

## Prof. Baojian Wu Visits Bangor

Prof. Baojian WU of Key Lab of Broadband Optical Fiber Transmission and Communication Networks of the Ministry of Education, University of Electronic Science and Technology of China (UESTC), is visiting the Optical Communications Research Group for three months. Prof. WU's Bangor visit, supported financially by The China Scholarship Council, is a continuation of the well-established research collaborations between UESTC and Bangor. In Bangor, Prof. WU is conducting experimental investigations of the transmission performance of real-time optical OFDM transceivers in low-cost in-building networks using plastic optical fibres.

From 1999 to 2003 Prof. WU was employed, as a senior researcher by one of the major Chinese telecommunication companies, Datang Telecom Inc, and was promoted to a professor in 2008. As a principal investigator, he is currently undertaking several major research projects funded by the central Chinese government. He has published 70 research papers in professional journals and conferences.



Prof. Baojian WU

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## Honorary Chair Awarded



Takis Hadjifotiou with the Head of Electronic Engineering Professor Paul

Takis Hadjifotiou has been awarded an honorary chair at Bangor University after many years of enthusiastic collaboration with the Schools of Engineering and Computer Science. Takis is an expert in the field of Optical Communications and has had a long and prestigious

career at Nortel Networks where he was responsible for research into future optical systems and technology. Takis has also lectured extensively at Bangor as well as many other Universities and is a member of the School's Industrial Advisory Board.

## CaFMAD Mini-Symposium

A symposium was held at the School which brought together experts from all over Europe to discuss Developments in Thin Film and Nano-electronics.

Siegfried Bauer Johannes Kepler University, Linz, Austria gave a presentation on stretchable electronic surfaces. Ernst Sudhölter from the Technical University Delft, Netherlands attended in order to present on:

Organic monolayers covalently bound to silicon: Preparation and electrical characterization. Vincent Barrioz from the Centre for Solar Energy Research, Glyndŵr University, OpTIC Technium, St Asaph, North Wales also gave a talk about recent advances in thin film photovoltaic research. The event, which was arranged by Professor Martin Talyor also featured presentations from other members of CaFMAD at Bangor.

## 125th Anniversary Scholarship

We are pleased to announce that Sanjay Priyadarshi and Suleman Sami Qasi have received the Bangor University 125th Anniversary Research Studentships which consist of a maintenance grants and free tuition. These students are studying for PhDs in Electronic

Engineering in the areas of Semiconductor lasers and carbon nanotube-based transistors respectively.



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# Electronics Leads at Bangor

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## News item

### UCAS open days

The School is hosting a number of UCAS Days this year on the following dates:

- Thursday 11th February
- Thursday 18th February
- Wednesday 10th March
- Wednesday 21st April

For further information please contact us on ee-news@bangor.ac.uk or see our web site www.bangor.ac.uk/eng

## Engineering at Bangor is ranked 2nd in the UK

Our excellence in research reflects our employability statistics, with over 99% of our students gaining graduate employment after they completed their studies at Bangor. We attribute our rating to a number of different factors namely: Our strong links with industry, the high amount of contact time we have with our students, a high staff:student ratio and our top quality research.

Electronic Engineering graduate Guy Barlow is a prime example of how our strong links with industry afford our graduates excellent career opportunities.

Guy completed his Electronic Engineering Degree and gained a PhD in Opto-electronics at Bangor, he is now a senior visualisation software engineer at CAST, (Centre for Advanced Software Technology). Guy spoke to us about his time at Bangor and the work he is now doing at CAST: "I design and help write visualisation applications in a variety of programming languages. I also provide technical assistance to the content team and help out in client consultation.



Guy Barlow at CAST

Without the opportunity offered at CAST, its hard to see how I'd have found a place doing computer graphics programming. The growth of commercial IT in North Wales has provided a perfect environment for me to break into this field. I also owe much to the excellent mentoring of Prof. Alan Shore at the School of Electronic Engineering.

After spending about five years as a post-doctoral RA at the School, I spotted an advert on the notice board in the foyer for content developers in CAST visualization. I submitted my CV not really knowing if I was what they were looking for, as I didn't have any real experience in the field at the time. Fortunately I had a hobbyist's enthusiasm as well as some programming credentials and I think that persuaded CAST to take me on.

Although initially employed as a 3D content developer, after about a year my programming skills became more useful until, together with another Bangor Graduate, I was asked to form a software engineering capability to develop tools and applications for the more technically demanding project work we were doing. Overall, I find the work at CAST to be challenging, varied and usually fascinating - I certainly can't think of anything else that would fit my particular skills and interests so well."

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## Carbon Based Electronics (RoVaCBE)



Research being conducted in the cleanroom facility

The Organic Electronics Research Group headed by Professor Martin Taylor has been successful in a major collaborative research proposal to the Innovative Electronic Manufacturing Research Centre (leMRC) based at Loughborough University. The leMRC distributes funding competitively on behalf of the Engineering and Physical Sciences Research Council (EPSRC) that is specifically earmarked for undertaking research into new manufacturing technologies. The consortium, led by Oxford University and which included Bangor, Manchester and Leeds Universities made a successful bid to the leMRC's prestigious Flagship scheme. The £1M+ project will seek to develop a vacuum-based approach to the low-cost printing of organic electronic circuits onto fast moving plastic sheets. Since these sheets are supplied from a roll and are rewound into a roll after printing, the technique is known as roll-to-roll (R2R) printing. We believe that using a vacuum-deposition approach will overcome

many of the problems currently being encountered when attempting to print organic electronic circuits from solvent-based liquids. Immediate applications of the proposed circuits include simple logic devices, security labels and novelty greetings cards. Future applications could include large-scale addressable transistor arrays for driving displays.

Bangor's role will be to design the circuits and fabricate devices under 'ideal' laboratory conditions to establish benchmark performances. These benchmarks will then be used to test the production technologies being developed by Dr Hazel Assender's group at Oxford. New materials for the project will be synthesised by Professor Steve Yeates' team at Manchester while Professor Long Lin's group at Leeds will develop the innovative microscopic patterning techniques required for R2R fabrication of electronic circuits.

[www.rdfunding.org.uk/queries/ListGrantDetails.asp?GrantID=14340](http://www.rdfunding.org.uk/queries/ListGrantDetails.asp?GrantID=14340)

## Optical Communications Seminar

Dr Evgeny Vanin of Acreo AB, Network and Transmission Lab. In Sweden, recently visited the School's Communications Research Group to undertake

research collaborations in Optical OFDM. Dr Vanin gave a seminar on Semi-analytical methods for transmission system performance evaluation.

## Final Year Poster Competition Winner Chris Williamson Wins a Flight Over Snowdon

Here, Chris Williamson gives us his account of the event. "The poster presentation was very successful and a unique experience. A very wide range of people came to view and judge the posters. These comprised of other students, staff, and people from industry associated with the University including an expert in the field of valve amplification visiting from Austria who challenged me on numerous technical aspects! It was helpful to explain my project to the visitors and to discover any aspects of it that were unclear. I was then able to ensure that these were clearly explained in my dissertation.

I was very pleased to win the

competition for the best poster. I felt that the time and effort taken preparing a poster and talking to the people present that morning was thoroughly worthwhile. The plane flight over Snowdonia was fantastic and was very different from anything else I have experienced."



Taking off from Caernarfon airport

## Record High 11.25Gb/s Real-Time Optical OFDM Transceivers

Under the support of the FP7 Alpha project, the Bangor Communication Research Group, led by Dr Jianming Tang has made ground-breaking achievements in experimentally demonstrating real-time optical OFDM transceivers, which are the key devices for future optical networks of various architectures.



The Bangor group is the first and only research group in the world that has experimentally demonstrated a series of world-first real-time end-to-end OOFDM transceivers at record-breaking signal bit rates of 1.5Gb/s in April 2009 3Gb/s in May and June 2009, 6Gb/s in July and August 2009, the record-high spectral efficiency of 5.25bit/s/Hz in September 2009 and 7.5Gb/s using RSOAs in October 2009. 12Gb/s real-time OOFDM transceivers using directly modulated DFB lasers have also been experimentally achieved successfully. It is expected that 20Gb/s real-time OOFDM transceivers will be demonstrated experimentally during the first quarter of 2010. A live customer demonstration of the developed transceivers will be taking place in June 2010 at the ICT Mobile Summit.

## ETOP 2009

As part of his work with the Photonics Academy for Wales, Professor Alan Shore chaired the biennial meeting of the Education & Training in Optics and Photonics (ETOP ) conference at Technium OpTIC , 5 - 7 July 2009. The conference attracted delegates from every inhabited continent in the World. The hard work of the conference was complemented by enjoyable recreational activities including a medieval banquet at Ruthin Castle. At this event



Professor Alan Shore (centre)

Professor Shore was elevated to be a Baron for the evening – his Baroness being Professor Maria Yzuel from Barcelona. Professor Yzuel is currently the president of the international optics society SPIE. The next conference in the ETOP series is expected to be held in Mexico City in 2011.

## The Science of Light and Colour



Professor Pete Vukusic

Dr Pete Vukusic recently visited Bangor to give his exciting lecture entitled *Light Fantastic: the Science of Light and Colour*. His lecture included demonstrations, hands-on activities and movie clips to help shed light on the science of colour. The lecture explored the properties and characteristics of radiant electromagnetic energy and showed how the use of light has created the world we live in today and how it will shape the world of tomorrow. Prof. Pete Vukusic is an experienced science

communicator, and former secondary school science teacher. He now works as a researcher and lecturer at the University of Exeter's School of Physics. He is one of the leading scientists in the world involved in broadening our understanding of how nature uses and controls the flow of light and colour. Schools from across North Wales attended the lecture.

School of Electronic Engineering

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