

Research Funding in Mining

Congratulations to Ian Porter, Ernest Baafi and Stephen van Duin who are amongst the successful researchers who have received \$1 million in research funding from the Australian Coal Association (ACARP) to develop automation and robotic solutions to solve one of the remaining bottlenecks in underground coal mining (\$780,000) and to develop new simulation methods for underground coal mining (\$250,000).

Congratulations to Ernest Baafi, Chris Lukey, Geoff Spinks, Jan Nemcik and Gary Gibson who have re-



Ernest Baafi and Ian Porter, two of the team who have received \$1 million funding from the Australian Coal Association

ceived ACARP funding of \$300,000 (twelve months) for the development of a polymer based alternative to steel mesh for use in underground coalmine roadways. It is anticipated that this fundamental research will lead to pilot-scale and eventually full-scale testing and commercialisation which will be the subject for further funding applications.

The total for all currently funded mining research projects in the Faculty is now over 1.7 million dollars - a tribute to the reputation of our Mining Engineering colleagues, and to our ability to put multidisciplinary teams together to solve Industry problems - in the case of the automation grant, Electrical, Mechanical and Mining Engineers.

Dean's Spot

Happy New Year everyone for 2008! Our Faculty is really looking forward to another successful year in research and teaching in engineering. It's a great time to be an engineer as there a strong worldwide need for engineering skills. For example, India and China are very keen to improve the quality of life of their citizens. Engineering design and creativity are essential to provide the basic necessities such as clean drinking water, sustainable energy for heating, cooling and lighting, new infrastructure to support the community's need for transport, health, etc. and our Faculty is leading research in these areas. For example, we have just been notified that we have been awarded over 2 million dollars in new research contracts to develop: new methods of mining automation; software simulation of mining operations; new and safer methods for roof support for underground coal mines; research to improve the reliability of electricity supplies; and research to improve the operations of railways.

In addition there are a number of new engineering education initiatives which have received recent funding to further assist engineering students at the University of Wollongong. In Electrical Engineering new initiatives have been funded in: 'Problem-Based Learning Using Autonomous Robotics for Com-



puter Engineering' (Dr Zengxi Pan in School of Electrical, Computer and Telecommunications Engineering-SECTE); 'Development of an Immersive Learning Environment and Platform for Microcontroller Study' (Dr Montserrat Ros, SECTE); 'Building Em-

ployability Skills in ICT Master Courseworks Curricula (Professor Fazel Naghdly, SECTE); 'A Multi-Institution Approach to Predicting and Addressing Student Performance in Fundamental Engineering Mechanics' (Professor Tim McCarthy, Civil Engineering).

Another indication that the value of an engineering education is not only good preparation for a technical career but also for senior executive posts is that the University has announced that an engineer has been appointed as our Deputy Vice Chancellor, Research. She is Professor Judy Raper who is currently serving at the National Science Foundation (USA) as Division Director of Chemical, Bioengineering, Environmental and Transport Systems. Other engineers in our University's management structure include our Vice Chancellor, Prof Gerard Sutton, who is an Electrical Engineer, and the Deans of

Informatics and Engineering who are also Electrical Engineers (Prof Joe Chicharo and myself).

Judy Raper has been Department Chair, Chemical & Biological Engineering at the Missouri University of Science and Tech-

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Endeavour Scholarship Holders

Gyanendra Regmi

Mr Gyanendra Regmi from Nepal is the recipient of an Endeavour Scholarship. Gyanendra completed an undergraduate degree in Civil Engineering from the Institute of Engineering, Tribhuvan University, Nepal in 1999. He then worked at the Thapathali Campus of the same University for four years as a lecturer, and was Acting Head (Department of Civil Engineering) for two years. In 2006 he received a Masters Degree in Civil and Environmental Engineering from Saitama University, Japan with the assistance of a scholarship from the Asian Development Bank.

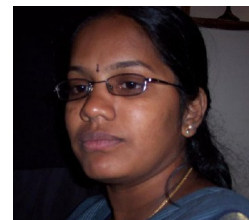


Under the supervision of Professor Buddhima Indraratna and Dr Long Nghiem, Gyanendra will carry out research in the performance investigation of a permeable reactive barrier installed for remediating acidic groundwater. This study is expected to bring about a breakthrough analysis in the remediation of acidic groundwater, with much relevance to practicing engineers in infrastructure development in coastal of Australia.

Muthu Karpagam

Muthu Karpagam, a Geotechnical Engineering graduate from Indian Institute of Technology, Madras has been awarded a 2008 Endeavour scholarship to study for a PhD at UOW under the supervision of Professor Indraratna, Dr. Khabbaz and Dr. Cholachat in the field of geotechnical and railway engineering.

Muthu completed her Bachelor degree in Civil Engineering with Distinction at Anna University, Chennai, and was ranked within the top 1% of Civil Engineers in the GATE examination (Graduate Aptitude Test for Engineers). She then pursued a Masters degree at the Indian Institute of Technology, Madras (IITM), which is the one of the most prestigious engineering institutes in India, and received a gold medal at for the best academic record in Civil Engineering. She was also ranked 3rd out of over 5000 candidates for the Teacher's Recruitment Examination (TRB 2006), which enabled her to work as a lecturer at AC college of Engineering and Technology in Karaikudi, Muthu's hometown.



Educational Development in the Faculty

Maureen Bell is the Faculty's CEDIR representative this year.

Maureen is available for consultation with academic staff members interested in any aspect of teaching practice.

Please contact Maureen if you would like to:

- talk through subject/teacher surveys
- arrange a teaching workshop for your tutors
- discuss your design of a subject or assessment task
- start/finish the ULT course
- discuss any other aspect of teaching/learning.

Maureen will be located in the Faculty office on Tuesdays during session time.

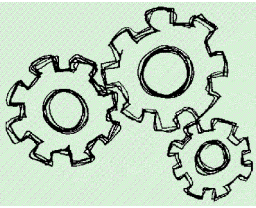
E-mail: mbell@uow.edu.au
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Maureen Bell (Photo: Adam Orvad)

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nology (formerly known as University of Missouri-Rolla) (2006) and Dean of Engineering at the University of Sydney (1997-2003). When previously in Australia, she served on the Australian Research Council (ARC) Engineering and Earth Sciences Panel and was founding Director of the Centre for Particle & Catalyst Technologies (now incorporated into the ARC Centre for Functional Nanomaterials) at the University of New South Wales. Professor Raper has an impressive research background in chemical engineering and is the recipient of a number of prestigious awards (including the Sheddon Pacific Award for the most outstanding young chemical engineer in Australia in 1992 and the Professional Engineer of the Year in 1998) In 2003 her contribution to the engineering profession in Australia was recognised by election to the Australian Academy of Technological Sciences and Engineering in Australia and as an Honorary Fellow of the Institution of Engineers Australia.



PhD Engineering Graduates



Dr Behzad Fatahi

Dr Behzad Fatahi

Dr Behzad Fatahi received a PhD in Engineering at the Tuesday afternoon graduation ceremony in December. Dr Fatahi has conducted extensive research, under the supervision of Professor Buddhima Indraratna, into how railway infrastructure can be improved by identifying and managing surrounding vegetation, refuting the age-old belief that vegetation is detrimental to railway tracks. He was also named Young Railway Engineering of the Year 2007 by the Railway Technical Society of Australasia. Dr Fatahi is currently working with Coffey Geotechnics in Sydney as a Professional Geotechnical Engineer and will take up a role as a lecturer in UTS's Faculty

of Engineering early next year. Congratulations to Behzad Fatahi on receiving his PhD at the recent UOW Engineering Graduation.

Dr Scott McGovern

Dr Scott McGovern was rewarded on Tuesday afternoon for his years of research, under the supervision of Professor Geoff Spinks, into assessing the strength of aluminium joined with engineering adhesives. He worked with an adhesive so strong that when it was applied to steel and stressed, the steel broke before the adhesive. Scott completed pioneering work applying intelligent polymers to welding on boats, planes and cars. If his research is perfected it may be possible to gauge the strength of an adhesive joint in real time, giving drivers, pilots and captains precious moments to avert a catastrophe. Dr McGovern was awarded the Best Paper prize at an international conference in the USA for his contribution to the new engineering area of 'structural health monitoring'.



Dr Scott McGovern

Dr Zhenguo Huang

Dr Zhenguo Huang (Bernie), ISEM student, received his PhD at the 2007 Spring Graduation Ceremony.



Dr Zhenguo Huang

Bernie's PhD project studied hydrogen storage materials and his thesis title was "Effects of compositions and mechanical milling modes on hydrogen storage properties". He was supervised by Hua Kun Liu, Zaiping Guo and A. Calka.

Dr. Huang has published 12 papers (first author in 8 papers) in refereed international journals, 5 conference papers (first author in 4 papers) and has delivered 3 oral presentations at national and international conferences in the past two years.

His research has been recognized by the Chinese Government through the prestigious award "Chinese Government Award for Outstanding Self-Financed Students Abroad" in 2006. He also received the ISEM postgraduate student merit award in August 2005 due to his excellent performance in the previous year.

Bernie was elected as a University of Wollongong Council Member 2005-2007 and was the first international student to be elected to the University Council. He is also the Chairman of the Chinese Students & Scholars Association in the University.

Congratulations

Engineering student Damon Bishop has been awarded the University Medal. Damon was awarded a High Distinction mark of 98% for his thesis in the Faculty of Engineering.

During his studies Damon produced outstanding research which resulted in the submission of four papers to internationally recognised scientific journals. His Honours thesis was described as one of the best two theses produced at an undergraduate level in the past 10 years.

Hands on Engineering

On 2 November 2007, 42 students from Priority Funded Schools (previously disadvantaged schools) attended the "Hands on Engineering Day". This was a day organised as part of the Engineering Faculty's Equity Project in collaboration with Sue Rosskelly, from Uniconnections. We had the help of two volunteers, our own students Kirsty Last and Ashley Davies and many of the Faculty's staff provided assistance. The students were given two hands-on workshops: a Physics Lab and a Surveying practicum, as well as tours of the campus and Thermo Lab. The racing car was especially popular! Two academic staff members, Ian Porter and Montse Ross, gave the students valuable information about Engineering as a career. They were also given morning tea and a sample bag put together by the EEC, and each student received a Certificate of Attendance.

The students had a great day, and we hope that more will follow. Many thanks to all involved.

Hands on Engineering Day



Medical Physics Students Awarded

Four postgraduate students from Centre for Medical Radiation Physics were recently awarded prizes for their outstanding research.

Scott Penfold (supervised by Prof Anatoly Rozenfeld and Dr Reinhard Schulte, LLUMC USA) was awarded First Prize for his innovative work on Proton Computer Tomography presented at the Workshop on Innovative Technology for Hadron Therapy at IEEE NSS MIC 2007 in Honolulu, USA.



Scott Penfold and Lakshal Perera

Scott is a first year PhD student at CMRP, and was among experienced researchers in competing for this prize.

Both Scott Penfold and Lakshal Perera (supervisor Dr Michael Lerch) were awarded prestigious Trainee Grants from IEEE NPSS to support their participation and presentations at the

IEEE NSS MIC 2007 conference and to attend training courses.

These awards demonstrate the high standard of preparation our PhD students receive and the importance of the research they are conducting at CMRP

Postgraduate students from Medical Radiation Physics were also recently awarded



Amy Zeibell

prizes at conferences in Australia.

At the Medical Physics 07 conference in Sydney, Amy Zeibell (supervised by Professor Rozenfeld) was awarded the 1st Prize for the best PhD work in 2007 on the Microdosimetry Project (our NASA research project and ARC DP grant).

At the medical physics student competition held in Victoria, Joanne McNamara, a recent Masters Medical Radiation Physics

candidate, was awarded first prize for a project in Radiation Therapy. Supervised by Professor Metclafe, the project was on talk on gating signals to account for patient breathing during radiotherapy treatment for lung cancer.

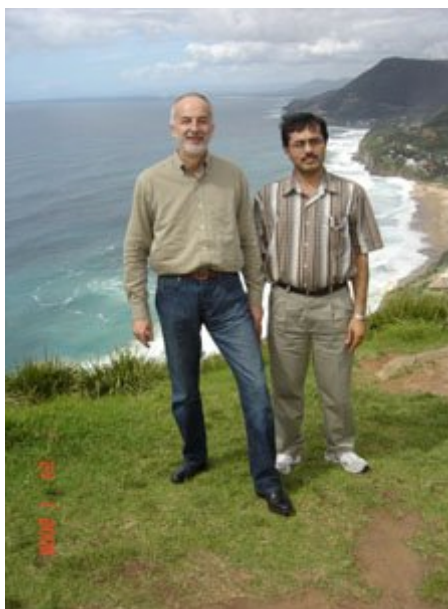


Joanne McNamara

Diary Dates

- 5 Feb Faculty Education Committee
- 12 Feb Faculty Advisory Committee
- 19 Feb CME Subject Outline Assessment Meeting
- 19 Feb MMM Subject Outline Assessment Meeting
- 19 Feb Physics Subject Outline Assessment Meeting
- 22 Feb Engineering Orientation Day
- 26 Feb Postgraduate Research Student Orientation Day
- 26 Feb CME Safety Committee
- 26 Feb Physics Safety Committee
- 26 Feb MMM Safety Committee

Visiting Professor



Prof. Felix Darve and PhD Student Promod Thakur at Sea Cliff Bridge

Professor Felix Darve from the Institute National Polytechnique de Grenoble (INPG, France) visited UOW during 20-24 January 2008. Professor Darve is an expert on railway engineering and is collaborating with Professor Indraratna on an ARC Discovery project on Railway Ballast Behaviour. As well as being a well-known academic and Editor of the International Journal of Analytical and Numerical Methods in Geomechanics, Professor Darve has been an adviser/member of a number of important French Government and European Union Committees in Civil Engineering.