



HONORARY FELLOWS

CLARKE, Keith E F

Chairman of Atkins Middle East and Director of Sustainability, Atkins

CLEAVER, Sir Anthony

Chairman, Novia Financial plc and Caithness North Sunderland Regeneration Partnership

O'ROURKE, Ray

Chairman and Chief Executive, Laing O'Rourke

FELLOWS

APSLEY, Norman

Chief Executive Officer, Northern Ireland Science Park Foundation Ltd

BIGGS, Simon Richard

Royal Academy of Engineering/National Nuclear Laboratory Professor of Particle Science and Engineering, University of Leeds

BUCKBERRY, Clive Henry

Director of Science and Technology, Quanta Fluid Solutions Ltd

BUENFELD, Nicholas Robert

Professor of Concrete Structures, Imperial College London

CARFRAE, Tristram

Arup Fellow

CARLTON, John Stephen

Professor of Marine Engineering, City University London

CHEW, Tai Chong

Projects Director, MTR Corporation Limited

CLARKE, David Andrew

Chief Executive, Energy Technologies Institute (ETI)

CLARKE, Sarah Regina Florence

Chief Highway Engineer, Highways Agency

DEEMING, Lianne

Director of Business Excellence, Tata Steel Europe Ltd

DRAYSON, Lord Paul

Managing Partner, Drayson Racing Technologies LLP

FIGGURES, Andrew Collingwood

Chief Executive, British Transport Police Authority

FLINT, David Jonathan

Chief Executive, Oxford Instruments plc

FRANKLAND, William

Engineering Leader, Laing O'Rourke Construction Hong Kong Ltd

FRENCH, Peter Douglas

Chief Executive, BMT Group Ltd

GARRAD, Andrew Douglas

President and CEO, Germanischer Lloyd Garrad Hassan

GLASS, Alastair Malcolm

Chairman, Tyndall National Institute, Ireland, and Board Member, Science Foundation Arizona

GREGORY, Sir Michael

Head of Manufacturing & Management Division, University of Cambridge and Director of the Institute for Manufacturing

HARKIN-JONES, Eileen

Professor of Polymer Engineering, Queen's University Belfast

HARTER, Andrew Charles

Chief Executive Officer, RealVNC Limited

HOPKINS, Graham William

Executive Vice President, Engineering and Technology, Gas Turbine Supply Chain, Rolls-Royce plc

HOSTY, Andrew Joseph

Chief Executive Officer, Morgan Ceramics

JACKSON, Neville Stuart

Chief Technology and Innovation Officer, Ricardo plc, Chairman, UK Low Carbon Vehicle Partnership.

KEANE, Andrew John

Professor of Computational Engineering and Director, University of Southampton

LAZAR, John Wilfred

Chairman, Metaswitch Networks

LEIPER, Quentin John

Group Chief Engineer, Carillion plc

LOVE, Robert Thomas

Deputy Chief Executive Officer, Babcock International Group, Marine and Technology Division, Australia

MARVIN, Andrew Charles

Professor of Applied Electromagnetics, University of York and Technical Director, York EMC Services Ltd

MCDOWELL, Michelle

Chair of Civil and Structural Engineering Group, Chair of London and Winchester Studios, Company and Executive Board Member, BDP

MEDCALF, Nicholas

Bio-processing Manager, Smith & Nephew plc

MISSOUS, Mohamed

Professor of Semiconductor Materials and Devices, University of Manchester

MUNDY, Jeni

Director, Products and Innovation, Vodafone Global Enterprise

NORTON, James

President, British Computer Society, and a Director of F&C Capital and Income Investment Trust plc

REESE, Jason Meredith

Weir Professor of Thermodynamics and Fluid Mechanics, University of Strathclyde

ROSCOE, Andrew William

Professor and Head of Computer Science Department, University of Oxford

RUTT, Harvey Nicholas

Rank Professor of Infrared Science and Technology, University of Southampton

SAUNDERS, Frances Carolyn

Chief Executive, Defence Science and Technology Laboratory (dstl)

SELLEN, Abigail Jane

Senior Researcher and Co-Manager, Socio-Digital Systems Group, Microsoft Research Cambridge

SHAYLER, Paul John

Ford Professor and Professor of Mechanical Engineering, University of Nottingham

SHERRY, Andrew Hamilton

Professor of Materials Performance and Director, The Dalton Nuclear Institute, University of Manchester

SMITH, Liane Margaret

Founder and Director of Intetech Ltd

STITT, E Hugh

Scientific Consultant, Johnson Matthey Technology Centre

TAYLOR, John Crawshaw

Founder and Chairman of Fromanteel Ltd

TAYLOR, Richard Jonathan

Chief Engineer and Senior Fellow, National Nuclear Laboratory

TURNBULL, Alan

NPL Fellow, National Physical Laboratory

WARDXOGLOU, Yiannis John Costas

Dean, School of Electrical and Electronic Engineering, Loughborough University

WALLACE, Ian George

Professor and Head of Cranfield Defence and Security, UK Defence Academy at Shrivenham, Cranfield University

WOODCOCK, James Charles Paul

Anniversary Professor of Software Engineering, University of York

WORRALL, Peter R

Chief Material (Joint Enabler), MoD

YU, Hai-Sui

Pro-Vice-Chancellor, University of Nottingham

INTERNATIONAL FELLOWS**CHU, Steven (USA)**

Secretary of Energy, US Department of Energy

GENS, Antonio (Spain)

Professor of Geotechnical Engineering, University of Catalonia (UPC), Spain

LAUVERGEON, Anne (France)

Chairman of *Libération* and former Chief Executive Officer, AREVA

LI, Jinghai (China)

Professor and Vice-President of the Chinese Academy of Sciences (CAS)

MAI, Yiu-Wing (Australia)

University Chair and Professor of Mechanical Engineering, University of Sydney, Australia

ZHANG, Jie (China)

President, Shanghai Jiao Tong University, China

HONORARY FELLOWS**CLARKE, Keith E F CBE MSc DipArch MRIBA**

HonIStructE FICE FRSA

Keith Clarke, an architect by original education, has long been a thoughtful, enthusiastic, reforming and increasingly influential voice within and on behalf of civil engineering. He provides the Academy with a charismatic and substantial advocate for the importance of engineering in providing solutions to many of the world's major challenges - most particularly climate change and the development of a soundly-based low carbon future.

Keith Clarke is a chartered architect, with a masters degree in urban planning from Pratt University Brooklyn, USA. He has worked in the public sector in New York with major construction contractors Trafalgar House and Olympia and York and as an Executive Vice President at Skanska AB where he was responsible for operations in the UK, Poland, Czech Republic, India and China. His experience covers urban regeneration, policy development and the delivery of large-scale construction projects in the USA, Asia, India and Europe. He is known for firm leadership, integrity and strong support for technical excellence and engagement with the wider community.

In his current role as CEO of Atkins Global, the UK's largest firm of consulting engineers covering design and delivery of construction, infrastructure, transport, architecture and industrial projects, he has turned a company which, since the

millennium, had become unfocused and was struggling, into a profitable and respected organisation – principally by concentrating on ensuring the excellence of its core engineering functions. Despite his high profile and demanding role within Atkins, he regularly accepts appointments beneficial to the whole construction sector, latterly as a very visible Chairman of the Construction Industry Council and as the Institution of Civil Engineers' 2010/11 Brunel Lecturer, in which role he is speaking on 'Delivering the Low Carbon Economy' more than a dozen times worldwide.

His achievements in leading Atkins sit alongside his wider public role and his undoubted ability to further the place of engineering in society, with government and, most importantly, in generating the engineering agenda of the future, give him impeccable credentials for election as an Honorary Fellow.

CLEAVER, Sir Anthony MA(Oxon) HonLLD HonDSc HonUniv FBCS CCMI FCIM HonFCIPS FCGI FRCM

As Chairman of EngineeringUK from August 2007 to July 2010, Sir Anthony Cleaver conceived, developed and launched the Big Bang Fair, an annual exhibition of science and engineering for young people. He is currently Chairman of SThree plc, Novia Holdings Ltd and Caithness & North Sutherland Regeneration Partnership.

Born in 1938, he graduated from Trinity College Oxford in Literae Humaniores in 1962 and joined IBM the same year. His career at IBM spanned marketing, systems engineering, product management and line management. It included overseas assignments to the United States and to the IBM European Headquarters in Paris. Returning to the United Kingdom in 1983 as General Manager, he became Chief Executive in 1986 and Chairman and Chief Executive in 1990. He was knighted in 1992.

He retired from IBM in 1994, having previously become Chairman of the United Kingdom Atomic Energy Authority. In 1996 he led the privatisation and subsequent flotation of UKAEA's commercial activities, becoming Chairman of AEA Technology plc - a post he held until the end of 2001. In 2004, he became the founding Chairman of the Nuclear Decommissioning Authority, retiring from this position in 2007.

During his career, Sir Anthony has been chairman of a number of other organisations, including IX Europe plc, the Medical Research Council, UK eUniversities Worldwide Limited, General Cable plc, Working Links Ltd, The Strategic Partnership Limited and the

Government's Industrial Development Advisory Board. He has been a non-executive director of General Accident, Smith & Nephew plc and Lockheed Martin UK Ltd and a member of the British Government Panel on Sustainable Development, the Committee on Standards in Public Life (Nolan Committee), the Singapore British Business Council and the British Overseas Trade Board.

In the field of education and training, he was a founder member of the National Training Task Force and Chairman of its TEC Committee. He was also Chairman of the Independent Assessors of the TECs and a member of NACETT, the National Advisory Council for Education and Training Targets (UK). He chaired the RSA Inquiry into 'Tomorrow's Company' and from 1989 to 1999 was Chairman of the Governors of Birkbeck College, London. From 1997 to 2002, he was President of the Involvement & Participation Association (IPA), and was, for several years, a member of the Particle Physics and Astronomy Research Council Appointments Committee. He was Chairman of the Council for Excellence in Management and Leadership until May 2002 and President of the Chartered Management Institute for the year 1999/2000.

Consequent on his long-term concern with the environment, Sir Anthony is President of Business Commitment to the Environment. He was a Director of the UK Centre for Economic and Environmental Development, founding Chairman of Business in the Environment and a member of the first Advisory Committee on Business and the Environment. In 1990 he was named a member of the United Nations Environment Programme's Global 500 Roll of Honour. He was President of the Classical Association for 1995-1996.

Sir Anthony Cleaver is closely involved in the arts, having been Chairman of the Royal College of Music and Deputy Chairman of English National Opera.

O'ROURKE, Ray KBE CEng FICE FIEI

Ray O'Rourke has built Laing O'Rourke into Europe's largest privately owned construction company. Laing O'Rourke has over 30,000 employees worldwide and enjoys an enviable track record, having delivered some of the UK's most high-profile engineering projects. The Channel Tunnel Rail Link, Heathrow's Terminal 5, and Ascot Race Course are just some of the major contracts the company has completed. Laing O'Rourke is also leading the consortium managing the building programme for the 2012 London Olympics. Ray O'Rourke was born in County Mayo, Ireland, in 1947. He studied civil engineering

at Dublin Institute of Technology, leaving Ireland in 1966 to work in England. After working for a number of construction companies he founded R O'Rourke & Son, which began trading in 1978. Over the next decade this company established itself as a major force in the UK construction industry, specialising in civil engineering on sub- and superstructure package contracting. In 2001 O'Rourke Group acquired the construction arm of John Laing plc to create the current multinational business.

Ray O'Rourke's business acumen and entrepreneurial drive are considerable; however he has also greatly distinguished himself as an 'investor in people'. His strong commitment to lifelong learning is evident in the extensive opportunities available to his staff, the majority of whom are directly employed by the company. Staff at all levels are offered continuing professional development to hone their expertise and improve their skills. This approach has given the company a strong in-house skill set and the resilience to retain market leadership and weather economic downturns. Laing O'Rourke has also become a leader in construction innovation, particularly in the development and use of pre-cast concrete. The company was a founding member of the UK Green Building Council.

Laing O'Rourke is also noted for its commitment to workplace safety, an issue on which Ray O'Rourke holds strong personal views: "For me, safety is paramount," he has said. "If we don't have safety in our business it is worthless." In 2009 Ray O'Rourke was appointed a director of Anglo American plc, where he serves on the Sustainability and Audit committees.

Recently, thanks to Ray O'Rourke's visionary leadership, new centres of excellence have been set up at Cambridge, Oxford and Imperial College universities. These new multi-disciplinary academic centres of excellence aim to advance the engineering profession and leverage innovative thinking to benefit the construction industry and to respond to the environmental and sustainability challenges facing our planet.

He is a strong advocate of government investment in skills and training for industry. A Fellow of the Institution of Civil Engineers, Ray O'Rourke is an outstanding ambassador for engineering and an exemplar of the entrepreneurial spirit.

In recognition of this lifelong service, in January 2011 he was awarded an honorary knighthood for services to the construction industry.

FELLOWS

APSLEY, Norman BSc MA(Cantab) PhD(Cantab) CPhys CEng FInstP FIAE (60)

Professor Apsley is distinguished for the development of engineering-based science parks. He is outstanding for management of R&D based engineering projects in defence and for commercial applications of defence science, technology and engineering; and eminent for work in electronic conduction in compound semiconductors.

BIGGS, Simon Richard BSc PhD CEng CChem FICHEM FRSC (46)

Professor Biggs is distinguished for achievements in the application of colloid and interface science to the development of new functional materials and innovations in the engineering of particulate systems in the chemicals, minerals and nuclear sectors.

BUCKBERRY, Clive Henry BSc MTech PhD MInstP MIMechE (50)

Professor Buckberry is distinguished for fundamental fibre optoelectronic speckle pattern interferometry developments and for creating and implementing laser photonic applications for automotive and other industries; exceptional for technical leadership of a medical engineering company spun out of IMI Vision; and outstanding for sustained, mutually fruitful university knowledge transfer.

BUENFELD, Nicholas Robert BSc MSc DIC PhD CEng MICE MICT (54)

Professor Buenfeld is one of the most eminent researchers and consultants worldwide working on problems associated with concrete deterioration – a subject of immense and growing practical importance. His world-leading research in this key area has delivered major improvements in the design, assessment and repair of large-scale civil engineering infrastructure.

CARFRAE, Tristram RDI MA(Cantab) FRSA FTSE CEng FIEAust CEng MStructE (52)

Tristram Carfrae is an inspirational structural designer, responsible for a wide range of award winning buildings – most recently Beijing's 'Water Cube'. He is a MacRobert Award winner, Arup Fellow, and a Royal Designer for Industry. He is a pioneer of digital design methods and has a deep commitment to integrated and sustainable design. He is a member of the Arup Group Board, responsible for the output of about a third of the firm under the 'Buildings Practice'.

CARLTON, John Stephen BA(Cantab) DSc CEng CMarEng FIMarEST FIMechE MRINA (64)

As the recent Global Head of Marine Technology and Investigation for Lloyd's Register, Professor Carlton is one of the nation's outstanding marine engineers. His career has blended design with innovative research, including authorship of the standard textbook on marine propellers and ship propulsion. He is the current President of IMarEST.

CHEW, Tai Chong BSc MSc CEng FIET FIMechE FICE FIRSE FHKEng (59)

Tai Chong Chew demonstrated outstanding leadership in establishing the operational and engineering master plan leading to the construction and full implementation of the world's first fully automated driverless heavy metro system on the North East MTR line in Singapore. This system leads in the application of integrated automated processes and sub-systems to deliver reliable, energy-efficient, high-quality transit services. It continues to be a showcase mass transit railway, in particular to those authorities who contemplate introducing driverless operation.

CLARKE, David Andrew BSc PhD CEng FIMMM FEI (49)

Dr Clarke's composite creation and component manufacturing expertise has given Rolls-Royce significant competitive edge. He is also distinguished for his part in shaping the company's technology strategy. As Chief Executive of the ETI he is leading a team taking promising projects through to technology demonstrators which will be essential in delivering affordable, secure and sustainable energy technology for the long term and modelling the complexities of the UK's low carbon energy options.

CLARKE, Sarah Regina Florence CBE BSc CEng MICE FCIHT (56)

Ginny Clarke holds the position of this country's Chief Highways Engineer. She is responsible for setting the highway engineering standards for the United Kingdom. Her international reputation in highway engineering is widely recognised and she was for several years the United Kingdom First Delegate of the World Road Association.

DEEMING, Lianne BSc MBA FIMMM (44)

Professor Deeming is exceptional for steel industry leadership, drawing on engineering science, shop floor know-how and leadership to create and run an internationally competitive plant; outstanding for introducing and operating best of breed risk and safety practices; and notable for her commitment to and success in fostering engineers at all stages in their careers.

DRAYSON, Lord Paul PC BSc PhD HonDSc FIET FRSA (51)

Lord Drayson is distinguished for contributions to national science, innovation and defence policy. He is renowned as a technology-led entrepreneur and well-regarded as a role model promoting engineering as a career.

FIGGURES, Andrew Collingwood CB CBE MA(Cantab) MBA HonDSc CEng FIMechE FIET FRAeS (60)

Lieutenant General Figgures is distinguished for leading the direction of MOD's equipment and support programme which is based on the introduction and maintenance of new technology worth £16 billion per annum. It is technology that provides new equipment capability and he regularly makes outstandingly difficult decisions based on a breadth and depth of technical understanding unparalleled in any other walk of life.

FLINT, David Jonathan BSc MBA FInstP FIET (50)

David Flint is distinguished for outstanding leadership in electronics, avionics and instrumentation businesses, particularly in reinvigorating and redirecting Oxford Instruments plc.

FRANKLAND, William Eur Ing CEng FICE ARCATS (65)

Bill Frankland has made outstanding contributions in delivering the construction of a whole series of major international iconic structures, including the North Cormorant Offshore Structure, the Hong Kong Airport roof, Heathrow T5 roof structures and the London Aquatics Centre and Main Stadium roof for the Olympic Games.

FRENCH, Peter Douglas BSc CEng FRINA MICE (61)

Peter French is distinguished for his outstanding abilities as an international maritime civil engineer and eminent for his remarkably successful leadership of one of the world's leading maritime engineering consultancies, recognised internationally for its investment in research, innovation and quality of work. He is distinguished also for his leadership of wider engineering and business organisations.

GARRAD, Andrew Douglas BA(Oxon) PhD HonDEng FIMechE FRAeS FEI (57)

Dr Garrad is distinguished as an international consultant in the field of wind energy. He has created the world's largest renewable energy consultancy, with 750 employees, which has been awarded Queen's Awards in 2000 and 2008. His personal achievements have been recognised by the University of Bristol which awarded him an honorary DEng in 2009.

GLASS, Alastair Malcolm BSc(UCL) PhD(British Columbia) NAE FOSA FIEE (70)

Dr Glass has made eminent contributions to the semiconducting and glass-based materials and device technologies now used for high bit-rate photonic fibre-optic communications systems. His outstanding technical accomplishments allowed Alcatel Lucent to establish mastery in the field. His leadership drove forward the commercialisation of the fruits of his research.

GREGORY, Sir Michael CBE BSc MA(Cantab) CEng MIMechE FIET (63)

Sir Michael is the founder and now head of Cambridge University's internationally respected Institute for Manufacturing and has had a distinguished career teaching and researching at the forefront of engineering. His work has made a significant contribution to UK industrial policy and the performance of both large and small companies.

HARKIN-JONES, Eileen BEng PGCE PhD FIMechE FICHEM FRSA (49)

Professor Harkin-Jones is distinguished for her pioneering work on free surface plastic moulding processes, and rotational moulding of reactive liquid polymers and its application to increase efficiency of industrial processes and enhance product quality. She is prominent in promoting women in science and engineering and enhancing young people's understanding of science, technology, engineering and mathematics.

HARTER, Andrew Charles MA(Cantab) PhD(Cantab) CEng FIET FBCS CIP (50)

Dr Harter is outstanding for his contributions to software engineering and commercialisation through VNC, a ubiquitous remote access technology deployed on hundreds of millions of computers worldwide. VNC is embedded in Intel chips, Apple computers and Linux distributions, and its enduring utility is distinguished by profoundly simple and versatile engineering.

HOPKINS, Graham William BSc CEng FRAeS FIMechE FIMMM FRSA (53)

Graham Hopkins is distinguished for leadership and engineering innovation in gas turbine technology, making major contributions to civil and military aero-engines. At Rolls-Royce he pioneered robust design and systems engineering programmes and has worked extensively with professional, government, academic and industry bodies in the UK and overseas.

HOSTY, Andrew Joseph BSc PhD CEng FIMMM (46)

Dr Hosty has a very strong academic record and is an outstanding business leader. He is eminent in the ceramic industry and distinguished for his contribution to the UK ceramics and engineering industry.

JACKSON, Neville Stuart BSc DSc ACGI CEng FIMechE (51)

Neville Jackson is internationally recognised as an outstanding thinker and spokesman for the future of automobiles in a low carbon world. He is Chair and member of several UK and International Low Carbon committees. He sets the direction for future research at Ricardo and supervises projects to completion. He successfully combines commercial research with advanced, speculative university projects.

KEANE, Andrew John BSc MSc PhD DSc CEng MRINA FIMechE (53)

Professor Keane is distinguished for his research in the field of aerospace design, with over two hundred articles and four books on the subject. He founded the UK's largest research group dedicated to computational aerospace design and has successfully commercialised his research.

LAZAR, John Wilfred BSc(Witwatersrand) MSc(Oxon) DPhil(Oxon) FBCS (52)

Dr Lazar is exceptional for combining far-sighted technical vision with business success, as the driving force behind Metaswitch Networks, one of the world's most successful young telecommunications companies, with 90% of its revenues from exports. Outstanding for building and technically guiding a team of over two hundred engineers, winning several Queen's Awards.

LEIPER, Quentin John CBE BSc MSc CEng CEnv FICE (59)

Professor Leiper is distinguished for providing leadership to the civil engineering profession from industry. His most significant contribution lies in driving sustainability into the engineering delivery and business strategy of Carillion plc and the civil engineering profession during his Presidency of the Institution of Civil Engineers.

LOVE, Robert Thomas CB OBE BSc CEng FIMarEST FAPM (56)

Rear Admiral Love is acknowledged as the Royal Navy's leading and most influential marine engineer. He is widely recognised as the pre-eminent expert in modern warship support making outstanding engineering contributions to the new Type 45, Queen Elizabeth Class Aircraft Carrier and the Future Surface Combatant platforms.

MARVIN, Andrew Charles MEng PhD CEng FIET FIEEE (60)

Professor Marvin combines a highly distinguished academic research career with a significant industrial activity involving founding and directing a world renowned Electromagnetic Compatibility (EMC) company, technical innovation in EMC metrology, sought-after CPD lecturing, and outstanding international standards leadership. His work continues in all these fields with new initiatives in industrially led research.

MCDOWELL, Michelle MBE BSc CEng FICE FRSA (48)

Recognised for her integrated and innovative approach to structural design as exemplified by her outstanding delivery of complex and architecturally challenging projects, such as the Royal Albert Hall (£77 million), Berlin Stock Exchange (£40 million) and BBC Mailbox (£40 million). Michelle McDowell is also eminent for her pioneering use of building information modelling, using 3-D intelligent computer models of building structures.

MEDCALF, Nicholas MSc PhD CEng CChem MRSC FICChemE (53)

Dr Medcalf is a distinguished biochemical engineer who is developing products and processes using tissue engineering that make possible treatments involving skin and cartilage regeneration and advances in the treatment of osteoarthritis and the replacement of ligaments and skin. He successfully applies engineering principles in this new field of orthobiologics.

MISSOUS, Mohamed MSc PhD FInstP FIET SMIEEE (51)

A distinguished academic with a flair for business and a strong sense of public duty, Professor Missous has built a world class epitaxial growth facility and used the knowledge gained from it to launch two semiconductor device companies with unique products. His business experience makes outstanding academic endeavour more relevant to his students and his technology is seminal to a number of UK and foreign companies doing pioneering work in very high frequency electronics. Professor Missous is UK champion for the Square Kilometre Array, an ambitious global engineering project aimed at building the largest radio telescope ever conceived.

MUNDY, Jeni BSc MSc CEng MIET (45)

Jeni Mundy is distinguished as an operational engineer responsible for the development and continuous commercial operation of one of the largest telecommunications networks in the UK. Her achievements in building networks that can be scaled for rapid traffic growth have earned her an international reputation as an outstanding Chief Technology Officer.

NORTON, James BEng HonDEng CEng CIP FBCS FIET (59)

Professor Norton is distinguished as the first professional engineer to head the UK Government's spectrum management agency, where he pioneered radical approaches to radio spectrum management. As a founder of the Cabinet Office Performance Innovation Unit, James Norton placed e-business firmly on the political agenda and continues to influence national infrastructure issues.

REESE, Jason Meredith BA(Oxon) MSc(Oxon) DPhil(Oxon) FRSE FIMechE FInstE (54)

Professor Reese is an engineering scientist distinguished for unique research into the fluid dynamics of high-speed flight and micro- and nano- systems. He is a successful industrial entrepreneur and consultant, co-founder of a company exploiting inventions for sealing oil/gas pipeline leaks; an ExxonMobil Engineering Fellow, Philip Leverhulme Prize winner, and finalist in 2006 MacRobert award.

ROSCOE, Andrew William MA (Oxon) DPhil (Oxon) CEng FIET (54)

Professor Roscoe is distinguished for his fundamental contributions to the specification, design, analysis and implementation of concurrent computer systems, and for the industrial application of his research.

RUTT, Harvey Nicholas BSc PhD CEng CPhys FIET FOSA SMIEEE (50)

Professor Rutt has made a lifetime of outstanding research contributions to electro-optical research and development in laser technology for industrial application. Significantly he has been responsible (at some considerable personal career cost) for leading a major fire recovery and rebuild of the award winning £100 million national research facility in electro-optics and semiconductor fabrication at the University of Southampton.

SAUNDERS, Frances Carolyn CB BSc PhD CEng CPhys FInstP (57)

Dr Saunders is distinguished for leading MOD's engineering and science programme as Chief Executive of the Defence Science and Technology Laboratory. She has worked in collaboration with UK industry and academia to support the British Armed Forces engaged on current operations, and also to meet the needs of an uncertain future.

SELLEN, Abigail Jane BASc MA MASc PhD MACM MIEEE FBCS (50)

Professor Sellen is internationally recognised as a leading expert in the field of Human Computer Interaction (HCI). She is distinguished for her seminal works on the role of electronic documents and on video-conferencing.

SHAYLER, Paul John MSc PhD FIMechE FRSA MSAE (61)

Professor Shayler is distinguished for internationally renowned research on the thermodynamic behaviour of internal combustion engines, particularly under cold start and warm-up operating conditions, which has made a leading contribution to knowledge in the field and produced practical methodologies and models which have changed engine development processes in the automotive industry.

SHERRY, Andrew Hamilton BSc MSc PhD CEng FIMMM (49)

Professor Andrew Sherry is distinguished for his work on the development, validation, application and standardisation of advanced structural integrity assessment methods including constraint-based fracture mechanics, mechanistic materials modelling and near-service condition testing. He is outstanding for his leadership in industrial-academic partnerships to support applied research and engineering skills development in the nuclear sector.

SMITH, Liane Margaret BA(Cantab) MA(Cantab) PhD CEng FIMMM FWeldI (51)

Dr Smith is recognised as a world authority on corrosion and materials within the oil and gas industries. Through the development of her corrosion and material selection models she has made an outstanding engineering contribution to the safety and economic viability of oil and gas fields throughout the world.

STITT, E Hugh BEng PhD CEng FICHEME (53)

Professor Stitt is distinguished as one of the top chemical reaction engineers in the UK. During a substantial career, he has been responsible for the design of hundreds of highly successful commercial industrial reactors. As a result, he has helped create an important commercial advantage for the UK and its chemical industry.

TAYLOR, John Crawshaw BA(Cantab) MA(Cantab) FInstP (74)

Dr Taylor is the ultimate example of an entrepreneurial engineering inventor whose drive and success have benefited not only those engineers that work for him but also the economy of the UK. He has made outstanding lifelong contributions to engineering by inventing thermal controls which exploit the properties of materials and are manufactured by innovative methods for products ranging from kettles to small motors. His company has sold one billion controls for the ubiquitous cordless kettle and received four Queen's Awards.

TAYLOR, Richard Jonathan BSc FEANI CEng Eur Ing FIMechE (48)

Richard Taylor is outstanding for his work in development of a technically viable alternative to the traditional wet chemical process used to reprocess spent nuclear fuel. He is an engineering leader of substance in the nuclear sector, recognised internationally for his leadership in addressing engineering challenges at the back end of the nuclear fuel cycle.

TURNBULL, Alan BSc PhD CEng FICorr FIMMM (61)

Dr Turnbull is a distinguished and internationally recognised engineering scientist who has made outstanding contributions to the understanding of the response of materials in aggressive environments. This knowledge has been applied via codes and standards to evaluating and understanding the health of a wide range of engineering plants across many industry sectors, including the nuclear and petrochemical industries.

VARDAXOGLU, Yiannis John Costas BSc PhD CEng FIET SMIEEE (46)

Professor Vardaxoglou is an outstanding academic, researcher, engineer and administrator. He has made significant contributions in electromagnetics, especially in the area of structures with negative refractive index (metamaterials). This allows high performance from very compact antennas and he is technical director of a company exploiting his knowledge in mobile phone and WiFi equipment.

WALLACE, Ian George BSc PhD CEng FICE CMarSci FIMarEST MCIWEM (56)

Professor Wallace is a distinguished explosives engineer, derived from a background as a chemist, who has improved the standards of safety in the explosives and ordnance world. Through his leadership of explosives education in the UK and Europe and his role as the MOD Chief Inspector of Explosives he has made an outstanding contribution to safety engineering.

WOODCOCK, James Charles Paul BSc MSc PhD MA(Oxon) CEng CITP FBCS (55)

Professor Woodcock is distinguished for elucidation of sound mathematical principles underlying the practice of software engineering. His research method is based on interactions between abstract theory, pilot development, industrial collaboration, consultancy, tool development, and practical evaluation. He leads the experimental strand of the International Verified Software Initiative.

WORRALL, Peter R OBE BSc CEng FIMechE
FAPM FCMI RCNC (50)

Peter Worrall is eminent in the Ministry of Defence as Chief Engineer, Helicopters. Previously, he has been a distinguished contributor to the introduction into service of warships, main battle tanks and 21st century communications systems. Engineering judgement of outstanding quality has been a constant feature of his work.

YU, Hai-Sui BE MSc DIC DPhil(Oxon) DSc
CEng FICE (46)

Professor Yu is distinguished for his outstanding contributions to theoretical and computational geomechanics. He is recognised internationally as a world leader in cavity expansion methods and plasticity theory for geotechnical and pavement applications, and eminent for the interpretation of in situ soil testing for site characterisation. He leads one of the UK's most respected civil engineering schools.

INTERNATIONAL FELLOWS

CHU, Steven (USA) BA(Rochester)

BS(Rochester) PhD(Berkeley) NAS FAAS FAPS
Academia Sinica FCAS FCAST (63)

Professor Chu became US Secretary of Energy in January 2009. He won the Nobel Prize in Physics in 1997. Prior to serving as Energy Secretary, he was a professor of physics and molecular and cellular biology at the University of California, Berkeley, and Director of the Lawrence Berkeley National Laboratory. He has spent much of his career advocating for alternative energy and nuclear power research, arguing that these are vital for combating climate change.

GENS, Antonio (Spain) MSc DIC PhD
MISSMGE MISRM MIACMAG (60)

Professor Gens is eminent for his outstanding contributions to soil mechanics and geotechnical engineering. Recognised internationally as a world leader in unsaturated soils and coupled multi-physics analysis. He has a distinguished consulting role in large landmark projects, where he is leader of one of the world-leading groups in geotechnical research. He is also a highly-esteemed contributor to UK geotechnical and academic activity.

LAUVERGEON, Anne (France) École
Normale Supérieure Degree in Physics École
Nationale de Mines HonDEng(Imperial) (51)

Anne Lauvergeon is recognised internationally for her vision and leadership in creating AREVA, and developing it into the world's largest builder of nuclear reactors and producer of uranium through deployment of innovative technology and business models. She was the prime motivating force behind the development and roll out of the European Pressurised Reactor (EPR).

LI, Jinghai (China) BS(Harbin) MS(Harbin)
PhD(CAS) FInstP HonFICHEM FRSC TWAS
MAICE (54)

Professor Li has had a highly distinguished career demonstrating outstanding personal leadership in the areas of science, engineering and national strategy. He is also known as an independent researcher of the highest calibre working in chemical process engineering who has undertaken pioneering work in multi-scale computational modelling. He is a Vice-President of the Chinese Academy of Sciences and past President of the Asian Association of Science Academies.

MAI, Yiu-Wing (Australia) BSc(Hong Kong)
PhD(Hong Kong) DSc(Hong Kong)
DEng(Sydney) AM FHKIE FHKENG FASME
FTSE FAA FRS (65)

Professor Mai is distinguished for seminal work on fracture mechanics; characterisation of advanced materials; and basic understanding of composite interfaces and crack-wake bridging, which has revolutionised the microstructure design of tough fibre composites and ceramics. His research has contributed to the development of asbestos-free cements, testing protocols and improved manufacturing processes with global impact.

ZHANG, Jie (China) PhD(CAS) CAS TWAS
AAPPS (53)

Professor Zhang is distinguished by advanced engineering solutions to some of the most challenging, critical and fundamental problems in optical communications, directly underpinning the development of the field and the growth of the internet. He is also distinguished for his leadership roles in the international optical communications community.

The Royal Academy of Engineering is pleased to announce that the
above were elected Fellows at the AGM on 11 July 2011.