BROWN COAL INNOVATION AUSTRALIA

Positioning brown coal for a brighter future

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Media Release

Research scholarships to foster Australia's future scientists

Brown Coal Innovation Australia (BCIA) today awarded five postgraduate research scholarships for innovation in the development of low-emissions technologies that will broaden the sustainable use of Australia's world-class brown coal resource.

The prestigious awards will develop the nation's future scientists and are part of BCIA's commitment to strategic investment in skills-development to secure the scientific, engineering and trades expertise required for the development of new low-emissions brown coal technologies.

The five recipients of the inaugural BCIA PhD Research Scholarships are: Hirra Azher (University of Melbourne), Karen Little (Monash University), Alicia Reynolds (Monash University), Adam Rady (Monash University) and Hui-En Teo (University of Melbourne).

BCIA Chair, Gerry Morvell, said: "The BCIA PhD research scholarships demonstrate the wealth of emerging talent in our scientific community and are a significant component of our investment in leading-edge research and development that will underpin our capacity to tackle environmental challenges associated with the exploitation of brown coal."

The postgraduate research scholarships are worth more than $600,000 in total and follow the awarding of the 2010 BCIA Research Leader Fellowships. "Supporting the development of our human resource expertise is critical to enabling the technology innovation that will drive future high-value, low emissions uses for Australia's unique brown coal resource," Mr Morvell said.

Applications for BCIA postgraduate research scholarships were assessed by the BCIA Research Advisory Committee, chaired by experienced research leader; Dr John Burgess. The BCIA Board of Directors reviewed applications and awarded the scholarships; each worth $40,000 per annum for a maximum of three years.

Dr Burgess said: "The postgraduate research applications were of a very high calibre and, together with BCIA's Research Leader fellowships, the successful candidates will make a significant contribution to Australia's scientific standing in low-emissions utilisation of our vast natural resource."

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Background Information

About BCIA

BCIA is a not-for-profit company with a mandate to co-invest with stakeholders in brown coal innovation and emissions reduction technologies. The organisation's mission is to invest proactively in the development of technologies and people that broadens the use of brown coal for a sustainable future.

BCIA's funding agreements with the Victorian Government and Australian National Low Emissions Coal R&D (ANLEC R&D) provide for multi-million dollar research and development investment in key activities in the brown coal innovation value-chain, spanning from mine-mouth to the capture of greenhouse emissions.

BCIA Postgraduate Research Scholarship Recipients

Hirra Azher, The University of Melbourne,
PhD focus area: Development of membrane processes for the recovery of water from flue gas streams.
Project description: Enabling the capture and recycling of water in the flue gas emitted from brown coal power stations offers significant environmental and economic benefits. This project will research the use of novel membrane materials suitable for water capture from flue gases, resulting in reduced fresh water usage, energy savings and increased overall power plant efficiency. Additionally, removal of the water from the flue gas would allow colder flue gases to be emitted, increasing the opportunities for heat recovery from this stream.

Karen Little, Monash University
PhD focus area: Sustainable soil carbon and soil health through brown coal-derived products
Project description: This project will study a selection of brown coal-derived humic/fulvic extracts, and commercial products containing humic substances, to evaluate the effectiveness of each in sequestering soil carbon, enhancing fertiliser efficiency and improving soil health. The study will provide a detailed scientific analysis of the beneficial effects of adding brown coal-derived products to soil including improvements in soil properties and plant yields. The capacity of soils to sequester carbon is a high priority area and a possible component of a future carbon-trading scheme.

Adam Rady, Monash University
PhD focus area: Evaluation of Victorian brown coals as fuel for direct carbon fuel cells
Project description: Fuel cells, in combination with pyrolysis or partial gasification, can potentially result in very high utilisation efficiency of brown coal for power generation compared with conventional combustion. Improving the utilisation efficiency of brown coal will enable a significant reduction in CO_2 emissions. This collaborative research project, involving CSIRO and Monash University, will assess the viability of using brown coal chars in direct carbon fuel cells (DCFC), coupled to an external pyrolyzer or partial gasifier. Coupling gasfication and pyrolysis or partial gasification can result in a utilisation efficiency in excess of 70% as opposed to around 50% for gasification alone. Using DCFC also allows for the production of pure products for alternative uses such as in chemical production.

Alicia Reynolds, Monash University
PhD focus area: Identification and monitoring of byproducts generated from amine based solvents and adsorbents during post-combustion CO_2 capture from brown coal flue gases
Project description: This project aims to improve the technical and environmental performance of amine solvent and adsorbent based post-combustion CO_2 capture from brown coal flue gases. Currently, a range of anti-corrosive and anti-oxidant additives are used to manage solvent degradation however little is known about the underlying mechanisms. Consequently, there is large uncertainty around the emissions of degradation products to the atmosphere. Development of innovative analytical techniques and procedures is essential for characterising byproducts in pilot plant systems. Ultimately, the project will contribute to the fundamental understanding of solvent degradation reactions in response to flue gas composition, process operation and solvent constituents.

Hui-En Teo, The University of Melbourne
PhD focus area: Novel coal dewatering techniques
Project description: Electricity generators currently expend significant time, energy and money on reducing the very high water content of brown coal prior to combustion. An energy efficient and economical process for dewatering coal is a key challenge to the future viability of brown coal power stations in an emissions-constrained world. The project will investigate the use of existing coal grinding equipment as the dewatering operation, thereby enhancing combustion efficiency and minimising energy and capital requirements for the reduction of brown coal water content.

For more information, visit http://www.bcinnovation.com.au/BuildingtheFutureWorkforce

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