Australian Government
Australian Research Council

Examples of new *Linkage Projects* in 2010

Engineering and Environmental Sciences

Monash University (Contact: 03 9903 4840)

Metal-air batteries with improved rate capability and safety for hearing applications (LP100100066)

Summary: Hearing impairment affects on average 20 per cent of the adult population in western society, with the impact being as high as 50 per cent in older adults. Effective hearing devices require a significant amount of power, supplied by a battery, to support their function. Current batteries require very frequent replacement and represent a significant impediment to advances in the technology. This project will develop improved energy and power density batteries which will lead to immediate implementation of more powerful signal processing algorithms, making hearing aids much more effective and appealing to the user. This, in turn, will improve recipient compliance and thus the quality of life for those with severe hearing impairment.

Chief Investigator: Professor Maria Forsyth

ARC funding: $448,000 over 3 years

University of Technology Sydney (Contact: 02 9514 1616)

A new end use of recycled water for sustainable Australian water (LP100100494)

Summary: The economic, environmental and social impacts of this project will have benefits across Australia, and the rest of the world. Recycled water has never been used in clothes washing machines anywhere in the world, by introducing it in Australia we would save approximately 20 per cent of domestic water used for laundry purposes. This also has significant policy implications as it is a huge step towards the implementation of a program of recycled water usage in Australia.

Chief Investigator: Associate Professor Hao Ngo

ARC funding: $249,000 over 3 years

The University of Newcastle (Contact: 02 4921 5061)

Gravity separation and desliming of fine particles (LP100100361)

Summary: This project will be of benefit to the Australian coal and mineral processing industries, worth tens of billions of dollars to the Australian economy each year. The objective is to establish an innovative system of cascading Reflux Classifiers for achieving both gravity separation and desliming of fine particles. Presently millions of tonnes of fine coal exist in tailings dams, unrecoverable by existing technologies such as flotation. This research will provide options for the recovery of this resource, making the remediation of these sites economically viable. The project will also support the education and training of researchers in this field of importance to Australia's future.

Chief Investigator: Professor Kevin Galvin

ARC funding: $130,000 over 3 years

Charles Darwin University (Contact: 08 8946 6551)

Impacts of deforestation and afforestation on greenhouse gas emissions, and carbon and water resources in the Daly River catchment, north Australia (LP100100073)

Summary: Over the last decade, north Australia has been viewed as a potentially exploitable resource, given issues of salinisation, soil acidification, over-allocation of water resources and rainfall declines in south Australian agricultural regions. Improved pastures and plantation forestry are two land uses that may expand in the Northern Territory. Clearing of savanna vegetation would be required, with implications for greenhouse gas emissions, soil health, water resources and dry season environmental flows. This project will track greenhouse emissions and water use from uncleared and cleared savanna that has been converted to pasture and timber plantations, providing critical understanding of the environmental implication of such land use change.

Chief Investigator: Dr Lindsay Hutley

ARC funding: $308,000 over 3 years

University of New South Wales (Contact: 02 9385 2864)

Targeted growth factor delivery using natural polysaccharide materials for bone regeneration (LP100100504)

Summary: This project addresses the core issue of nano-biomaterials capable of encouraging bone growth and providing better and more complete healing of bone fractures. Australia will benefit firstly through improved health outcomes by providing material-based solutions to address slow or non-healing fractures, which are increasingly prevalent in the aging population in Australia. This will have a further benefit to the Australian economy improving the quality of life, enabling people to work longer and reducing the need for further surgical intervention. This project will also have benefits to Australia through training future researchers in this field which will in turn provide economic growth through the development of Australian industries.

Chief Investigator: Professor John Whitelock

ARC funding: $240,546 over 3 years

The University of Queensland (Contact: 07 3365 1120)

Development of a novel process for recovering fluoride from spent pot-lining as AlF2(OH) using industrial waste solutions (LP100100165)

Summary: Every year approximately 40,000 tonnes of a hazardous waste known as spent pot-lining is generated by Australia's aluminium industry. It contains significant levels of leachable cyanide and fluoride and is currently being stored awaiting a suitable treatment technology. This project will develop a novel low-energy and low-cost process for extracting the fluoride as a useful aluminium fluoride product that can be recycled back into the aluminium industry; destroy the cyanide; and recover other components for use in the metallurgical industry. If commercialised the benefit will be an end to the stockpiling of spent pot-lining in Australia, a more sustainable aluminium industry, and protection of the world's natural fluoride resources.

Chief Investigator: Dr Karen Steel

ARC funding: $80,007 over 3 years