

Faculty Prize Evening

The Engineering Faculty held its annual prize evening on Wednesday 12 April. Each year, the best students in the Faculty are awarded prizes for high academic achievement at this event.



Benjamin Braddock, winner of the Matthew Biasutti Memorial trophy.

Over \$141,120 worth of prizes and scholarships were awarded on the night. All engineering and physics disciplines have a number of awards and prizes each year, and students in every year of their four year degree are eligible. These awards are donated by the Faculty and companies, Industry Associations, individuals and

other sponsors. Amounts range from a few hundred dollars to more than \$10,000.

Students typically receive awards for best performance in particular subjects (eg in management subjects or in specialist subjects of particular interest to the donor), best thesis in a discipline, best overall performance in a certain year, and so on. Awards are also given to the top 5% of students in the Faculty, and these students are formally placed on the 'Dean's Merit List'.

There are also a number of scholarships specifically for our first year students, including several 'Women in Engineering' bursaries.

We are very grateful for all the donors, and congratulations to our many talented students whose hard work received such high praise on the evening.



Scott Morrison (right), from Coffey Geosciences Pty Ltd., pictured with Geoff Cook, who collected five prizes on behalf of his son, Gregory, who is currently overseas.

Contents

Vacation Night Success	2
Excellence Awards	2
Record Enrolments	2
Civil Engineering Forum	2
Rail CRC Researchers	3
Record Enrolments	3
Iron-making Conference	3
International Mining Games	3
Visiting Principal Fellow	4
Global Roaming	4
OCTAL Awards	4
Commercialisation Workshop	5
Earthquake Conference	5
Nanotechnology	6
Project Grant Success	6



Pictured at the UoW Faculty of Engineering's Prize Night. From left: Dr Cholachat Rujikiat-kumjorn, Professor Buddhima Indraratna, Dr Alex Remennikov, Sakdirat Kaewunruen, and Associate Professor Muhammad Hadi of UoW



Vacation Night Success

Professional Work Experience is an integral part of most university degrees and strongly assists students when they are deciding the path their career will take on completing their



Mining blast at Bengalla open cut mine

degrees. The Student Chapter of The Australasian Institute of Mining and Metallurgy (AusIMM) recently held its first "Vacation Night" at the University of Wollongong. The night featured presentations of vacation work experiences by the students. The night was designed to encourage first and second year students to meet and hear about various vacation work experience program from older students, and perhaps make the whole concept a little less daunting.

Two of the nine presenters spoke of their experiences overseas. Frank Grima, a second year Mining Engineering student, spoke about his trip to Ireland where he spent time at the Lisheen Mine working with Sandvik in an underground workshop.

Jonathan Griffin, a geology post-graduate student, spoke about his time in Pakistan after the recent earthquakes. Jonathan's time was predominantly spent giving aid to the Pakistani people and assisting them to rebuild their communities by estab-

lishing water and sewerage systems in the villages.

Closer to home, Kristi Renneberg, a third year Mining Engineering student who had spent time working at

Baal Bone Colliery, explained what it was like to work in an underground coal mine, both in the development panel and also at the longwall face. Matt Taylor, another third year Mining Engineering student, spoke of his role at the Cadia open-cut metal operation near Orange, NSW. In his position he worked with the drill and blast engineer, often designing blast plans to be used in the mine.

The Master of Ceremonies for the night, Tom Carroll, who is in the final year of his Mining Engineering degree, focused on the importance of safety in mining. Tom also showed open-cut blast footage, which was particularly appreciated by the first year students.

Congratulations are extended to the nine students who participated in the night. Our gratitude is directed particularly to the Illawarra Branch of

the AusIMM for sponsoring the night. Given the success of the night, it is planned that this will become an annual event in the AusIMM Student Chapter calendar.

Simone Walsb, Chairperson, AusIMM Illawarra Branch Student Chapter

Civil Engineering Forum

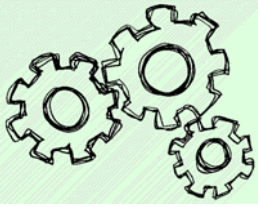
Following the success of the G08 + Associates Deans of Engineering forum which has been meeting regularly for a number of years, the G08 + Associates Heads of Civil Engineering met in Canberra on 19 April for their Inaugural meeting. This forum was initiated by Professor Ian Gilbert (UNSW), Professor Andrew Deeks (UWA) and Professor Brian Uy (UoW) who conceived the idea in September 2005. The meeting was very helpful in understanding teaching and research issues across the civil engineering discipline of universities with fairly similar strategies. Further meetings, planned for June/July 2006, will focus on long term plans for research in the field of civil engineering. Further information is available from Professor Brian Uy. Ph: 4221-3070. Email: brianuy@uow.edu.au.

Sydney Division Excellence Awards

The Faculty continues to be a key player in Engineers Australia Sydney Division's Excellence Awards Scheme following its very successful involvement in 2004 and 2005.

An entry "University/Engineers Australia Co-operation in Promoting Engineering in High Schools: the Year 11 Engineering Report Competition" has become a Finalist after Level 1 entries were judged last week. This entry was submitted by Bob Wheway and Elaine Bailey, Regional Co-ordinator of the Illawarra/Sutherland Regional Group.

Also, our Faculty has been commissioned to provide 70 table centrepieces for the tables at this year's Excellence Awards Presentation Dinner. These centrepieces are to be based on the University's 2003 World Champion FSAE Car.



Rail CRC Researchers

Two Rail-CRC researchers were awarded prizes at the Engineering Faculty's recent prize evening (see photo page 1).

Dr Rujikiatkumjorn was awarded the Australian Geomechanics Societies Prize from the Australian Geomechanics Society (AGS), Sydney Chapter, for his outstanding PhD research. This is the first time that the AGS, Sydney Chapter, has initiated this award. Dr Rujikiatkumjorn is currently working for Professor Buddhima Indraratna on an ARC Discovery project and a Rail

CRC project "Design upgrading of Australian rail tracks in soft and compressible coastal soils".

Sakdirat Kaewunruen won the Peter Schmidt Memorial Scholarship Prize for Best Performance in Engineering Postgraduate Research. Sakdirat is in his 2nd year working towards a PhD under the supervision of Dr Alex Remennikov, Co-project leader on a Rail-CRC Project: "Dynamic analysis of track and the assessment of its capacity with particular reference to concrete sleepers".

Record Enrolments

The University of Wollongong has received the highest number of first year enrolments in Mining Engineering in ten years.

Naj Aziz, Associate Professor of Mining at the School of Civil, Mining and Environmental Engineering, said "Part of this increase is due to the current boom in mining activity in Australia, but we also believe part is related to the high reputation our university has for undergraduate teaching".

There are thirty students in this year's intake.

Ironmaking Conference

Dr Brian Monaghan, along with a number of Undergraduate and Postgraduate Materials Engineering students, attended the Ishii Symposium on Sustainable Ironmaking in Sydney during early March. The students found the conference an informative, enjoyable and worthwhile experience. Dr Monaghan plans to repeat this exercise with more undergraduate students as the opportunity arises.

International Mining Games at Kalgoorlie



Twelve University of Wollongong mining students travelled to Kalgoorlie to the New Leaders Conference and International Mining Games from 9 to 16 April.

The two-day conference was titled 'Riding the Boom – The minerals industry into tomorrow'.

Representing the UoW at the International Student Mining Games were two teams of six students. Events included air leg drilling, mucking and rail setting. We were pleased to be placed 10th and 12th out of the field of 18 teams, many of whom had travelled from the USA and trained for the annual event, usually held in America.

Many thanks to major sponsors – Seedsman Geotechnics, BMA and Metso Minerals who made the trip possible.



Photos: Students competing at the International Student Mining Games

Thanks also go to Ray Tollhurst, who generously donated half of his payment for lecturing in the subject MINE421 to the AusIMM Illawarra Branch Student Chapter to go towards the cost of attending the games.

Visiting Principal Fellow from Japan

Associate Professor Ming Yang from the Department of Mechanical Engineering, Tokyo Metropolitan University (TMU) Japan, was invited by Associate Professor Zhen-gyi Jiang and Professor Kiet Tieu to visit the Faculty of Engineering, UoW, as a Visiting Principal Fellow from 8 - 17 April 2006. This visit was scheduled as part of an ARC Linkage International Award grant "Intelligent modelling of thin strip rolling".

Key researchers from the UoW discussed intelligent modelling in metal forming and future research plans with Prof. Yang, and recent research results were exchanged. Prof. Yang also gave a lecture titled "Fabrication of dies in micro-scale for micro sheet metal forming".



Attendants at the joint workshop on Materials Processing

Based on the schedule of the ARC Linkage International Award grant with Professor Ken-Ichi Manabe from TMU and Professor Yang's visit, Associate Professor Jiang and Professor Tieu organised a joint workshop on Materials Processing with the UoW and TMU. Seventeen attendants (including nine from Ja-

pan) presented their research at the workshop, which was held at the Faculty of Engineering, UoW on 27 March 2006.

Professor Chris Cook, the Dean of Engineering, strongly supported the joint workshop and gave a welcoming address. The proposal for joint work was based on our long collaboration history, our research strength and ARC Linkage International grant. Micro/nano forming is a new area which has the potential to attract more research interests and funding from the research community of materials processing engineering. The one-day workshop was very successful and intensive, and we sincerely thank EEC staff's support of this workshop, with special thanks to Lorelle.

Global Roaming

Prof. Buddhima Indraratna was invited by Tanta University, Egypt, as one of two international experts to advise the Dean of Engineering and Vice-President in the planning of a new Centre of Excellence in Civil Infrastructure Engineering, to be funded by the Egyptian Government and private Civil Engineering companies. This Centre is the first of its kind in any Egyptian University, and the concept is similar to the CRC system in Australia.

Tanta University, which has approximately 55,000 undergraduate and postgraduate students, is located in Tanta City with a population of nearly 5 million—the third largest city in Egypt after Cairo and Alexandria.

Buddhima also conducted a workshop on Ground Improvement for practicing engineers from the Tanta-Cairo area, with special reference to the stabilisation of highly compressible soft clay deposits surrounding the River Nile for future development.

OCTAL Awards

Dr Brett Lemass has won the Engineering section of the Outstanding Contribution to Teaching and Learning (OCTAL) awards for the second time. Dr Brett Lemass is a Senior Lecturer in Engineering and is a past OCTAL winner. His practical background in design and project management, his applied research, and his ability to motivate and effectively teach students have made him a valued member of the Engineering staff since 1999.

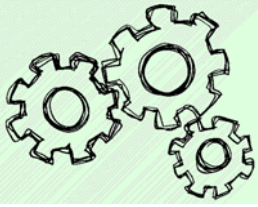
Since his previous OCTAL award Brett has written two practical books on design, serving the needs of students within and beyond his



Dr Brett Lemass, Senior Lecturer, School of Civil, Mining and Environmental Engineering.

classroom, as well as industry professionals. Both books have been warmly received as a necessary contribution to teaching resources by teaching staff at other universities.

Brett has worked with the Engineering FEC to improve the competency level of graduates. He has been a driving force in overhauling the management stream and revised ENGG361 to align the UoW graduate attributes with the formal competency expectations of international and domestic certifying authorities that provide a framework for engineering education.



Commercialisation Workshop

Professor Rian Dippenaar, Dr Dominic Phelan and Dr Kristin Carpenter from the Materials Process Engineering Group, along with staff members from various faculties, recently attended a Commercialisation Workshop run in conjunction with UniQuest. The Workshop was held at the Novotel Twin Waters Resort in Maroochydore, Queensland. UniQuest is the commercialization arm for the University of Queensland. The University of Wollongong are joint members, with Wollongong's Managers of Innovation and Commercial Development, Aapo Skorulis and Craig Peden, as representatives.

There was a comprehensive program at the workshop covering commercialization, recognizing the potential of your research, Intellectual Property (IP), Consulting, Patenting, Licensing and many important guidelines for successful commercialisation. Small team workgroups were formed with the aim of developing a research project to the point of commercialization allowing discussion with other faculty staff and putting theory into practice. The workshop was run professionally, included knowledgeable, high-calibre speakers, and comprehensively covered the 'ins and outs' of commercialisation of research.

The most important point that came out of the workshop was to get advice for your MICD's early! Commercialisation of research can bring many benefits to both the individual researcher and to the reputation of the University of Wollongong as being capable of producing high-quality research.

Staff News

Carroll Graham has left the Faculty of Engineering to take up a position as Faculty Manager, Faculty of Pharmacy, at the University of Sydney.

Lorelle Pollard has taken on the role of Acting Administration Manager for the Engineering Faculty.

Participation in Earthquake Conference

Prof. Robin Chowdhury recently participated in the 100th Anniversary Earthquake Conference commemorating the well known 1906 San Francisco Earthquake. This major once-in-a-lifetime event was held at the very modern Moscone Convention Centre located in the heart of San Francisco and attracted about 4,000 delegates - a record for such a conference. It was organised jointly by the Earthquake Engineering Research Institute (EERI), Seismological Society of America (SSA) and Disaster Resistant California with support from the Governor's Office of Emergency Services (OES California).

Apart from civil, structural and geotechnical engineers and seismologists, the participants included earth scientists, emergency managers, policy makers, teachers, design professionals and other stake holders.



San Francisco City after the 1906 earthquake

The 1906 earthquake devastated San Francisco and it took decades for the city to recover from the destruction and damage. However, this earthquake was also a catalyst for progress in seismology and earthquake science. Increased interest in earthquake engineering led to many design innovations, new and sophisticated analytical tools and most importantly, to the development of vastly improved codes for the building and design of structures.

Plenary sessions at this conference dealt with a variety of perspectives ranging from the historical to structural engineering and from policy making and emergency management to political will for mobilising public opinion towards increased funding for research and for retrofitting and strengthening existing buildings, bridges and other structures.

Sessions were devoted to the consequences of earthquakes worldwide, the importance of research and innovation in mitigating these effects, simulation of future earthquake scenarios and how to prepare for dealing with the emerging challenges posed by continued population growth and urbanisation.

Robin also participated in sessions concerned with geotechnical earthquake engineering including seismic slope stability.

Nanotechnology a prime example of the teaching/research nexus

The interaction between undergraduate and postgraduate students with researchers is a special aspect of student life at the University of Wollongong. A prime example of this interaction was a session held recently at the UniCentre function rooms between students and researchers in the developing new science of nanotechnology.

The function was organised by the Head of the School of Chemistry, Associate Professor Will Price, and attracted a larger-than-usual students/researchers get-together.

“Nanotechnology proves an ideal nexus for teaching and research,” according to nanotechnology coordinator, Professor Geoff Spinks. “Current research topics are ideal case studies for our undergraduates,” he said.

Pictured is Professor Spinks (left in photo) and nanotechnology undergraduate student, Peter Sherrell (third year Bachelor of Nanotechnology degree) and postgraduate Vahid Motaghitalab (PhD student in the Intelligent Polymer Research Institute (IPRI) and Faculty of Engineering), who are looking at the application of new nano-composite fibres in an electronic Braille prototype. The composites, developed by Vahid, have been jointly researched with IPRI and by nanotechnology undergraduates such as Peter Sherrell.

Professor Spinks said Peter did his research as part of case studies conducted in first and second years of the four-year nanotechnology degree.

“With nanotechnology, it’s hard to tell where the teaching stops and the research starts,” Professor Spinks said.

He said that the performance of the new nano-composite fibres as artificial muscles has recently been published in the international journal, *Advanced Materials*.

Professor Spinks said that the nanotechnology industry was currently based in the R&D sector and that this is where most of the gradu-

ate employment will be for the foreseeable future.

Hence, we need to train graduates who can move into the R&D field and the best way to fulfill this objective is to involve nanotechnology researchers in our teaching program, he said.

“So from year one the nanotechnology students are doing project work in the research laboratories and be-

ing taught by the researchers,” Professor Spinks said.

“We have found that a number of the nanotechnology students have opted to do summer work in the nano research laboratories and many are expected to stay on and do their PhDs,” he said.

Note: Nanotechnology is simply the building of devices that are 1-100 nanometre in size – one nanometre is a billionth of a metre, so nano-scale devices are composed of just a handful of atoms/molecules. The reason to make such small things is to shrink micro-electronics even smaller and, therefore, build such things as much more powerful computers, smaller mobile phones and better digital cameras.



University of Wollongong researchers pictured with their undergraduate and postgraduate nanotechnology students.

Project Grant Success

The University of Wollongong, in cooperation with UNSW, the NSW Minerals Council (the lead organization), and a number of NSW High Schools (including Smith’s Hill, Keira, TIGS, Warrawong and Wollongong), has been awarded a grant of \$63,120 from the Hon Julie Bishop MP.

The grant will support the Science and Minerals School Clusters. This initiative aims to enhance science teaching and learning by providing senior students and teachers with opportunities to learn from science professionals within the minerals industry. Industry professionals will share their knowledge through mentoring, experiential learning opportunities and applied research. Teachers and students will have access to modern technology which will be used to demonstrate and exemplify scientific

principles and procedures. Students will participate in minerals industry-related work experience and training and will gain an understanding of the range of careers within this field. Teachers will have direct contact with industry personnel, as well as access to research opportunities and professional development. This professional development will provide an excellent platform for teaching relevant and contemporary science.

Diary Dates

- 9 May** Physics School Committee
MM School Committee
CME School Committee
- 16 May** Faculty Education Committee
- 23 May** Faculty Research Committee
- 30 May** Faculty Postgraduate Research Committee