Welcome

To the fifth edition of the School of Engineering Research Newsletter.

The flowers are once again in bloom around campus as we head towards the final term for 2011-12. This edition of Research News includes news on grants successes, awards, upcoming PhD graduands, top tips for academic staff plus dates for your diary and upcoming funding calls.

If you have any news stories, please email eng.research@warwick.ac.uk or see Sarah Pain in the Research Office.

News Round-up

The top stories from the School of Engineering’s staff and students

Congratulations to Dr Simon Leigh, who has won Silver at a special House of Commons competition to showcase the UK’s thriving science and engineering base. Simon, who is undertaking a post-doctorate in micro-manufacturing, presented his research on 3D printing technology to a panel of expert judges inside Parliament and was awarded the Silver Prize and £2,000, as part of the poster competition SET for Britain. This competition, in the House of Commons, involves researchers displaying posters of their work to panels of expert judges and politicians. This year saw 59 entries shortlisted.

Right: Simon with Sir John Parker, President of RAEng

The event aims to help politicians understand more about the UK’s thriving science and engineering base and rewards some of the strongest scientific and engineering research being undertaken in the UK. Simon said, “I’m very happy to have won. It hasn’t really sunk in yet. The quality of all the exhibitors’ work was excellent, it really must have been a difficult competition to judge.”

Mr. Yuning Zhang, a 4th year PhD student in major fluid dynamics, recently received an award: “Chinese Government Award For Outstanding Self-Financed Students Abroad” with a cash prize of US$6000. This award is set up by China Scholarship Council, Ministry of Education, China with the purpose of recognising the excellent performance of Chinese students abroad who are not financially supported by the Chinese government. The recipients of this award are selected by experts from a huge number of applications nominated by Chinese embassies in 29 countries.

Twenty-eight awards were given to doctoral students, who are from China and studying in UK. Yuning Zhang is the only one in the University of Warwick to receive this award and during his PhD program, he has delivered several high-quality publications.

Speaking of the award, Mr. Yuning Zhang said “I am very happy to receive this award and regard it as important recognition and encouragement of my research from the Chinese government. I also appreciate excellent supervision and long-term encouragement given by my supervisor Prof. Shengcai (Vic) Li.”

Mr. Yuning Zhang also gratefully acknowledges financial support from EPSRC WIMRC and Peter Carpenter Memorial Graduate Student Travel Fund (2011).
Agence Nationale de Recherche (ANR) is the main research grant awarding body in France. Prof. Roger Green was amongst specially invited panel members in their recent funding round, at which a budget of over €140M was assigned.

His fellow panel members were drawn from major institutions and companies across the world, including Harvard University and MIT, and Prof. Green was the sole representative from Warwick.

Each project awarded through the body has an average value of €7M, hence the rigorous panel process. Each group of panellists meet for 2-3 days on two occasions to rank and discuss bids. Prof. Green felt “honoured to be part of this system, which has such an strong influence over engineering futures in France.”

Congratulations to our recent PGR graduands, who are due to graduate in the summer, having completed their PhDs.

- Dr. Shiva Mahmoudi was approved for graduation in December 2011, having completed her PhD on “the abatement of gaseous emission for hot flue gas using a Circulating Fluidised bed (CFB) Reactor” under supervisor Prof. Jonathan Seville.
- Dr. Shuyi Wang was approved in December 2011, having completed her PhD on “Receiver design for Ultra Wideband Systems” under supervisor Dr. Yunfei Chen.
- Dr. Amy Jones was approved in January 2012, having completed her PhD on “Solute Dispersion Across Manholes Under Time-Varying Flow Conditions” under supervisor Prof. Ian Guymar.
- Dr. Huseyin Kusetogullari was approved in March 2012, having completed his PhD on “Network Routing Optimization and Effective Multimedia Transmission” under supervisor Dr. Mark Leeson.
- Dr. Kenneth Leong was approved in March 2012, having completed his PhD on “Cryogenic Power Electronics” under supervisor Prof. Phil Mawby.

We wish all our graduands the very best in their future careers!
New grant awards

Here are a selection of recent awards achieved within the School.

Prof. Jihong Wang is the Principal Investigator for the newly awarded EPSRC Grand Challenge in Integrated Energy Storage for the Network. The £3.7million project is entitled “Integrated, Market-fit and Affordable Grid-scale Energy Storage (IMAGES)”, and will address a major gap in the field of energy.

The UK is particularly vulnerable in terms of network stability, as it has a relatively isolated small island power network. With an impending reduction in the use of fossil fuels and an increase in reliance on clean, variable intermittent energy generators, the need for effective and efficient energy storage becomes a pressing requirement. IMAGES will focus on the challenging technical and economic issues faced by integrating large grid scale energy storage with the energy network.

The project consortium is made up of twelve partners from four different institutions; Warwick, Nottingham, Loughborough and NERC British Geological Survey. Links within the University come from the Economics and Mathematics departments. The multi-disciplinary group will enable a fully holistic approach to this major issue.

Prof. Alexei Lapkin is the PI for two recently been awarded EU FP7 grants. The vision for “Control and Real Time Optimisation of Intensive Polymerisation Processes” (COOPOL) is to develop new methods and tools for modelling and control, based on real-time sensing. This will facilitate the development of a new paradigm of processes: intensive, low-impact, sustainable chemical technologies. Dr. Daciana Iliescu is a co-investigator on this project, and participants in the project come from Germany, Norway, the Czech Republic as well as Chemistry Innovation Ltd, based in the UK.

“Doped Carbon Nanostructures as Metal Free Catalysts” (FREECATS) is aimed at developing novel metal-free catalysts based on nanostructured carbon for several industrially-relevant classes of reactions. The specific project at Warwick will be devoted to experimental and computational investigation of hydrodynamics and heat transfer in structured catalyst supports, namely ceramic foams.

These awards take Prof. Lapkin’s successful EU grants up to four in total. If you would like to learn more about the subject, there is a ‘Top Tips’ session for academic and research staff on Wed 18th April, where Alexei will present on “A personal view on what makes a successful FP7 application”.

Dr. Stefano Utili will soon commence work on his EU funded project in Geomechanics and Geohazards, with funding of £325k. This project will bring together the complementary expertise of world leading groups in Asia (including the top Indian University of Technology and the two top civil engineering departments in mainland China) and Europe in geotechnical and hydraulic engineering to find novel solutions and exchange current knowledge for the assessment and mitigation of geohazards. The focus of the research effort will be on climate change related flooding, landslides, and earthquakes. Speaking of the grant success, Dr. Utili said “I am delighted for the award of this grant which will allow the establishment of a strong international collaboration between Warwick and the very best civil engineering departments in India and mainland China”.

Dr. Benoit Jones has been awarded £49k from the Warwick Impact Fund, for a new industrial collaboration with TAM International UK. The project will develop a revolutionary approach to monitoring the early strength development of sprayed concrete, which stands to impact the construction industry in the UK and worldwide.

Dr. Xiaobing Hu begins a three-year fellowship between China and Warwick in late Spring, following his post doctorate position with Dr. Leeson and Prof. Hines.

We’re delighted to welcome Dr. Peter Gammon (pictured right) back to the School of Engineering. He obtained his PhD here in 2011, and has begun a five-year Royal Academy of Engineering Fellowship this Spring, with a project entitled “Novel Interlayer Cooling for Harsh Environment (NICHE) Devices and Circuitry”. 
Thanks for joining us Fiona - can you tell me about you and your team, and what you do?
I am the Academic Support Librarian for research and work in a Library team that supports researchers. My team work specifically on the offer through the Wolfson Research Exchange (go.warwick.ac.uk/researchexchange); a space that encourages researchers to exchange their knowledge and create new connections, outside traditional departmental structures. We wanted to connect the physical space of the Research Exchange with online space so this is where the idea of Research Match came from.

Research Match has been described as a dating agency for researchers! What does that mean in real terms?
We found that this description was the easiest way for people to get a handle on the concept of Research Match...but if people match on more than research then that's purely incidental! Research Match is a Warwick specific, matching service for researchers. It is profile based like online dating services but the things you can connect on are research fields, methodologies, techniques and wider research interests. You can search and browse for researchers and once you find matches you can contact them.

Who should use Research Match?
Research Match (RM) is for all Warwick researchers from doctoral researchers through to those who are more established, and we currently have about 600 researchers on the system. Those who use RM could be looking to move slightly outside their traditional research field, they might be looking for researchers in the same field but outside the normal departments they work with or they might be looking for someone who uses a similar technique/methodology and want to pick their brains. RM is also a great way to make your own collaborative interests known within Warwick. RM is particularly strong in helping the connections in the very earliest stages and complements the services offered through Research Support Services for formal collaborations.

There are many profile facilities available to researchers - why should they use RM?
RM is different to other profile sites in two ways. Firstly it is Warwick specific and helps us understand the research connections we have in our own institution. Secondly it is about matching researcher to researcher and not about showcasing research. Sites like Academia.edu, LinkedIn and departmental profile pages are excellent for showcasing research and publications. What RM does is create a profile that is highly searchable, will help researchers within Warwick connect together without the need to trawl through departmental sites looking for connections. It does link back to the researchers profile site of choice.

Have any collaborations been formed through the service?
Yes there have been some great connections made. Here’s a few examples: a researcher from America made contact with Warwick researchers in a drinking studies network as he runs a similar network in the States; an eco-poet contacted a researcher who profiled themselves as researching eco-poetry and research staff from economics, sociology and cultural studies connected around research into new media who previously did not know that they are all researching in the same area within the institution.

What’s the future for Research Match?
We’re working on some new developments at the moment. From April, when you add or amend your profile, it will create an automatic match list for you, you will be able to load your profile and maintain it yourself and create ‘match lists’ of possible contacts.

I understand you and your team are managing the Postgraduate Hub now? What can the hub offer our PGRs?
Yes, we’re very excited about the PG Hub as it provides another great space for students, alongside what is already available at the Learning Grid and Research Exchange. The Hub opened on 7th March and we are working with the Graduate School and others to develop what is offered through the space. It is for all Warwick postgrads, where they can access support in the broadest context of postgraduate life, not just study. We have a large open area which is excellent for group work, space to work alone and a number of rooms which can be used for groups from 3 – 30. We’re encouraging academic departments and students to drop-in, see the space and talk with us about how we develop from this point forward. You can contact us on pghub@warwick.ac.uk and can follow us on Twitter @warwickpghub.

Research Match is available at go.warwick.ac.uk/lib-researchmatch and you can find out more from Fiona Colligan (f.h.colligan@warwick.ac.uk)
In Conversation

Thanks for taking time to talk to Research News, Emma. Many people will recognise your face around Engineering, but for anyone who hasn’t yet worked with you, what does your role involve?

My role primarily involves dealing with all research contracts from start to contract award for the department/s for which I have responsibility. This involves assisting with the pricing and costings, attending meetings, liaising with the funder/parties involved, as well as drafting, reviewing and negotiating the contracts, ensuring compliance with all University governance requirements (e.g. ethics, insurance, liability risks, departmental authorisation, etc.) and arranging sign off by an authorised representative of the University. I’m also responsible for dealing with any issues that arise during a project’s life that affect the contract or relationship with the funder (e.g. extensions, amendments, etc.) and for putting in place confidentiality agreements (NDAs) to facilitate and protect initial discussions. In addition, I work alongside Rachel Corke and the wider Research Development team providing advice on contractual aspects of grant proposals, as well as providing advice to the department and the wider University on particular topics/issues.

I understand you’ve been with RSS for about ten years? How has your role changed and developed during that time?

I’ve worked at the University for ten years and with RSS for just over nine. My first role at the University was as the Projects Coordinator for a Research Centre based within Warwick Business School, before I moved to RSS as a Research Funding Officer and then was subsequently promoted to the role of Contracts Officer eight years ago. My Contracts Officer role has changed significantly during this time, particularly as the University’s research income has increased and the requirements placed on the University by funders and legislation have become ever more stringent. One example of how this has impacted my role is that many of the traditional grant funders now also require contracts alongside the grant award in the form of collaboration agreements, consortium agreements, confidentiality agreements, industrial supporter agreements etc., as projects have become more multi-disciplinary, multi-partner and require the involvement of industry. However, perhaps the most significant change to my role was in August 2009 when I was released from my day-to-day Contracts Officer role for fifteen months to undertake the contracting and associated work on the £19M AWM/ERDF funded Low Carbon Vehicle Technology Project (LCVTP).

Things are changing at RSS; what does this mean for you and the School of Engineering?

RSS have a number of projects which are on going at the moment as we continue to seek to improve the support provided and meet ever-changing requirements. One project is looking specifically at the contracts process, identifying efficiencies, increasing transparency and enabling faster escalation. Another project is looking at the system used to process applications and awards with a view to improving the functionality offered and making information more accessible to academics and their departments. Following a recent resource review, my role has been revised to enable me to be Engineering’s dedicated Contracts Officer. All of these changes will hopefully enable better support for the research work being undertaken by the School.

Can you give our researchers a contracting tip?

One key tip would be to talk to me as early as possible. I’m very happy to get involved at the early stages, providing initial advice and guidance as well as taking forward any resulting contracts. I’m hoping my increased availability in Engineering will help facilitate this.

Note: For more specific tips, Emma will be running a Top Tips session on Wednesday 16 May on ‘Achieving successful research contracts: an update and handy hints’ – contact Sarah Pain in the Research Office for more information or to book your place.

So, when and where are you in Engineering?

After Easter I’ll be in Engineering room F313 on both Wednesdays and Thursdays. My extension there is x51680, but of course academics are welcome to just ‘pop in’ or can arrange a meeting with me during those days or at any time during the week – I’m happy to just pop across to Engineering when it’s convenient for academics to meet. The rest of the week I’m based in RSS, situated on the ground floor Annex of University House and can be contacted on x74515. My email address is E.J.Peak@warwick.ac.uk.

Thanks to Fiona and Emma for providing such useful information about the services they and their team provide.
The School has recently instigated ‘Top Tip’s sessions, where colleagues present on areas in which they have had particular success. The inaugural session took place on 8th February, where Prof. Phil Mawby and Prof. Ben Mayo took the stand to talk about ‘how to make and keep industrial contacts’. Both highlighted the importance of addressing real industry requirements, rather than perceived needs. Empathy, enthusiasm and a willingness to understand are key ingredients, along with the ability to communicate effectively; avoiding jargon.

Needs of SMEs and larger companies are rather different and should be handled accordingly. SMEs are particularly fast moving and keen for innovation, but on a small budget. Larger companies tend to invest higher amounts in longer term projects, often with a wide-variety of interests.

Phil and Ben both advised making every effort to meet good contacts and, importantly, to grow the relationships. Links may be made at events, conferences, business visits or through professional bodies, to name a few options. However follow-up with an email or call after the meeting is important for momentum. The key qualities looked for in an academic include genuine interest, confidentiality, a straightforward approach and the ability to spin plates (metaphorically speaking!).

The second session took place on 28th March; Prof Jihong Wang, Dr. Duncan Lockerby and Prof. Nigel Stocks presented ‘Ideas for successful EPSRC applications’ to their colleagues. Despite different personal experiences, they summarised strikingly similar points, including: collaboration is essential for a solid bid; ensure you fit EPSRC priorities; keep your application interesting, exciting and easy to read; get lots of feedback; and don’t let rejection stop you trying again!

For further ‘top tips’ on the subjects, please email eng.research@warwick.ac.uk for copies of the presentations from these sessions.

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**Event news**

On 20th/21st March, the international workshop on Mathematical Modelling and Simulation of Power Plants and CO2 Capture Processes was held at Warwick, organised by Prof Jihong Wang and Dr Jacek Wojcik with the support of the researchers from Power and Control Systems Research Laboratory.

Mathematical modelling and simulation play a crucial role in proof of concept, feasibility study, reliability and performance analysis for new design and development to be cost effective and robust. This is especially important in power generation industry and deployment of CO2 capture technologies, which are limited in experiments with the real object (power plant). Modelling can potentially support decisions at a range of business levels, from strategic planning, component and process design through to plant and system implementation, operation and maintenance. The workshop included 16 presentations from academic institutions and industry. 60 participants from UK, China, Poland, Belgium and USA came to share their time and expertise in the area of mathematical modelling and simulation. The main aims of this workshop were:

- to exchange the information of modelling and simulation techniques and the progress of research in this area;
- to create a meeting platform for researchers in this area to get together;
- to get a better picture for who does what in this research area;
- to update the software package and computer language available for modelling and simulation;
- to explore the opportunity for more unified software package in the future to achieve exchangeable modelling and simulation blocks;
- to get better ideas of what industrial needs are.

It was also a great opportunity to make new contacts and to discuss potential collaboration and future grant applications. The event was sponsored by UKCCSC (UK Carbon Capture and Storage Community), Science City Energy Efficiency Project and Warwick GPP in energy.

Thanks to Dr. Wojcik for providing this event summary and photo.
Funding Opportunities

Here is a selection of upcoming funding opportunities. Brief introductions can be found below; see the funding calendar online for more information, as well as details of other new additions: go.warwick.ac.uk/engcalendar

**Sustainable Manufacturing for the Process Industry**
Up to £4.6m is available for collaborative R&D projects, which must be business-led and include an end user. Up to £400k is available for feasibility projects, which must be business-led and may be collaborative or led by single companies. Collaborative R&D projects should last one to three years and will attract up to 50% public funding.
Closing Date: 25 April 12

**Industrial Secondment Scheme**
This scheme provides an invaluable opportunity for engineering teaching staff in HE institutions to gain state-of-the-art industrial experience.
Closing Date: 29 May 2012

**Marie Curie International Outgoing Fellowships (IOF)**
Supports experienced researchers from EU member states wishing to conduct research of their choice in a ‘third’ (non-EU member state, non-associated member) country followed by a return research phase to their country of origin.
Closing date: 16 Aug 12

**Marie Curie International Incoming Fellowships (IIF)**
Supports experienced researchers from non EU countries to conduct research of their choice in European host country.
Closing date: 16 Aug 12

**Marie Curie Intra-European Fellowships for Career Development**
Supports experienced researchers to conduct research of their choosing. The Researcher must spend at least 70% of their time in the host country.
Closing date: 16 Aug 12

**Brian Mercer Award for Innovation**
This scheme is for scientists who wish to develop an already proven concept or prototype into a near-market product ready for commercial exploitation. The award is up to £250K to support an idea in; built environment, clean technology, energy, nanoscience and nanotechnology.
Closing Date: 09 May 12

**International Exchanges Scheme**
This scheme is for scientists in the UK who want to undertake a collaboration with scientists overseas through either a one-off visit or bilateral travel. Collaborations should be based on a single project and travel can only take place between the UK and a country where the overseas collaborator is based.
Closing Date: 18 Jun 12

**EPSRC UK ICT Pioneers**
UK ICT Pioneers is a unique partnership between EPSRC and key stakeholders that aims to recognise the most exceptional UK PhD students in ICT-related topics who are able to communicate and demonstrate the excellence and exploitation potential of their research.
Closing date: 31 May 2012

**Visiting Professorships**
To enable distinguished academics based overseas to spend between 3 & 10 months inclusive at a UK university, primarily in order to enhance the skills of academic staff or the student body within the host institution. Priority will be given to new or recent ventures.
Closing Date: 10 May 12

**Industrial Secondment Scheme**
This scheme provides an invaluable opportunity for engineering teaching staff in HE institutions to gain state-of-the-art industrial experience.
Closing date: 13 Jun 2012

**Cafe Scientifique**
Tue 15 May 6-8.30pm
Café Scientifique is an arena in which to present research to a wide audience. This café provides the opportunity for PGRs to present their research in an informal & supportive setting, to a broad audience of fellow researchers.
Registration is required – go to Student Careers & Skills webpage

**Strategy Bites: Global Priorities Programmes**
Tue 29 May 12.30-1.30pm, IDL
Strategy Bites is your chance to find out more about the many projects that are part of the University’s Strategy 2015.

**SCHOOL OF ENGINEERING EVENTS**

**Fluid Dynamics Seminar**
The structures of monodispersed foam
Wed 02 May 4.15pm A206a
Prof. Stefan Hutzler (University of Dublin) will present in Room A206a. Refreshments provided.

**Andrew Little Lecture**
Dr Sasan Armand, NASA Langley Research Center
In early May, Dr Armand will be visiting the School, and will give an special Andrew Little Lecture. Watch for news from the Research Office for date and location.

**Top Tips for Research Staff**
A personal view on what makes a successful FP7 application
Wed 18 Apr 12-1pm A401

Achieving successful research contracts: an update and handy hints
Wed 16 May 1-2pm A401

How to manage a wide variety of PhD students and their expectations”
Wed 23 May 12-1pm A401

How to make funding opportunities come to you
Wed 30 May 12-1pm A401

**PhD Research Student Event 2012**
Tue 19 Jun 12.30-2pm
Details to follow – watch out for details from the Research Office