INNOVATE

NEWCASTLE INNOVATION NEWS

NEWCASTLE INNOVATION™

June 2009

CEO Welcome

Welcome to our first industry newsletter for 2009 .This year Newcastle Innovation celebrates 40 years in business. This is a special milestone for any business, especially at the cutting edge of research and development. This longevity is a testament to the quality and quantity of new technologies and capabilities developed at the University of Newcastle over the years and the service oriented business model developed at Newcastle Innovation.

It is the combination of these two important ingredients that allow our business partners to efficiently access and apply the research and technology capabilities of the University to innovate and create ongoing economic value.

To celebrate this milestone, we are planning a series of events and activities that are focused on invigorating our efforts to engage industry with the research capabilities available at the University. Visit our website – www.newcastleinnovation.com.au for more information as the year unfolds.

We look back on 2008 as being an outstanding year for Newcastle Innovation in terms of its engagement with industry in the areas of contract research, consulting and IP commercialisation. Our involvement in the inaugural Hunter Means Innovation 2008 festival and the creation of our "Exchange Event" program, are examples of our active marketing efforts which will continue in 2009.

However, entering 2009 also brings the scale of the Global Financial Crisis (GFC) into sharp relief. As a business dependent on expenditure on risky or expansionary technology development and innovation, we see the GFC providing some significant challenges. Despite this, I have confidence in the world class research capabilities in the University and our ability to connect industry with these capabilities and create value from these partnerships.

A new opportunity for Newcastle Innovation and the University will come through the establishment of the new Clean Energy Innovation Centre (CEIC) to be hosted by Newcastle Innovation and located at the Industry Development Centre.

I hope you enjoy this issue of our Innovate newsletter and invite you to contact one of our business development team to discuss your IP or commercial opportunities.

Dr Brent Jenkins
CEO Newcastle Innovation

Research News

A solution for soil decontamination

Soil remediation company, Innova Soil Technology led by Associate Professor John Lucas, School of Chemical Engineering, was appointed by Harvey Norman to treat contaminated soil at the company's Springvale site in Victoria. The company used their unique thermal desorption process to treat the soil, making it safe for re-use on the site.

The proposed Harvey Norman site

During the treatment the soil was independently sampled before and after processing to verify that all processed soil met the remediation requirements. To date, 241 independent product soil samples have come back with PCB levels below the limit of detection.

Apart from being only the second such cleanup of its kind in the world, the levels of cleanliness achieved in the treated soil and the control of emissions are the best for any such remediation, worldwide. For more information on Innova Soil visit www.innovasoil.com.au.

Improving the fertility of older women

A new research project at the University of Newcastle is looking at ways to improve the fertility of older women. Associate Professor Eileen McLaughlin from the Faculty of Science and Information Technology has received $400,000 from the National Health and Medical Research Council for the project. She will investigate the healthy development of the female egg cell, called an oocyte, involved in reproduction. The research will build on the PRC for Reproductive Science's current investigations into the impact of environmental chemicals on female fertility.

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Newcastle Innovation turns 40!

Newcastle Innovation will be celebrating its 40th Anniversary in 2009. To mark the occasion, we will be holding a series of events throughout the year. Check our website for dates and more information.

Exchange Events

In 2008, Newcastle Innovation launched its Exchange seminars, a series of events that 'exchange' information and knowledge with industry in an effort to increase contract research, consulting and facilitate collaboration and investment. Successful Exchanges in Energy, Mining and Minerals Processing and Food Science Technology have been held with further Exchange events to be held in 2009.

Hunter Innovation Festival

Newcastle Innovation held its popular 'Innovation in Energy' Exchange event as part of the Hunter Central Coast Innovation Festival. Attendance numbers were up on last year's event making the Exchange one of the top events of the festival. Researchers presented their research and capabilities in geothermal and wind energy and clean coal to industry. Small startup companies working in the clean energy sector also showcased their services.

Newcastle Innovation also showcased the University's research in energy and the environment at Envirohunter 09 in May, Envirohunter is a conference which covers a range of environmental issues facing business people.

Neville Sawyer, Chairman of the HCCIF, thanks participants at the Innovation in Energy event.

A novel drying and briquetting process for Banpu

Banpu Public Company Ltd, a Thai based energy and mining company with interests in Indonesia and China, required a solution to quality and transportation issues associated with an Indonesian low quality coal. In order to reduce handling costs and improve the properties of the low quality coal, Banpu needed a cost effective drying and briquetting solution. Thus, a research brief was defined to develop a unique binderless briquetting system which would transform low quality coal into a higher quality product (low moisture, high grade solid fuel product). This would make the coal more attractive for thermal purposes, and allow the coal to be transported for blending and use for steel making processes. Newcastle Innovation delivered this unique research project using a combination of expert resources at The University of Newcastle, The University of Science and Technology and Shenyang Institute of Aeronautical Engineering in China.
The novel drying and briquetting process, developed by researchers Emeritus Professor Terry Wall and Professor Jianglong Yu allowed low quality coal to be briquetted by a newly developed machine into a low moisture briquette or pellet (without the need of a binder). The result confirmed that a cost effective, higher quality, briquetted coal product could be manufactured from a low quality mined coal.

Research findings lead to improved sustainable procedures for management of estuary systems

Professor Philp Geary from the School of Environmental and Life Sciences has been assisting Port Stephens Council to improve procedures for maintaining estuary water quality. This follows the discovery of faecal contaminants in the Tilligerry estuary which led to harvest bans for Oyster farmers in the area. The research team from the University worked with the council to develop a sand mound filtration technology in the catchment to reduce the concentration of contaminants entering Tilligerry Creek.

Investigating new treatments for melanoma

Hunter researchers are examining the resistance of melanoma to chemotherapy in an effort to find new treatments for the disease. Dr Xu Dong Zhang from Calvary Mater Newcastle, Dr Rick Thorne from the University of Newcastle and Professor Peter Hersey from Calvary Mater Newcastle and the University of Newcastle, are leading the project. The Newcastle researchers will focus on a particular part of the cell, called the endoplasmic reticulum (ER), which sends out signal pathways that control cell survival. When activated for a prolonged period of time, the pathway will kill cells under extreme stress. However, it has previously been established that melanoma cells have developed resistance to the pathways and survive in the body. The new research will investigate whether the melanoma cells' adaptation to ER stress plays a role in the cancer's resistance to chemotherapy.

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Clean Energy Innovation Centre Launched

NI has been chosen as the host and location of the Enterprise Connect Clean Energy Innovation Centre (CEIC) as part of the Enterprise Connect program. The centre was officially opened on May by the Minister for Innovation, Industry, Science and Research, Kim Carr, with local industry and members of parliament attending the launch.

The CEIC will offer a range of business improvement services to help clean energy companies find and adapt the latest research and technology to improve products and manufacturing processes. It will provide access to specialist facilities and advice to turn innovative ideas into new products. It will also help firms become export-ready and provide grants to address areas of weakness.

The CEIC is supported by a partnership between Newcastle Innovation, Enterprise Connect, the Australian Institute for Commercialisation and the Western Australia Sustainable Energy Association. The centre will be located in the Industry Development Centre.

For more information visit www.enterpriseconnect.gov.au

Minister for Innovation, Industry, Science and Research, Kim Carr, with Federal Member for Newcastle, Sharon Grierson, Federal Member for Chalrton Greg Combet, and Deputy Vice Chancellor (Research) Prof. Mike Calford at the CEIC launch

New Corporate Brochure

NI has published a new corporate brochure. The brochure features new developments in research at the University of Newcastle and information on our research partners' capabilities. To download a copy of the brochure visit www.newcastleinnovation.com.au

Non-Pharmaceutical Management of Hyperlidemia

Hyperlipidemia, or abnormal levels of lipids in blood, remains one of the major risk factors for the development of cardiovascular disease. Monotherapy with cholesterol lowering medications such as statins, is inadequate to optimise blood lipid profile for maximum protection against the coronary heart disease. The research published by the Nutraceuticals Research Group headed by Professor Manohar Garg in the School of Biomedical Sciences has demonstrated that concurrent dietary supplementation with phytosterol-enriched spread (Logicol) and long chain omega-3 fatty acids (fish oil) lowers blood lipids in a complementary and synergistic manner and provides greater risk reduction against cardiovascular disease than either of the supplements alone. This research has the potential for the development of novel functional foods (margarine, breakfast cereals, milk, yogurt etc) fortified with the two ingredients, phytosterols and omega-3 fatty acids, for safe and efficacious means of managing hyperlipidemia. Nutraceuticals Research Group (NRG) at the University specialises in the development and testing of novel functional foods for safety and efficacy by conducting human intervention trials and providing vital information required to substantiate health claims. Current research projects focus on lipid-lowering, anti-oxidant, anti-inflammatory and anti-aggregatory effects of dietary supplements and functional foods for the management of hyperlipidemia, obesity (weight loss and maintenance) diabetes mellitus and mental disorders.

University of Newcastle Researcher wins International Award

A University of Newcastle researcher has won a special award at the 11th International Conference on Electrostatics, held in May in Valencia, Spain. Dr. Peter Ireland, a physicist with the Centre for Multiphase Processes, received the 'Young Scientist Award' for his research titled 'Contact charge accumulation and separation discharge'. The research arose from a research program on electrostatic particle separation conducted under the auspices of the Australian Minerals Science Research Institute (AMSRI). AMSRI is a collaboration between the Centre for Multiphase Processes and research centres from several other Australian universities. The Institute is funded as a Linkage project by the Australian Research Council and AMIRA International. Industrial supporters include BHP Billiton, Rio Tinto, Anglo American, Xstrata, Orica, and Freeport-McMoRan.

TUNRA Clean Coal on display in Paris

Test work done by TUNRA Clean Coal was recently showcased at the International Energy Association Conference in Paris. Top Australian scientist, Professor Robin Batterham, presented the findings in his report "Science for Energy Activities: A Corporate and Academy Approach".

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New Website for TUNRA Clean Coal

TUNRA Clean Coal has developed and launched its new website, which is www.tunracleancoal.com
Visitors to the site will see the company's latest projects and news, and as well can download technical data of the products available.
Some of the products developed by TUNRA Clean Coal include:

The Frother Gauge
A valuable indicator of the frothing reagent levels in a flotation plants water circuit

The TUNRA Emulsifier
An economical and effective tool for the rapid emulsification of reagents.

TUNRA Froth Depth Meter
A simple device to provide real time, on-line indication of the depth of the froth bed within a flotation cell.

Other products and services include:
- Online Slurry Particle Density (Coal Ash) Analyser
- Analytical Laboratory Testing Service, including physical sizing to 10 and 20 micron
- Consultation Service for Coal Handling and Preparation
- Flotation Testing and Reporting Service and more.

All this information is provided in greater detail, as well as a full contact list, is available on www.tunracleancoal.com

TBS Links up with Central South University, China

During a recent visit to the University in Changsha, Professor Mark Jones, Director of TUNRA Bulk Solids (TBS) and Head of the School of Engineering at Newcastle, was made a Visiting Professor of Central South University in China.
In August, David Fleming, Senior Business Development Manager for Newcastle Innovation and Professor Mark Jones will again visit Central South University in China to discuss potential opportunities for greater collaboration between the University and TUNRA Bulk Solids in providing contract research and development services to Chinese industry.

Professor Mark Jones being awarded his Visiting Professorship at Central South University in China

The work done by TUNRA Clean Coal was in collaboration with the CSIRO and involved the physical cleaning of Australian thermal coal to produce a product with a very low ash level of below 2%.
Professor Batterham is the Group Chief Scientist for Rio Tinto, and the President of the Australian Academy of Technological Sciences and Engineering. He spoke of the importance of improving the efficiency of coal fired power generation, and highlighted the work done by TUNRA Clean Coal. The full presentation from Professor Batterham is available at www.tunracleancoal.com

Computer Assisted Research Mathematics and its Applications (CARMA)

CARMA forms the base for a vibrant cross-university and intra-university Priority Research Centre. CARMA aims to develop inter-disciplinary mathematics-based research, serving the broader University of Newcastle research community in Engineering, Medicine, Bioinformatics and other areas. CARMA provides a focal point for Operations Research and Optimization activity across the University of Newcastle and to support and develop joint research activities with major Australian research groups in allied fields, such as in the CSIRO, DSTO, NICTA, and ACFR. For further information please contact Laureate Professor Jonathan Borwein.

Available Technologies for Commercialisation

Surface Structures to Enhance Implant Bone Ingrowth

Researchers at the University of Newcastle have developed a way of fabricating complex external and internal surface textures on implantable ceramics such as alumina.

Harmonics Based Wireless Telemetry - a novel concept which is based on utilising high frequency harmonics. The device has applications in many communication spheres, including medical telemetry and addresses all of the key design requirements for medical implants.

Crystalline Ternary Ceramic Precursors- The invention relates to more effective and economic synthesis of compounds of general formula $Mn+1AXn$, such as Ti^3SiC^2, which have become known as MAX phases.

For more information on the above opportunities visit www.newcastleinnovation.com.au/investment

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