South Australia

University of South Australia

LP0990847 A/Prof SM Aziz; Dr H Hsu; A/Prof RK Begg; A/Prof RN Butler; Dr AA Claasz

Approved Project Title **Development of an endofunctional capsule for targeted delivery of biomarkers in the alimentary tract**

2009 : $ 26,140
2010 : $ 52,280
2011 : $ 52,280
2012 : $ 26,140

Primary RFCD 2909 ELECTRICAL AND ELECTRONIC ENGINEERING

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)

Women's & Children's Hospital
Micronix Pty Ltd

Administering Organisation University of South Australia

Project Summary

The proposed capsule will provide a solution to the problem of accessing the small intestine for targeted delivery of biomarkers and drugs, and contribute to translational medical research to enhance our understanding of the function of the gut. Successful completion of this project will build on defined priority areas of research strength in Australia (frontier technologies, smart information use) and assist in the provision of information critical to the design of novel in vivo endofunctional devices. The technologies to be developed in this project will be translatable to the development of other in vivo functional investigation and treatment devices.

LP0990646 Dr DA Beattie; A/Prof J Addai-Mensah; A/Prof D Fornasiero; Prof J Ralston

Approved Project Title **Environmentally Benign Flotation Chemicals**

2009 : $ 72,500
2010 : $ 152,500
2011 : $ 145,000
2012 : $ 65,000

Primary RFCD 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)

AMIRA International

Administering Organisation University of South Australia

Project Summary

The research described in this proposal and the anticipated outcomes are concerned with replacing toxic and environmentally hazardous chemicals used in the mineral processing industry with benign chemicals that are biodegradable and have low toxicity. Replacing these chemicals reduces the risk of workplace injuries and damage to the environment that could be caused by industrial accidents.

LP0990692 Prof VM Carrington; Prof BM Comber; Prof PR Freebody

Approved Project Title **New literacy demands in the middle years: learning from design experiments**

2009 : $ 35,850
2010 : $ 74,527
2011 : $ 73,232
2012 : $ 34,554

Primary RFCD 3302 CURRICULUM STUDIES

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Department of Education and Children's Services South Australia
Australian Education Union of South Australia

Administering Organisation University of South Australia

Project Summary

National benefit and impact accrues most particularly in terms of (i) capacity building across the teaching profession, including increased preparedness of teachers to effectively teach curriculum literacies and adopt pedagogically sound practices with digital technologies; and (ii) the sound use of evidence to inform decision-making and curriculum design in Australian schools, including to inform professional development programs for classroom teachers, drive understanding of the complex nature of contemporary teachers' work; to sustain and retain innovative, change-ready teachers; and engage directly with the key predictions of the OECD's Futures of School scenarios in local, national and international arenas.

LP0990554 Prof WA Dawson; A/Prof JW Boland; A/Prof J Coveney; A/Prof PR Ward; Miss M Stasiak; Mr A Gray

Approved Project Title **Zeroing in on food waste: Measuring, understanding and reducing food waste**

2009 : $ 59,000
2010 : $ 119,000
2011 : $ 95,000
2012 : $ 35,000

Primary RFCD 4203 CULTURAL STUDIES

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)

Zero Waste SA
Local Government Association of SA

Administering Organisation University of South Australia

Project Summary

By developing a socio-culturally aware public education and social marketing programme to reduce food waste behaviours, the proposal addresses the national research priority area of an environmentally sustainable Australia. Reducing food waste by just 10% would save ~$530 million worth of wasted expenditure on food and reduce food waste in landfill by ~300,000 tonnes per annum, thereby reducing the costs associated with disposal and the release of harmful methane gases. The methodology refined by this project to understand food waste will provide the basis for efficient and sustainable food waste reduction strategies and provide an approach that can be generalised to other waste streams with strong socio-cultural determinants.

LP0990927 Prof AR Gerson; Dr DJ Simpson; Dr GP Cavallaro; Mr MA De Vos

Approved Project Title **Enhanced pigment weathering resistance by coating with high dielectric ceramic**

2009 : $ 73,500
2010 : $ 123,500
2011 : $ 50,000

Primary RFCD 2914 MATERIALS ENGINEERING

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Tiwest Joint Venture

Administering Organisation University of South Australia

Project Summary

The partner company, Tiwest, based in Western Australia, is a major contributor to the economy, and earns more than $A400m annually in exports. It is the only company in the world that mines, separates, refines and manufactures titania products, including pigments, in one region. The current post-titania particle formation wet-coating process, however, presents a major capital and recurrent cost and necessitates a pigment regrind stage. The research will investigate the development of a highly durable dry-coated pigment utilising a novel high dielectric coating. This development has the potential to ensure the partner company's future competitiveness through reduced processing costs and improved product performance.

LP0991370 Prof AJ Grant; Dr LM Davis; Dr NA Letzepis; Dr IR Land; Mr NR Hart; Mr N Cirillo; Mr H Anderson

Approved Project Title **Satellite Data Communications for Remote Sensing and Broadband Connectivity**

2009 : $ 77,500
2010 : $ 155,000
2011 : $ 142,500
2012 : $ 65,000

Primary RFCD 2917 COMMUNICATIONS TECHNOLOGIES

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)

Thiss Technologies
Schlumberger Oilfield UK PLC

Administering Organisation University of South Australia

Project Summary

The remote, distributed location of many of Australia's primary industries preclude the use of consumer-oriented terrestrial wireless broadband services. In many instances, satellite communications provides the only feasible means of connectivity for telemetry, supervisory control and data acquisition, tracking and fleet management. Meteorology, remote sensing, irrigation, mining, oil and gas exploration, and fisheries are just a few examples of high-value applications of particular significance to Australia. This project will develop bandwidth efficient satellite communications technologies that greatly reduce cost and pave the way toward new market opportunities for broadband access and telemetry applications.

LP0990845 Dr J Li; Prof RS Smart; Dr RC Schumann; Dr PL Brown

Approved Project Title **Mechanisms for Pyrite Oxidation Control in Acid Mine Drainage**

2009 : $ 87,500
2010 : $ 175,000
2011 : $ 167,500
2012 : $ 80,000

Primary RFCD 2599 OTHER CHEMICAL SCIENCES

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

AMIRA International Limited

Administering Organisation University of South Australia

Project Summary

The annual costs of acid rock drainage (ARD) management at operating sites in Australia are $120M p.a.; over 15 years, a total cost of $1.8 billion for the whole industry. There are limitations to the ability of existing systems to cope with high capacity ARD, to the long-term effectiveness of these systems and high potential costs/liability of remediation. The value of the project outcomes to industry and government will be in reduction of ARD release, well-understood long-term outcomes, reduced cost of treatments and improved control. The scale of these savings is in the tens of $M p.a. but also in potential improvements in environment (acid and toxic metals in streams), health and social quality of life in mining areas and towns.

LP0990211 Prof WY Saman; Prof SC Beecham; Dr MB Luther; Ms WF Miller; Mr G Nolan; Dr K Lyon; Prof S Vigneswaran; Mr SR Berry

Approved Project Title **A Roadmap for Greening Existing Australian Housing**

2009 : $ 55,000
2010 : $ 118,000
2011 : $ 105,500
2012 : $ 42,500

Primary RFCD 3102 BUILDING

APA(I) Award(s): 3

Collaborating/Partner Organisation(s)

Department of Environment, Water, Heritage and the Arts
Seeley International
Rheem Australia Pty Ltd
Victorian Building Commission
ICANZ
Air Barrier Technologies Pty Ltd
Whyalla Council

Administering Organisation University of South Australia

Project Summary

The project will minimise the impact of the Greenhouse Pollution Reduction Scheme and anticipated rises in water costs on the householders. It will assist the consumers and the building industry in evaluating the environmental and economic costs and benefits of specific retrofitting actions for building envelope and major fixed appliances (thermal insulation, glazing, air infiltration, hot water, heating/cooling, lighting, low water flow and water reuse appliances, and solar photovoltaic systems). In addition to assisting a burgeoning renovation industry, the project will enable accurate assessment of the impacts of the Green Loans Program and guide future national and local energy and water reduction policies.

LP0990371 Dr C Sargent; Dr GD Roach; Prof CJ Gore; Dr S Halson

Approved Project Title **Sleeping for Gold: The Influence of Sleep on the Sports Performance of Elite Athletes.**

2009 : $ 39,295
2010 : $ 78,591
2011 : $ 78,591
2012 : $ 39,295

Primary RFCD 3899 OTHER BEHAVIOURAL AND COGNITIVE SCIENCES

APDI Dr C Sargent

Collaborating/Partner Organisation(s)

Australian Institute of Sport

Administering Organisation University of South Australia

Project Summary

The aim of this project is to improve the performance of Australia's elite athletes by enhancing the amount and quality of sleep that they obtain. This project will have three major benefits. First, successful role models will encourage more Australian children and adults to participate in sport. This is critical given that the incidence of obesity (a major risk factor for diabetes, cardiovascular disease and some cancers) has doubled in Australia in the last 15 years as participation in sport has dropped. Second, the success of our elite athletes will provide a source of pride in our achievements as a nation. Third, this research will enable the Australian Institute of Sport to remain as an international leader in sports science research.

LP0990429 Dr SA Wheeler; A/Prof H Bjornlund; A/Prof MP Shanahan; Dr DA Hatton MacDonald; Dr I Singh; Prof KK Klein

Approved Project Title **Improving water market outcomes through a better understanding of market behaviour**

2009 : $ 58,500
2010 : $ 135,000
2011 : $ 125,000
2012 : $ 48,500

Primary RFCD 3701 SOCIOLOGY

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Murray Darling Basin Commission (MDBC)
University of Lethbridge (Canada)
Goulburn-Murray Water (GMW)
NSW Department of Water and Energy
Department of Sustainability and Environment

Administering Organisation University of South Australia

Project Summary

The issue of water resources and their sustainable use is probably the most important issue facing the rural sector. The water reform process and its aim to secure water for the environment will cause economic and social pain and result in structural change within the irrigation sector. Properly functioning water markets will play an instrumental role in facilitating this process by providing water for the environment and allowing water to move between competing resources. This study will enable policy makers and water managers to optimise the positive outcome of water markets and increase the likely success of programs to purchase environmental water.