MONASH University Engineering

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ChemEng focus

TEACHING AND RESEARCH NEWS FROM THE DEPARTMENT OF CHEMICAL ENGINEERING, MONASH UNIVERSITY

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Inside this issue:

Welcome to our first issue!

There's always a lot happening in our Chemical Engineering department, - staff awards, new research projects, teaching developments as well as news from our undergraduate and post-graduate students. There's so much happening that its hard even for us to keep up with it all!

We hope to point out our highlights using this new newsletter, Chemical Engineering Focus. The newsletter will be issued regularly during the year, and distributed via email and the departmental website.

Each issue of the newsletter will provide a quick update on a variety of news articles, which we hope you find interesting.

Our fishtank is a local landmark at the department entrance.

Future issues will be automatically distributed via email to all staff and students of the department, as well as to our alumni and representatives from our key industrial supporters.

If you would like to receive future copies of Chemical Engineering Focus via email, please send a brief email request (please indicate if you are one of our alumni) to:

Karen.hapgood@eng.monash.edu.au

Future Summit Leadership award

Dr Gareth Forde, Senior Lecturer from the Department of Chemical Engineering has been awarded a a highly prestigious 2008 Future Summit Leadership Award. The awards are an initiative of the Australian Davos Connection, a not-for-profit organisation committed to encouraging individuals and organisations to make a difference.

The awards recognise outstanding "new-generation" leaders for their achievements and contribution to a vision for Australia's future. Gareth will be presented with the award by The Hon Kevin Rudd MP Prime Minister of Australia on the 11th of May, prior to the commencement of the Future Summit in Sydney.

Dr Forde was acknowledged for his work in establishing the Bio Engineering Laboratory which he manages on behalf of the faculty. Dr Forde is currently working on a project to create a particle that can deliver a DNA prime-and-protein-boost vaccine via nasal inhalation. This technology could be of huge benefit to immunise large numbers of people in case of a pandemic or when there is limited access to trained medical staff.

CHE4164: Integrated Industrial Project

In 2008, the Department of Chemical Engineering introduced a scheme offering students the opportunity of spending a period working on an industry-based project integrated within the undergraduate program.

The aim of the integrated industrial project scheme is to engage, stimulate and challenge our brightest students, by providing a unique environment that broadens their learning and allows for intellectual stimulation, innovation and creativity.

During the industrial placement, students work in-depth on a significant project, allowing them to apply their chemical engineering knowledge in an industrial context. This can be challenging in an industrial situation and thus will develop an informed and reflective approach to theories and concepts presented as part of their course. Students are paid a weekly $700 scholarship to cover their living and travel costs while on placement. At the conclusion of the project, the students write a major report describing the project undertaken.

In 2008, we have six students working at a local company site—two at AMCOR, one at VISY, two at GlaxoSmithKline and one at Melbourne Water. Feedback has been very positive from both the students and their company supervisors. The scheme will run again in the first half of 2009—if your company is interested in participating, please contact the Department (details are on the back page)

Synchrotron up close

A group of fifty second-year chemical engineering students got a first-hand look at the most powerful research facility in Australia on a recent visit to the Australian Synchrotron.

The tour of the $200 million synchrotron was coordinated by the Monash Centre for Synchrotron Science (MCSS) in conjunction with staff at the Australian Synchrotron.

A supporting lecture from MCSS Beamline Research Fellow Dr Rosalie Hocking provided the students with an overview of how the machine works and how it can contribute to research.

A synchrotron is a large machine (about the size of a football field) that accelerates electrons to almost the speed of light. As the electrons are deflected through magnetic fields they create extremely bright light. The light is channelled down beamlines to experimental workstations where it is used for research.

Director of the Australian Pulp and Paper Institue Professor Gil Garnier said the tour, now part of the Bio-Nano Engineering curriculum, aimed to provide the students with the motivation and inspiration to pursue a career in Engineering Science.

"We also wanted to show the students that Australia can be competitive at an international level," Professor Garnier said.

"We hope that the visit will broader the students' horizons and show them that high technology and innovation is within their reach."

MCSS Research and Training Manager Dr Karen Siu said the success of the tour had led to plans to include further tours as part of the coursework of other undergraduates.

"We look forward to providing this fantastic activity as part of the Monash undergraduate experience," Dr Siu said.

Monash University Centre for Synchrotron Science's Research and Training Manager Karen Siu shows students the XAS (X-ray absorption spectroscopy) beamline.

"We hope that the visit will broader the students' horizons and show them that high technology and innovation is within their reach."

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Monash leads on clean coal research

Monash University is a major beneficiary of the Victorian Government grants for brown coal research. Monash University is leading in three of the projects and participating in another six. valued at more than $8 million dollars under the Energy Technology Innovation Strategy (ETIS).

Monash Chemical Engineering Professor Chun-Zhu Li is leading a $2.6 million project to look at oxy-fuel combustion, which leads to a more efficient combustion process and less emissions for brown coal fired power stations and also capture emissions for sequestration storage.

Senior Lecturer Andrew Hoadley is also leading a $600,000 project to investigate the key technical feasibility of new coal gasification technology. A $1 million project will investigate the use of lignite to improve separation of sludge solid from municipal water treatment plants and pulp and paper mills.

Monash University Vice-Chancellor, Professor Richard Larkins welcomed the funding. "Our goal is to contribute to cutting edge research and development into clean coal technology, and also meet the continuing demand for graduate students skilled in the processes that will secure Victoria's and Australia's sustainable energy future," Professor Larkins said.

Head of Department to retire in June 2008

Professor Martin Rhodes has been part of Monash University since 1994 and has served as head of department since 2003, and has recently announced his plans to retire from June 2008. Whist HOD, Martin has attracted many excellent, hard-working and talented staff and students and has greatly expanded the level of research activity. Simultaneously, he has overseen the introduction of a new, exciting undergraduate course, which is attracting better prepared students. All this has been done through Martin's personal leadership and support of a professional, collegiate and friendly working environment.

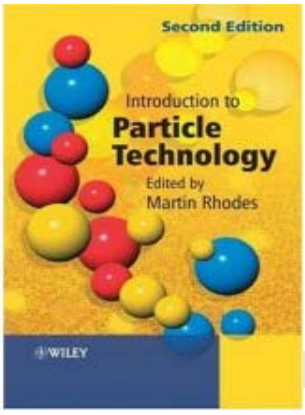
When asked about his future plans, Martin explained that he will be stepping away from academic life and heading off with his wife Val on an adventure where they will take up whatever opportunities arise as they go. Martin will be missed and we wish him well. Prof Paul Webley will become the new Head of Department.

Martin will be stepping away from academic life and heading off with his wife Val on an adventure.

New edition of Particle Technology textbook

The second edition of Prof Martin Rhodes book "Introduction to Particle Technology" has been published by Wiley and will be released in May 2008.

For the new edition, Prof Rhodes has collaborated with other experts in particle technology to update and expand some of the chapters, including Karen Hapgood, (Monash University), George Franks (U Melbourne) and Jennifer Sinclair-Curtis, (USA). Case studies and real-life industrial applications are used to illustrate the techniques and theory. The textbook is a comprehensive introduction to the broad subject of powder technology, and will be the recommended text for our 4th year particle technology unit, CHE4162. RRP is US$80 from John Wiley and Sons.



Introduction to Particle Technology, 2nd edition, Prof Martin Rhodes, Wiley

MONASH University
Engineering

4th Year Design and Pratt Prize 2007

Each year, our final year students spend a significant amount of time and energy on a major design project as part of CHE4170.

This is a capstone design unit drawing together the skills and knowledge previously developed in the areas of detailed design of chemical equipment and processes, process safety, mechanical integrity, equipment selection, process operability (including piping and instrumentation), environmental impact and economic evaluation. Students work in teams on the design and evaluation of a specified process plant, but produce individual design reports.

Each year, the Pratt Prize is awarded to the best Chemical Engineering Design project submission in Victoria. Named after the former Monash Professor Clive Pratt, the top design projects from RMIT, Monash and University of Melbourne are judged by a panel of practicing chemical engineers. The winner of the Victorian Pratt prize goes on to the national competition.

In 2007, the Monash project was to design an off-shore LPG facility, somewhere in the world. Each team was given a different world location, (and thus unique sea conditions including temperature) and a different feed composition. These facilities do not yet exist, so the project was quite challenging!

In 2007, the Monash nominee was by Mr Ling Wong, who gave a brief presentation to the audience on the key project challenges. Ling was presented with 3rd prize and a check for $250, and was applauded by current Monash students and a number of alumni.

"In 2007, the Monash 4th year design project was to design an off-shore LPG facility"

NEWS in brief.....

- Professor Xiao Dong CHEN FTSE, Chair of Biotechnology and Food Engineering;, Chemical Engineering, was named as an ATSE Fellow for his outstanding research and inventions and his application in benefiting the food and bio processing industries in Australia.
- The Chemical Engineering department recently hosted members of IChemE and Engineers Australia, as part of an accreditation review. The two day event reviewed all aspects of the undergraduate course against strict criteria, including a range of double degrees. The accreditation was successfully re-awarded to all our degrees.
- A number of undergraduate students will be heading off to study overseas in July 2008. We have four students heading to the USA—University of California at Berkely, Purdue University, Michigan State University, & North Carolina State University—and one study off to study in France at INSA Lyon, where a strong knowledge of the French language is required! We hope to bring you an update on their experiences in future.
- Andrew Hoadley and Gareth Ford are leading an ARC Linkage project worth over $600,000 to obtain bio-oil from algae. In partnership with Energetix (Biofuels Pty Ltd), the project will capture CO2 using algae then off-set the capital investment and on-going expenses of the CO2 capture technology by creating high value products from algae (i.e. bio-diesel, livestock feed and purified water). This process aims to be independently profitable regardless of future carbon taxes or carbon trading systems. This project also investigates water purification methods and new livestock feed additives which can help reduce the effects of drought on food producers in rural

Dept Chemical Engineering

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