

Academy staff

As at 31 May 2014

Chief Executive

Philip Greenish CBE

QUEEN ELIZABETH PRIZE FOR ENGINEERING

Director, QEPrize

Caroline Evans
Communications Manager, QEPrize

Katya-yani Vyas
Prize Manager, QEPrize

Bridge Sawyers
DEVELOPMENT

Director, Development

Sarah Phillibrick
Trusts Manager

Dominic Geyer
Corporate Development Manager

Jon O’Neill

POLICY AND EXTERNAL AFFAIRS

Director, Policy and External Affairs

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Head of Communications and Engagement

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Manager, Events

Helen Berrington (maternity leave)

Jane Divito (maternity cover)

Events Administrator

Jessica Burgess

Events Coordinator

Emma Calvert

Events Intern

Ewan Dickson

PROGRAMMES AND FELLOWSHIP

Director, Programmes and Fellowship

Dr Hayaatun Sillem
Senior Policy Advisor

Dr Kedar Pandya
Head of International Activities

Shane McHugh
Manager, International Partnerships and Missions

Cuang Dang
International Policy Advisor

Meredith Ettridge
Head of Fellowship Services and Awards

Sylvia Hampartsumian
Manager, Membership

Jo Ryley
Departmental Administrator

Anne Mahabal
Pauline Stillman Fellowship Advisor

Dr Chris Coulter
Head of Research and University

Programmes

Dr Ian Forristal
Programme Manager, Research

Angus Baker
Tapsi Khambra
Dr Louise Manfredi
Programme Manager, Bursaries

Eunice Hung
Programme Manager, VPs and CPD

Kerry Brandon
Head of Enterprise

Arms’ Veterans

Dr Catherine Lawrence (maternity cover)

Katie Melton (maternity leave)

Enterprise Intern

Miriam Nweze

ENGINEERING AND EDUCATION

Director, Engineering and Education

Dr Rhys Morgan
Head of Engineering the Future

Claire Donovan

Programme Manager - Engineering the Future

Dr Wahida Amin
Head of 5-19 Education

Lynda Mann
Head of Further and Higher Education

Styli Charalampous
Manager, STEM Curriculum

Dominic Nolan
STEM Education Projects Officer

Jonathan Lowe
Manager, Diversity

Bola Fatimilehin
Jenny Young

FINANCE AND CORPORATE SERVICES

Director, Finance and Corporate Services

Howard Beeston
Head of Executive Services

Kim Turner
Executive Assistants

Gillian Birkbeck (maternity cover)

Karen Childe
Alyx Clarke (maternity leave)

Senior Administrator

Christine Dowling
AV Technician

Barry Weekes
Receptionist/Security

Paul Morant
Carolyn Clarke
HR Consultant

Jackie Carter
Head of Finance

Lisa Kiew
Management Accountant

David Lewthwaite
Finance Assistant

Sanjay Jethwa
Michelle Lai
Nadia Malik
Head of IT

Hakan Altinislak
Lead Web Developer

Syed Adeeel
Web and Data Administrator

Josephine Amirthanayagam

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35
Grants, fellowships and programmes

INGENIOUS PUBLIC ENGAGEMENT AWARDS
ROUND 8 AWARDS

Ingenious provides funding for projects that enable engineers to enhance their public engagement skills, consider the societal applications of their work and take part in debate with the public on engineering and its impact on society.

<table>
<thead>
<tr>
<th>Awardee</th>
<th>Organisation</th>
<th>Project title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stuart Ballard</td>
<td>Magna Science Adventure Centre</td>
<td>It's a rubbish adventure</td>
</tr>
<tr>
<td>Dawn Bonfield</td>
<td>Women's Engineering Society (WES)</td>
<td>Magnificent women and their flying machines</td>
</tr>
<tr>
<td>Dr Claire Brockett</td>
<td>University of Leeds</td>
<td>Engineering the Tour de France: From body to bicycle</td>
</tr>
<tr>
<td>Dr Diane Conn</td>
<td>The Royal Institution</td>
<td>Robotics in engineering</td>
</tr>
<tr>
<td>Dr Rebecca Crawford</td>
<td>University of Glasgow</td>
<td>Three minute engineering</td>
</tr>
<tr>
<td>Christine Davis</td>
<td>The Architecture Centre</td>
<td>Bridge150! Festival</td>
</tr>
<tr>
<td>Dr Marianne Ellis</td>
<td>University of Bath</td>
<td>The futures of cultured meat</td>
</tr>
<tr>
<td>Professor Paul Fleming</td>
<td>De Montfort University</td>
<td>The festival roadshow</td>
</tr>
<tr>
<td>Natalie Ford</td>
<td>Science Oxford</td>
<td>Creative computing</td>
</tr>
<tr>
<td>Andy Franzkowiak</td>
<td>LASTheatre</td>
<td>The Enlightenment Café: New Atlantis</td>
</tr>
<tr>
<td>Mark Gadd</td>
<td>4science</td>
<td>Champion the researchers</td>
</tr>
<tr>
<td>Dr Simon Gage</td>
<td>Edinburgh International Science Festival</td>
<td>Bridging the divide</td>
</tr>
<tr>
<td>Tara Gibson</td>
<td>Glasgow Science Centre</td>
<td>Primary engineering</td>
</tr>
<tr>
<td>Dr Maiwenn Kersaudy-Kerhoas</td>
<td>Heriot-Watt University</td>
<td>Small plumbing! Empowering the next generation of microfluidic engineers</td>
</tr>
<tr>
<td>Faisal Khan</td>
<td>Market Bosworth School</td>
<td>#ILOVEWITHEngineering</td>
</tr>
<tr>
<td>Shane McCracken</td>
<td>Galtomar Communications Ltd</td>
<td>I'm an Engineer. Get me out of here!</td>
</tr>
<tr>
<td>Laura Meikle</td>
<td>Lambda Jam</td>
<td>First Lego League in Scotland: Growing a passion for engineering in children</td>
</tr>
<tr>
<td>Laura Fogg Rogers</td>
<td>University of the West of England</td>
<td>Robots vs. Animals: Learning from the ingenuity of nature</td>
</tr>
<tr>
<td>Dr Chris Smith</td>
<td>The Naked Scientists</td>
<td>Broadcast internships in engineering</td>
</tr>
<tr>
<td>Elaine Steele</td>
<td>W5</td>
<td>Ultimate farming</td>
</tr>
<tr>
<td>Dr Peter Theobald</td>
<td>Cardiff University</td>
<td>Putting the ‘spark’ back into electrical engineering</td>
</tr>
<tr>
<td>Victoria Thornton</td>
<td>Open-City</td>
<td>‘Structure Rocks!’ at Archikids Festival</td>
</tr>
<tr>
<td>Dr Djuke Veldhuis</td>
<td>Cheltenham Festivals</td>
<td>Supporting FarnLab engineers: helping today's engineers to inspire tomorrow's engineers</td>
</tr>
</tbody>
</table>

RESEARCH CHAIRS

Research Chairs provide funding, together with industry and other research organisations, to support strategically important research in UK universities. The Academy provides funding initially for a period of five years.

<table>
<thead>
<tr>
<th>Name</th>
<th>Co-sponsor</th>
<th>Subject</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor Guglielmo Aglietti</td>
<td>Surrey Satellite Technology (EADS)</td>
<td>Space engineering</td>
<td>University of Surrey</td>
</tr>
<tr>
<td>Professor Robert Akid</td>
<td>BP</td>
<td>Corrosion and materials</td>
<td>University of Manchester</td>
</tr>
<tr>
<td>Professor John Andrews</td>
<td>Network Rail</td>
<td>Infrastructure asset management</td>
<td>University of Nottingham</td>
</tr>
<tr>
<td>Professor Matthew Angling</td>
<td>Dril</td>
<td>Space environment and radio frequency engineering</td>
<td>University of Birmingham</td>
</tr>
<tr>
<td>Professor Ashraf Ayoub</td>
<td>Pell Frischmann</td>
<td>Nuclear infrastructure engineering</td>
<td>City University</td>
</tr>
<tr>
<td>Professor Luke Bisy</td>
<td>Arup</td>
<td>Fire and structures</td>
<td>University of Edinburgh</td>
</tr>
<tr>
<td>Professor Richard Butler</td>
<td>GKN Aerospace</td>
<td>Composites manufacturing</td>
<td>University of Bath</td>
</tr>
<tr>
<td>Professor Jonathan Cooper</td>
<td>Airbus</td>
<td>Integrated design of advanced novel wing architectures</td>
<td>University of Bristol</td>
</tr>
<tr>
<td>Professor George Constantineides</td>
<td>Imagination Technologies</td>
<td>Energy-efficient high-performance embedded processing in an uncertain world</td>
<td>Imperial College London</td>
</tr>
<tr>
<td>Professor Yulong Ding</td>
<td>Highview Power Storage</td>
<td>Cryogenic energy storage</td>
<td>University of Birmingham</td>
</tr>
<tr>
<td>Professor Daniel Esser</td>
<td>Selex ES</td>
<td>Laser devices and engineering</td>
<td>Heriot-Watt University</td>
</tr>
<tr>
<td>Professor Steve Evans</td>
<td>RiverSimple</td>
<td>Industrial sustainability</td>
<td>University of Cambridge</td>
</tr>
<tr>
<td>Professor Brian Falcon</td>
<td>Bombardier</td>
<td>Advanced aerospace composites</td>
<td>Queen's University Belfast</td>
</tr>
<tr>
<td>Professor Chris Gerada</td>
<td>Cummins</td>
<td>Electrical machine technology</td>
<td>University of Nottingham</td>
</tr>
<tr>
<td>Professor Alastair Gibb</td>
<td>ECI</td>
<td>Management of complex projects</td>
<td>Loughborough University</td>
</tr>
<tr>
<td>Professor Kenneth Grattan</td>
<td>FIREng</td>
<td>Next generation optical and fibre optic instrumentation</td>
<td>City University</td>
</tr>
<tr>
<td>Professor Hugh Griffiths</td>
<td>Thales UK</td>
<td>Intelligent radar systems</td>
<td>University College London</td>
</tr>
<tr>
<td>Professor Susan Grimes</td>
<td>SITA Trust</td>
<td>Environmental waste management</td>
<td>Imperial College London</td>
</tr>
<tr>
<td>Professor Ian Hunter</td>
<td>Radio Design Limited</td>
<td>Microwave signal processing</td>
<td>University of Leeds</td>
</tr>
<tr>
<td>Professor Neil Hyatt</td>
<td>The Nuclear Decommissioning Authority</td>
<td>Nuclear waste management</td>
<td>University of Sheffield</td>
</tr>
<tr>
<td>Professor Lorenzo Iannucci</td>
<td>Dril</td>
<td>Multiscale composite armour design</td>
<td>Imperial College London</td>
</tr>
<tr>
<td>Professor Alan Kemp</td>
<td>Fraunhofer UK</td>
<td>Advanced laser engineering</td>
<td>University of Strathclyde</td>
</tr>
<tr>
<td>Professor Philip Mawby</td>
<td>Converteam</td>
<td>Power electronics</td>
<td>University of Warwick</td>
</tr>
<tr>
<td>Professor John Miles</td>
<td>Arup</td>
<td>Energy transitions</td>
<td>University of Cambridge</td>
</tr>
<tr>
<td>Professor James Moore</td>
<td>Bagrit Trust</td>
<td>Medical devices</td>
<td>Imperial College London</td>
</tr>
<tr>
<td>Professor Stephen Muggleton</td>
<td>FIREng</td>
<td>Applications of automated theory-formation using meta-interpretive machine learning</td>
<td>Imperial College London</td>
</tr>
</tbody>
</table>
RESEARCH CHAIRS IN EMERGING TECHNOLOGIES

These Chairs allow recipients to conduct research at a pre-competitive level and develop an area of technology to a stage where it will attract interest from the wider research community and subsequently be taken forward by industry.

<table>
<thead>
<tr>
<th>Name</th>
<th>Co-sponsor</th>
<th>Subject</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor Bernard Mulgrew</td>
<td>SELEX Galileo</td>
<td>Multi-sensor signal processing</td>
<td>University of Edinburgh</td>
</tr>
<tr>
<td>Professor Andrew Neely</td>
<td>IBM/BAE Systems</td>
<td>Complex engineering systems</td>
<td>University of Cambridge</td>
</tr>
<tr>
<td>Professor Kamran Nkbin</td>
<td>EDF Energy</td>
<td>Structural integrity assessment</td>
<td>Imperial College London</td>
</tr>
<tr>
<td>Professor Peter O’Hearn</td>
<td>Microsoft Research</td>
<td>Logic software verification</td>
<td>University College London</td>
</tr>
<tr>
<td>Professor Sven Schroeder</td>
<td>Infineum UK/Diamond light source</td>
<td>Engineering applications of synchrotron science</td>
<td>University of Leeds</td>
</tr>
<tr>
<td>Professor Sridhar Seetharaman</td>
<td>Tata Steel</td>
<td>Low carbon technologies</td>
<td>University of Warwick</td>
</tr>
<tr>
<td>Professor Ajit Shenoi</td>
<td>Lloyds Register</td>
<td>Lightweight structures</td>
<td>University of Southampton</td>
</tr>
<tr>
<td>Professor Spencer Sherwin</td>
<td>McLaren Racing</td>
<td>Transient flow simulation for advanced race and road cars</td>
<td>Imperial College London</td>
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<tr>
<td>Professor David Smith</td>
<td>Rolls-Royce/EDF Energy</td>
<td>Structural performance of energy systems</td>
<td>University of Bristol</td>
</tr>
<tr>
<td>Professor Philip Webb</td>
<td>Airbus</td>
<td>Aerostructures design for assembly and systems installation</td>
<td>Cranfield University</td>
</tr>
<tr>
<td>Professor Anton Ziolkowski</td>
<td>Petroleum Geoservices</td>
<td>Petroleum geoscience</td>
<td>University of Edinburgh</td>
</tr>
<tr>
<td>Professor Zi-Qiang Zhu</td>
<td>Siemens Wind Energy</td>
<td>High efficiency and power density wind power generator systems</td>
<td>University of Sheffield</td>
</tr>
</tbody>
</table>

SENIOR RESEARCH FELLOWSHIPS

The Senior Research Fellowships (SRFs) scheme provides funding for Senior Lecturer / Reader level appointments. Like Research Chairs, SRFs are funded jointly with industry for a period of five years.

<table>
<thead>
<tr>
<th>Name</th>
<th>Co-Sponsor</th>
<th>Subject</th>
<th>University</th>
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</thead>
<tbody>
<tr>
<td>Dr Matthew Hall</td>
<td>British Geological Survey</td>
<td>Rock-fluid interactions in carbon capture, storage and alternative hydrocarbons</td>
<td>University of Nottingham</td>
</tr>
<tr>
<td>Professor Nicholas Hills</td>
<td>Rolls-Royce</td>
<td>Computational engineering</td>
<td>University of Surrey</td>
</tr>
<tr>
<td>Dr Stephen Neething</td>
<td>Rio Tinto</td>
<td>Heap and in situ leaching</td>
<td>Imperial College London</td>
</tr>
<tr>
<td>Dr Rongshan Qin</td>
<td>Tata Steel</td>
<td>Steel research</td>
<td>Imperial College London</td>
</tr>
<tr>
<td>professor mc schraefel</td>
<td>Microsoft Research</td>
<td>Supporting work in progress for innovation and discovery</td>
<td>University of Southampton</td>
</tr>
<tr>
<td>Dr Graham Spinardi</td>
<td>Dve Arup Foundation</td>
<td>Integrating technical and social aspects of fire safety engineering</td>
<td>University of Edinburgh</td>
</tr>
<tr>
<td>Professor Sethu Vijayakumar</td>
<td>Microsoft Research</td>
<td>Learning robotics</td>
<td>University of Edinburgh</td>
</tr>
</tbody>
</table>

LEVERHULME TRUST SENIOR RESEARCH FELLOWSHIPS

These Fellowships provide mid-career engineers working in UK academic institutions with the opportunity to focus on research activities for a period of up to 12 months with their academic and administrative responsibilities being taken over by an early-career academic.

<table>
<thead>
<tr>
<th>Name</th>
<th>Project title</th>
<th>University</th>
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<tbody>
<tr>
<td>Dr Steve Burrow</td>
<td>Energy harvesting for wireless sensors in turbulent flows</td>
<td>University of Bristol</td>
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<tr>
<td>Dr Haoqiang Chen</td>
<td>Modelling the fatigue and creep of metal matrix composite</td>
<td>University of Strathclyde</td>
</tr>
<tr>
<td>Dr Marianne Ellis</td>
<td>Scale-up of immune cell therapies for organ transplants</td>
<td>University of Bath</td>
</tr>
<tr>
<td>Dr Alexandros Ferenidis</td>
<td>THz reconfigurable antennas for communication and imaging systems</td>
<td>University of Birmingham</td>
</tr>
<tr>
<td>Dr Paola Lettieri</td>
<td>A life cycle approach for nuclear waste management and plant decommissioning</td>
<td>University College London</td>
</tr>
<tr>
<td>Dr Geoff Moggridge</td>
<td>Engineering anisotropic polymer nano-composites for improved prosthetic heart valves</td>
<td>University of Cambridge</td>
</tr>
<tr>
<td>Dr Dmitry Nerukh</td>
<td>Personal supercomputer for modelling complete virus at all atom resolution</td>
<td>Aston University</td>
</tr>
<tr>
<td>Professor Thomas Nowotny</td>
<td>Enabling scientific computing with GPUs with domain specific languages and metacomputers</td>
<td>University of Sussex</td>
</tr>
<tr>
<td>Dr Nick Pears</td>
<td>3D face modelling for surgical planning, guidance and assessment</td>
<td>University of York</td>
</tr>
<tr>
<td>Dr David Sanders TD</td>
<td>Improving mobility and quality of life for children with disabilities</td>
<td>University of Portsmouth</td>
</tr>
<tr>
<td>Name</td>
<td>Project title</td>
<td>University</td>
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<tr>
<td>Dr Sebastian Savory</td>
<td>Realising the capacity in fibre-optic networks with uncertainty and nonlinearity</td>
<td>University College London</td>
</tr>
<tr>
<td>Dr Helen Trehane</td>
<td>Formal modelling technology for the analysis of European rail traffic management systems</td>
<td>University of Surrey</td>
</tr>
<tr>
<td>Dr Dagoue Zeze</td>
<td>Nanoscale characterisation and integration platform for nanowires</td>
<td>University of Durham</td>
</tr>
<tr>
<td>Dr Yonghao Zhang</td>
<td>A platform for enabling highly automated and integrated microdroplet technologies</td>
<td>University of Strathclyde</td>
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</tbody>
</table>

### DAPHNE JACKSON TRUST FELLOWSHIPS

These Fellowships enable engineers to return to academia following a career break, to pursue a research project and training.

<table>
<thead>
<tr>
<th>Name</th>
<th>Subject</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Helen Cornwell</td>
<td>Estimating the through-life-in-service costs for long-life high value assets in the water industry</td>
<td>University of Bath</td>
</tr>
<tr>
<td>Dr Nokuthula Dube</td>
<td>Characterisation of organic solar cells</td>
<td>Imperial College London</td>
</tr>
<tr>
<td>Dr Margarita Fernandez-Chas</td>
<td>Effect of changes in the spatial properties of the myocardial tissue mechanics on the overall efficiency of the heart</td>
<td>Kings College London</td>
</tr>
<tr>
<td>Dr Divya Tiwari</td>
<td>LPG sensors for measuring carbon dioxide concentration at carbon capture and storage sites</td>
<td>Cranfield University</td>
</tr>
</tbody>
</table>

### RAENG/EPSRC RESEARCH FELLOWSHIPS

These Fellowships, which are funded jointly with the EPSRC, are aimed at outstanding researchers from all branches of engineering who are about to finish their PhDs or have up to three years' post-doctoral experience.

<table>
<thead>
<tr>
<th>Name</th>
<th>Subject</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Sachi Arafat</td>
<td>Foundations research in information retrieval inspired by quantum theory</td>
<td>University of Glasgow</td>
</tr>
<tr>
<td>Dr Helen Bridle</td>
<td>Biosensors in engineering: From in situ pathogen detection to global impacts</td>
<td>Heriot-Watt University</td>
</tr>
<tr>
<td>Dr Tore Butlin</td>
<td>Modelling the vibration of complex structures with localised nonlinearities</td>
<td>University of Cambridge</td>
</tr>
<tr>
<td>Dr Maria Ana Cataluna</td>
<td>Compact and ultra- Versatile lasers based on quantum-dot materials</td>
<td>University of Dundee</td>
</tr>
<tr>
<td>Dr Daniel Clark</td>
<td>Random set filtering techniques for multisenor multi-object tracking and data fusion</td>
<td>Heriot-Watt University</td>
</tr>
<tr>
<td>Dr Simon Cotton</td>
<td>Next generation body-centric communications: a joint analytical-statistical approach to modelling quasi-cyclo-stationary anisotropic signal reception</td>
<td>Queen's University Belfast</td>
</tr>
<tr>
<td>Dr Christophe Dubach</td>
<td>Adaptable processor architecture and software for energy-efficient computing</td>
<td>University of Edinburgh</td>
</tr>
<tr>
<td>Dr Dino Distefano</td>
<td>Software model checking with separation logic</td>
<td>Queen Mary, University of London</td>
</tr>
<tr>
<td>Dr Filippo Fazi</td>
<td>Electroacoustic inverse problems</td>
<td>University of Southampton</td>
</tr>
<tr>
<td>Dr Maria Galano</td>
<td>Development of aluminium metal matrix complex nanocomposites for high strength applications</td>
<td>University of Oxford</td>
</tr>
<tr>
<td>Dr Christopher Gourlay</td>
<td>The granular rheology of partially solidified alloys and defect formation in advanced metal casting processes</td>
<td>Imperial College London</td>
</tr>
<tr>
<td>Dr Deborah Gunnin</td>
<td>Neural interfaces for studying cortical processes</td>
<td>University of Strathclyde</td>
</tr>
<tr>
<td>Dr Matthew Hinsworth</td>
<td>Atom-chip integration for quantum-enabled devices</td>
<td>University of Southampton</td>
</tr>
<tr>
<td>Dr Timothy Jones</td>
<td>Power-aware compilation in a multi-core era</td>
<td>University of Cambridge</td>
</tr>
<tr>
<td>Dr Hugh Leather</td>
<td>Optimising the mobile net</td>
<td>University of Edinburgh</td>
</tr>
<tr>
<td>Dr Ioannis Lestas</td>
<td>Analysis of complex heterogeneous networks: Scalability, robustness and fundamental limitations</td>
<td>University of Cambridge</td>
</tr>
<tr>
<td>Dr Andrew Marshall</td>
<td>Exploiting emerging interface misfit epitaxy to engineer cheaper, higher performance photodiodes for imaging, communications and gas monitoring</td>
<td>Lancaster University</td>
</tr>
<tr>
<td>Dr Davide Mattia</td>
<td>Nanoparticle factory-on-a-chip</td>
<td>University of Bath</td>
</tr>
<tr>
<td>Dr John Murphy</td>
<td>Improved multi-crystalline silicon for solar cell applications</td>
<td>University of Warwick</td>
</tr>
<tr>
<td>Dr Steven Neale</td>
<td>Micro-actuators controlled by optoelectronic tweezers (MACOET)</td>
<td>University of Glasgow</td>
</tr>
<tr>
<td>Dr Francesca Parmigiani</td>
<td>Optical processing of high spectral efficiency phase encoded signals for future generation optical networks</td>
<td>University of Southampton</td>
</tr>
<tr>
<td>Dr Andrew Robertson</td>
<td>Intelligent interactive musical performance systems</td>
<td>Queen Mary, University of London</td>
</tr>
<tr>
<td>Dr Silvia Schievano</td>
<td>FEM before FIM – Finite element modelling prior to first-in-man in heart valve technology</td>
<td>University College London</td>
</tr>
<tr>
<td>Dr Aleksey Shitov</td>
<td>Distributed passive intermodulation phenomena in microwave circuits</td>
<td>Queen's University Belfast</td>
</tr>
<tr>
<td>Dr Susannah Speller</td>
<td>Superconducting metamaterials for near field NMR microscopy applications</td>
<td>University of Oxford</td>
</tr>
<tr>
<td>Dr Danail Stoyanov</td>
<td>Real-time intra-operative navigation for robotic assisted minimally invasive surgery</td>
<td>University College London</td>
</tr>
<tr>
<td>Dr Manlio Tassieri</td>
<td>Rheology at the microscale: New tools for bio-analysis</td>
<td>University of Glasgow</td>
</tr>
<tr>
<td>Dr Kosmas Tsakmakidis</td>
<td>Ultras low and stopped light in metamaterials</td>
<td>Imperial College London</td>
</tr>
<tr>
<td>Dr Kevin Webb</td>
<td>Optical stimulation for the long-term control and monitoring of neural network activity</td>
<td>University of Nottingham</td>
</tr>
<tr>
<td>Dr Amanda Wright</td>
<td>New horizons in adaptive optics for life science research: adaptive microscopy</td>
<td>University of Nottingham</td>
</tr>
</tbody>
</table>
The Research Exchanges with China and India scheme promotes academic collaboration between high-quality engineering researchers in the UK and China/India, aims to strengthen relations between leading partners in these countries, and supports the expansion of international networks of excellence, offering funding (to cover travel, accommodation and subsistence) for exchanges of 3-12 months.

UK Academic | Chinese/Indian Academic | Project Title
--- | --- | ---
Dr Abir Al-Tabbaa (University of Cambridge) | Professor Liwu Mo (Nanjing University of Technology) | Sustainable construction materials: Green shrinkage-free blended cements containing magnesia
Dr Daniel Barreto (Edinburgh Napier University) | Dr Zhongxuan Yang (Zhejiang University) | A micro-scale (DEM) investigation on driven pile cyclic behaviour
Professor Phil Coates FREng (University of Bradford) | Dr Zhiyong Jiang (Changchun Institute of Applied Chemistry, Chinese Academy of Sciences) | Deformation and fracture behaviour of polymer materials
Professor Michael Fairweather (University of Leeds) | Dr Jun Yao (Xiamen University) | Modelling and simulation of nuclear waste flows
Professor Steven Gao (University of Kent) | Dr Xueshi Ren (Tsinghua University) | Advanced reflectarray antenna for small satellites synthetic aperture radars
Carlos Molina Hutt (University College London) | Professor Lin-Hai Han (Institute of Software, Chinese Academy of Sciences) | Seismic assessment of existing tall buildings in Beijing
Professor Zhaoxu Liu (Royal Holloway University) | Professor Yu Zhang (Institute of Software, Chinese Academy of Sciences) | HoTT-based computer-assisted reasoning
Professor John Marsh (University of Glasgow) | Professor Hongliang Zhu (Institute of Semiconductors, Chinese Academy of Sciences) | Flip-chip compatible, integrated laser sources for 100 Gb/s systems
Professor Dhruv K Pradhan (University of Bristol) | Dr Rajat Subhra Chakrabarty (Indian Institute of Technology, Kharagpur) | Trusted electronic system design with untrusted integrated circuits: theory and implementation
Dr Guogang Ren (University of Hertfordshire) | Professor Ke Yang (Institute of Metal Research, Chinese Academy of Sciences) | Creating antiviral and antibacterial stainless steel by doping antiviral nanoparticles
Professor Qiandong Shen (Northeastern Polytechnical University) | Professor Ying Li (Northwestern Polytechnical University) | Sparse representation-based super-resolution restoration of remote sensing images
Professor Yichuang Sun (University of Hertfordshire) | Professor Baoyang Chi (Tsinghua University) | Low-power reconfigurable filter techniques for flexible wireless transceiver chip development
Dr Paul Topham (Aston University) | Professor Lingfei Wang (South China University of Technology) | Incorporating electrospun block copolymer fibres into organic photovoltaics

Chinese/Indian Academic | UK Academic | Project title
--- | --- | ---
Professor Yifei Sun (Beihang University) | Dr Xin Tu (University of Liverpool) | Plasma-catalysis for the conversion of tar from biomass gasification into clean fuels
Dr Xiangyang Meng Xian (Jiaotong University) | Professor Velisa Vesovic (Imperial College London) | Viscosity of CO₂-alkanes mixtures: measurement and modelling
Dr Zhantao Han (Chinese Academy of Geological Sciences) | Dr David Werner (Newcastle University) | Environmental remediation applications of iron/carbon composite sorbent materials
Professor Changjun Li (University of Science and Technology Liaoning) | Dr Sophie Wuerger (University of Liverpool) | Development of a human 3D face imaging system
Dr Jingchun Chen (Southwest Jiaotong University) | Dr Pei Xia (University of Surrey) | On the enhanced multi-carrier technology for high-mobility 5G broadband systems
Professor Qingling Zhang (Northeastern University, China) | Dr Xinggang Yan (University of Kent) | Variable structure control for complex singular systems with applications to industrial systems
Professor Shi Liu (North China Electric Power University) | Professor Yong Yan (University of Oxford) | Advanced monitoring and computational modelling of burner flames for environmentally friendly power generation from biomass and pulversed coal
Dr Yan Chen (Tianjin University) | Dr Zheng You (University of Oxford) | Origami-inspired deployable polyhedra
Professor Suyash P Awate (Indian Institute of Technology (IIT) Bombay) | Dr Hui Gary Zhang (University College London) | Compressed sensing and statistical shape analysis for advancing dementia imaging
Dr Xiao-jiu Ju (Sichuan University) | Professor Zhiming Zhang (University of Birmingham) | Fabrication and characterisation of stimuli-responsive smart microgels
Dr Yongguang Huang (Institute of Semiconductors, Chinese Academy of Sciences) | Dr Kaiming Zhou (North China Electric Power University) | Ultrafast laser micromachining of semiconductor materials for solar cells

**RESEARCH EXCHANGES WITH CHINA AND INDIA AWARDS**

- **UK Academic**
- **Chinese/Indian Academic**
- **Project Title**
- **Professor Yifei Sun** (Beihang University)
- **Dr Xin Tu** (University of Liverpool)
- **Dr Xiangyang Meng Xian** (Jiaotong University)
- **Dr Zhantao Han** (Chinese Academy of Geological Sciences)
- **Professor Changjun Li** (University of Science and Technology Liaoning)
- **Dr Sophie Wuerger** (University of Liverpool)
- **Dr Pei Xia** (University of Surrey)
- **Dr Xinggang Yan** (University of Kent)
- **Professor Yong Yan** (University of Oxford)
- **Dr Zheng You** (University of Oxford)
- **Dr Hui Gary Zhang** (University College London)
- **Professor Zhiming Zhang** (University of Birmingham)
- **Dr Kaiming Zhou** (North China Electric Power University)
- **Professor Yichuang Sun** (University of Hertfordshire)
- **Professor Qiandong Shen** (Northeastern Polytechnical University)
- **Professor Yichuang Sun** (University of Hertfordshire)
- **Dr Paul Topham** (Aston University)
- **Professor Lingfei Wang** (South China University of Technology)
RAENG RESEARCH FELLOWSHIPS

These Fellowships are aimed at outstanding researchers from all branches of engineering who are about to finish their PhDs or have up to three years’ post-doctoral experience.

<table>
<thead>
<tr>
<th>Name</th>
<th>Subject</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Mark Ainslie</td>
<td>Engineering interactions of magnetic and superconducting materials</td>
<td>University of Cambridge</td>
</tr>
<tr>
<td></td>
<td>for electrical applications</td>
<td></td>
</tr>
<tr>
<td>Dr David Armstrong</td>
<td>Micro-engineering advanced alloys for extreme nuclear power environment</td>
<td>University of Oxford</td>
</tr>
<tr>
<td>Dr Mahdi Azarpeyvand</td>
<td>Source and propagation modelling for wind turbine and</td>
<td>University of Bristol</td>
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<tr>
<td></td>
<td>turbomachinery noise</td>
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<tr>
<td>Dr Peter Carrington</td>
<td>High-efficiency mid-infrared semiconductor materials and devices</td>
<td>University College London</td>
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<td></td>
<td>grown on silicon</td>
<td></td>
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<tr>
<td>Dr Alasdair Clark</td>
<td>Plasmon enhanced pyroelectrodynamic nanoscale trapping and sensing</td>
<td>University of Glasgow</td>
</tr>
<tr>
<td>Dr David Clifton</td>
<td>Machine learning for the intelligent patient record</td>
<td>University of Oxford</td>
</tr>
<tr>
<td>Dr Christian Fensch</td>
<td>Auto-tuned programming patterns and the</td>
<td>Heriot-Watt University</td>
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<tr>
<td></td>
<td>programmability gap</td>
<td></td>
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<tr>
<td>Dr Peter Gammon</td>
<td>Novel interlayer cooling for harsh environment (NICHE) devices and</td>
<td>University of Warwick</td>
</tr>
<tr>
<td></td>
<td>circuitry</td>
<td></td>
</tr>
<tr>
<td>Dr Tawfique Hasan</td>
<td>Graphlex: fully flexible graphene-based transparent conductors</td>
<td>University of Cambridge</td>
</tr>
<tr>
<td>Dr Edmund Kelleher</td>
<td>Next generation short-pulse lasers for the visible and</td>
<td>Imperial College London</td>
</tr>
<tr>
<td></td>
<td>ultraviolet</td>
<td></td>
</tr>
<tr>
<td>Dr Maiwenn Kersaudy-Kerhoas</td>
<td>Towards better pregnancy monitoring: Miniaturised tools for</td>
<td>Heriot-Watt University</td>
</tr>
<tr>
<td></td>
<td>noninvasive prenatal diagnosis in clinics and hospitals</td>
<td></td>
</tr>
<tr>
<td>Dr Edward Laird</td>
<td>Quantum computing devices based on carbon</td>
<td>University of Oxford</td>
</tr>
<tr>
<td></td>
<td>nanomaterials</td>
<td></td>
</tr>
<tr>
<td>Dr Grigoris Loukides</td>
<td>Privacy protection in event-based data sharing and</td>
<td>Cardiff University</td>
</tr>
<tr>
<td></td>
<td>analysis</td>
<td></td>
</tr>
<tr>
<td>Dr Fleur Loveridge</td>
<td>New thermal and geotechnical facility for ground heat</td>
<td>University of Southampton</td>
</tr>
<tr>
<td></td>
<td>exchangers</td>
<td></td>
</tr>
<tr>
<td>Dr Mathieu Lucquiauld</td>
<td>Future-proofing fossil power stations with CO2 capture</td>
<td>University of Edinburgh</td>
</tr>
<tr>
<td>Dr Christos Masouros</td>
<td>Interference as a source of green signal energy in</td>
<td>University College London</td>
</tr>
<tr>
<td></td>
<td>wireless communications</td>
<td></td>
</tr>
<tr>
<td>Dr Matthias Mauch</td>
<td>Software systems for computer-aided music</td>
<td>Queen Mary, University of London</td>
</tr>
<tr>
<td></td>
<td>understanding</td>
<td></td>
</tr>
<tr>
<td>Dr Ruth Misener</td>
<td>Towards rational chemotherapy strategies: A hybrid computational/</td>
<td>Imperial College London</td>
</tr>
<tr>
<td></td>
<td>experimental approach</td>
<td></td>
</tr>
<tr>
<td>Dr Mehran Moazen</td>
<td>Predicting skull growth in craniosynostosis for improved</td>
<td>University of Hull</td>
</tr>
<tr>
<td></td>
<td>surgical treatment</td>
<td></td>
</tr>
<tr>
<td>Dr Oliver Payton</td>
<td>Mapping, measuring and manufacturing nanostructures via high-speed</td>
<td>University of Bristol</td>
</tr>
<tr>
<td></td>
<td>atomic force microscopy</td>
<td></td>
</tr>
<tr>
<td>Dr Alberto Peruzzo</td>
<td>Quantum processors for quantum chemical engineering</td>
<td>University of Bristol</td>
</tr>
</tbody>
</table>

RAENG/MINISTRY OF DEFENCE RESEARCH FELLOWSHIP

This Fellowship offers innovative engineers the opportunity to work with research, development and modelling teams within the Defence Science and Technology Laboratory and some of the Laboratory’s industrial and academic partners.

<table>
<thead>
<tr>
<th>Name</th>
<th>Project Title</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Benjamin Russell</td>
<td>Energy mitigation and blast impact loading</td>
<td>University of Cambridge</td>
</tr>
</tbody>
</table>

ENGINEERING PROFESSIONAL DEVELOPMENT AWARD

The Engineering Professional Development Awards are aimed at supporting the training and development of engineers in UK industry, especially SMEs.

Aquatec Group Ltd  EKV Design Ltd  React Engineering Ltd
Balfour Beatty Civil Engineering Ltd EVA Projects Ltd  Rig Control Products
BCS Design Ltd  Flight Dynamics Ltd  Safetec UK Ltd
Bott Ltd  Infront Solutions Ltd  Somers Forge Ltd
BPE Design and Support Ltd  Itsus Consulting Ltd  Wartsila UK Ltd
Buhrer Sortex  Jacobs UK Ltd  Waterman Energy Environ and Design Ltd
Cadogan International Ltd  Johnson Matthey Davy Technologies  West Mercia Fork Trucks Ltd
Cultech Ltd  Kellogg Brown and Root Ltd  Xtrac Ltd
Dawson Precision Components Ltd  Malvern Instruments Ltd
Donaldson Filtration (GB) Ltd  Midel Ltd  Morgan Tucker Ltd
Doosan Babcock Ltd  Ratcliff Palfinger

44 45
**ENTERPRISE FELLOWSHIPS**

Enterprise Fellowships provide funding and support to outstanding entrepreneurial engineering researchers, working at a UK university, to enable them to develop a spin-out business around their technological idea.

<table>
<thead>
<tr>
<th>Name</th>
<th>University</th>
<th>Project title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Benjamin Kingsbury</td>
<td>Imperial College London</td>
<td>Ceramic hollow fibre catalytic converter for automotive emissions control</td>
</tr>
<tr>
<td>Dr Richard Nock</td>
<td>University of Bristol</td>
<td>Configurable time to digital converter for medical imaging, laser radar and laboratory instrumentation</td>
</tr>
<tr>
<td>Dr Philip Orr</td>
<td>University of Strathclyde</td>
<td>Synaptec: Distributed photonic sensing for smart grids</td>
</tr>
<tr>
<td>Dr Loren Pirro</td>
<td>University of Bristol</td>
<td>The future of nanoscale microscopy - the high-speed atomic force microscope</td>
</tr>
<tr>
<td>Dr Daniel Plant</td>
<td>Imperial College London</td>
<td>Hip protection for osteoporosis patients</td>
</tr>
<tr>
<td>Dr Sithamparanathan Sabesan</td>
<td>University of Cambridge</td>
<td>Pervasive accurate passive RFID tracking</td>
</tr>
<tr>
<td>Professor Jonathan Timmis</td>
<td>University of York</td>
<td>Auto-immune disease modelling and prediction for diagnosis, monitoring and drug development</td>
</tr>
<tr>
<td>Dr Ian Wakeman</td>
<td>University of Sussex</td>
<td>Digital stadium</td>
</tr>
</tbody>
</table>

**DISTINGUISHED VISITING FELLOWSHIPS**

The Distinguished Visiting Fellowship scheme provides funding to enable an academic engineering department in a UK university to host for a period of up to a year an academic from overseas with a history of academic excellence, to strengthen a UK partnership and to enable the fellow to share knowledge through visiting and collaborating with the participating organisations to discover common and complementary skills and initiatives that could form the foundation for future collaborations, thereby strengthening UK capacity and international standing.

<table>
<thead>
<tr>
<th>Award holder</th>
<th>Distinguished Visitor</th>
<th>Area of collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Zeechen Aniz (University of Salford)</td>
<td>Professor Feniosky Peña-mora (Columbia University, USA)</td>
<td>Developing a framework for natural systems inspires robust disaster resource distribution</td>
</tr>
<tr>
<td>Professor Luke Bidly (University of Edinburgh)</td>
<td>Professor Mark F Green (Queen's University, Canada)</td>
<td>Fire performance and safety of sustainable construction materials</td>
</tr>
<tr>
<td>Dr Mario E Giardini (University of Strathclyde)</td>
<td>Dr Gabor Kosa (Tel Aviv University, Israel)</td>
<td>Novel power coupling methods for medical implants</td>
</tr>
<tr>
<td>Professor Ken Gratton FREng (City University London)</td>
<td>Professor Greg Baxter (Victoria University, Australia)</td>
<td>Multi-parameter, multiplexed optical fibre-based chemical sensors for use in water sensing networks</td>
</tr>
<tr>
<td>Professor Dawei Han (University of Bristol)</td>
<td>Professor Ni-Bin Chang (University of Central Florida, USA)</td>
<td>Promoting next-generation environmental remote sensing and informatics platform design / Promoting stormwater management technologies in eco-cities under climate change impacts</td>
</tr>
<tr>
<td>Dr Zhaoxu Huang (Brunel University)</td>
<td>Professor Guo-Qiang Li (Tongji University, China)</td>
<td>Hazard mitigation for steel and composite structures</td>
</tr>
<tr>
<td>Dr Ivan Jordanov (University of Portsmouth)</td>
<td>Professor Nikola Kasabov (Auckland University of Technology, New Zealand)</td>
<td>Computational intelligence and spiking neural networks: methods, systems, and engineering applications</td>
</tr>
<tr>
<td>Professor Erich A Muller (Imperial College London)</td>
<td>Professor Alexander V Neimark (Rutgers, the State University of New Jersey, USA)</td>
<td>Thermodynamics and transport in nanomaterials</td>
</tr>
<tr>
<td>Professor Eann Patterson (University of Liverpool)</td>
<td>Professor John Lambros (University of Illinois, USA)</td>
<td>Thermo-acoustic fatigue research</td>
</tr>
<tr>
<td>Dr Bhaskar Sengupta (Queen's University, Belfast)</td>
<td>Professor Arup K Sen Gupta (Lehigh University, USA)</td>
<td>Analysis of mutual interaction of iron and arsenic in subterranean and ex situ adsorption processes - considerations for treatment system design</td>
</tr>
<tr>
<td>Dr Fernando Soares Schlimmwein (University of Leicester)</td>
<td>Professor Dr Adrian van Oosterom (Radboud University, The Netherlands)</td>
<td>Inverse problem of electrocardiology: improved diagnostic tools for atrial fibrillation</td>
</tr>
<tr>
<td>Dr Junwang Tang (University College London)</td>
<td>Professor Wei Huang (Nanjing University of Technology, China)</td>
<td>New hybrid solar cell fabrication</td>
</tr>
<tr>
<td>Professor Paul Taylor (University of Oxford)</td>
<td>Professor Yoo Sang Choo (National University of Singapore, Singapore)</td>
<td>Full asset integrity management of offshore platforms to assess the performance of new and ageing platforms with reinforcement of critical joints</td>
</tr>
<tr>
<td>Dr Igor Timoshkin (University of Strathclyde)</td>
<td>Dr Nelly Bonifaci (The G2E Laboratory, France)</td>
<td>Breakdown mechanisms and processes in dielectric fluids</td>
</tr>
<tr>
<td>Professor Emile Touber (Imperial College London)</td>
<td>Professor Jean-Christophe Robinet (DynFluid, France)</td>
<td>Control of the dynamics of shock wave / transitional-boundary-layer interactions</td>
</tr>
<tr>
<td>Dr Barbara Turnbull (Nottingham University)</td>
<td>Professor Michel-Yves Louge (Cornell University, USA)</td>
<td>Transients shocks and billows: unsteady processes in avalanche fronts and a mini symposium</td>
</tr>
<tr>
<td>Dr Ramji Venkataramanan (University of Cambridge)</td>
<td>Professor Andre Barron (Yale University)</td>
<td>Design and analysis of sparse superposition codes and communication</td>
</tr>
<tr>
<td>Professor Jiangzhou Wang (University of Kent)</td>
<td>Dr Sumei Sun (Agency for Science, Technology and Research, Singapore)</td>
<td>Present and future in wireless mobile communications in Singapore</td>
</tr>
<tr>
<td>Professor Jin Wang (Liverpool John Moores University)</td>
<td>Professor Xingping Yan (Wuhan University of Technology, China)</td>
<td>An investigation into formal safety assessment of large complex ships</td>
</tr>
<tr>
<td>Professor Yong Chang Wang (University of Manchester)</td>
<td>Professor Lin-Hai Han (Tsinghua University, China)</td>
<td>Fire performance of concrete filled tubes, education of future civil engineers, practice on composite construction and research on construction safety</td>
</tr>
<tr>
<td>Professor Zidong Wang (Brunel University)</td>
<td>Professor Huijin Gao (Harbin Institute of Technology, China)</td>
<td>Distributed estimation and control for networked systems with link/node faults</td>
</tr>
<tr>
<td>Professor David Webb (Aston University)</td>
<td>Professor Boris Vayner Zhnanov (Institute of Semiconductor Physics SB RAS, Russia)</td>
<td>Advanced infrared thermography methods for avionics and automotive industry</td>
</tr>
</tbody>
</table>
**Award holder** | **Distinguished Visitor** | **Area of collaboration**
---|---|---
Dr Qing Xiao (University of Strathclyde) | Professor Frederic Boyer (Ecole des Mines de Nantes, France) | An integrated analytical and simulation study on a bio-inspired flexible robotic swimmer
Professor Steve Young (University of Cambridge) | Professor Diane Litman (University of Pittsburgh, USA) | Dialogue systems for teaching and assessing conversational skills in second language learning
Professor Huazhao (Brunel University) | Professor Mingfa Yao (Tianjin University, China) | Research on high-efficiency and low emission heavy duty engines for buses and commercial vehicles
Dr Xiangming Zhou (Brunel University) | Professor Zongjin Li (Hong Kong University of Science and Technology, Hong Kong) | Graphene-based smart skin material/sensors for structure health monitoring
Professor Huazhao (Brunel University) | Professor Mingfa Yao (Tianjin University, China) | Research on high-efficiency and low emission heavy duty engines for buses and commercial vehicles
Dr Xiangming Zhou (Brunel University) | Professor Zongjin Li (Hong Kong University of Science and Technology, Hong Kong) | Graphene-based smart skin material/sensors for structure health monitoring

**GLOBAL RESEARCH AWARDS**

This scheme enables researchers to spend up to one year working at overseas organisations in order to access facilities and expertise which are unavailable in the UK.

<table>
<thead>
<tr>
<th>Name</th>
<th>University</th>
<th>Project title</th>
<th>Host</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor Stuart Burgess</td>
<td>University of Bristol</td>
<td>Biologically inspired mechanisms for autonomous robotic vehicles</td>
<td>Liberty University, USA</td>
</tr>
<tr>
<td>Dr Michael Smith</td>
<td>British Energy plc</td>
<td>Synthesizing residual stress measurement and modelling for welds</td>
<td>Australian Nuclear Science and Technology Corporation (ANSTO), Australia</td>
</tr>
<tr>
<td>Professor Fu Chen Zheng</td>
<td>University of Reading</td>
<td>Relay transmission in cellular networks: Its impact on energy efficiency</td>
<td>Georgia Institute of Technology, USA</td>
</tr>
</tbody>
</table>

**INDUSTRIAL SECONDMENTS SCHEME**

This scheme facilitates knowledge transfer between universities and UK industry by providing engineering academic staff exposure to industrial and commercial practice.

<table>
<thead>
<tr>
<th>Name</th>
<th>University</th>
<th>Project title</th>
<th>Host</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Anusas</td>
<td>University of Strathclyde</td>
<td>Product design engineering: advanced techniques in creative form generation</td>
<td>4c Design</td>
</tr>
<tr>
<td>Dr Nick Bryan-Kirnis</td>
<td>Queen Mary, University of London</td>
<td>Tools for low-cost evaluation of mobile and social user experiences</td>
<td>Togeva Ltd</td>
</tr>
<tr>
<td>Dr Man-Chun Chau</td>
<td>Kingston University</td>
<td>Hybrid buses in London: Monitoring and improving their performance</td>
<td>Abellio London</td>
</tr>
<tr>
<td>Dr Robin Curtis</td>
<td>University of Manchester</td>
<td>Measurements of protein-protein interactions in formulation science</td>
<td>MedImmune</td>
</tr>
<tr>
<td>Dr Mojtaba Ghadiri</td>
<td>University of Leeds</td>
<td>Industrial challenges in particle technology</td>
<td>Procter and Gamble</td>
</tr>
<tr>
<td>Dr Patrick Harkness</td>
<td>University of Glasgow</td>
<td>AEOLLOS – development to TRL 6</td>
<td>Clyde Space Ltd</td>
</tr>
<tr>
<td>Dr Tim Katz</td>
<td>University of Brighton</td>
<td>Developing a new medical instrument from concept to the market</td>
<td>GB Electronics Ltd</td>
</tr>
<tr>
<td>Dr Sundar Marimuthu</td>
<td>Loughborough University</td>
<td>Numerical and experimental investigation of the laser drilling process</td>
<td>Manufacturing Technology Centre (MTC)</td>
</tr>
<tr>
<td>Dr Arnaud Marmier</td>
<td>University of Exeter</td>
<td>Cardboard surfboards: design and manufacture</td>
<td>Smurfit Kappa Barnstaple</td>
</tr>
<tr>
<td>Dr Carolina Mateo-Segura</td>
<td>Heriot-Watt University</td>
<td>Radiation protection of wideband active electronically scanned arrays</td>
<td>SELEX Galileo Ltd</td>
</tr>
<tr>
<td>Dr Donal McNally</td>
<td>University of Nottingham</td>
<td>Additive manufacture of spinal implants</td>
<td>3T RPD Ltd</td>
</tr>
<tr>
<td>Dr Sreejith Nanukuttan</td>
<td>Queen's University Belfast</td>
<td>Development of performance-focused maintenance management strategies for concrete structures</td>
<td>Roads Service, Department of Regional Development, Northern Ireland</td>
</tr>
<tr>
<td>Dr Tom Rendell</td>
<td>University of Bristol</td>
<td>Setting aerodynamics education in industrial context</td>
<td>Airbus UK</td>
</tr>
<tr>
<td>Dr Daniela Romano</td>
<td>University of Sheffield</td>
<td>Applications of agent-based modelling</td>
<td>COSTAIN Group PLC</td>
</tr>
<tr>
<td>Dr Andrea Szymkowiak</td>
<td>University of Abertay Dundee</td>
<td>The application of human-like agents in self-service technology</td>
<td>NCR Financial Solutions Group Ltd</td>
</tr>
</tbody>
</table>

**Awardees appointed during the year**

<table>
<thead>
<tr>
<th>Name</th>
<th>University</th>
<th>Project title</th>
<th>Host</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Akram Alomainy</td>
<td>Queen Mary, University of London</td>
<td>Advance traceable and cost-effective measurement solutions for characterising wearable antennas and body-centric wireless networks</td>
<td>National Physical Laboratory (NPL)</td>
</tr>
<tr>
<td>Dr Paul Bagot</td>
<td>University of Oxford</td>
<td>Advanced atom probe studies of critical engineering for Rolls-Royce</td>
<td>Rolls-Royce PLC</td>
</tr>
<tr>
<td>Name</td>
<td>University</td>
<td>Project title</td>
<td>Host</td>
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</tr>
<tr>
<td>Dr Phil Brooke</td>
<td>Teesside University</td>
<td>Reliable approaches to gathering evidence and intelligence from network sources</td>
<td>Cleveland Police</td>
</tr>
<tr>
<td>Dr Gary Burnett</td>
<td>University of Nottingham</td>
<td>Human factors engineering methods for vehicle design</td>
<td>Jaguar Land Rover Ltd</td>
</tr>
<tr>
<td>Dr Jyoti Chaudrie</td>
<td>University of Hertfordshire</td>
<td>Evaluation cloud computing technologies development using vertical and horizontal communication</td>
<td>Xerox Europe</td>
</tr>
<tr>
<td>Dr Adam Clare</td>
<td>University of Nottingham</td>
<td>Non-traditional manufacturing technology deployment for future Rolls-Royce factories</td>
<td>Rolls-Royce PLC</td>
</tr>
<tr>
<td>Dr Martin Foster</td>
<td>University Of Sheffield</td>
<td>Development of 1-2kW power converter system for battery storage applications</td>
<td>Vxi Power Limited</td>
</tr>
<tr>
<td>Professor Stephanie Haywood</td>
<td>University of Hull</td>
<td>Energy Works Academy: Building industry-focused energy research and education for the future</td>
<td>C Spencer Ltd</td>
</tr>
<tr>
<td>Dr David Hessom</td>
<td>University of Wolverhampton</td>
<td>Industrial implementation of HD laser scanning for visualisation of building information modelling</td>
<td>The Severn Partnership Ltd</td>
</tr>
<tr>
<td>Professor Raffaella Dcone</td>
<td>Heriot-Watt University</td>
<td>Management of sour water: Translating SHE and ethics from industry into the engineering curriculum - the development of case studies</td>
<td>PETROINEOS</td>
</tr>
<tr>
<td>Dr Donal Reay</td>
<td>Heriot-Watt University</td>
<td>Lab-in-a-box hands-on DSP teaching materials for ARM Cortex M4</td>
<td>ARM Holdings Ltd.</td>
</tr>
<tr>
<td>Dr Jenna Tudor</td>
<td>Northumbria University</td>
<td>Sensor improvement on inline inspection tools</td>
<td>GE: P9 Pipeline Solutions</td>
</tr>
<tr>
<td>Professor Jiangzhou Wang</td>
<td>University of Kent</td>
<td>Wireless in-building distributed antenna systems (Wi-DAS)</td>
<td>Hutchison 3G UK Ltd</td>
</tr>
<tr>
<td>Dr Darren Watts</td>
<td>Loughborough University</td>
<td>Industrial application and implementation of CAE simulation</td>
<td>Majenta PLM Ltd</td>
</tr>
<tr>
<td>Dr Zena Wood</td>
<td>University of Exeter</td>
<td>Gaining insight from data collected from emerging technologies</td>
<td>IBM UK Ltd</td>
</tr>
</tbody>
</table>

ENGINEERING LEADERSHIP ADVANCED AWARDS:

This award funds ambitious engineering undergraduates to undertake an accelerated personal development programme in order to move into a leadership position soon after graduation.

The Academy has 113 awardees currently being funded, from the following universities:

Brunel University, Durham University, Heriot-Watt University, Imperial College of Science, Technology and Medicine, Loughborough University, Queen's University Belfast, Robert Gordon University, Swansea University, University College London, University of Bath, University of Bristol, University of Cambridge, University of Edinburgh, University of Leeds, University of Manchester, University Of Nottingham, University of Oxford, University of Sheffield, University of Southampton, University of Strathclyde, University of Surrey.

The following students were newly awarded in 2013/14:

- Arnaud Doko University of Bath
- Rebecca Jane Ede University of Sheffield
- Supun Fernando University of Surrey
- Radovan Gallo University of Southampton
- Andrew Zi-Xiang Gng Imperial College of Science, Technology and Medicine
- Oliver Grolling Durham University
- Conor Hamill Queen's University Belfast
- Gideon Hammond Loughborough University
- Claire Hughes Queen's University Belfast
- Samuel David Kelly University of Bristol
- Ailsa Kelly University of Sheffield
- Rabia Lakhani Imperial College of Science, Technology and Medicine
- Eric Shut Wai Leung Imperial College of Science, Technology and Medicine
- Archie Lodge University of Cambridge
- Conor McClacken University of Bristol
- Alan Midnap University of Sheffield
- Rabbiya Naveed University of Cambridge
- Philip George Parr Queen's University Belfast
- Sarah Parsons Loughborough University
- Shakti Patel Loughborough University
- Nicole Perrin Loughborough University
- Edward James Rogers Loughborough University
- Mark Runciman University of Strathclyde
- Cuil Seo University of Bristol
- Aaron Smyth Queen's University Belfast
- Laura Steedman Robert Gordon University
- Katherine Theobald University of Southampton
- Angie Theresa University of Manchester
- Aleksi Tukiainen University of Cambridge
- Rebecca Voslet University of Strathclyde
- Fiona Walport Imperial College of Science, Technology and Medicine
- Neale Watson Queen's University Belfast
- Jack Wilkinson Imperial College of Science, Technology and Medicine
- Ciebong Wong University of Strathclyde
- Wai-Ming Yap Imperial College of Science, Technology and Medicine
ENGINEERING LEADERSHIP STANDARD AWARDS:

240 learning opportunities were awarded in 2013/14 to students from the following universities:

Bournemouth University, Brunel University, Cardiff University, City University, Coventry University, Heriot-Watt University, Imperial College of Science, Technology and Medicine, Kingston University, London South Bank University, Loughborough University, Plymouth University, Queen’s University of Belfast, Robert Gordon University, Swansea University, University of Aberdeen, University of Leeds, University of Manchester, University of Newcastle, University of Sheffield, University College London, University of Bath; University of Birmingham, University of Brighton, University of Bristol, University of Cambridge, University of Edinburgh, University of Glamorgan, University of Glasgow, University of Leicester, University of Liverpool, University of Nottingham, University of Portsmouth, University of Salford, University of Southampton, University of Strathclyde, University of Surrey, University of the West of Scotland, University of Ulster, University of Warwick.

VISITING PROFESSORS IN ENGINEERING FOR SUSTAINABLE RESOURCES

This scheme promotes the integration of sustainable development into the engineering curriculum in universities.

During 2013-14 the scheme operated at the following universities:

University of Nottingham

VISITING PROFESSORS IN INTEGRATED SYSTEMS DESIGN

This scheme promotes the understanding of integrated systems design in undergraduate engineering courses.

During 2013-14 the scheme operated at the following universities:

Aston University; Cranfield University; University of Edinburgh; University of Glasgow; University of Kent and University of York.

VISITING PROFESSORS IN DESIGN AND INNOVATION

This Visiting Professors scheme seeks to improve the innovation content in undergraduate teaching and give a better understanding of the innovation processes that are utilised by industry in turning ideas and prototypes into wealth creating products.

During 2013-14 the scheme operated at the following universities:

Aston University; University of Birmingham; University of Bournemouth; University of Bristol; Brunel University; University of Cambridge; Coventry University; Cranfield University; University of Derby; University of Durham; University of East Anglia; Heriot-Watt University; University of Huddersfield; University of Hull; University of Leicester; University of Liverpool; Loughborough University; University of Northumbria; University of Plymouth; Queen Mary, University of London; Royal College of Art/Imperial College London; University of Salford; University of Sheffield; University of Southampton; University of Strathclyde; University of Surrey; and University College London.

VISITING PROFESSORS IN BUILDING ENGINEERING PHYSICS

This scheme aims to encourage engineering undergraduates to pursue a career in the field of building engineering physics, a new discipline which is concerned with achieving sustainability in the built environment and an understanding of energy efficiency.

During 2013-14 the scheme operated at the following universities:

Loughborough University and University College London.

SHELL/ROYAL ACADEMY OF ENGINEERING VISITING TEACHING FELLOWS

Shell has generously funded a scheme to enrich the curriculum in the technologies associated with the upstream and downstream operations of the petrochemical industry.

During 2013-14 the scheme operated at the following universities:

University of Aberdeen; City University London; University of Durham; University of Newcastle upon Tyne; and University of Surrey.

SAINSBURY MANAGEMENT FELLOWSHIPS

This scheme seeks to enhance the national potential of UK engineering industry by providing a human resource of high career potential chartered engineers who have complemented their technical training and knowledge with an MBA degree from a leading international business school.

Nine fellowships were awarded during the year, the recipients being:

<table>
<thead>
<tr>
<th>Name</th>
<th>Business School</th>
<th>Name</th>
<th>Business School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russ MacMillan</td>
<td>INSEAD</td>
<td>Adam Fudakowski</td>
<td>INSEAD</td>
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<tr>
<td>Christopher Shepherd</td>
<td>London Business School</td>
<td>Ali Korotana</td>
<td>London Business School</td>
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<tr>
<td>Nikhil Amin</td>
<td>INSEAD</td>
<td>Max Fieguth</td>
<td>INSEAD</td>
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<tr>
<td>Michael Smale</td>
<td>London Business School</td>
<td>David Rickwood</td>
<td>London Business School</td>
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<tr>
<td>Jonathan Smith</td>
<td>London Business School</td>
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PETROFAC FELLOWSHIPS FOR THE ENHANCED GRADUATE ENGINEER

The Enhanced Graduate Engineer is developed through a combination of an appropriate full-time postgraduate master’s level degree coupled with additional learning and development opportunities provided by Petrofac.

In 2013-14 fellowships were awarded to:

Mustafa Aljaf – University of Aberdeen    Sean McKirdy – University of Aberdeen
Chukwuka Maduekeh – University of Sheffield Abdul Rafay Zafar – Imperial College London
Syed Shah – University of Sheffield
Queen Elizabeth Prize for Engineering

The Queen Elizabeth Prize for Engineering is a global award which celebrates outstanding innovations in engineering that have created significant benefit to humanity. The £1 million prize is awarded to an individual or team of people, of any nationality, directly responsible for a groundbreaking advance in engineering.

QEPrize panel of judges

<table>
<thead>
<tr>
<th>Name</th>
<th>Job Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lord Alec Broers, FREng FRS</td>
<td>Chair of Judges, Past President, The Royal Academy of Engineering</td>
</tr>
<tr>
<td>Professor Sir Christopher Snowden FREng</td>
<td>Deputy Chair and Chair Elect of Judges, President and Vice-Chancellor University of Surrey</td>
</tr>
<tr>
<td>Professor Frances Arnold</td>
<td>Professor of Chemical Engineering, Bioengineering and Biochemistry at Caltech, USA</td>
</tr>
<tr>
<td>Professor Brian Cox OBE</td>
<td>Royal Society Research Fellow, University of Manchester</td>
</tr>
<tr>
<td>Professor Lynn Gladden CBE, FREng FRS</td>
<td>Pro Vice Chancellor for Research, Shell Professor of Chemical Engineering at University of Cambridge</td>
</tr>
<tr>
<td>Professor John Hennessy</td>
<td>President, Stanford University</td>
</tr>
<tr>
<td>Professor Dr hc Reinhard Huettl</td>
<td>President, German National Academy of Science and Engineering (acatech)</td>
</tr>
<tr>
<td>Dr Chen Jining</td>
<td>President, Tsinghua University, Beijing</td>
</tr>
<tr>
<td>Professor Calestous Juma, HonFREng FRS</td>
<td>Professor of the practice of international development, Director of the Science, Technology and Globalisation Project, Harvard University</td>
</tr>
<tr>
<td>Professor Hiroshi Komiyama</td>
<td>President, Engineering Academy Japan</td>
</tr>
<tr>
<td>Dr C D (Dan) Mote, Jr</td>
<td>President, U.S. National Academy of Engineering; Regents Professor, University of Maryland, USA</td>
</tr>
<tr>
<td>Narayana Murthy CBE</td>
<td>Infosys founder</td>
</tr>
<tr>
<td>Professor Choon Fong Shih</td>
<td>Singapore University</td>
</tr>
<tr>
<td>Professor Dr hc Viola Vogel</td>
<td>Department of Health Sciences and Technology, ETH Zurich</td>
</tr>
<tr>
<td>Paul Westbury FREng</td>
<td>CEO, Büro Happold</td>
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QUEEN ELIZABETH PRIZE FOR ENGINEERING FOUNDATION TRUSTEES

The Queen Elizabeth Prize for Engineering Foundation is run by a charitable company limited by guarantee and called The Queen Elizabeth Prize Foundation, which manages the prize and the funding for the prize.

Lord Browne of Madingley FREng FRS (Chairman)
Sir John Parker GBE FREng
Mala Goenka
Sir Paul Nurse HonFREng PRS
Sir John Beddington CBE, HonFREng
Sir Mark Walport, Chief Scientific Adviser to UK Government, is adviser to the board.
QEPRIZE DONORS

The Queen Elizabeth Prize for Engineering Foundation extends its gratitude to the corporate donors whose generosity has funded an endowment to enable the continuing development of the Queen Elizabeth Prize. Support has been received from the following:

**Founding donors**
- BAE Systems plc
- Jaguar Land Rover
- Sony
- Tata Steel Europe
- Tata Consultancy Services
- Toshiba

**Donors**
- Nissan Motor Company Ltd

**QEPRIZE SEARCH GROUP**

The role of the Search Group is: profile raising, engaging the global professional engineering community in making nominations for the prize; acting as global ambassadors for the prize, promoting awareness throughout networks, participating in events and seeking intelligence of emerging areas of accomplishment and innovation; and assisting in the search for nominations.

**Name** | **Job Title** | **Country**
--- | --- | ---
Professor Sir William Wakeham FREng | Chair of Search Group | UK
Professor Stephen Williamson FREng | Deputy and Chair Elect of Search Group, Former Deputy Vice-Chancellor Research and Innovation, University of Surrey | UK
Professor David Balmforth | Senior Vice President and President Elect ICE | UK
Dr David Clarke FREng | CEO Energy Technologies Institute | UK
Professor Carlos Henrique de Brito Cruz | Scientific Director of Fapesp (São Paulo Research Foundation) | Brazil
Professor Dave Delpy FREng FRS FMedSci | Former CED EPSRC, Chair of DSAC (Defence Scientific Advisory Council) | UK
Professor Dr Igor Emri | Chairman of The Scientific Committee for Engineering Sciences, Chair of the ICR | Slovenia
Dr Alan Finkel AM FTSE FIE Aust | President of Australian Academy of Technological Sciences and Engineering (ATSE) and Chancellor of Monash University | Australia
Professor Il Soon Hwang | Seoul National University, Director, Nuclear Transmutation Energy Research Centre of Korea (NUTRECK). | South Korea
Dame Julia King DBE FREng FIE | Vice-Chancellor Aston University, Universities UK, EPSRC | UK
Professor Venkatesh Narayananurtri | Director of the Science, Technology and Public Policy Program at the Belfer Center for Science and International Affairs at the Harvard Kennedy School | USA
Professor Bjorn O Nilsson | President of the Academy Royal Swedish Academy of Engineering Sciences (NA) | Sweden
Dr Baldev Raj | President, Indian National Academy of Engineering, Director Indira Gandhi Centre for Atomic Research (IGCAR) | India

**DEVELOPMENT ADVISORY BOARD**

The role of the Development Advisory Board is to support the realisation of the Academy’s goals and in particular its fundraising efforts. Board members are:

- Sir Richard Olver FREng – Chair
- Professor Haroon Ahmed FREng
- Ian Barlow
- Malcolm Brinded CBE FREng
- Iain Conn FREng FRSE
- Vivienne Cox
- Andrew Gould
- Dr David Grant CBE FREng FLSW
- Steve Holliday FREng
- Fred Kindle
- Dr Mike Lynch DBE FREng FRS
- Professor Richard Parry-Jones CBE FREng (until July 2013)
- Roberto Quarta
- Simon Robey
- David Thomson FREng

**CONTRIBUTORS TO ACADEMY PROGRAMMES**

The Academy extends its gratitude to the Fellows, companies and charitable trusts whose generosity has enabled the continuing growth and development of its programmes and activities in the UK, and its engineering capacity-building work in sub-Saharan Africa. In the financial year, new support has been received from the following:

- ABB Ltd
- The Sir John Fisher Foundation
- Airbus
- David Gammon
- The Anglo American Group Foundation
- The Garfield Weston Foundation
- Atkins
- The Gatsby Charitable Foundation
- BAE Systems plc
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- Robert Bosch Ltd
- Jaguar Land Rover
- BP plc
- The Leverhulme Trust
- BT plc
- Lloyds Register Foundation
- The Commercial Education Trust
- Sir Robert McAlpine FREng
- ConocoPhillips Nigeria
- Motorola Solutions Foundation
- Consolidated Contractors Company
- Mott MacDonald Group Ltd
- EDF Energy Nuclear Generation Ltd
- National Grid plc
- The ERA Foundation
- NATS Limited
- Network Rail
- The Nuffield Foundation
- The Panasonic Trust
- Petrofac Ltd
- QinetiQ plc
- Rolls-Royce plc
- Royal Commission for the Exhibition of 1851
- Sir Robin Saxby FREng
- Shell Centenary Scholarship Fund
- Shell International Ltd
- URS Corporation
- Weir Group plc
- Worshipful Company of Engineers
- W 5 Atkins plc

In addition, John Taylor OBE FREng generously pledged a substantial sum towards the proposed redevelopment of the lower ground floor area at Prince Philip House to provide high-quality space and facilities for the Enterprise Hub.
In November 2013, the Academy launched its second Annual Fund to its Fellowship. The Academy would like to thank the following* including those Fellows who have made regular annual gifts for some years:

Hugh Allen FREng  Professor Robert Dover FREng  Michael Reeve FREng
Charles Betts CB FREng  Professor Rodney Eatock Taylor FREng  Professor Peter Rowe FREng
Ian Bodd FREng  Dr Cecil French FREng  Philip Ruffles CBE RDI FREng FRS
Robert Brander, FREng  Dr Peter Hackett OBE DL FREng  Professor Sarah Springman CBE FREng
Professor Paul Cannon OBE FREng  Professor Joseph Helszajn OBE FREng FRSE  Dr Scott Steedman CBE FREng
Keith Clarke FREng  Dr John Lazar FREng  Stephen Vranch FREng
Dr James Cowley CBE FREng  Professor Robert Mair CBE FREng FRS  Albert Wheeler CBE FREng
Peter Cox FREng  Charles Massey OBE FREng

*a further 11 Fellows wished their gifts to remain anonymous.

The Academy also wishes to acknowledge a legacy left by Air Marshall Sir Charles Pringle KBE FREng.

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London W1U 7EU

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London W1X 1PD