

New South Wales

The University of New South Wales

LP0989507 Dr MM Chakravarty; Dr G Keller; Prof SL Peyton Jones

Approved Project Title **Dataparallel Programming for Multicore Processors**

2009 : \$ 98,000

2010 : \$ 101,000

2011 : \$ 101,000

Primary RFCD 2803 COMPUTER SOFTWARE

Collaborating/Partner Organisation(s)

Microsoft Corporation

Administering Organisation The University of New South Wales

Project Summary

The proposed project will contribute to the development of frontier technologies to help build Australian industries. The project is designed to unlock significant performance improvements with current and future multicore (processor) computer architectures. This potential performance improvement can be achieved with parallel programming models. This is crucial for ICT applications in performance hungry areas, such as biotechnology, finance, multi-media, and 'info-tainment'. The project will also provide research training and increase local expertise in parallel programming for multicore processors, an area that is quickly growing in importance.

LP0989997 Mr AM Giddy; Ms BA Ely; Mr MG Sims; Prof M Skyllas-Kazacos; Mr SF O'Hara; Ms SM Thomas; A/Prof LF Paroissien

Approved Project Title **Sustainable Public Art: Testing experimental technologies and ecological models for new interdisciplinary installations aimed at regenerating degraded sites.**

2009 : \$ 87,000

2010 : \$ 55,000

2011 : \$ 55,000

Primary RFCD 4102 VISUAL ARTS AND CRAFTS

Collaborating/Partner Organisation(s)

Sydney Olympic Park Authority

Broken Hill Community Incorporated

Studio Elicio PTY. Ltd.

Administering Organisation The University of New South Wales

Project Summary

The project develops new models of public art that combine natural and manufactured energy in ways that promote a culture of awareness about pressing environmental issues. The research highlights the need for an environmentally sustainable Australia and effective management of the nation's biodiversity by embodying these concerns in novel aesthetic systems that test clean energy production and its efficient storage. The latter have implications beyond the project for light industry, telecommunications and public utilities. Utilizing a range of adaptive technologies and natural elements in experimental ways, the project offers creative responses to critical questions of sustainability capable of being profiled internationally.

Summary of Linkage Projects Proposals for Funding to Commence in 2009

LP0989969 Dr S Hand; Prof M Archer; Mr SA Hocknull; Mr TH Worthy; A/Prof JD Woodhead; Dr DI Cendon; A/Prof J Zhao; Dr IT Graham; Dr JD Scanlon; Dr GJ Price; Prof AR Chivas

Approved Project Title **Environmental change in northern Cenozoic Australia: a multidisciplinary approach**

2009 : \$ 300,000

2010 : \$ 300,000

2011 : \$ 300,000

Primary RFCD 2601 GEOLOGY

APDI Mr TH Worthy

Collaborating/Partner Organisation(s)

Xstrata Copper North Queensland

Queensland Museum

Outback at Isa

Mount Isa City Council

Administering Organisation The University of New South Wales

Project Summary

The Intergovernmental Panel on Climate Change (IPCC) warned that by 2020 to 2050, Australia will suffer significant biodiversity loss and water shortages. Our research will document and date the evolution of Australia's biota through three cycles of climate change over the last 25 million years to quantify and thereby better anticipate the nature and dimension of threats facing our natural and cultural communities. We will develop innovative techniques to date prehistoric biotic and climatic events and, using a range of tracers, characterize ancient environments and groundwater. This project will assist rural and regional Australia through education and job creation in geotourism and natural resource interpretation and provide a mechanism to combat generational skill shortage.

LP0990002 Dr N Kumar; Prof SL Kjelleberg; Dr SA Rice; Dr LH Yee; Dr N Barraud; Dr HV Meyers

Approved Project Title **Development of novel environmentally benign technologies for the control of bacterial biofilms in industrial applications**

2009 : \$ 130,000

2010 : \$ 135,000

2011 : \$ 125,000

Primary RFCD 2599 OTHER CHEMICAL SCIENCES

Collaborating/Partner Organisation(s)

WASTE TECHNOLOGIES OF AUSTRALIA PTY LTD

VINIDEX PTY LIMITED

Administering Organisation The University of New South Wales

Project Summary

Bacteria will attach to and form biofilms on almost all surfaces. This is particularly a problem in moist environments, including food preparation surfaces, pipe networks (eg. water, oil, and gas), water purification systems. The effects of bacterial biofilms are wide ranging and impact on human health, our capacity to use water resources effectively, and the environment where toxic chemicals are normally used to kill the biofilm. The technologies under development here have the potential to reduce our reliance on toxic chemicals as well as contribute to significant reductions in the cost to purify and distribute vital resources such as water as well as reducing bacterial contamination food surfaces.

Summary of Linkage Projects Proposals for Funding to Commence in 2009

LP0989552 Prof PR Munroe; Dr SD Joseph; Dr L Van Zwieten

Approved Project Title **Conversion of Lignite to Biochars to Enhance Soil Fertility**

2009 : \$ 39,000

2010 : \$ 38,000

2011 : \$ 38,000

Primary RFCD 3001 SOIL AND WATER SCIENCES

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Ingite Energy Pty Ltd

Administering Organisation The University of New South Wales

Project Summary

Lignite, or brown coal, is used in power generation, but it is uneconomic to transport and acts as a significant source of greenhouse gases. The conversion of lignite to liquid fuel and char provides an economic source of fuel and the generation of a char which also lowers the carbon footprint associated with lignite processing. Lignite-derived char has potential to act as an agent for both promoting plant growth and improving soil health. This project will do much to promote the use of chars, from a lignite source, which will increase the economic viability of mining brown coal.

LP0989930 Ms SA Nathan; Dr CW Evers; A/Prof LR Jackson Pulver; Dr CS Duncan; Dr R Henley

Approved Project Title **Social Cohesion through Football**

2009 : \$ 121,000

2010 : \$ 107,000

2011 : \$ 113,000

Primary RFCD 3702 SOCIAL WORK

Collaborating/Partner Organisation(s)

Sydney FC

Blacktown District Soccer Football Association

Sydney South West Area Health Service

Western Sydney Area Health Service

Transcultural Mental Health

Comm Relations Commission

Blacktown Migrant Resource Centre

Liverpool Migrant Resource Centre

Miller IEC

Administering Organisation The University of New South Wales

Project Summary

This project will help strengthen Australia's social and economic fabric, one of the priority goals aimed at promoting and maintaining good health for all Australians. The proposed inter-disciplinary study will provide new evidence on how sports programs can foster community building, social inclusion and social cohesion, helping families and individuals to live healthy, productive, and fulfilling lives. The proposed study will provide critically needed guidance on best-practice for governments and communities to develop and evaluate sport-based and related programs to address social cohesion and social inclusion. The result will enable humanitarian refugees to overcome barriers that hinder their participation in Australian communities.

Summary of Linkage Projects Proposals for Funding to Commence in 2009

LP0989830 Prof BA Neilan; Dr SA Murray

Approved Project Title Regulation of saxitoxin production in bacteria and algae

2009 : \$ 26,140

2010 : \$ 26,140

2011 : \$ 26,140

Primary RFCD 2703 MICROBIOLOGY

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Diagnostic Technology

Administering Organisation The University of New South Wales

Project Summary

In Australia, toxic algal blooms have had a devastating impact on marine and freshwater resources. In collaboration with a biotechnology company, this project will develop exciting new methods based on information regarding the genetics of the toxin, to monitor and potentially mitigate the effects of algal blooms on water supplies and aquaculture industries. We will use this method to determine the impact of light and salinity in regulating toxin production in cyanobacteria and algae.

LP0990054 Dr M Oeser; Dr AR Russell; Prof N Khalili

Approved Project Title Enhanced Analysis and Structural Design of Pavements - Virtual Laboratory for Advanced Pavement Design

2009 : \$ 100,000

2010 : \$ 120,000

2011 : \$ 80,000

Primary RFCD 2908 CIVIL ENGINEERING

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

ARRB Group Ltd

Administering Organisation The University of New South Wales

Project Summary

The proposed research will lead to improved pavement engineering procedures, which will reduce the maintenance costs for future pavement projects, and will result in cost-effective and more reliable design of new pavements.

LP0989493 Prof O Ostrovski; Dr G Zhang

Approved Project Title Characterisation of carbonaceous materials in production of manganese alloys

2009 : \$ 60,000

2010 : \$ 60,000

2011 : \$ 60,000

Primary RFCD 2913 METALLURGY

Collaborating/Partner Organisation(s)

Tasmanian Electrometallurgical Company

Administering Organisation The University of New South Wales

Project Summary

Optimisation of the carbonaceous materials feedstock in production of manganese alloys will increase energy efficiency and decrease environmental impact in operation of submerged electric arc furnace. Currently, Australia processes domestically only about 25% of produced manganese ore, while 75% is sold as raw material. Increase in production of manganese alloys will add value to the products and create additional employment opportunities, what will be beneficial to the Australian economy. The project will also contribute to further understanding of behaviour of coals in pyrometallurgical processes what will be beneficial to coal industry.

Summary of Linkage Projects Proposals for Funding to Commence in 2009

LP0989719 Dr HM Paterson; Prof RA Bryant; Dr RI Kemp; Mr GR Dewsnap AFSM; Dr T Kirkpatrick
Approved Project Title **The impact of post-incident debriefing on psychological wellbeing and recall of events**

2009 : \$ 144,000

2010 : \$ 130,000

2011 : \$ 136,000

Primary RFCD 3801 PSYCHOLOGY

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)

NSW Fire Brigade

Administering Organisation The University of New South Wales

Project Summary

First response emergency service personnel, such as fire fighters, police officers and paramedics provide an essential service, but as a result of their work are at increased risk of developing Post Traumatic Stress Disorder (PTSD). In an attempt to protect against PTSD many personnel are required to attend group debriefings following exposure to traumatic events. However, there is evidence that these group debriefings may actually increase the risk of PTSD and also permanently distort the participants' memory for the events they witnessed. We will work with NSW Fire Brigade to develop an effective PTSD intervention for emergency service personnel which also preserves the integrity of the participants' memory for critical events.

LP0989373 Prof WG Randolph; Prof J Marceau; Dr RC Bunker; Dr H Easthope

Approved Project Title **Governing the Compact City: The Role and Effectiveness of Strata Management in Higher Density Residential Developments**

2009 : \$ 87,000

2010 : \$ 96,000

Primary RFCD 3101 ARCHITECTURE AND URBAN ENVIRONMENT

Collaborating/Partner Organisation(s)

Institute of Strata Title Management Ltd

Department of Lands

NSW Office of Fair Trading

Lannock Strata Finance

Andreones Pty Ltd

Macquarie Bank Ltd

Owners Corporation Network Australia Inc

Administering Organisation The University of New South Wales

Project Summary

The research will deliver systematic information about the operation of the strata system that regulates the majority of residential higher density housing in Australia. It will assist strata residents and owners and those involved in strata management and policy development to better understand the nature and scale of issues facing the strata sector and its capacity to self-manage these issues. It will therefore build an informed evidence base to support improved best practice and policy development across the sector. In addition, the research will make a major contribution to the emerging academic literature on local urban governance in higher density cities.

Summary of Linkage Projects Proposals for Funding to Commence in 2009

LP0990075 Prof WG Randolph; Dr SM Pinnegar; Dr RC Bunker; Dr TG Wilson

Approved Project Title **Implementing metropolitan planning strategies: taking into account local level housing demand**

2009 : \$ 113,000

2010 : \$ 123,000

2011 : \$ 60,000

Primary RFCD 3101 ARCHITECTURE AND URBAN ENVIRONMENT

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

NSW Department of Planning

Landcom

Administering Organisation The University of New South Wales

Project Summary

This project will make a major contribution to our knowledge of contemporary urban change and will inform wider debates on the future of Australian cities. Providing planners and community stakeholders with a better understanding of housing demand at a local level, the research will assist in the implementation of metropolitan planning strategies, offering an effective framework that can incorporate affordability and social inclusion considerations. The research relates directly to the National Housing Supply Council's emerging agenda, which has identified the need to consider housing demand across a variety of spatial scales, and responds to the priority goal of strengthening Australia's social and economic fabric.

LP0989176 Prof C Rizos; Dr DT Woo; Dr B Li; Mr E Ramsey-Stewart; Mr K Johar

Approved Project Title **Mobility and Location Information providing Social Equality for Blind and Vision Impaired persons**

2009 : \$ 110,000

2010 : \$ 78,000

2011 : \$ 50,000

2012 : \$ 52,000

Primary RFCD 2910 GEOMATIC ENGINEERING

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Vision Australia

Ramsey Stewart Industrial Design

Administering Organisation The University of New South Wales

Project Summary

Providing reliable situational information to the blind and visually impaired (BVI) can deliver far greater independence. Confidence and autonomy will result from knowing where they are, what is in that location, how to go to the destination and the location related information. This will not only save a significant welfare costs but will also provide social equality to BVI. The underlying technology can also readily be extended to other socially useful and profitable applications.

Summary of Linkage Projects Proposals for Funding to Commence in 2009

LP0989933 Dr TL Rogers; Dr CJ Hogg; Dr AS Andrew

Approved Project Title **You are what you eat: can tissues of top predators which show sequential dietary change identify long-term trends in ecosystems?**

2009 : \$ 100,000

2010 : \$ 100,000

2011 : \$ 100,000

Primary RFCD 3004 ANIMAL PRODUCTION

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Zoological Parks Board of NSW (trading as Taronga Conservation Society Australia)

Environmental Isotopes

Administering Organisation The University of New South Wales

Project Summary

This project uses stable isotope signatures in the whiskers of top predators to determine foraging ecology. We aim to validate current stable isotopic models so this cost-effective tool can be used to examine large scale changes in food web dynamics in one of the world's climate hotspots in the Antarctic. Changes in the Antarctic directly impact the Australian community as our climate is affected by changes in Antarctica. As this project is part of an International Polar Year Program, Impact of CLimate induced glacial melting on marine and terrestrial COastal communities on a gradient along the Western Antarctic PENinsula (ClicOPEN), it strengthens Australia's international scientific links and exposes Australia's future scientists to internationally collaborative research which is of global significance.

LP0989901 Dr SA Ross; Dr SE Connor; Dr AI Herries; Dr G Burgers; Dr I Iliev; Ms A Sobotkova; Dr K Rabadjiev

Approved Project Title **Cultural change in its environmental context: exploring, interpreting, and managing archaeologically rich, large-scale cultural landscapes in the Mediterranean Basin**

2009 : \$ 70,000

2010 : \$ 20,837

2011 : \$ 26,267

Primary RFCD 4302 ARCHAEOLOGY AND PREHISTORY

Collaborating/Partner Organisation(s)

Royal Netherlands Institute in Rome

Historical Museum, Yambol

Administering Organisation The University of New South Wales

Project Summary

(1) Production of a Holocene climate history and evaluation of long-term human response to environmental change in Mediterranean to continental climate zones. (2) Development of relationships with international researchers, including leading scholars from Italy, Bulgaria, the United States, and the Netherlands. (3) Extension of Australia's leadership in Mediterranean archaeology to the Balkans through building institutional relationships and initiating a presence in Bulgaria (arguably the most promising country in its region for archaeological research). (4) Development of innovative remote sensing methods for archaeological reconnaissance with wide applicability, including in Australian contexts and by other Australian research projects.

Summary of Linkage Projects Proposals for Funding to Commence in 2009

LP0989262 Dr X Shang; Dr KR Fisher; Dr K Zhang

Approved Project Title **Social Support Provided in China to Older People with Disabilities**

2009 : \$ 80,000

2010 : \$ 85,000

2011 : \$ 82,000

Primary RFCD 3702 SOCIAL WORK

Collaborating/Partner Organisation(s)

China Research Centre on Ageing

Administering Organisation The University of New South Wales

Project Summary

The project contributes to understanding our region through the opportunity to demonstrate Australia's engagement with China, with which it is establishing strong links in social, economic and cultural interests. It contributes to national understanding of East Asian policies for older people with a disability, including partnership approaches to social support between government, non-government and communities. The project strengthens connections between Australian researchers and policy officials, the China Research Centre on Ageing, and Chinese government organisations.

LP0989365 A/Prof RM Stuetz; Dr HM Coleman; Dr SJ Khan; Dr P Le-Clech; A/Prof JE Drewes; Dr KN Power

Approved Project Title **Optimising Decentralised Membrane Bioreactors for Water Reuse**

2009 : \$ 120,000

2010 : \$ 120,000

2011 : \$ 100,000

Primary RFCD 2908 CIVIL ENGINEERING

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

MidCoast Water

Bega Valley Shire Council

NSW Department of Health

Hunter Water Corporation

Administering Organisation The University of New South Wales

Project Summary

Water is a critical resource in Australia and as pressures on water resources increase, water recycling has emerged as an important component of water management practises throughout Australia. Decentralised wastewater treatment systems (or package plants) offer opportunities for water recycling in regional communities; however this application is limited by our understanding on the removal of contaminants of concern through these treatment systems. This project will assess the suitability and efficiency of decentralised membrane bioreactors (MBRs) for the removal of endocrine disrupting chemicals (EDCs), pharmaceutically active compounds (PhACs) and pathogens in accordance with the 2006 National Guidelines for Water Recycling.

Summary of Linkage Projects Proposals for Funding to Commence in 2009

LP0989304 A/Prof J Wang

Approved Project Title **A new abrasive waterjet milling technology and process models for fabricating energy-efficient electrical machines from amorphous magnetic metal laminations**

2009 : \$ 111,000

2010 : \$ 123,000

2011 : \$ 117,000

Primary RFCD 2903 MANUFACTURING ENGINEERING

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Glassy Metal Technologies Ltd.

Administering Organisation The University of New South Wales

Project Summary

As the most energy-efficient core material for electrical machines, amorphous magnetic metal (AMM) can save more than 36% of the energy wasted by ordinary electrical motors. Since electrical motors consume about 70% of all the electricity generated, if all electrical motors in Australia use AMM as the core material, an annual energy saving worth approximately \$4 billion and an annual reduction of 16 million tonnes of greenhouse gas emission in Australia are expected based on the predicted electricity consumption in 2010. This project will develop a new technology for fabricating larger electrical machines from AMM laminations. It targets the national research priorities in Frontier Technologies and An Environmentally Sustainable Australia.

LP0990057 Prof AM Williamson; Dr BR Molesworth; Ms RJ Mitchell

Approved Project Title **Human Factors and Patient Safety**

2009 : \$ 90,000

2010 : \$ 85,000

2011 : \$ 110,000

Primary RFCD 3212 PUBLIC HEALTH AND HEALTH SERVICES

APDI Ms RJ Mitchell

Collaborating/Partner Organisation(s)

Clinical Excellence Commission

NSW Health

Administering Organisation The University of New South Wales

Project Summary

In some cases hospitalisation can result in the patient becoming worse, or even dying, due to the experience. These events cost the community unnecessary pain and suffering and consume healthcare resources. Prevention of adverse events in healthcare will contribute to Promoting and Maintaining Good Health. Improving our ability to deal with failures in healthcare, including those due to human factors, will have a significant impact on their reduction.

LP0989778 Dr SA Wood; A/Prof CK Carter; Prof MH England

Approved Project Title **Using Advances in Bayesian Statistics to Estimate Australian Rainfall Variations in a Climate Change World.**

2009 : \$ 80,000

2010 : \$ 85,000

2011 : \$ 75,000

Primary RFCD 2302 STATISTICS

Collaborating/Partner Organisation(s)

Elders

Administering Organisation The University of New South Wales

Project Summary

Modelling changes to rainfall patterns answers many important questions about changes in Australia's climate. This is essential to protecting our biodiversity and ensuring Australia's environmental sustainability. The project will address such issues as the extent to which the entire distribution of daily rainfall has changed over time, which areas of Australia have been most affected by this change and to what extent are these changes related to global climate indices. The latest advances in Bayesian statistics will be used to introduce flexibility and complexity into the model.