

**New South Wales**

**The University of Newcastle**

**LP0884139** Dr SW Donne; Dr P Aitchison; Dr WD King

**Approved Project Title** **Capacitance Fade Mechanisms in Carbon-Based Supercapacitors**

**2008 :** \$ 12,813

**2009 :** \$ 25,627

**2010 :** \$ 25,627

**2011 :** \$ 12,813

**Primary RFCD** 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

APA(I) Award(s): 1

**Collaborating/Partner Organisation(s)**

CAP-XX (Australia) Pty Ltd

**Administering Organisation** The University of Newcastle

**Project Summary**

Energy storage is of significant importance to the global community. This project addresses certain performance issues concerning prolonged energy storage in supercapacitors, which are an emerging technology in the electronics industry. CAP-XX is Australia's only manufacturer of supercapacitors, and the improvements to their products that will result from this work, will lead to significant returns to them and the Australian economy.

**LP0884147** Dr K Krabbenhoft; Prof SW Sloan; Mr PL Shrestha; A/Prof AV Lyamin; Dr AS Jones; Mr D Castillo; Dr JS Truelove

**Approved Project Title** **Microstructural Analysis and Modelling of Copper Ore Agglomerates for Heap Leaching**

**2008 :** \$ 65,000

**2009 :** \$ 130,000

**2010 :** \$ 130,000

**2011 :** \$ 65,000

**Primary RFCD** 2907 RESOURCES ENGINEERING

APA(I) Award(s): 1

**Collaborating/Partner Organisation(s)**

BHP Billiton Innovation Pty. Ltd.

**Administering Organisation** The University of Newcastle

**Project Summary**

The efficient extraction of valuable metals from mined ore can be considered as a problem of global concern as the world's reserves of such metals quickly diminish. For low grade copper ore, heap leaching has long been recognized as the most efficient mineral recovery procedure. This project aims to apply X-ray microtomography and micromechanical modelling to quantify the critical leaching properties of ore agglomerates and to formulate optimal heap leaching strategies. This will allow for better utilization of the Australia's low grade ore reserves. The procedures and methodologies to be developed will be applicable to other types of ore including gold, uranium and nickel.

## Summary of Linkage Projects Proposals for Funding to Commence in 2008

**LP0883918** Dr GR MacFarlane; A/Prof RH Dunstan; Dr WA O'Connor; Dr L Van Zwieten

**Approved Project Title** **Molluscan Biomonitor for Quantification and Impact Assessment of Endocrine Disrupting Chemicals in Marine Ecosystems**

**2008 :** \$ 22,500  
**2009 :** \$ 45,000  
**2010 :** \$ 45,000  
**2011 :** \$ 22,500

**Primary RFCD** 3008 ENVIRONMENTAL SCIENCES

APA(I) Award(s): 1

**Collaborating/Partner Organisation(s)**  
NSW Dept Primary Industries  
Hunter Water Corporation  
Port Stephens Council

**Administering Organisation** The University of Newcastle

### Project Summary

There is an urgent need to address the significant issue of contaminants with potential endocrine disrupting effects in Australian waters. Robust monitoring tools are required to establish whether estrogens are present in sewage effluents/waters in Australia and the potential impacts on aquatic ecosystems. Edible oysters are one of Australia's most valuable and fastest growing aquaculture industries. The proposed project will provide management bodies within Australian estuaries a sound scientific basis to make informed decisions to facilitate protection of both aquatic biodiversity and commercial aquaculture initiatives in response to estrogenic diffuse and point inputs.

**LP0884106** Em/Prof AW Roberts; Dr CA Wheeler; Prof MG Jones; Mr LK Nordell; Dr R Steven

**Approved Project Title** **Development of a New Generation Low Rolling Resistance Conveyor Belt**

**2008 :** \$ 107,500  
**2009 :** \$ 207,500  
**2010 :** \$ 159,000  
**2011 :** \$ 59,000

**Primary RFCD** 2905 MECHANICAL AND INDUSTRIAL ENGINEERING

APA(I) Award(s): 2

**Collaborating/Partner Organisation(s)**  
Conveyor Dynamics, Inc.  
Veyance Belting Pty Ltd  
Laing O'Rourke Australia Construction Pty Ltd

**Administering Organisation** The University of Newcastle

### Project Summary

Belt conveying systems are employed extensively to transport bulk materials within Australia's mining and mineral processing industries. The energy consumption of belt conveyors are significant and dominated by the indentation rolling resistance of the idler rolls into the bottom cover of the belt. This project will develop technology to design more energy efficient conveyors by employing new laminated low energy loss belt covers. With Australian mineral exports exceeding \$100 billion, coupled with the considerable transportation distances often necessary in Australian mining operations, the outcomes of this research will result in significant energy savings and economic benefits to these vital industries.

## Summary of Linkage Projects Proposals for Funding to Commence in 2008

**LP0883378** Dr MJ Veysey; Dr PR Lewis; Dr MD Lucock; Dr PD Roach; A/Prof DJ Kennedy

**Approved Project Title** **Is retirement village living good for health: Comparing the health of older adults living in retirement villages and the community**

**2008 :** \$ 62,337

**2009 :** \$ 136,998

**2010 :** \$ 132,749

**2011 :** \$ 58,088

**Primary RFCD** 3701 SOCIOLOGY

### **Collaborating/Partner Organisation(s)**

Public Health Unit, Northern Sydney Central Coast Health

UnitingCare Ageing NSW.ACT

Babcock & Brown Communities Group

Urbis Pty Ltd

**Administering Organisation** The University of Newcastle

### **Project Summary**

Australia's ageing population will have substantial economic and social ramifications. This study will contribute knowledge to the development and application of environmental and housing policies designed to promote health and public health and clinical interventions intended to combat the major contributors to disease and disability in older populations. Knowledge of factors that improve health and promote mobility, independence, social interaction and life satisfaction will also assist planning future age-congregated living environments. The research falls within national priority goals including ageing well, ageing productively, preventative healthcare, and strengthening Australia's social and economic fabric.

**LP0883716** Prof TF Wall; Dr PR Austin; Dr D Maldonado; Dr HP Rogers

**Approved Project Title** **Understanding the reactivity of pulverised coal at extreme conditions when injected into blast furnaces during PCI**

**2008 :** \$ 22,500

**2009 :** \$ 45,000

**2010 :** \$ 45,000

**2011 :** \$ 22,500

**Primary RFCD** 2999 OTHER ENGINEERING AND TECHNOLOGY

APA(I) Award(s): 1

### **Collaborating/Partner Organisation(s)**

BlueScope Steel Limited

**Administering Organisation** The University of Newcastle

### **Project Summary**

This study aims to improve the understanding and develop a mathematical model of coal combustion during injection into blast furnaces as PCI (pulverised coal injection). The principle economic and social benefits of this project to the community are: (i) Increased efficiency of Blast Furnace operations, resulting in cheaper production of iron in an increasingly globally competitive industry, supporting the Australian steel industry and domestic market. And (ii) the potential to impact on process fuel efficiency and reduce CO2 emissions from fossil fuel sources providing a cleaner source of iron for steel production.