

Volume 7, January 2014

### Athena SWAN Bronze Award

The School of Engineering was delighted to achieve an Athena SWAN bronze award in the most recent assessment round. Dr Katherine Cameron and Prof. Ian Underwood led the team that compiled the School's submission and collected the award at the ceremony on the 7th of November at Imperial College. The Athena SWAN Awards recognise success in developing employment practices to further and support the careers of women in science, technology, engineering, mathematics and medicine (STEMM) departments in higher education. More details on the Athena SWAN charter can be found at <http://www.athenaswan.org.uk/>

*Dr Katherine Cameron and Prof. Ian Underwood receive the School of Engineering's Bronze award from the Athena SWAN patron, Professor Dame Julia Higgins.*



Li-1st

### pureVLC Ltd has Reached a Significant Milestone

pureVLC, a spin-out company based on research in the School led by Prof. Harald Haas, has shipped its first product - Li-1st, based on Li-fi technology that uses the visible light spectrum instead of radio frequencies to enable wireless data communication.

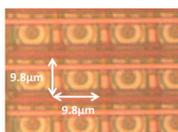
Li-1st is a system that allows networking via arbitrary off-the-shelf light fixtures. It consists of one unit to be fitted into the light fixture and another to be connected to a computer or a laptop. The system enables bi-directional communication which, for example, is required for browsing the Internet.

A Li-1st technology demonstration project was launched at the Bexley Business Academy in London on 11 October. The Bexley Business Academy was equipped with energy efficient

LED lighting by pureVLC's partner 8point3. LED lighting at Bexley Academy will also enable the delivery of teaching content in a way that is not possible with Wi-Fi by harnessing the capability of Li-Fi to deliver different content at different locations in a room. This could enable new ways of teaching taking into account the different abilities of pupils in a classroom. The Li-1st launch was accompanied by an article in the "Financial Times" on 10th October 2013. In addition, Li-1st was shipped to a number of key customers while the next product generation - Li-Flame is currently being developed.

### ERC Advanced Grant

Dr Robert Henderson has been awarded a prestigious European Research Council (ERC) Advanced Grant starting in February 2014. The 5 year €2.3 Million TOTALPHOTON project aims to develop ultra-high speed, single-photon cameras to capture the entire photon flux from live biological cells for wide-field single-molecule imaging. TOTALPHOTON will be developed through the collaboration of chemists, biologists and electronic engineers at Edinburgh and Heriot-Watt Universities. They will apply the new camera technology within advanced super-resolution microscopes ([www.esric.org](http://www.esric.org)). The project will exploit recent advances in CMOS single-photon avalanche



diode detectors developed through a long-standing collaboration with STMicroelectronics.

Analogous single photon counting pixels

### ADVANTAGE

Prof. John Thompson and Dr Aristides Kiprakis will be leading a new European Marie Curie training project called ADVANTAGE. This €3.6 Million Project starts in January 2014 and will involve researchers and industrialists from the UK, Denmark, Serbia and Spain. The main theme of the project concerns the development of "smart" grid power systems. Engineers working in this area should understand the power network that the smart grid is designed for and possess knowledge of how to communicate and process data concerning the power grid, so that it can be controlled effectively. ADVANTAGE is a major inter-disciplinary and inter-sectoral project between power and communications engineering research and development communities. The goal is to train a group of PhD students who will form the next generation of engineers leading the development of smart grid technology.

### ADEL

Dr Tharmalingam Ratnarajah from the Institute for Digital Communications has been awarded an FP 7 project, ADEL, as project coordinator. The ADEL consortium consists of eight partners from the UK, Greece, France, Germany, Ireland and Portugal and its goal is to explore the potential of licensed shared access as a key enabler for 5G mobile broadband networks. The partners are: Athens Information Technology (GR), Thales Communications and Security (FR), Technical University Darmstadt (DE), Intel Mobile Communications GmbH (DE), EURECOM (FR), Trinity College Dublin (IE) and Portugal Telecom Inovação SA (PT). This €3.7 Million project will start in December 2013. Further details can be found at <http://www.fp7-adel.eu/>



Advanced Dynamic spectrum  
5G mobile networks Employing  
Licensed shared access

### Dr Tina Düren Wins a 2012 ExxonMobil Excellence in Teaching Award

Congratulations to Dr Tina Düren who has won a 2012 ExxonMobil Excellence in Teaching Award. These awards, run in conjunction with the Royal Academy of Engineering, reward individuals who "distinguished themselves within their peer group by showing a strong and continuing commitment to teaching, professional activities, promoting engineering as a rewarding and creative career, establishing industrial-academic links and other activities which ultimately ensure the output of top-quality graduate engineers." As a consequence of Tina's success, the School is recognised as an "ExxonMobil Centre of Teaching Excellence".





Professor Hugh McCann

## New Head of School amongst Academic Staff Recruits

The School has successfully grown its academic staff complement by 24 during 2013. Prof. Hugh McCann FREng, joined as Head of School in March from the University of Manchester where he was most recently the Associate Dean (Research) in the Faculty of Engineering and Physical Sciences. Hugh graduated BSc (1976) and PhD (1980) in Physics at the University of Glasgow before carrying out 6 years of post-doctoral research at DESY (Hamburg), Manchester, and CERN (Geneva). He then spent 10 years in R&D at the Royal Dutch/Shell Group. As Chair of Industrial Tomography at UMIST since 1996, he pioneered opto-electronic systems to provide specific chemical imaging capability in combustion systems, and has developed electrical impedance tomography for medical applications. In Manchester he was Head of Electrical & Electronic Engineering (1999-2002) and then he chaired the UK *Professors & Heads of Electrical Engineering* (2003-2005). He taught 1st, 2nd and 3rd year classes in measurement and instrumentation, and ac circuit theory.

Another recent key appointee has been Prof. Jason Reese FREng, to the Regius Chair of Engineering, one of the oldest Engineering Chairs in the UK; it was established by the Crown in 1868 with the appointment of Fleeming Jenkin, the most recent incumbent being Peter Grant, FREng. Prof. Reese was most recently Head of the Department of Mechanical and Aerospace Engineering at the University of Strathclyde.

## Student Awards

Our students have had another very successful year, winning prizes in various categories including:

### First Prize in the Tata Steel / BCSA / SCI Student Bridge Design Competition

David Winning collected the prize during the Structural Steelwork Design Awards in July, alongside other prizes for high-profile projects from across the Industry. The other students in our winning design were James Robb, Aly Sim and Peter Jools, who designed a cable-stayed bridge crossing of a canal.

### Unisim Design Challenge

Honeywell announced that Dursun Can Ozcan has been named the winner of the annual Honeywell UniSim Design Challenge student competition for the Europe, Middle East, Africa (EMEA) region. Dursun, a student at the School of Engineering, showcased his winning design to nearly 1,000 attendees at the 2013 Honeywell Users Group (HUG) EMEA, in November 2013, in Nice, France.

Dursun's research focused on reducing carbon dioxide emissions in the cement industry.

### Chemical Engineering Students win an Advanced Engineering Leadership Award

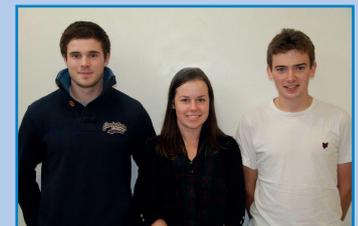
Congratulations to Camille French, David MacDonald and Ruaridh MacDonald, fourth year chemical engineering students, who won Engineering Leadership Advanced Awards from the Royal Academy of Engineering. These awards provide motivation and support for exceptional engineering undergraduates in British universities who have the potential to be future leaders of industry. MEng students in the third year of a five-year course are eligible to compete for the awards, which are worth up to £5,000 each, as well as access to experienced mentors allowing them to benefit from carefully planned training and targeted support over three years.

### Charles M. Vest NAE Grand Challenges for Engineering International Scholarship

Laura Underwood, a postgraduate research student in the Institute for Infrastructure and the Environment has been awarded the inaugural Charles M. Vest NAE Grand Challenges for Engineering International Scholarship at the Pratt School of Engineering, Duke University, North Carolina. Laura's research into providing access to clean water will be conducted in association with Prof. Mark Wiesner at the Pratt School.



Dursun Can Ozcan collects his award from Hedwig Leemans



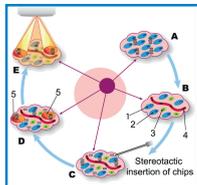
Ruaridh MacDonald, Camille French and David Macdonald

## New Members Appointed to The Royal Society of Edinburgh (RSE) Young Academy of Scotland

The School of Engineering is very pleased to announce that Prof. Luke Bisby and Drs Blanca Antizar-Ladislao and Stewart Smith have been appointed to the Royal Society of Edinburgh Young Academy of Scotland (YAS). They will serve a three year term which began in April 2013.

## IMPACT

A team led by Professor Alan Murray has been awarded a 5-year EPSRC Programme Grant for the £5.2M IMPACT project (Implantable Micro-systems for Personalised Anti-Cancer Therapy). Cancer patients could be treated more effectively in future with tiny, sensory implants that will monitor tumours in real time and in great detail. The team, from both the University of Edinburgh and Heriot-Watt University, will develop the miniature chips to prove the technology, which they hope to follow with clinical trials. The devices, about the size of an eyelash, would be implanted into patients' tumours. They would



Chip in Tumour

allow doctors to target radiotherapy, and ultimately chemotherapy, where and when it is most needed, improving patients' chances of recovery.

## Signal Processing 4 the Networked Battlespace

Research Councils UK (RCUK) and the Defence Science and Technology Laboratory (Dstl) have signed a collaboration agreement to maximise the benefits delivered by public investment in research, innovation and technology.

EPSRC and Dstl also announced that they will be providing £7.5 million in funding for two projects that have been successful in response to a joint call, Signal Processing in a Networked Battlespace, which was issued in February 2012.

The £4 million Edinburgh award, Signal Processing 4 the Networked Battlespace will be led by Professor Mike Davies from the University of Edinburgh supported by colleagues at the Universities of Edinburgh and Heriot-Watt.

## Alumni News

### Visiting Professor, Peter Fraenkel MBE, Awarded the Saltire Prize Medal 2013.

Professor Peter Fraenkel MBE, Visiting Professor at University of Edinburgh, is the third recipient of the Scottish Government's Saltire Prize Medal. The award is for his outstanding contribution to the development of tidal energy over three decades. Professor Fraenkel was a co-founder of IT Power in 1981 which developed the world's first tidal turbine tested on Loch Linnhe in 1994. Following that he co-founded Marine Current Turbines Ltd which continues to develop the ground breaking Seagen turbine. Peter is heavily involved with the Industrial Doctoral Centre in Offshore Renewable Energy (IDCORE).



Peter Fraenkel MBE and Seagen on installation barge

