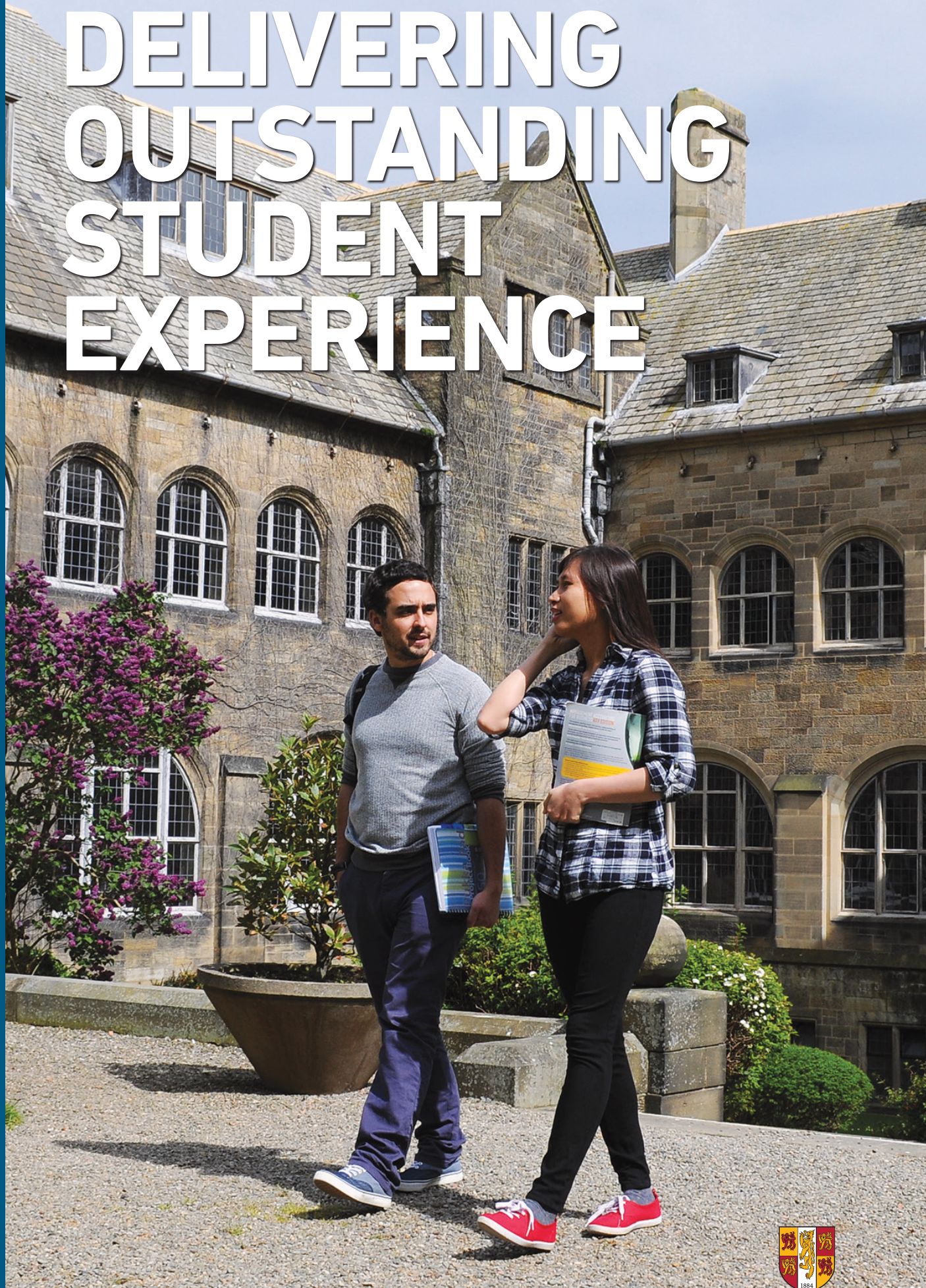


ANNUAL REVIEW 2013-2014

DELIVERING OUTSTANDING STUDENT EXPERIENCE



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GOVERNANCE

The Council, which is the governing body of the University, met on four occasions in 2013/14. It was chaired by Lord Davies of Abersoch until 31 March 2014 and has been chaired since that date by Lord Dafydd Elis-Thomas AM. The Deputy Chairs of the Council are Sir Peter Davis and Mr David Williams. Dr David Roberts retired from his post as Secretary & Registrar on 30 April 2014. The University Secretary is now Dr Kevin Mundy. The Council is assisted by a number of sub-committees, including the Resources Committee, chaired by the Treasurer, Mr David Williams, and the Audit & Risk Committee, chaired by Mr Geraint Jones, which both met on five occasions. Other Council committees which met during the year include the Nominations & Governance Committee, Ethics Committee, Bilingualism Committee and the Health & Safety Committee.

Further information regarding the University's governance is available on www.bangor.ac.uk/about/management.php.en

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AN INTRODUCTION FROM THE VICE-CHANCELLOR

The Annual Report for 2013-14 looks back on what has been a very successful year for Bangor University.

Most notably, Bangor topped the National Student Survey in Wales and is placed joint seventh among the UK's non-specialist universities. We were ranked 3rd amongst these UK universities for satisfaction with academic support, 5th in the UK for students' ability to contact staff when they needed to, and 7th for fairness of assessment arrangements and marking. It's a position which reflects the excellent standard of teaching available at Bangor, and is a fantastic achievement by any standards.

We launched our first major partnership venture abroad with the Central South University of Forestry and Technology in the city of Changsha in China. Named 'Bangor College Changsha', we have already registered 260 students who are following courses through the medium of English in subjects such as Accounting, Banking, Finance and Electronic Engineering.

In last year's annual report I referred to our significant investment in the University's infrastructure in order to provide the very best study and social environment for our students. I am pleased to say that this has continued this year. These include a £2.5m refurbishment and rebranding of our new sports facility as Canolfan Brailsford. The facilities now include a brand new two-storey gym, a new aerobics studio, a new sports café, the complete replacement and upgrade of the changing rooms and showers, and a new floor in the main sports hall.

In addition we entered into a joint venture with Bangor City Football Club, the Football Association of Wales and Sport Wales to create a brand new floodlit 3G pitch that will allow our students to play matches and train whatever the weather throughout the winter months.

This is part of a wider investment in sports facilities at Bangor University which also includes the new £500,000 indoor tennis and netball facility attached to Canolfan Brailsford.

Work is also well underway on the new student village at St Mary's, a £36m development of 600 new rooms which will offer students the best in comfort and design with a café bar, shop, launderette and sports and fitness facilities all on site.

Many will be aware of the delays we've experienced with the construction of the Pontio building and although we have been disappointed by this, I am confident that once it's completed, we will have a fantastic facility for all our students, staff and local community to enjoy. In the meantime we have provided a wide programme of artistic events hosted in a range of other venues in the local area as well as the University itself. We have also continued with a range of community based projects which have proved very popular.

Looking forward to next year, the major capital programmes due for completion and our excellent staff as evidenced by the National Student Survey, will make us an even more attractive location in which to study. I am grateful to all the staff, students and supporters of Bangor University for the valuable contribution they make to our success.

PROFESSOR JOHN G HUGHES
VICE-CHANCELLOR





HIGHLIGHTS

Several individuals attended the University Degree ceremonies to receive honorary fellowships. They were: **Professor Anthony Edward Hill OBE** Executive Director of the National Oceanography Centre, Southampton University, former postgraduate student and member of staff at Bangor; **Beti George**, Welsh Language TV news reader and broadcaster for 30 years; **Professor Emeritus Robert Owen Jones OBE**, retired Professor of Welsh from Cardiff University and Bangor graduate; **David & Alison Lea-Wilson**, founders of Anglesey Sea Zoo and of Halen Môn, local entrepreneurs who have a long association with the University; **Professor Andrew McNeillie**, Emeritus Professor of English at Exeter University

and former Literature Editor at the Oxford University Press; **Dei Tomos**, BBC Radio Cymru presenter whose early morning farming bulleting has run for 25 years; **Professor Donal T Manahan**, Professor of Biological Sciences, University of Southern California and Chief Scientist for over 20 scientific expeditions to the Antarctic; **George North**, Wales and British & Irish Lions rugby player brought up on Anglesey and the youngest player ever to score a try on his debut for Wales; **Rhys Meirion** the Welsh opera singer who has enjoyed international success; presenter of the BBC Ten O'Clock News, **Huw Edwards** and **Professor Jean White**, the Chief Nursing Officer for Wales since 2010.

- 1 Andrew McNeillie
- 2 Beti George
- 3 Dei Tomos
- 4 Donal Manahan
- 5 Ed Hill
- 6 George North
- 7 Huw Edwards
- 8 Jean White
- 9 David & Alison Lea-Wilson
- 10 Rhys Meirion
- 11 Robert Owen Jones
- 12 Meave Leaky

Professor Meave Leaky, the world-renowned palaeontologist who graduated from Bangor University with a BSc and PhD received an honorary fellowship in May and also presented at a special inter-discipline forum.



School of Creative Studies and Media graduate, Osian Williams won a British Academy Cymru Award. His short film commissioned by **Pontio**, "Cân i Emrys (A song for Emrys)", which he directed during his third year, won the award for the "Short Form" category. His three minute documentary short about the power of music featured musician Manon Llwyd, who looks back for the first time at the effects of her musical residency at a care home in north Wales.

Dr Simon Watt from **the School of Psychology** received an Award from the Society of Motion Picture and Television Engineers, the influential global society and technical standards-setting agency for the movie and television industry. The Award was for a research paper on 'Stereoscopy and the human visual system'. The Society requested a paper from Simon Watt and his research colleagues for their Journal.

Bangor Business School entered the top 15 in the world for banking research, ahead of Universities such as Harvard Business School and Princeton in the October 2013 rankings by RePEc, a division of the Economic Research Department of the Federal Reserve Bank of St. Louis. It also retains its place as the highest ranking UK institution, ahead of Oxford University and the Centre for Economic Policy Research, London.

The University is one of a handful of UK universities to host Chevening Scholars and joins Cambridge and Durham universities in offering Chevening's Central Partnership Scholarship programme. These Scholarships are the UK government's global scholarship programme, funded by the Foreign and Commonwealth Office and partner organisations. The programme makes awards to outstanding scholars with leadership potential from around the world to study postgraduate courses at universities in the UK.

Researchers at the **School of Psychology** have been awarded £4 million to lead the 'Improving the experience of Dementia and Enhancing Active life: Living well with dementia' (IDEAL) project. The study will be carried out in collaboration with Cardiff University, Brunel University, the London School of Economics, King's



College London, Sussex University, the Research Institute for the Care of Older People (RICE), the Alzheimer's Society and Innovations in Dementia CIC.

13 Creative Studies and Media graduate, Osian Williams with his British Academy Cymru Award

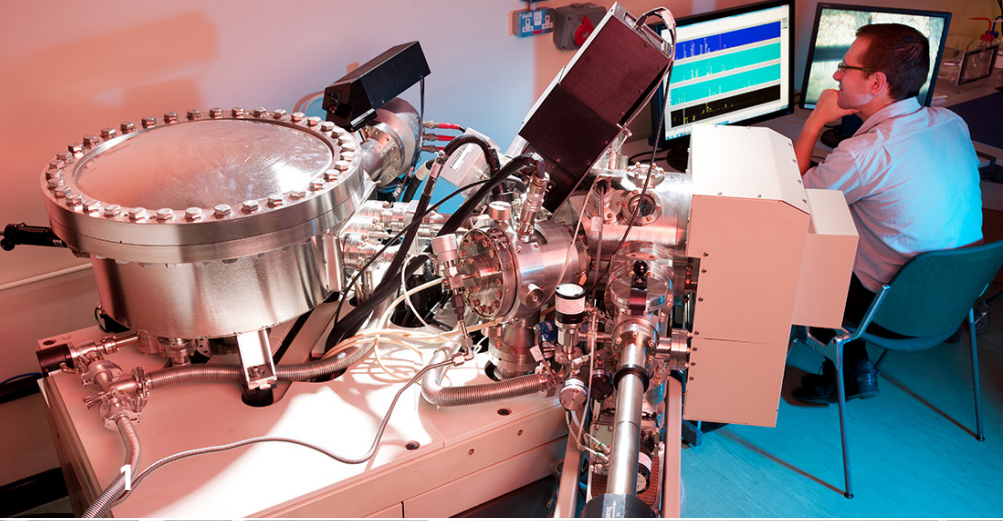
The University's commitment to sustainability earned it 19th position in an international league table of environmentally friendly institutions. 301 Universities from 61 countries took part in the league table, which was launched by Universitas Indonesia in 2010 to highlight sustainability and environmental management at universities across the world.

The University featured among the world's elite institutions in a newly published league table. The University was listed in the top 200 universities for four of the 30 subjects featured in this year's influential 'QS World University Rankings by Subject' (www.topuniversities.com).

Emily Holmes and Dr Paul Parham of the **Centre for Health Economics and Medicines Evaluation** were awarded best podium presentation overall and best podium presentation for new investigators, respectively, at the 16th annual European congress of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) in Dublin. Attended by nearly 4000 delegates and with over 1800 presentations, their achievements are significant, and reflect the quality of their research.

14 Emily Holmes and Dr Paul Parham of the Centre for Health Economics and Medicines Evaluation who were awarded best podium presentation overall and best podium presentation for new investigators





The **School of Electronic Engineering** was awarded funding of £500,000 through the Welsh Government's A4B programme to create the Centre for Lifetime And RELiability Testing (CLARET). This new industry-standard facility will provide regional and national businesses involved in the design, manufacture or integration of opto-electronic and material technologies with lifetime and reliability testing facilities and access to academic expertise and business support.

Bangor **Students' Union** not only won the 'Course Rep of the Year' and 'Union Staff Member of the Year' categories at the annual NUS Wales Awards this year, but also scooped the Higher Education Students' Union of the Year category. The Students' Union also won the UK-wide University Ecologist Communications Challenge Award, where they created a 'Flash Garden' in 60 seconds outside Bar Uno on the Ffriddoedd Site.

A consortium of three companies was selected to develop the University's residential site at St Mary's. Investment of over £36 million will bring new life to a site that will offer students the best in in comfort and design with a café bar, shop, laundrette and sports and fitness facilities all on site.

The life and work of Bangor chemistry graduate, Dr Tom Parry Jones OBE was commemorated when Wales' First Minister Carwyn Jones, delivered the inaugural Tom Parry Jones Memorial Lecture. Dr Jones was the inventor of the breathalyser and an internationally-acclaimed scientist and entrepreneur.

The University received backing from the European Investment Bank, Europe's long-term lending institution, to provide £45 million for the expansion and modernisation of its campus, enabling a significant upgrade of its teaching and research facilities.

1 Dr Jeff Kettle with the Time of Flight Secondary Ion Mass Spectrometer ToF-SIMS, a £1m system, unique to Wales and based at CLARET.

2 An artist impression of the redeveloped St Mary's site.

3 Rt Hon Carwyn Jones AM presenting the Dr Tom Parry Jones OBE Memorial Lecture.

Following an intensive external audit the University has successfully achieved ISO 14001:2004 certification for its commitment to continual environmental improvement. This is the internationally recognised standard for organisations that proactively control their environmental impacts through a formal Environmental Management System. This award builds upon the Green Dragon certification which the University has held since 2009.

Playing a major role in a £1.1m Medical Research Council study, the **School of Psychology** is to conduct research into new pharmacological treatment for psychiatric illnesses. Researchers at Bangor and Oxford Universities, and the University of British Columbia, will evaluate the potential of a new drug to reduce the impulsive behaviours associated with alcohol and drug addictions, as well as mania.

Dr Carl Hughes from the **School of Psychology**, deputy director of the newly established Wales Centre for Behaviour Change, received the *Award for Distinguished Service to Behavior Analysis* by the *Society for the Advancement of Behavior Analysis* at their annual convention in Chicago, USA.

The University's Website was shortlisted for the Best Website Award at the annual Heist marketing awards. These annual awards are the principal awards for the HE marketing sector. The website has been redesigned and is now adaptive for use on smartphones, tablets and computers, and provides an exciting and interactive experience for visitors. It also features content in a number of languages in addition to both Welsh and English. It can be found at www.bangor.ac.uk

The University was delighted to join The Worshipful Company of Drapers at Drapers Hall in London for a two-day event to celebrate their 650th anniversary. The Drapers have supported Bangor since the University was established in 1884, and the relationship has gone from strength to strength.



This year, Drapers Awards were presented to two outstanding postgraduate students based on their academic achievement and engagement with the academic community both at the University and internationally. Owain Jones, a Coleg Cymraeg Cenedlaethol Teaching Fellow in the **School of History, Welsh History and Archaeology** was awarded a silver Drapers Company medal for an exceptional postgraduate contribution to the University. Zubaida Abdul Sattar, a PhD student at the **School of Electronic Engineering** was awarded a bronze Drapers medal for her notable research contribution which has been disseminated via high-quality journal papers and leading international conferences.

4 Shaun Bainbridge of Lucideon (right) presenting Professor John G Hughes, Vice-Chancellor with the ISO 14001:2004 certificate, and Ricky Carter, Environmental Manager.

5 Mr Andrew Walker, Master of the Drapers Company with Stephanie Bostock (left) & Charlotte Angove (right), former Drapers Scholarship recipients.

6 Owain Jones and Zubaida Abdul Sattar, recipients of Drapers Medals.





Stephen Bootle
PHOTOGRAPHY

Professor James Intriligator from the **School of Psychology** and Peggy Murphy from the **School of Healthcare Sciences** were made National Teaching Fellows. This is the most prestigious award that can be made to recognise excellence in higher education teaching and support for learning. Bangor has now received more awards than any other Welsh university.

The £23.6m **SEACAMS** EU scheme, pioneering collaborative research projects in marine science between business and universities, delivered by Bangor in partnership with Aberystwyth and Swansea Universities received a £1m boost. The project is helping to develop the coastal marine economy in Wales and has already worked with more than 60 companies on R&D projects ranging from developing new products to studying marine life to determining management strategies for rising sea levels.

Four research projects which have made outstanding impacts in very different areas have been recognised at the University's second Research and Enterprise Impact Awards. The Award for the Best Cultural and Societal Impact went to **The Photonics Academy of Wales @Bangor (PAWB)** at the School of Electronic Engineering; the University's ESRC Impact Acceleration Award Best Impact on Public Policy and/or Public Services Award was presented to Professor Dyfrig Hughes of the **Centre of Health Economics & Medical Evaluations** at the College of Health Sciences; the Award for the Best Business Impact went to the **BioComposites Centre** and The Best Innovation award was presented to the **School of Chemistry** for their work with Superfix Supplements and Halen Môn.

1 Professor Oliver Turnbull, Pro Vice-Chancellor (centre) with Peggy Murphy and her husband, Mr Rob Shepherd (left) and Professor James Intriligator and his wife Rev Susanne Intriligator (right) at the National Teaching Fellow awards ceremony.



2 Professor Oliver Turnbull, Pro Vice-Chancellor (2nd left) and Professor John G Hughes, Vice-Chancellor (3rd right) with members of the Centre for Health Economics and Medicines Evaluation who were awarded the University's ESRC Impact Acceleration Award Best Impact on Public Policy and/or Public Services Award.



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Gruffudd Antur, a postgraduate student at the **School of Welsh** won the Chair at this year's Urdd National Eisteddfod in Meirionnydd with his poem on the subject 'Pelydrau' (Rays).

Bangor University graduates won major prizes at the National Eisteddfod of Wales. Welsh and Drama graduate, Dewi Wyn Williams won the Drama Medal; Music graduate Sioned Eleri Roberts won the Musician's Medal and poet Guto Dafydd, a graduate from the School of Welsh won the Chair.

The **College of Natural Sciences** in conjunction with Almac Group and Hockley International were awarded a grant to develop an organic natural based pesticide. This is the first industrially relevant CNS project using Synthetic Biology methods. The research brings £500,000 to the University over 3 years and is funded through Biotechnology & Biological Sciences Research Council and Technology Strategy Board. It is aimed at bringing a novel natural herbicide produced via enzymatic route from an abundant natural oil to the market.

Students who have volunteered during the year were rewarded during the **Student Volunteering Bangor Awards** night. Over 30 students received the Outstanding Achievement award for their participation in various projects over the year.

The **School of Environment, Natural Resources and Geography** celebrated 110 years of forestry teaching. Bangor is one of the oldest "forestry universities" in the UK – and the first to offer a degree in forestry. Forestry staff and graduates celebrated with a trip to Gwydyr Forest in Conwy and a commemorative tree planting in the grounds of Pontio, the new arts and innovation centre.

Professor Jo Rycroft-Malone, Professor of Health Services & Implementation Research at the **School of Healthcare Sciences** was ranked among the world's most influential researchers. Prof Rycroft-Malone's work is listed in the Thompson Reuters Highly Cited Researchers 2014 list, which represents the world's leading scientific minds.



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3 Gruffudd Antur, winner of the Chair at the Urdd National Eisteddfod.

4 Dewi Wyn Williams winner of the Drama Medal at the National Eisteddfod of Wales.

5 Guto Dafydd winner of the Chair at the National Eisteddfod of Wales.

6 Sioned Eleri Roberts winner of the Musician's Medal at the National Eisteddfod of Wales.

7 Student Volunteering Bangor Awards night.

8 Professor Jo Rycroft-Malone is listed among the world's most influential researchers.



TEACHING AND LEARNING

SPECTACULAR NSS RESULTS

Bangor University has seen a dramatic increase in its NSS position, taking it to 7th in the UK, level with universities such as Glasgow, Durham, Oxford and Cambridge. The majority of Bangor's Schools are now on or above the 90% mark in overall satisfaction, and the University as a whole lies 3rd in the UK for academic support, 5th for staff contact, and 7th for assessment. In subject areas, the University is also in the top ten in the UK for Biology, Biomedical Sciences, Business Studies, Celtic Studies, Electronic Engineering, French, German, Forestry, Journalism, Marketing, Music, Ocean Sciences, Psychology, Music Spanish and Sports Science.

Bangor is now the best university overall in Wales in the NSS (up from 2nd last year), as well as best in Wales for almost

all the major categories of teaching: Library, Teaching, Personal Development, Information Technology, Assessment & Feedback, Course Organisation, and Academic Support. The University is also top in Wales in a vast range of subject areas: Biology, Biomedical Science, Business Studies, Chemistry, Creative Writing, Electronic Engineering, Finance, Forestry, French, German, History, Initial Teacher Training, Journalism, Law, Marketing, Medical Technology, Music, Psychology, Spanish and Sports Science. In fact, roughly two thirds of Bangor students now study in a subject area that is best in Wales for student satisfaction.

Prof Oliver Turnbull, Pro Vice-Chancellor, said: "This is an impressive result for us as an institution, and I'd like to thank the many, many staff across our University that have made this possible."

STUDENT ENGAGEMENT

This year, the University's commitment to student engagement has been reflected in the creation of a new senior academic post: Director of Student Engagement. Directors have been appointed in every academic school and are a member of their school's senior management team. They have responsibility for the strategic leadership of their school's student experience. Twenty-two appointments have been made across the institution and work in this area will benefit enormously from their leadership.

A new Student Library Champions scheme has been developed: six students will be appointed to these paid positions, and teamed up with a College Academic Support Librarian to work on projects and co-ordinate how the Library and Archives Service obtains student feedback. The Champions will influence how the service develops for students, and they will play a vital role in the long-term efforts to improve communication between students and the Library and Archives Service.



The University is also increasing students' involvement in quality assurance and enhancement processes. From 2014/15, all internal quality audit procedures will include a written student submission, outlining what it's like to be a student at Bangor. In addition, a team of Student Reviewers is being trained to participate as full panel members in the internal review processes, and Course

Representatives are being brought into the development and design of new programmes.

Jo Caulfield, Student Engagement Officer, said: "It has been a fantastic year for our student engagement work and our efforts in this area are affirmed by our National Student Survey success. Thank you to everyone involved."

NEW CENTRE FOR THE ENHANCEMENT OF LEARNING AND TEACHING (CELT)

This year the University established a new Centre for Excellence in Teaching (CELT), to deliver high quality and relevant training and support for teaching, with an all-academic and University-wide remit. Staff in CELT, which is double the size of the previous Academic Development Unit, provides support and guidance on all aspects of teaching, learning and assessment and works closely with colleagues across the institution. Importantly, the Centre's staff are on part-time secondment – and also teach in Schools across the University, to ensure that there is an integrated approach to offering support.

CELT coordinates a number of important aspects of professional development, including the dissemination of best practice in teaching across the University, pedagogic research and associated grant capture, teaching-related staff induction, student satisfaction, Open Educational Resources, and the development and promotion of electronic and other innovative learning technologies. The Centre provides opportunities for staff at all stages of their career to gain a recognised teaching qualification and ongoing professional recognition for their teaching, and offers support and advice on applying for teaching excellence awards such as the National Teaching Fellows Scheme. The Centre also works with the Bangor Academy of Teaching Fellows to support their role in enhancing teaching and learning.



RESEARCH



CANCER PATIENTS DIAGNOSED QUICKER

The time taken to diagnose more common cancers – from the point when a patient first reports a possible symptom to their GP - fell in adults by an average of five days in just under a decade, according to research led by the North Wales Centre for Primary Care Research.

Researchers based at the Universities of Bangor, Exeter and Durham found that the average time it took to be diagnosed for a range of common cancers combined fell from 125 days in 2001-2002 to 120 days in 2007-2008.

In relation to kidney, head and neck, and bladder cancers, more than two weeks were shaved off the time between first reporting a possible symptom and receiving a diagnosis.

This improvement may be thanks to the introduction of National Institute for Health and Care Excellence (NICE)

Guidelines for Urgent Referral of Suspected Cancer, published in 2005. These guidelines give GPs advice about symptoms which might indicate cancer and mean the patient should be urgently referred for further testing.

Lead study author, Professor Richard Neal, said: "Our study shows that there was a small but significant improvement overall in diagnosis times for many cancers between 2001-2002 and 2007-2008. And this is likely, at least in part, to be as a result of the introduction of the 2005 NICE urgent referral guidelines."

Diagnosing cancers early can make a real difference to patients' survival; and this study shows it's possible to make a difference to the speed of diagnosis for some cancers through influencing policy and changing the way that potential cancer symptoms are dealt with.



PREDICTING MARINE CLIMATE CHANGE

Scientists from the School of Ocean Sciences are leading a £2.6 million EU-funded project ("ARAMACC"), to better understand the history of the marine environment of the northeast Atlantic during the past thousand years.

The project will use the shells of very long-lived molluscs as an archive of past environmental change. It builds on research originally developed at Bangor by Professor James Scourse and Professor Chris Richardson that led in 2007 to the discovery of the longest-lived animal known to science – a clam from Iceland that had lived for 507 years.

Seashells retain evidence of marine conditions at the time they were produced and can thus provide a unique insight into the history of the seas and oceans. They also mark each year with a visible growth ring (like trees), so the timing of environmental changes can be known with very high precision. The use of shells



TESTING AN EFFECTIVE ANTI-BULLYING PROGRAMME FOR WALES

Researchers at the Centre for Evidence Based Early Intervention, directed by Professor Judy Hutchings, are evaluating a school anti-bullying programme.

Although no worse than elsewhere, bullying, in person or 'cyber-bullying', is a big problem in Welsh schools and among children and young people. The Welsh government and educationalists want to address the problem but before spending limited public money, programmes must demonstrate both effectiveness and cost-effectiveness.

Researchers at the Centre looked for effective bullying prevention programmes, and found the Finnish Government funded KiVa programme, developed at Turku University, Finland. KiVa, means 'nice' in Finnish and is also an acronym for 'against bullying'. It is an inclusive programme with class lessons, web-based games to test children's learning, a website for parents, comprehensive material for teachers,

KiVa playground vests, school posters and a structured approach to dealing with confirmed bullying incidents. Finnish research showed the programme to be extremely effective in reducing both bullying and victimization and has been disseminated throughout Finland.

In 2012 the Bangor Centre undertook a pilot trial with 17 schools, mainly grant funded by the Welsh Government, which showed significant reduction in bullying and victimisation. This led to a Big Lottery funded randomised controlled trial with partners, the Dartington Social Research Unit, to further evaluate its effectiveness in Welsh schools before advocating its introduction across the country. A cost-effectiveness analysis of the programme, is being undertaken by the University's Centre for Health Economics and Medicines Evaluation. Preliminary indications are that teachers like the material and children enjoy the lessons.

from exceptionally long-lived animals allows scientists to investigate the marine environment over periods of hundreds of years, potentially spanning the whole period during which humans have been making use of the European shelf seas.

Project Leader, Dr Paul Butler, explains: "This project will help us disentangle the complex combined effects of climate change and human use over the long term, so we can distinguish between natural background variation and changes caused by humans. That will help us to predict more accurately changes in the marine climate system over the next few decades, so helping governments and industry to take the best policy decisions."

A specimen of the long-lived bivalve mollusc *Arctica islandica*, photographed on the sea bed in a Scottish Loch.



MAJOR AWARD FOR LEADING RESEARCH CENTRE

A prestigious European Commission RegioStars Award 2014 for regional development was won by the BEACON Biorefining Centre of Excellence, an innovative Welsh research partnership between Bangor's BioComposites Centre, Aberystwyth and Swansea universities. The BEACON Centre is dedicated to developing industrial products from plants to reduce reliance on fossil-based resources such as coal and gas.

The RegioStars awards, organised by the European Commission, identifies good practices in regional development and highlights original and innovative projects which could be attractive and inspiring to other regions. BEACON won the sustainable growth category, beating competitors from across the EU.

Bangor's BioComposites Centre works with industry, including small and medium sized enterprises, both locally and in Europe to develop renewable materials, fuels and chemicals as well as modified and new environmental and economically sustainable processes. Case studies include working with partners



From left: Nick Laflin, Dr Rob Elias, Director of the BioComposites Centre and Viacheslav Tverezovskiy with Ecotiles at the Biorefining Technology Transfer Centre in Mona, Anglesey

Ecobond Cymru to develop the Ecotile, a process to make roofing tiles from slate waste; and Pennotec, who are focussing on the waste streams associated with crustacean meat processing.

The BioComposites Centre have unique facilities housing a range of key equipment and associated expertise at their Bio products and Biorefining Technology Transfer Centre based at Mona on Anglesey. Having consistently developed strong networks with

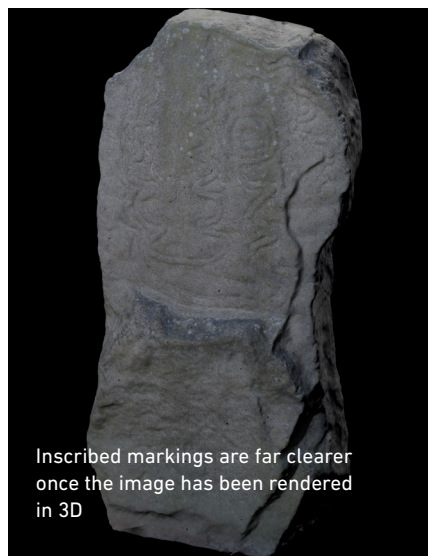
companies and key stakeholders such as UK and Welsh Governments, the BioComposites Centre is recognised as a leading EU centre of excellence in applied research.

Led by Aberystwyth University, BEACON is funded by the European Regional Development Fund (ERDF) through the Welsh Government, under the Convergence programme for West Wales and the Valleys.

STANDING STONES LEAP INTO THE DIGITAL AGE

Anglesey's standing stones are the subject of a new 3D visual information database following an Arts and Humanities Research Council grant. Dr Jonathan Roberts at the School of Computer Science is leading a project involving computer scientists and archaeologists at the School of History, Welsh History and Archaeology, Gwynedd Archaeological Trust and academics at Aberystwyth and Manchester Metropolitan universities, to build up a visual resource of information about Anglesey's standing stones which will be accessible to all.

The project, 'Co-Production of alternative views of lost heritage' uses the latest technology, enabling members of the public to partake as amateur archaeologists and photographers. The project aims to create an exciting high tech three dimensional information



Inscribed markings are far clearer once the image has been rendered in 3D

resource about Anglesey's renowned standing stones and other archaeological sites and monuments in north Wales.

A new digital computer visualisation

technique, called photogrammetry, is used to create three dimensional representations of the standing stones. These will be 'stitched' together from digital images photographed and submitted by the public and then 3D printed. The models will enable users to interact with a special touch surface table, displaying information about that standing stone.

Dr Jonathan Roberts said: "This project provides a great way to involve the public in work that marries new technology with Archaeology."

Professor Raimund Karl, from the School History, Welsh History and Archaeology said: "This is a great way of involving people in archaeology at a very accessible level. It will allow people to become much more actively involved in the management of their heritage."



FIRST MINISTER FIRST TO VOLUNTEER FOR WELSH SPEECH RECOGNITION RESOURCE

Carwyn Jones, Wales' First Minister, was the first to respond to a new appeal by the University for volunteers to record their voices to help create a new Welsh language speech recognition resource.

Speech Recognition systems are important for communicating verbally with computers, phone systems, and all sorts of other electronic equipment. In order to create the technology, hundreds of different people need to be recorded reading out specially prepared scripts. It helps to have a variety of voices, young, old, male, female, south Wales, north Wales and learner accents. The recordings, captured through an app, will be used to train speech recognition engines who will understand anyone's voice speaking in Welsh. The research led by Canolfan Bedwyr's Language Technologies Unit, received a grant from the Welsh Government and S4C towards the project.

Wales' First Minister, Carwyn Jones, said: "I'm very happy to be able to support this appeal in a practical way. Our Welsh language policy, 'Moving Forward', states clearly the importance of being able to use Welsh with the new technology, and our commitment to ensuring that Wales leads the way in this field."

Elin Morris, S4C Director of Corporate and Commercial Policy, said: "The development of an efficient voice recognition system will be a significant step for the language and for S4C. In recent years, voice recognition devices have become increasingly popular, and are likely to evolve further, so it's vital we ensure that our viewers can use devices such as Smart TVs in Welsh."

The innovative app, called Paldaruo, which means "chattering" in Welsh, has been developed for smartphones to facilitate gathering recordings for this project. Dewi Bryn Jones and Delyth Prys from the Language Technologies Unit are pictured with First Minister Carwyn Jones.



WELSH MEDIUM

EXAMINING MINORITY LANGUAGE MUSIC AND COPYRIGHT LAW

The University held a special bilingual conference to explore recent developments in copyright law and the impact of the law on minority language music.

Hosted by the Law School, 'Collecting and Protecting: 21st century copyright and minority language music' was sponsored by the Coleg Cymraeg Cenedlaethol. The conference came in the wake of the recent decision of the Copyright Tribunal in the case of the BBC and Eos, a collecting agency which represents the rights and interests of Welsh musicians.

The keynote speech was given by Ian Hargreaves, Professor of Digital Economy at Cardiff University, who discussed 'The Politics of Copyright' and explained his own review of IP law for the UK Government.

Among other presentations, Kalev Rattus of The Estonian Authors Union outlined the situation of minority language music in Estonia and Dafydd Roberts, chair of Eos reflected on the Eos v BBC Tribunal decision and its significance in the wider

debate on copyright law and minority language music.

"We hope that this highly topical conference stimulated more interest in the field of copyright in general in Wales, and specifically more debate on the issue of copyright in the context of minority languages and cultures", commented Carys Aaron, conference organiser and Lecturer in Law at Bangor. "Our hope is that it will lead to further research and greater legal specialisation in the subject here in Wales."

Professor Ian Hargreaves (left) and Dafydd Roberts, chair of Eos.

Through further investment from the Coleg Cymraeg Cenedlaethol, Bangor was able to confirm its position as a leading provider of higher education through the medium of Welsh during the year and contribute significantly to Welsh Government targets in this area.

With new Welsh medium appointments in areas such as Accounting and Computer Science, the University is continuing its strategy to expand Welsh medium provision across its entire curriculum.

The efforts to attract students to this provision has been very successful with as many as 1388 students studying at least 5 credits of their courses through the medium of Welsh and 769 of them have studied a minimum of 40 credits in 2013/14.

CELEBRATING WELSH AND CHINESE LITERATURE

Welsh and Chinese authors, poets, translators, academics and publishers came together to celebrate a sharing of literature between the two countries, in an event organised by Yan Ying of Bangor University's School of Modern Languages and Sioned Puw Rowlands of the Wales Literature Exchange.

The symposium celebrated the release of a special issue of *Foreign Literature and Art* from Shanghai Translation Publishing House, focusing on contemporary Welsh literature in translation. This publication represents the first move in introducing contemporary Welsh literature to the Chinese readership. The day drew to a close with an evening of live poetry and music.

The event provided a novel opportunity to discuss how to develop the literature exchange between the two cultures, with speakers including Mr WU Hong, Vice Editor-in-Chief of the Shanghai Translation Publishing House, and Professor Elin Haf Gruffydd Jones, on behalf of Wales Literature Exchange and Aberystwyth University.

Yan Ying a lecturer in Translation Studies at the School of Modern Languages and Co-Director of the newly founded Centre for East Asian Studies, said: "This event celebrated the positive steps taken so far to raise awareness and interest in each other's literature. A memorandum of understanding was signed between Bangor University, Shanghai Translation Publishing House and Wales Literature Exchange, which builds the framework of collaboration between the three institutions. This step should lead to more publications sharing the literature of each country in the future."



Dr Cynog Prys

TWEETING TO HELP PUPILS REVISE

Dr Cynog Prys from the School of Social Sciences creatively used Twitter as a revision resource for sixth form students.

As a programme of work which aimed to bridge the gap between schools and studying Sociology at university, Dr Prys, who specialises in the use of Welsh online, Tweeted Welsh medium revision advice during the lead up to A Level exams.

Daily Tweets were sent out in the run up to the exams using the #cymdeithasegIefelA hashtag. These concise messages proved to be an ideal medium to get to the core of the subject and hopefully students found them to be very useful in terms of A Level notes.

Dr Prys said: "Research conducted by the School of Social Sciences shows that young Welsh speakers use social media platforms such as Twitter extensively.

"As educators we are constantly looking for opportunities to enrich the learning experience and to try new things. The concise nature of twitter lends itself well to the process of revision and it can help students and pupils to condense the relevant information to short and memorable points. Most young people use smartphones by now and are very familiar with the technology. This means that they can look at Twitter and revise anywhere.

"We created a stream that will be of assistance to young people studying sociology in Welsh at A Level, and hopefully this raised awareness of the possibility of studying the subject through the medium of Welsh at University level."



Coleg
Cymraeg
Cenedlaethol



INTERNATIONALISATION



RECLAIMING AND TRANSFORMING DEGRADED LAND IN INDONESIA

In a partnership between Universities and commercial organisations both in Indonesia and the UK, Bangor University secured a grant from the British Council Indonesia to seed fund research projects that will help return disused mining sites into productive land.

As a country rich in natural resources, Indonesia has undergone rapid economic development over the last 10 years with the growth of extractive industries, such as coal mining, contributing greatly to the economic development of the country. Of concern, however, are the environmental problems that can arise, like soil and forest destruction, production of acid rock drainage, pollution of air, water and soil and the creation of harmful waste. A consortium of Indonesian Universities are involved as well as private, commercial and governmental organizations. The partnership will run projects relevant to the various environmental challenges faced in Indonesia which include

improvement of soil and water quality and the development of agroforestry techniques. The partnership will also provide opportunities for academic exchanges between institutions and PhD opportunities for Indonesian students in the UK.

The first step of the partnership saw the School of Environment, Natural Resources and Geography staff attend

a workshop held at the Indonesian base of Seameo Biotrop in Bogor, West Java in late March 2014. The workshop was preceded by a visit to the PT Bukit Asam coal mine at Tanjung Enim, a 6.4 billion tonne coal reserve in South Sumatra. The group were able to view some of environmental problems as well as the approaches taken by PT Bukit Asam to tackle them.



1 & 2 Bangor University staff and colleagues during their visit to Indonesia.

THE LAUNCH OF 'BANGOR COLLEGE CHANGSHA'

Following more than three years of hard work and collaboration, the University and the Central South University of Forestry and Technology (CSUFT) were successful in their joint application to set up an international college in China. The proposal was approved by the Chinese Ministry of Education in December 2013, one of only two from the UK approved that year.

The international college will begin teaching in Changsha City, the capital city of Hunan province in China, and a city with a population of 8 million people. Bangor College Changsha opened its doors to over 260 Chinese students in September. The College will initially offer undergraduate programmes in accounting, banking, finance and electronic engineering, with plans to expand the range of subjects to include other academic areas in which Bangor University excels, such as Forestry and



L-R: Professor Xianyan Zhou, President of CSUFT and Professor Zhiqing Yang, Dean of Bangor College Changsha and Vice-Chancellor of Bangor University, Professor John G Hughes at the launch event.

Environmental Studies in a few years' time.

All programmes will be taught and assessed in English, and will provide students with a UK-style higher education experience. Students will have the opportunity to study at Bangor for one or two years. They may also complete the entire programme in China. The

College will expand to 2,000 students over the next few years providing real opportunities for both Bangor and CSUFT to develop new academic programmes that serve the local social and economic needs. The University's long-term ambition is also to develop the College into a study abroad centre and a research base for Bangor students to spend 1-2 semesters to study and research in China.

ALUMNI NETWORK ESTABLISHED IN NIGERIA

In a great start to 2014, Bangor University reconnected with its Alumni by launching the Nigerian Alumni Network. The network provided an opportunity for graduates to reunite with lost friends and colleagues, and for some to make new friends.

Launched in Abuja, the country's capital, the network invited graduates from Bangor Law School, School of Education, Bangor Business School, School of Engineering, School of Computer Science, School of Modern Languages, School of Social Sciences, and the School of Chemistry.

Following this initial launch event, a second event was held in the busy commercial hub of the country - Lagos. The second event was not only attended by alumni from the University but provided an opportunity for students interested in studying at Bangor to meet and interact with past students. Those present at the event thanked the University for establishing the network



Members of the Nigeria Alumni Network with Professor Dermot Cahill, Head of Bangor Law School (far right) and Ajoke Olakunle, Bangor University's Nigeria Representative (2nd right)

as it presented them with opportunities to explore professional and personal relationships with lost friends and new contacts. The network aims to create a support network for students in the country on their return from studying in

the United Kingdom, and help enable the alumni to strengthen ties with potential students who may have questions about life as a student in Bangor.

COMMUNITY



Professor John G Hughes, Vice-Chancellor (left) and Bangor City FC Chairman, Dilwyn Jones, with the University student Football Team members checking out the site of the new 3G pitch at Nantporth.

SUBSTANTIAL UPGRADING OF SPORTS FACILITIES

The University's sports facilities, which are used by students, staff and the local community, received a £2.5m upgrade during the year as part of a two phase refurbishment project.

The University's Sports facilities now include a brand new two-storey gym, a new aerobics studio, a 6-platform Olympic lifting area and new changing rooms and showers. Each of the existing sports halls also received new high specification floors during the project.

During the first phase of the refurbishment the existing outdoor tennis and netball courts were covered with an AirDome, creating a 1800m² indoor tennis and netball facility. The facility was opened by Lord Coe and Bangor University is now the only 4 court netball venue in north Wales.

Following the completion of the second phase, the sports centre was renamed Canolfan Brailsford in honour of cycling coach and Honorary Fellow of the University, Sir Dave Brailsford, who was brought up in nearby Deiniolen.

Sir Dave Brailsford said: "I am honoured that Bangor University has chosen to name its Sports Centre after me, and I am delighted to see that sport plays such a central part in the University's activities."

Alongside works at the Sports Centre, the University was a substantial funding partner in the construction of a third-generation artificial pitch at Bangor City FC's ground. The new pitch will be home to both University student teams and a host of community clubs.

Jointly funded by the Football Association of Wales, Bangor University and Sport Wales, the floodlit 3G pitch will ensure that a large number of clubs can keep training, whatever the weather throughout the winter months.



Lord Coe opens the University's new Sports Dome. With him are Lord Davies of Abersoch, former Chair of the University Council and Vice-Chancellor Prof John G Hughes.



SCIENCE PARK DEVELOPMENTS

Plans to develop the new Science Park have advanced rapidly over the last 12 months. Now trading as M-SParc, the new brand revealed at the inaugural conference reflects a vision to ignite ambition in the new and innovative companies that are expected to be attracted onto the Park itself.

A location has been agreed, which is a 20 acre site at Gaerwen on Anglesey. The next step is to submit a planning application, with the hope that a decision will be made in the first quarter of 2015. If the application is successful, the intention is to start work on the site towards the end of the summer 2015. The aspiration is to have the first building ready by the academic year 2016/17.

The Park is expected to concentrate on a few key sectors in the early days, these being energy and clean technologies, natural products which includes life sciences and animal health and ICT. Discussions have been held with a significant number of potential tenants.

As well as providing accommodation for companies and projects, M-SParc will provide or arrange for the provision of a wide range of ancillary services, including business support and access to finance. The provision of these services is seen as essential to ensure the success of science parks in the 21st century.

A conference was held to showcase the Park's offer. Presentations were made by Edwina Hart AM, the Business, Science and Transport Minister in the Welsh Government; the Vice-Chancellor, Professor John G Hughes; Ieuan Wyn Jones the Park's Executive Director and representatives from science parks in Durham and Aston.

Anglesey is well placed to benefit from a combination of factors, including the anticipated major investment in low-carbon energy projects, Enterprise Zone designation, a nearby University and its partner organisations as well as the skills and research base of Bangor.

BRINGING SPORTS ANALYSIS TECHNOLOGY TO LOCAL SPORTS CLUBS

A group of student volunteers have been working on a new community project aimed at bringing sports analysis technology to local grass roots sports clubs in Bangor and the surrounding area.

Student Volunteering Bangor's latest volunteering project offered a unique service to local clubs and individuals. Small teams of volunteers filmed local club games and training sessions and then examined the footage using specialist analysis software before presenting the results back to the club on a DVD.

Sports analysis software and equipment is used by most professional sports teams and athletes to analyse and improve their performance as it is an invaluable tool in understanding how and where improvements can be made to technique and team cohesion. The development of this project presented students with an opportunity to gain experience in this field



Student volunteer Abbey Forshaw filming at the sports analysis training session.

and it has proved very popular amongst students taking part in sports and exercise science courses.

The volunteers were also invited to St George's Park in Staffordshire, the home of the English Football Association to film Coaching Education sessions. Project Officer Sion Rowlands said:

"Sports Analysis is proving to be one

of our most popular opportunities for students to volunteer. More importantly, this project offered local sports groups and clubs the opportunity to benefit from a service which is only normally available to elite teams. We're very confident that it's a unique volunteering project and as far as we're aware it is currently the only one of its kind."

30 YEARS OF MATHEMATICS MASTER CLASSES

The University's Mathematics Masterclasses have celebrated their 30th year. These are exciting hands-on and interactive sessions led by education and industry experts for keen and talented young people from across north west Wales. The unique sessions go beyond the school curriculum and bring maths, computer science and engineering to life in surprising topics such as art and sculpture, computer science, design, medicine and even cryptography - the art of protecting information by encrypting it in an unreadable format, called cipher text.

Every year, the masterclasses aim to open the eyes of around 50 young people to the excitement, beauty and value of these subjects, and in turn, inspire the next generation of scientists, mathematicians and engineers.

This year, the classes, which are supported by the Royal Institution, were sponsored by Magnox. Wylfa nuclear power station's Deputy

Site Director, Gordon Malcolm, took part in one of the sessions.

Mr Malcolm said: "Magnox is pleased to support Bangor University's Mathematics Masterclass through the Magnox socio-economic scheme, which does great work supporting the communities in which it operates. Mathematics is fundamental to so many exciting careers in science, engineering or business. It's great to see local young

people enjoying these sessions and starting out on their own journey of learning."

Dr Chris Wensley, from the School of Computer Science, has been on the organising committee for the last 30 years. He said: "We are grateful for the co-operation of heads of mathematics in secondary schools and we look forward to the next 30 years."



Front row l-r: Victoria Tyler, Ysgol John Bright; Rhian Jones, PGCE student; Samantha Durbin, Royal Institution; Gordon Malcolm, Magnox Wylfa Site; Chris Wensley, School of Computer Science; Geraint Simpson, Ysgol Uwchradd Caerdybi; Geraint Rowlands, PGCE student, and behind them this year's Maths Masterclass participants.

AN EVENTFUL YEAR FOR PONTIO

The past year has been full of highs and lows for Pontio and its audiences.

Young people from *BLAS* developed their skills in performance and film. The immersive theatre project *Cerebellium* took to its third phase of development. Memories of Theatr Gwynedd were collected for the *Legacy* installation to be located in Pontio. International phenomenon *Bodies in Urban Spaces* took on Bangor with performers exploring and contorting into shapes across the city centre.

The music and dementia *Hidden Corners* residency evolved this year to include pupils from Ysgol Tryfan. Sixth formers visited Plas Hedd and Brynllifon residential and nursing homes taking music to every corner and tailoring repertoire to the needs of every resident.

International opera star Bryn Terfel made his first visit to his namesake theatre. Bryn joined children from Hiraef and Glancegin schools and sang a haunting rendition of *Anfonaf Angel* in hard hats on site.

Pontio, in collaboration with Artes Mundi, presented *Traw* by Bedwyr Williams. The event was part of **LIGHTS OUT**, a nationwide event marking the centenary of the outbreak of the First World War. Bedwyr's large-scale video and sound installation was projected from the North Wales Memorial Arch onto Pontio's facing wall. Images excluding all uniform and references to rank, just cropped images of local military and civilian faces, revealed something of the individual's personality and sacrifice. A deeply resonating soundtrack - a slowed down ticking clock, or heartbeat - was felt and heard across Bangor.

With significant delays to the building work, the University made the difficult decision to cancel the opening season in September. Pontio is now working once again to develop a new artistic programme for the Centre and its audiences.

Pontio is an exciting Arts and Innovation Centre which includes innovation spaces, lecture theatres, social learning spaces, rooms for our Students' Union, a cinema, café, and bar in addition to a theatre and studio theatre.



Bedwyr Williams' *Traw* part of LIGHTS OUT.
Pontio in partnership with 14-18 NOW and
Artes Mundi

CATCHING THE LIGHT WITH THE RAINBOW NATION

A team of scientists from Bangor and Swansea Universities and the University of KwaZulu-Natal (UKZN) ran scientific outreach workshops, for children of all ages, in Durban and Mafikeng, South Africa. The event, *Catching the Light with the Rainbow Nation*, was an extremely ambitious project with the aim of increasing the popularity and understanding of chemistry in South Africa. Over a two-week period, more than 1300 children took part in workshops centred on chemistry and light.

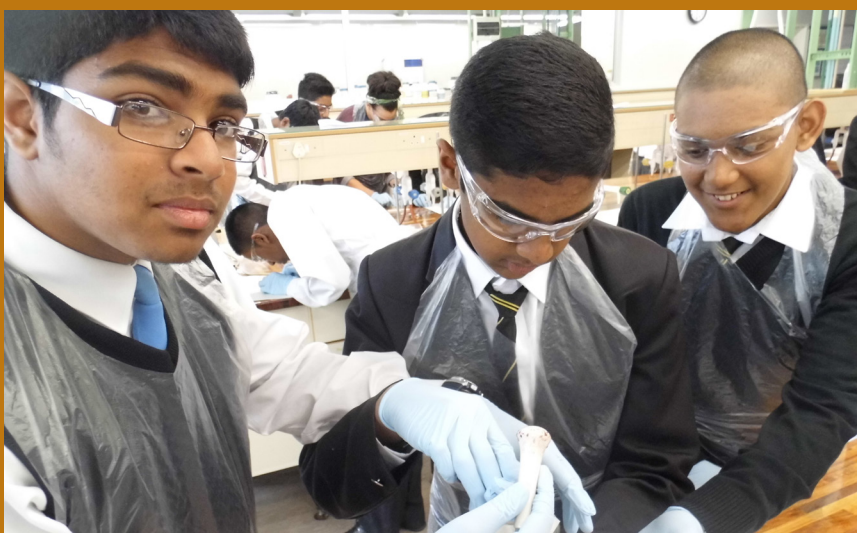
This outreach event was hosted at the School of Chemistry and Physics (UKZN University) laboratories, where local high school pupils undertook workshops on making dye-sensitised solar cells from fruit and everyday materials. Not only did this teach the children how to make and test a photovoltaic device but also emphasised the importance of renewable energy and in particular the pivotal importance of utilising solar energy.

Dr Matthew Davies, project leader, said: "As a team we hope that these children will further discover the wonderful and exciting world of chemistry and science and go on to have successful, happy lives and careers. It was an absolute pleasure to spend so much time with a wonderful team of scientists, teaching and interacting with wonderful and inspiring children. I hope this is the first of many such outreach events".

The outreach event was mainly funded by the SPECIFIC Innovation and Knowledge Centre, Swansea University and was supported by Bangor University, Swansea University, The University of KwaZulu-Natal, STRIP and the Royal Society of Chemistry South Wales West local section.



Young children at the Early Learning Centre, Mafikeng, show-off new t-shirts.



High School students from Durban learn all about solar energy and how to make and measure dye sensitised solar cells using dyes from fruit and tea at the University of KwaZulu-Natal.



The "Catching the Light" team along with the president of the charity SOS Africa, Henry Matthews. From left to right:- (Back row) Bernard Owaga, Vincent Nyamori, Khalil Khan, Bice Martincigh, Mike Garley, Ingrid Hallin, Carol Glover, Joel Troughton, Pete Greenwood, Moses Ollengo. (Middle row) Peter Douglas, Henry Matthews, Matthew Davies, Cecile Charbonneau. (Front row) Rhys Charles, Bruce Philip and Tonderai Mombeshora.