

Engineering Update - 3/2005

LAWRENCE HARGRAVE DRIVE BRIDGE PROJECT

CME staff recently were given a tour of the Lawrence Hargrave Drive Link Alliance Project. Guest lectures have been organised with the LHD Alliance, to be held in various engineering courses. The first lecture took place on March 24 as part of the Fundamentals of Engineering subject, ENGG101. 2 more lectures are planned during 2005. These have been organised by Associate Professor Muhammad Hadi.

The lectures will focus on different aspects relevant to the Civil Engineering curricula. In the Fundamentals of Engineering lecture, issues such as stability of the structure during construction and in the as-built condition were highlighted. The lecture in Engineering Management will focus on the LHD alliance, how it was established and how it assists in the design and construction of such a large-scale project. The Civil Engineering Design lecture will focus on the construction technology as well as the detailed geotechnical and structural design issues required to be overcome in building a bridge in this near coastal environment.

The full article can be found at <http://media.uow.edu.au/news/2005/0324d/index.html>

NEWS OF THE WELD!

Several developments in the Welding & Joining research area in the last 4 months include:

The only high power diode laser (3Kw) in Australia was installed in the Manufacturing Research Laboratory and commissioned in March. The system was funded by a joint LIEF application with Swinburne University and is worth in excess of A\$500000. The laser which operates in the infra red range is fibre coupled and an order of magnitude more efficient than equivalent YAG and CO₂ laser devices. It will be used initially for hybrid arc-laser welding research. For the next two months this research will be assisted by the appointment of Dr Marcel Hemans a senior visiting research fellow from Delft University in the Netherlands.

Following a successful patent application on controlled metal transfer based on novel electronic control strategies developed by Dr Dominic Cuiuri and Dr Gary Dean the CRCWS and UOW have entered into an agreement with a major international welding supplier (Fronius in Austria) to exploit the technology. The agreement includes supply of a robotic welding system and support for a post doctoral researcher as well as ongoing patent protection; in all the package is worth around A\$100,000 over the next three years.

At the Welding Technology Institute of Australia (WTIA) awards event in April Prof. John Norrish was presented with an Honourary Fellowship of WTIA for: *"meritorious service to the welding industry in the areas of welding research and education"*

Unfortunately the bid, late last year, for a new welded structures CRC failed and the current CRCWS will cease operations in June 2006. Recent developments will however enable a UOW welding research activity to be sustained near the current level for at least the next three years. Amongst these developments are several ARC discovery applications and the recent contract with BOC to undertake some A\$900,000 worth of welding research over the next three years;

The BOC article can be found at: <http://media.uow.edu.au/news/2005/0427a/index.html>

UOW RACING ENTRY IN SYDNEY DIVISION'S EXCELLENCE AWARDS SCHEME

Last year, an entry entitled " The University of Wollongong's World Champion FSAE Car " won a Highly Commended Award in the Small Business Ventures / Projects & Reports Category in Engineers Australia Sydney Division's Excellence Awards Scheme.

This year, the Year of the Young Engineer, an entry entitled " UOW Racing: 4 Years of Engineering Excellence by Young Engineers " is being prepared for submission in both the Welfare, Health, Safety, Education & Training Category and the Small Business Ventures / Projects & Reports Category in Sydney Division's Excellence Awards Scheme.

4TH GLOBAL COLLOQUIUM ON ENGINEERING EDUCATION

GCEE05 is being held in Sydney between 26th and 29th September. It is being organised by the American Society of Engineering Education and the Australasian Association of Engineering Education. The following abstracts have been accepted by the Colloquium Organisers:

"Creating and Maintaining an Interest in Engineering in High Schools through a Year 11 Engineering Competition" Bob Wheway, Andrew Spence & Michael Yastreboff

"Using the Formula SAE Competition to Promote Engineering in High Schools" Oliver Kennedy & Bob Wheway

"Promoting Interdisciplinary Learning in a Practical Environment Using the Formula SAE Competition" Oliver Kennedy & Bob Wheway

"Ethics and International Graduate Coursework Engineering Education" Peter Gibson, Bob Wheway & Peter Childs

"Establishing a Bridge between High School and Engineering Analysis Using Enquiry Based Learning" Richard Dwight, Tim McCarthy, Brian Ferry & Maureen Bell

The following abstract has been submitted:

"Innovation and Design, a Technical Subject for All University Students" Friso De Boer, N. Pritchard, Bob Wheway, Rob Wolff & Lorien Martin.

This abstract is based on the Subject CUC 106, Innovation and Design: Communicating Technology, a subject developed at Charles Darwin University based on the Wollongong Subject, ENGG154, Design and Innovation.

VISITORS

Professor Takashi Hara from Tokuyama College of Technology, Japan visited the School of Civil, Mining and Environmental Engineering for three weeks during Feb-March 2005. He conducted research with Muhammad Hadi in the area of modelling FRP wrapped concrete columns.

Associate Professor Manouch Salehi from Amirkabir University of Technology, Tehran, Iran is visiting the School of Civil, Mining and Environmental Engineering for a period of one year. He will be conducting research with Muhammad Hadi in the area of concrete structures.

THE AUSTRALIAN GEOMECHANICS SOCIETY'S MCMAHON LIBRARY

This library, containing more than 400 Volumes of Geotechnical, Geoenvironmental and Geological Engineering Books, is now housed at our Main Library. All of these books are now

available for borrowing. Our Library now contains one of the best geotechnical collections in the country.

PRIZES

Trailblazer is an innovation competition open to all UOW researchers and students. To enter or for more information visit: www.uow.edu.au/researcher/trailblazer Entries close Thursday 12 May 2005. There are two categories, an open category (for staff and students) and a student category. Prizes are open winner \$5,000; student winner \$2,000; open runner-up \$3,000; student runner-up \$1,000; highly commended open \$1,000; and highly commended student \$500. For more information contact Troy Coyle on x4420 or tcoyle@uow.edu.au

STAFF NEWS

Dr Alex Remennikov and Sakdirat Kaewunruen (PhD candidate) took part in the field trials as part of the CRC for Railway Engineering Project 5/23 "Investigation of dynamic behaviour of railway tracks with particular reference to reinforced concrete sleepers". The field testing was organised at the end of March by the Industry partner Queensland Rail and took place on a very busy heavy haul coal line near Mackay in Central Queensland. The logistic of the trip was quite complicated since the UoW researchers had to bring all their equipment, including dynamic analyser, computers, power supply and other devices, up to Mackay. The large sledge hammers that we use for excitation of the railway track caused a few raised eyebrows as we were boarding the Virgin Blue planes but were allowed to be taken on board with us. We spent three days working on a QR test site about 150km west from Mackay under a watchful eye of the QR engineers who were trying to ensure that we are not run over by the heavy haul 2-km long coal trains. The test data obtained during this trial will play a critical role in validating the numerical models of railway track that are currently under development as part of Rail-CRC project 5/23.

Professor Buddhima Indraratna has been invited to deliver one of the 3 Keynote Papers at the first Post-Tsunami Reconstruction and Rehabilitation Conference, being held in Bangkok in December 2005. He will report on his recent soil investigations and ground improvement practices in Sri Lanka, and the modern ways of reconstructing rail tracks and other strategic infrastructure on coastal soils weakened and loosened by the ferocity of the waves. The Conference is supported by the International Technical Committee on Disaster Mitigation, Institution of Engineers of several Southeast Asian countries and International organisations involved in various rehabilitation projects.

Professor Hugh Brown has been acknowledged with the Adhesion Society Award for Excellence in Adhesion Science. The award is the Society's most prestigious acknowledgement for outstanding achievement in scientific research relating to adhesion. The Adhesion Society is a US-based organisation that aims to promote the advancement of the science and technology of adhesion and promote education and training in the area, as well as providing recognition of accomplishments in the international adhesion community. Professor Brown, who originally worked for IBM in the US, has been researching the adhesion of paints to steel, the adhesion of particles to paint (dirt contamination) and studying how different polymers can be made to adhere to each other.

The full article can be found at: <http://media.uow.edu.au/news/2005/0419a/index.html>

Professor Roger Lewis was recently awarded by the Vice Chancellor the Faculty Award for

Outstanding Contribution to Teaching and Learning (OCTAL). The award was in recognition of Roger's skills and enthusiasm displayed in his teaching, his role in developing a number of courses and his introduction of appropriate technologies to his teaching.

Professor Brian Uy has recently been appointed as the Editor in Chief (Asia-Pacific) for Steel and Composite Structures, An International Journal. The journal which was released in 2001 already appears on the ISI Web of Science Database.

Associate Professor Ernest Baafi was recently awarded a Branch Service Award by the Australian Institute of Mining and Metallurgy (AusIMM). This award was in relation to his consistent and dedicated contributions to the Illawarra Branch over 15 years as well as initiating and convening coal operators' conference and other Branch conferences. In addition Claire Horsley received the G.B. O'Malley Medal for the preparation and presentation of her thesis research work. Claire's research work was supervised by Associate Professor Baafi and Associate Professor Boyd from the School of Civil, Mining and Environmental Engineering.

Warren Rogers has commenced a secondment for a few months as Faculty Administration Manager due to the recent departure of Julie Romanowski who has taken up a new position at UTS. Prior to this Warren has been working as the Finance Officer for the Faculty of Health and Behavioural Sciences for 3 years and prior to that several years at Macquarie University, Sydney University and UNSW.

Ellen Manning has recently started in the role of OHS Coordinator, a permanent position shared jointly with the Faculties of Engineering and Science. Ellen joined the Chemistry Department in 1982 and has both a BSc(Hons) Chemistry and BCompSci. During her many years in Chemistry she has been involved in preparing and demonstrating in laboratory undergraduate classes, managing the NMR facility and the role of IT Manager.

Ellen's role will be to coordinate Occupational Health and Safety issues within the faculty and to work with the Faculty Workplace Advisory committee (WAC) and the school Safety committees to target areas of concern, to implement plans for remedial action and to assist with corrective actions from the safety audit.

Generally, Ellen will be working for Engineering in the morning and Science in the afternoon.

Nominal hours of work are: Mon-Tues 8.30am – 6.00pm
Wed-Fri 8.30am – 3.30pm

Ellen can be contacted:- by email at emanning@uow.edu.au or by phone on ext 3528 or at her office 4.109f (Faculty of Engineering Office). To make an appointment please contact Ellen directly.

Julian Fyfe has begun the role of Technical Officer in Environmental Engineering replacing Joanne George whilst she takes a well earned break and travels the globe on her long service leave.

IMPORTANT DATES - 2005

May	17	2.30	WAC meeting – 8.119
	24	2.30	Faculty Education Committee – 8.119
	31	2.30	Faculty Research Council meeting – 8.119
June	7	2:30	Faculty Committee – 1.105

Warren Rogers – 2.5.05