

University of  
South Wales  
Prifysgol  
De Cymru

# MAKING THINGS HAPPEN



# WELCOME

The University of South Wales is a vigorous academic community of many nations and beliefs brought together by a shared commitment to the transformation of lives through knowledge and education.

I know from personal experience that the higher education this University provides is valued tremendously by graduates and their employers, and the University's success in fitting its students for the world of work is a source of justified pride. Our deepest function is universal, and is not confined to one subject or another: it lies fundamentally in educating citizens who will ask constructively critical questions in public life, who will understand the forces that shape it and know how seriously (or not) to take the confused mass of propaganda and fashion that swirls around in the overpopulated information culture of our age.

The most important bit of 'impact' any university can have is to help people to become intelligent citizens, and that means helping them to see what critical argument looks like, to see what genuine thinking is, and to explore great issues in an atmosphere of respect and positive expectation. The University of South Wales is a substantial presence in Britain and in the global higher education community. I am deeply proud to commend it to you.

*Rowan Williams*

Rt Hon and Rt Revd Lord Williams of Oystermouth  
Chancellor

Whether we are educating graduates for the changing world of work and industry or providing policy advice to government, pushing the boundaries of applied research or using those discoveries to address the great choices that face our society, we want our University to add value to our communities, our economy, and, most fundamentally, to the lives of those who study within our lively academic community.

In the early days of the expansion of British higher education and as the great industrial revolution grew, some far-sighted leaders of business and their professions created small, specialist professional institutions of higher learning in South Wales to educate the brightest minds of their younger generation.

I believe that our founders would be proud to see the University of South Wales today, for we have grown into a major international university, with the very latest in technology, superb staff, and students from more than 120 countries. We want the University of South Wales to be known for learning that is fed by world-class research in selected areas, by the development we offer for graduate employment and careers, and for our outstanding staff who deliver inspirational learning, teaching and student support fed by scholarship, enquiry and engagement with the wider world.

*J E Lydon*

Professor Julie Lydon OBE  
Vice-Chancellor

# A MAJOR UK PLAYER

**The University of South Wales is one of the UK's major higher education institutions, with students from more than 120 countries studying the full range of degrees of a large modern university.**

Within the United Kingdom, the University of South Wales is unique in the breadth of its role, encompassing a modern university and two subsidiaries in Wales's national conservatoire, the Royal Welsh College of Music & Drama, and The College Merthyr Tydfil. The University's work has been recognised with UK-wide awards for its innovative support to students, and widening access to higher education.

The University of South Wales is a key player in the regeneration of Newport city, the regional economy of the South Wales valleys, and the wider growth of the Cardiff Capital Region. Its iconic buildings form part of the economic and cultural landscape of the region's major cities, while its partnerships with key employers and substantial economic contribution are more than simply that of a major employer with more than 3,000 staff and a £190m turnover.

From the CBI to Chwarae Teg, the Welsh and UK Governments to the major employers of the region, the University of South Wales is both a key partner in the growth of its own region and more widely, as US Ambassador Matthew Barzun put it, a

"worthy ambassador for Britain's universities."

The University of South Wales is proud to have developed a strategic alliance with the major FE colleges of the region. Working with Bridgend College, Cardiff & Vale College, Coleg y Cymoedd, Coleg Gwent and The College Merthyr Tydfil, the University has signed a Strategic Alliance which reaches across South Wales to provide further and higher education across 38 campuses and a host of venues in the community to more than 98,000 learners.

With a combined turnover of £380m, the Alliance is a powerful vehicle for developing and delivering an integrated coherent regional approach. The Alliance aims to widen access and provide local accessible routes into further and higher education, supporting progression through further and higher education together with advice, guidance and support for learners. Ultimately its aim is to provide a fully joined-up offer for employers to raise skill levels, helping to drive up the economic performance of our region and the prosperity of all who live and work in it.



## State-of-the-art facilities for the professionals of the future

Our Newport Campus is one of the University's iconic city buildings, offering a vibrant, professional space where students on a range of courses collaborate on ideas as they study.

Working in collaboration, students at the campus have the opportunity to obtain skills and knowledge to fully equip them with the all-round experience demanded by their professions.

The campus is home to the National Cyber Security Academy (NCSA), a Welsh Government and USW initiative to help address a shortage of cyber security skills and develop the next generation of cyber security experts. The Academy is the first of its kind in Wales and a major UK initiative. Industry partners include Airbus and General Dynamics UK.



### Putting learning into practice

More than 80 student nurses took part in a simulated Blue Light Exercise. The students worked with other emergency service personnel to manage the aftermath of a mock road accident.

As well as responding to the accident, the student nurses had to manage the nearby fictional Dewi Sant Hospital – based in USW's clinical simulation suite – which was already filled with 'patients' undergoing treatment.

# INNOVATIVE EDUCATION FOR THE WORLD OF WORK

**A fundamental test for students and their families considering university is a simple question: am I likely to get a job at the end of it?**

University of South Wales graduates go straight to major employers, from British Airways, General Electric, Sony and Tata to the NHS, local authorities and the BBC. We have a strong record of employability, with 95% of our graduates in employment or further study six months after completing their courses. Part of this is due to the calibre of the students themselves, and the opportunities for work experience they have through our programmes. But many students at the University of South Wales also prepare for the world of work in the latest simulation environments, giving them a real advantage over students taught through purely theoretical classroom studies.

Our students get a real head start in their professions by training in state-of-the-art simulated environments, including a courtroom; a forensic scene-of-crime house; film, fashion and music studios; a stock trading floor; an internationally acclaimed clinical simulation centre for medical and nursing professionals; an aerospace centre with a real airliner and flight simulator; and sporting facilities used and endorsed by world champions such as the All Blacks and the Springboks. The University of South Wales offers a distinctive advantage for students: where technology helps to simulate the real-world work environment, they learn by doing.

**“The University of South Wales is playing a significant role in equipping young people with the skills they need to get ahead and set them on the path to successful careers.”**

Carolyn Fairburn, Director General CBI

# THE EMPLOYERS' PARTNER

We work as partners with employers. Many of our courses are developed with the professional bodies and leading organisations who employ our graduates, from local government and the NHS to many of the world's major corporations.

The University of South Wales's mace, the symbol of the University in its degree ceremonies, was designed by a lecturer who is a sculptor and artist in his own right, but it was constructed by the industry of General Electric and local industry through GE Aviation Wales. This represents the partnership with employers that runs through the University of South Wales's DNA.

Our Accounting courses are hugely respected, gaining Gold and Platinum ACCA accolades as well as being named Public Sector Accountancy College of the Year by PQ Magazine. In financial and professional services, our pioneering graduate scheme offers paid work placements in partnership with Admiral, Atradius,

GMAC and Composite Legal Expenses, providing opportunities to experience a professional career in financial services first hand.

Our partnership with employers makes the University of South Wales a major contributor to the success of our graduates and their employers.

USW's specialist aerospace engineering facility in the heart of the Dubai South development opened in 2018. As a leader in the field of aircraft maintenance engineering, USW was the natural choice to be the education partner in what will be the world's largest airport. Vice-Chancellor Professor Julie Lydon said: "Dubai South is where key aerospace markets are going to be for an international university like USW. As the city expands, USW will also be able to build on strong relationships so that other courses developed in South Wales can be made available to global organisations operating at Dubai South."

**"The University of South Wales has already established a leading reputation for excellence and partnership with industry and I am delighted to open this state-of-the-art facility, which will further accelerate this important work in power systems engineering."**

Lord Drayson, entrepreneur, racing driver and former science minister



## Hands-on training for a

## high-flying career

Natalie Simpson studied her BSc (Hons) Aircraft Maintenance Engineering at the University's Treforest campus. Students have the benefit of training in our Aerospace Centre, with its two aircraft hangars, cockpit flight simulator and two full-size aircraft.

The University of South Wales gives aircraft maintenance students the practical in-demand skills they will need in industry, with access to aerospace laboratories and equipment including a gas turbine engine, wind tunnel and Merlin MP521 engineering simulator.

Our recent aeronautical graduates are in demand in the civil and defence aerospace sectors worldwide. Some of the UK-based companies with which our students work include GE Aviation, Storm Aviation, Airbus, British Airways, and TESAviation.



### World-class creative graduates

Creative Director of world-famous animation series Wallace and Gromit, Merlin Crossingham, graduated with a film degree in 1995. Originally from Bath, Merlin is now a director at Oscar-winning studio Aardman Animations.

He considers his career highlights to be working as lead animator on Wallace and Gromit: Curse of the Were-Rabbit, and also in key roles on Chicken Run and A Matter of Loaf and Death.

Speaking about his time as a student, he said: "The degree I studied was focused on providing the hands-on skills needed for the job. My tutor was an inspiration and a fantastic animator. Having a course that immersed me in the creative and technical challenges of animated film-making enabled me to make the first tentative steps into the animation industry."

# GROWING TALENT IN THE CREATIVE INDUSTRIES

The University of South Wales is a powerhouse for the arts and creative industries.

As well as owning the national conservatoire, the Royal Welsh College of Music & Drama, the University's creative offering spans the range of film, animation, photography, gaming, drama, design, journalism, and fashion. A leading example of our creative industries capability is the University's Film School, which has a deserved international reputation. Our state-of-the-art facilities for animation, broadcasting, and visual effects are supported in partnership by major European funding and industry leaders such as Sony. Our graduates include Ashes to Ashes director Phil John; Martin Elsbury, editor of the BBC's Blue Planet series; action blockbuster director Gareth Evans; and BAFTA-winning director of Senna, Asif Kapadia.

However, it is not just within the high-profile major players of the international film and television industry that University of South Wales graduates make their mark. The University of South Wales is a rich resource for the UK's creative industries, from the major production studios and the BBC at Roath Lock to the rich ecosphere of smaller specialist creative businesses set up by our graduates. The University is leading the agenda for the creative industries and the digital economy in Wales through the Creative Exchange Wales Network, a joint Arts and Humanities Research Council and Welsh Government initiative. In the arts and creative industries, one of the major growth sectors of the modern economy, the University of South Wales is a powerful player.

"I can see that the University of South Wales has a bright future, from the way it is harnessing students' creativity with superb facilities and teaching to make an impact on the future of our high-tech industries... the University of South Wales is a worthy ambassador both for Wales and for Britain's universities."

Matthew Barzun, Former US Ambassador to the UK

# POWERING RESEARCH INTO ENERGY AND ENGINEERING

As well as being the largest provider of engineering higher education in Wales, the University of South Wales undertakes leading research in key fields of science and technology.

Our work in sustainable environment includes energy efficiency and low carbon emissions, new materials for energy storage and efficient use, hydrogen and energy systems, and bioprocess engineering. It is a platform for experimental research into the development of renewable hydrogen production systems and novel hydrogen energy storage technologies.

Wider engineering research includes major industry-partnered and/or EPSRC-supported research on optoelectronics, laser and LED technology, and EU-funded research on intelligent monitoring of co-fired utility power stations.

With cyber security and crime becoming an increasing issue facing both society and the economy, the University has developed a service for the forensic recovery and analysis of data. The University of South Wales has capability in computer network defence and data destruction, computer forensics, as well as situational awareness, penetration testing, and data recovery. From our unique, government-approved, high security computer forensics laboratory we deliver training and consultancy work for police and government.

The University provides an unusually comprehensive, all-platform and internationally recognised support to technology developers in mobile applications and services. Automotive technology research at the University, supported by government, is recognised as excellent by major players in battery technology and related automotive capabilities.

**“New universities like this one are at the heart of the UK’s knowledge generation in the field of applied research. The links between the academic expertise housed within its research centres and industry enables this University to make an impressive contribution to real-life problem solving. The strength of the University of South Wales’s industrial partnerships is what makes the University such a major player.”**

Professor Sir Christopher Evans OBE, scientist and entrepreneur

## Applied research for real-life problems

Professor Alan Guwy leads the University’s ground-breaking Sustainable Environment Research Centre (SERC), bringing together leaders from biology, engineering, chemistry, and physics into a single academic team and combining their resources and skills to meet the energy security and environmental challenges.

SERC has already established the University of South Wales as one of the most forward-looking institutions in its field in Europe, winning R&D contracts worth more than £25m in key areas of the energy and environment field, including hydrogen energy systems, biological fuel cells, anaerobic digestion and waste water treatment.

SERCs work in sustainable energy places the University as a leading centre for the development of biochemical, chemical, and systems engineering for the research and delivery of sustainable hydrogen low-carbon technologies.

# SETTING THE AGENDA

As a public policy think-tank, the University of South Wales provides policymakers and professionals with fresh thinking, new evidence, and above all innovative solutions to the challenges they face in effecting changes across public service organisation and delivery.

USW acts as a crucible in which we bring together the latest ideas of business leaders, public policy experts, and the elected representatives in whose hands the levers of government sit.

As part of USW's popular Global Choices lecture series, public leaders from the University's wider academic community provide political context, and lively discussion. Speakers have included former Prime Minister John Major, Julia Unwin, Rowan Williams, former Cabinet ministers John Morris and Peter Hain, and Labour politician Shami Chakrabarti.

USW is a rich resource of policy expertise, drawn on by government and both public and private sectors to underpin decisions on the major issues facing our society and economy. Our internationally-renowned experts in governmental leadership, transport, health and social care policy, economic growth and future skills, criminology and police sciences, and regeneration, work together to provide public policy analysis equal to the very best in the UK.

Nowhere is our impact more apparent than in the University's eponymous magazine. Recent organisations contributing, alongside our academic experts, to USW Impact include Women in Science & Technology, the Joseph Rowntree Foundation, the Equality & Human Rights Commission, and The King's Fund. With economic growth at the centre of the public policy debate, the economy is well represented with recent contributions from TheCityUK, Sony, British Airways, the City-Region task force, and CitiGroup.

# RESEARCH THAT MAKES A DIFFERENCE

# RESEARCH FOR THE REAL WORLD

At USW our research provides solutions to the challenges faced by our society and the economy. Our researchers work across disciplines to help businesses, communities and policy makers benefit from our research.

We continue to build on the strengths of the last Research Excellence Framework, increasing the depth and breadth of research and knowledge transfer activity across the broad range of disciplines. Importantly, research-informed teaching has positive benefits for students at all levels of study.

The research highlights that you will read in this publication provide a glimpse of the gravitas that USW provides to our local communities, to Wales, to the UK and internationally.

**Professor Martin Steggall,**  
Pro Vice-Chancellor Research



# BRAIN POWER

## Professor of Physiology and Biochemistry, Damian Bailey leads the Neurovascular Research Laboratory and is Director of the Health and Wellbeing Research Institute.

His unique research work is interested in the long-term benefits of exercise for the brain and to what extent corresponding improvements in oxygen transport could potentially slow down the ageing process and protect against dementia.

Professor Bailey has looked at the potential links between repetitive head injuries and long-term problems in rugby players in later life. Findings suggest that sustaining multiple concussions “accelerates brain ageing and increases the susceptibility to potentially develop early-onset dementia”.

The research studied the brains of nearly 300 current and former rugby players, looking for signs of whether repeated head injuries make the brain age faster.

In his most recent work, Damian has been carrying out experiments that will help to improve the understanding of what impact zero-gravity has on human bodies. Funded by the European Space Agency, he is looking at how space flight can affect the way blood makes its way through the brain.

Prof Bailey carried out a number of parabolic flights on a plane known as the ‘Vomit Comet’, which flies to various altitudes, with zero-gravity experienced during the ‘dive’ part of the trip.

“We’re looking to see if the weightlessness research can inform some of the exercise interventions that we actually deliver to volunteers, the aim being trying to figure out what is it about flow through the brain that is protective over the adult lifespan, and how can exercise, ultimately, optimise this,” he said.



# WORKING FOR A CLEANER, SUSTAINABLE ENERGY FUTURE

**Research into anaerobic digestion processes at the University of South Wales is helping to tackle today's energy security and environmental challenges.**

Hundreds of millions of tonnes of waste is generated in the UK every year. This leads to huge costs for businesses and households, as well as causing environmental damage from methane, a powerful greenhouse gas produced in landfill sites. Professor Alan Guwy has led research to reduce the environmental impact of wastes which were historically sent to landfill sites, by producing sustainable energy. To support this growing industry, the team is working closely with governments and businesses in the UK and internationally, and with a number of industrial and regulatory groups, to develop frameworks for best practice.

The team has been working with national and international companies to develop a deeper understanding about how complex waste could be treated more effectively on an industrial scale, producing hydrogen and other high-value materials. Such materials could be used in the production of biopolymers, to make more sustainable food packaging and other products. SERC has helped 45 companies in Wales and provided technical services to more than 30 companies across the UK. Through UK Government and European Regional Development funded programmes worth £32m, the group has provided technical assistance to more than 150 companies in the area of hydrogen and biomethane technologies.

[serc.research.southwales.ac.uk](http://serc.research.southwales.ac.uk)

# BUILDING CAPACITY: OUR NHS

**USW is the lead partner in Research Capacity Building Collaboration (RCBC) Wales, which is funded by the Welsh Government through Health and Care Research Wales.**

Its aim is to drive an increase in the research capacity and capability of nursing, midwifery, pharmacy and allied health professional groups and to contribute toward the development of clinical academic roles.

RCBC represents an opportunity for registered health professionals in nursing, midwifery, pharmacy, clinical science and the allied health professions to secure fellowships to develop their research confidence, skills and expertise, and equip them to lead and facilitate key areas of research and development in the future.

The research fellowship schemes also strengthen the R&D infrastructure by increasing the quality and quantity of research in health care in Wales.

All members of the scheme join the Community of Scholars which provides a mechanism for adding value to the studentships. The Community provides mentorship and masterclasses in research methods and research leadership throughout the year and is an integral part of the scheme and highly valued by fellows.

Some of the projects tackled by the scheme include the exploration of the psychological experiences of pregnant women who have previous Female Genital Mutilation, and the role of community-based disability nurses.

[rcbcwales.org.uk](http://rcbcwales.org.uk)





# MOBILE TECHNOLOGIES SHAPING BUSINESS SUCCESS

USW's Centre of Excellence in Mobile and Emerging Technologies (CEMET) plays a crucial role in ensuring Welsh businesses are making the most of cutting-edge mobile technologies.

The Centre aims to revolutionise the approach businesses take to continuously innovate, utilising emerging technologies to provide market leading products.

With support from CEMET, two eye specialists have developed an iPad-based game that can check children's sight at home to reduce the burden of lengthy medical appointments. The team at Vision Game Labs, has developed a method to allow parents to monitor their children's vision and provide an early alert to a decline. The results can be made available to a specialist to decide whether a further hospital appointment is needed.

Working with Motion Rail, CEMET has developed a virtual reality system that can give users a safe way to learn about the dangers posed by railways. A record number of young people have lost their life on railway tracks this year, and a recent survey, carried out on behalf of Network Rail and the British Transport Police (BTP), suggests there is a lack of knowledge about the dangers of the railways among young people. Allan Spence, head of corporate passenger and public safety at Network Rail, said, "The great work by Motion Rail to develop their immersive virtual reality is a brilliant way to engage youngsters and help them understand the simple steps that will keep them safe.

[cemet.wales](http://cemet.wales)

# CHANGING TIMES FOR HOMICIDE INVESTIGATION

Professor Fiona Brookman is one of the few criminologists to study both the causes of homicide and its investigation by the police in order to enhance how homicides are investigated, prevent miscarriages of justice, and improve homicide investigation outcomes.

Her work in this field has gained international recognition and her typology of homicide is included in the 'Murder Manual' – the definitive guide to homicide investigation in England and Wales.

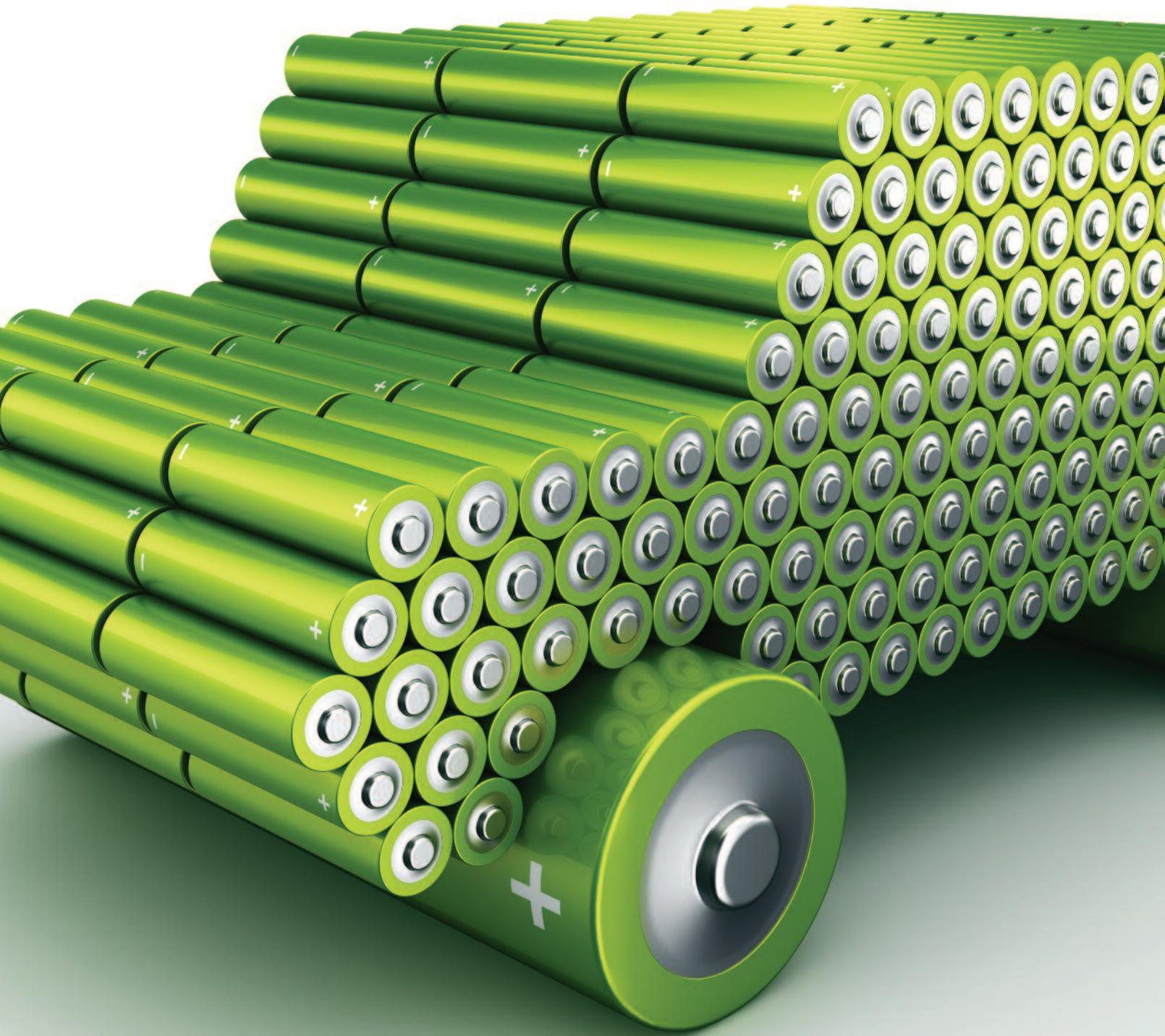
Fiona spent the first half of her research career interviewing violent offenders, including murderers, and later began to interview homicide detectives and observe them as they tried to solve homicides and prosecute the offenders. This included spending many months at a homicide unit close to Washington DC.

Prof Brookman explained: "My research has taken me into prisons to speak to those who have committed homicide and other violent crimes, to better understand the causes, as well as into homicide units in Britain and America, to better understand how police solve, or try to solve, homicide."

Fiona is currently leading a project funded by the Leverhulme Trust exploring how detectives, forensic scientists and other experts use science and technology in the course of murder investigations across Britain. Fiona is Director of the Criminal Investigation Research Network (CIRN). CIRN aims to advance knowledge on the theory and practice of criminal investigation, with a particular focus upon homicide and major crime investigation. The network brings together leading academics from different parts of the world with expertise in major crime investigation as well as senior investigating officers and practitioners at the forefront of developing practice and strategy in relation to major crime investigation.

[criminology.research.southwales.ac.uk](http://criminology.research.southwales.ac.uk)





# WORKING WITH INDUSTRY TO MAKE CLEANER, SMARTER TRANSPORT A REALITY

Working in partnership with some of the world's major players in the automotive industry.

The Centre for Automotive & Power System Engineering (CAPSE) is a nationally recognised independent research, development, test and certification house with a reputation for cutting edge research within the advanced automotive and power systems engineering sectors.

The Centre has been awarded almost £1m by Higher Education Funding Council for Wales (HEFCW) to establish a large-scale battery and smart distributed energy simulation research laboratory at the University's Power Systems Laboratory.

Clients and research partners include Johnson Matthey Battery Systems, Oxis, Yuasa Battery (UK) and Enersys, amongst others.

The Centre is half of a major partnership with global leader Ricardo Automotive focusing on electric vehicle battery systems research and development.

The team at Ricardo has extensive experience in the research and application of new and novel battery cell chemistries, as well as in the product development, engineering, and vehicle integration of production-ready battery packs and battery management systems.

The collaboration with USW provides Ricardo with access to the facilities and the support of the major investment in battery systems development by CAPSE, while also enabling the University to benefit from Ricardo's knowledge and experience of the challenges of both research and production-intent programmes.

Ricardo Automotive MD Rory Fisher said: "Ricardo is already a global leader in both vehicle electrification and in the development and application of EV battery systems and technology. CAPSE is an important element of the UK's electrified vehicle development capacity."

# SMALL NATIONS ON THE BIG SCREEN

Influencing policy through identifying the challenges and opportunities facing the creative industries in Wales is at the heart of the work of USW's Centre for the Study of Media and Culture in Small Nations.

The Centre's research has identified significant market failure in the Welsh media together with substantial under-investment in Welsh TV production which threatens the development of a plural, informed public sphere. As the powers of devolved government are increasing, the media's capacity to hold power to account has been diminishing.

Professor of Creative Industries Ruth McElroy explained: "As a small nation, it is important that, when they access the media, audiences see their own worlds on screen. Audiences need to understand what it means to live in a devolved Wales.

"As a result of our work, the BBC has invested more than £8m in new sources of programme funding, enabling Wales to be better represented on our screens".

USW is part of the Creative Industries Cluster Programme, part of the UK Government's Industrial Strategy and funded by the Arts and Humanities Research Council (AHRC), which brings together world-class research talent from leading UK universities with companies and organisations from across the creative sector. With a focus on screen industries – film and television production and their supply chains – academics will collaborate to provide research that can help the already thriving scene in South Wales reach its full potential.

[culture.research.southwales.ac.uk](http://culture.research.southwales.ac.uk)





# TACKLING PROBLEM GAMBLING:

## changing perceptions and influencing policy

In an area where there has previously been little independent data, a report published by USW researchers, in collaboration with a group of Assembly Ministers, reveals that a quarter of people that gamble don't identify themselves as gamblers.

Fixed Odd Betting Terminals (FOBTs) and betting online on sporting events are the most addictive types of gambling.

Problem gambling is receiving growing attention from politicians and the media. A group of USW academics looked at the impact of problem gambling in Wales, speaking to individuals who have sought help at gambling and other support services, support providers themselves as well as reviewing broader gambling patterns.

They found that 26% of people who responded to a survey do not consider themselves to be gamblers, but 99% say they take part in gambling activity. The results also showed that men gamble more frequently than women, and the National Lottery, slot machines and betting online on sporting events are the most common gambling activities. People who gamble most

frequently use phone apps, betting shops and gambling websites.

Bev John, Professor of Addictions and Health Psychology at USW, said: "The initial study aimed to understand a sample of experiences from people who have sought help for gambling addiction, from people who provide support services as well as to gain a broader understanding of attitudes and habits around gambling across Wales.

"Our research has found that the support provided by specialist services is invaluable to people who have accessed it, but there is a lack of these services in Wales, and other support agencies feel that a lack of skills and resources for treating problem gambling means that not everyone who needs help for gambling addiction is necessarily being identified and receiving it."



The Installation  
of the  
Chancellor

Sevdelur  
Canghellur