

# School of Engineering Newsletter

Volume 3 | Issue 3 | September 2009

## Head of School Welcome

This issue marks an important time in the School of Engineering's development. Firstly, September marks the fifteenth anniversary of the Opening of the Engineering Building by the Honorary Mr Ross Free MP, Minister for Schools, Vocational Education and Training on 3 September 1994. This anniversary

project was one of only three awarded in the Civil Engineering field in Australia and his project will further strengthen the research capacity of the Civionics Research Centre.



coincides with the announcement of the new Civionics Research Centre by the UWS Board of Trustees. This Centre will initially be funded for five years and brings together important research in the areas of civil and electronic engineering. The Centre will also encompass research activities relating to construction and design and the School hopes it will be an important vehicle for interacting with local, state and national bodies, as well as industry partners, in assisting with the design and maintenance of future civil engineering infrastructure.

The School of Engineering and Civionics Research Centre also welcomed the news that it would be the home of an Australian Research Council Future Fellowship awardee. Professor Zhong Tao from Fuzhou University will rejoin the School in late 2009 to carry out his research on concrete filled steel columns subjected to extreme loads. Professor Tao received one of 200 Future Fellowships awarded nationally. His

This issue also highlights some of our outstanding undergraduate award winners. James Pirozzi won the Engineers Australia Undergraduate Thesis Award. James was supervised by Dr Ataur Rahman and his thesis was titled 'Regional Design Streamflow Estimation for Eastern New South Wales'. This research forms an important part of the work carried out by Dr Rahman and a team developing the new edition of the Australian Rainfall and Runoff, used by designers for mitigating floods in urban areas. Furthermore, the School also welcomed the news that three of its Construction Management students received awards at a recent Master Builders Awards ceremony. UWS Construction Management graduate, Ivo Lima was awarded the prestigious prize and title of Master Builder's Association Graduate of the Year at the annual Master Builder's Top 50 Builder's luncheon.

The School has also been busy engaging with industry and the community, and August saw the staging of an important External Advisory Committee meeting chaired by Mr Greg Klamus of Maunsell. In addition, many of our staff and students assisted and took part in the UWS Open Day held at the Parramatta Campus. This annual event is an important day for the public, particularly HSC graduates, to visit UWS and seek advice about career choices and pathways that our degree programs provide.

This issue sees the School welcome some new outstanding recruits under the College of Health and Science Strategic Lectureship Initiative. We welcome Dr Haiping Zhu, Dr Qinghua Zeng and Dr Olivia Mirza through this scheme. Dr Grace Yan also will join the School through the UWS Research Lectureship Scheme. Both of these schemes are structured to attract outstanding researchers and lecturers to UWS and their track records are testimony to the success of these programs.

Once again I invite you to please contact the School if you would like any further information or insights about our programs or research and I look forward to sharing further exciting news on the School's developments in our December issue.

Yours sincerely,  
Brian Uy





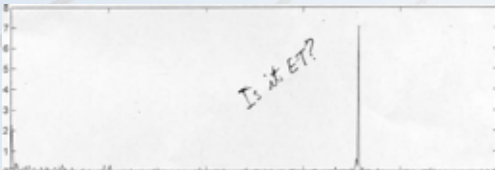
# Research and International

## New Civionics Research Centre

The School of Engineering has achieved a significant milestone, receiving confirmation of future funding for the development of a Civionics Research Centre. The UWS Board of Trustees will fund a five year civionics research project involving School of Engineering research staff and students.

## Visitor from South China University of Technology

Professor H.T. Ma from the Department of Civil Engineering at the South China University of Technology visited our School on August 13, presenting a research seminar titled "A new approach to exact solutions of frame structures". He discussed a new type of shape function and solution process that can be applied to obtain the exact buckling or vibration solutions of frames with relatively coarse meshes.



## Signal from Outer Space

A look-alike pulsed laser signal from outer space was detected by Dr Ragbir Bhathal at the UWS Campbelltown Observatory. Over the last few months the discovery has caught the attention of the media in the UK, US and Europe. Dr Bhathal's project is part of an international effort conducted by astrophysicists/engineers at Harvard University, Princeton University, University of California and UWS to detect nanosecond laser pulsed communications from outer space. The signal was discovered in December last year. This is the type of signal you get from a nanosecond laser pulse. A nanosecond laser pulse will outshine its Sun by several orders of magnitude and hence is detectable over large distances in space by suitable telescopes and associated equipment wired in coincidence mode to reject false signals. The equipment used to detect the signal uses very fast PMT's.

## Visitor from City University of Hong Kong

Associate Professor Y.F. Yu from the Department of Building and Construction at the City University of Hong Kong visited our School on July 13, presenting a research seminar titled "New technologies for application of fibre-reinforced polymers (FRP) in reinforced concrete structures". He discussed a hybrid bonding technique developed by his research team that can significantly increase the bond strength between the FRP reinforcement layer and the external face of concrete structures over the conventional adhesive bonding technique. He also presented a technique to increase the ductility of concrete structures with non-ductile reinforcement such as high strength reinforcing bars or FRP bars. It was achieved through the introduction of compression yielding in the structures.

## Structural Engineering Conference

The School of Engineering was heavily represented at the Ninth Association for Cooperation for Steel-Concrete Composite Structures (ASSCCS) held in Leeds from 8-10 July.

Professor Brian Uy, delivered a key note lecture on 'Applications, behaviour and design of composite steel-concrete beams subjected to combined actions'. Dr Seong Hui Lee, Dr Fei-Yu Liao and Dr Olivia Mirza who are postdoctoral fellows of the School also delivered papers on *composite joints*, *composite columns* and *shear stud connectors* respectively. Mr Brendan Kirkland gave a paper on his recent PhD research on composite beams subjected to bending and axial tension and Dr Quang-Huy Nguyen who is the School's first Co-Tutelle graduate, delivered his paper on non-linear analysis of composite steel-concrete beams.

ASSCCS attendees



## ARC Future Fellowship Grant

A 2009 ARC Future Fellowship grant of \$686,400 over 4 years has been awarded to Professor Zhong Tao for his project titled 'Behaviour and design of concrete-filled stainless steel tubular columns at ambient and elevated temperatures'.



The stainless steel used for the Dublin Spire in Ireland and the Australian Parliament House flagpole is recognised as an advanced construction material for its merits of corrosion resistance, attractive appearance and ease of maintenance. It has enormous potential for use in steel-concrete composite construction, which will provide the structural engineering community with greater choice in terms of aesthetics, constructability, cost and sustainability.



The research put forth in this proposal will promote the better use of stainless steel in Australia's building, bridge and offshore infrastructure, thereby providing significant socio-economic benefits to Australia. Moreover, it will greatly increase Australia's infrastructure maintenance capability.

Dr Tao researches the construction of concrete-filled steel columns and completed a post-doctoral research fellowship with the School in July this year. His Future Fellowship will be carried out in conjunction with the new UWS Civionics Research Centre, directed by Professor Brian Uy, involving international collaboration with Professor Lin-Hai Han from Tsinghua University in China, an Eminent Research visitor in our School.

Dr Tao already has five patents, has been involved with more than 100 publications, has supervised more than 40 Higher Degree Research students and has attracted 16 major research grants since receiving his PhD in 2001.



# Student awards

## UWS Construction Management Graduates Win Master Builder's Association Awards

UWS Construction Management graduate, Ivo Lima was awarded the prestigious prize and title of Master Builder's Association Graduate of the



Year at the annual Master Builder's Top 50 Builder's Luncheon held at Darling Harbour on August 11. Ivo graduated with honours in 2009 and is employed by Brookfield Multiplex in the position of site engineer.

Andrew Middleton received second prize for the same award. Andrew also graduated in 2009 and is employed by Lipman Pty Ltd in the position of project co-ordinator. He has recently been involved in the construction of the newly completed lecture theatre on the UWS Parramatta campus as well as upcoming work on the Kingswood Residential Building Construction project.

George Bader was awarded with the prestigious prize and title of Student Estimator of the Year. George topped his class in Estimating and graduated with honours in 2009. He is employed by Kell and Rigby.



## Engineers Australia Undergraduate Thesis Award

James Pirozzi, a Bachelor of Engineering (Civil) Honours I graduate from 2008, who was supervised by Dr Ataur Rahman, has won the Engineers Australia Undergraduate Thesis Award for his thesis titled 'Regional Design Streamflow Estimation for Eastern New South Wales'. Dr Rahman accepted the award on his behalf at an awards night on September 18 at the Engineering Excellence Awards for the Sydney Division.



*Right image: Dr Ataur Rahman accepted the EA Undergraduate Thesis Award from James Grantham of Hays Engineering on behalf of James Pirozzi.*

# Learning and Teaching

## Mid-Year Orientation Day

Orientation for students commencing in semester 2, was held on July 24 2009 and was attended by more than 50 enthusiastic first year students. Course information sessions were held providing information and advice on the skills and strategies needed to succeed at university followed by a BBQ and competition.

Congratulations to our competition winner, Levi Bilivalu, a first year Engineering student.



*Dr Qi Cheng presents Levi Bilivalu with his iPod*

## Refurbishment of Building Z to Take Place

Construction work is due to commence on the refurbishment of Building Z which was recently handed over to the School of Engineering. This new space will provide much needed workshop, laboratory and office space due to the continuous growth of the School.

# Community Engagement

## Engineering Discipline External Advisory Committee

This Committee met on July 30, discussing the interim progress report from Engineers Australia, Construction Engineering Key Program from 2010, Accreditation of the Bachelor of Engineering (Advanced) and the proposed Mechanical Engineering Key Program.



### Alumni News

To celebrate our building's 15 year crystal anniversary on 3rd September, join our Alumni and you could win a bridge climb over the Harbour Bridge. Membership is free – just complete the 'keep in touch' form located online at <http://www.uws.edu.au/alumni> by 31 October 2009 to go in the draw to win this great prize.

### Help us celebrate and launch our alumni chapter!

Building X will celebrate its 15 year crystal anniversary and we invite you to join our Construction, Industrial Design and Engineering Alumni.

- B**uild networks,
- R**ecieve newsletters,
- I**nvest in your future,
- D**iscover old friends and classmates,
- G**ain career advice and
- E**xplore the opportunities that await you.

To join, visit [www.uws.edu.au/EngineeringAlumni](http://www.uws.edu.au/EngineeringAlumni) and complete the Keep In Touch form.



## UWS Open Day

The UWS Open Day, held on Sunday August 31, was a success with a sufficient number of staff fielding a lot of prospective student enquiries, so hopefully we will receive a good number of calibre applications applying for our courses next year.



*Drs Vic Ilic, Ragbir Bhathal and Gu Fang talk with potential students*

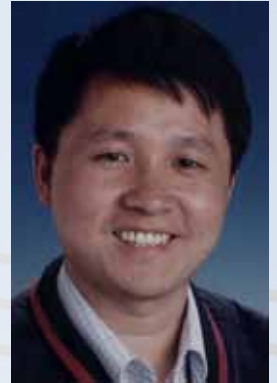


*Dr Jeffrey Zou presents a talk to potential students titled 'Engineering: Engineers meet the challenges of the 21st century'*



# School Staff

Dr Haiping Zhu commenced with the School on September 7 as a Senior Lecturer in Engineering Mechanics. Haiping was a Program Manager and Research Fellow for Granular Mechanics/Dynamics at the Laboratory for Simulation and Modelling of Particulate Systems in the School of Materials Engineering at The University of New South Wales headed by Professor Aibing Yu (Federation Fellow and Scientia Professor). Haiping completed a PhD in the dynamic analysis of mechanical systems at Beijing Institute of Technology and has over 15 years teaching experience working at Yueyang Polytechnic Institute, Hunan and Peiking University, Beijing. Haiping is currently the lead Chief Investigator on an ARC Discovery Project on the Experimental and numerical investigation of granular flow in hoppers and has published extensively in this field with over 45 archival journals.



Dr Qinghua Zeng will commence in the School effectively on 1 January, 2010 as a Lecturer in Engineering Materials. Qinghua is currently a Research Fellow at the Laboratory for Simulation and Modelling of Particulate Systems in the School of Materials Engineering at The University of New South Wales headed by Professor Aibing Yu (Federation Fellow and Scientia Professor). Qinghua completed a PhD in polymer nanocomposites at The University of New South Wales and has over ten years experience working as a Metallurgical Engineer. Qinghua is the lead Chief Investigator and Australian Postdoctoral Fellow on an ARC Discovery Project on Molecular modelling of the structure and mechanical properties of clay-based polymer nanocomposites. He is also a Chief Investigator on an ARC Linkage Project dealing with fly ash in manufacturing nanocomposites. Qinghua has also had extensive experience teaching undergraduate courses and supervising research students in his current role at UNSW.

Dr Olivia Mirza will commence in the School effectively on 1 January, 2010 as a Lecturer in Fire Engineering. Olivia graduates with her PhD from UWS on 23 September in the area of structural engineering and is currently employed as a Postdoctoral Fellow working on an ARC Linkage funded project with Ajax Fasteners and Australian Tube Mills dealing with the behaviour of composite joints within the School of Engineering at UWS. Olivia has significant teaching experience at the University of Wollongong and Western Sydney. Furthermore, she has extensive engineering design and construction experience having worked for the Cardno Group, Australian Consulting Engineers and Leighton Contractors.



Dr Guirong (Grace) Yan will commence in the School effectively on 1 January, 2010 as a Lecturer in Infrastructure Engineering (Civionics). Grace completed her PhD at Harbin Institute of Technology on the use of wavelet analysis in structural damage detection. Grace is currently employed as a Postdoctoral Research Associate working on an NSF project dealing with structural damage detection at Washington University, St Louis, USA. This research will also bring her to work at Purdue University with Professor Shirley Dyke for the remainder of 2009, before she joins the School. Grace has extensive research expertise in Structural Health Monitoring, particularly applied to bridge systems and this will bolster the Centre's research activities in that field. She has also previously held research positions at the Polytechnic University, Turin, Italy and Hong Kong Polytechnic University, China.

Dr Ragbir Bhathal celebrated 15 years of UWS service on 23 August 2009 and was awarded with a certificate of service signed by the Vice-Chancellor.

Mrs Kylie Docker concluded her role as Administration Officer on August 10 and has taken up a new administration position with the UWS School of Nursing and Midwifery at Hawkesbury Campus.

Mrs Patricia Hellier concluded her role as Administration Officer on September 4 for the birth of her second child.

## Organising Committee

### Chair

Professor Brian Uy, *University of Western Sydney, Australia*

### Co-Chair

Professor C-K. Choi, *Korea Advanced Institute of Science & Technology, Korea*

### Co-Chair

Professor Chris Earls, *Cornell University, USA*

### Co-Chair

Professor David Nethercot, *Imperial College London, United Kingdom*

Professor Zhong Tao, *University of Western Sydney, Australia*

Dr Fidelis Mashiri, *University of Western Sydney, Australia*

Dr Xinqun Zhu, *University of Western Sydney, Australia*

Dr Olivia Mirza, *University of Western Sydney, Australia*

Mr Ee Loon Tan, *University of Western Sydney, Australia*

## Keynote Speakers

Professor Mark Bradford, *University of New South Wales, Australia*

Professor Siu Lai Chan, *Hong Kong Polytechnic University, Hong Kong*

Professor Lin-Hai Han, *Tsinghua University, China*

Dr Dennis Lam, *University of Leeds, United Kingdom*

Professor Roberto Leon, *Georgia Institute of Technology, USA*

Professor Richard Liew, *National University of Singapore, Singapore*

Professor David Nethercot, *Imperial College London, United Kingdom*

Professor Eiki Yamaguchi, *Kyushu Institute of Technology, Japan*

## SYDNEY, AUSTRALIA

Wednesday 21 – Friday 23 July 2010

The 4th International Conference on Steel & Composite Structures, to be held in Sydney from Wednesday 21–Friday 23 July 2010 will feature a number of outstanding local and international speakers, concurrent sessions and an exhibition.

The Conference will provide a wonderful opportunity to meet and extend contacts including:

- Researchers
- Engineers
- Manufacturers
- Suppliers
- Fabricators
- Contractors

## Call for Abstracts

The organising committee for the 4th International Conference on Steel & Composite Structures are keen to invite potential speakers to address a range of issues on Steel and Composite Structures.

If you have an interest in any of the topics below and wish to inspire others with your experiences and knowledge, please register your interest by submitting an abstract.

Some of the many topics to be considered (but not limited to) include:

- Bridge structures
- Building structures
- Case studies
- Composite construction
- Infrastructure projects
- Steel structures
- Sustainability concepts in steel and composite structures

**The deadline for submitting abstracts is  
Friday 18 December 2009**

University of  
Western Sydney

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