

Summary of Linkage Infrastructure, Equipment and Facilities Proposals

New South Wales

The University of New South Wales

LE0989147 Prof IW Dawes; A/Prof SC Schuster; Prof RJ Trent; Prof RJ Henry; Prof RJ Scott; Prof IT Paulsen; A/Prof KS Gibb; Dr T Thomas; Prof SL Kjelleberg; Prof R Cavicchioli; Prof BA Neilan; Prof JK Reichardt; Em/Prof PL Bergquist; Prof HW Stokes; A/Prof MR Gillings; Dr PM Giffard; Prof PR Dunkley; Prof PS Foster

Approved Project Title **Advanced high throughput genomics facility for biological, medical, agricultural, environmental and evolutionary research**

2009 : \$ 950,000

Primary RFCD 2702 GENETICS

Partner Organisations & Collaborating Organisations

The University of New South Wales

Southern Cross University

The University of Sydney

Macquarie University

The University of Newcastle

Charles Darwin University

Administering Organisation The University of New South Wales

Project Summary

Infrastructure requested will expand the capacity of researchers in NSW/NT to undertake environmental, medical and evolutionary studies using state-of-the-art technologies based on the recent advances in DNA sequencing analyses. It will ensure the retention of leading researchers in the exciting areas of genomics and Systems Biology and make a significant contribution to biomolecular research in medicine, agriculture and environmental biology, thereby providing major benefits to the wider community. The application will enhance existing genomic technologies by substantially increasing the scope of experiments that can be performed leading to important advances in gene discovery.

LE0989567 Prof JJ Gooding; Prof R Amal; Dr P Thordarson; Prof AN Buckley; Prof MA Green; Dr GJ Conibeer; Dr E Cho; Dr D Koenig; Prof RP Burford; Prof SM Thurgate; Prof MJ Crossley; Dr W Yang; Dr J Downes

Approved Project Title **State of the Art Surface Characterisation Facility for the Sydney Basin**

2009 : \$ 500,000

Primary RFCD 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Partner Organisations & Collaborating Organisations

The University of New South Wales

Macquarie University

The University of Sydney

Administering Organisation The University of New South Wales

Project Summary

Many of the grand challenges of our time, including finding alternative sources of energy, maximizing our current supply of natural resources, identifying and treating pollution in general, and in water in particular, and developing therapies and biomaterials that enable the personalisation of therapies to each individual are being solved using developments in the molecular sciences. Pivotal to the success of such research is to understand materials and surfaces at the molecular level. The request is to purchase surface analysis instrumentation which will dramatically enhance the ability of scientists around Australia understand how to develop solutions to these grand challenges.

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LE0989476 Prof RH Grzebieta; Prof AM Williamson; Prof MJ Hoffman; A/Prof AS McIntosh; A/Prof MM Attard; Dr M Bambach; Dr C Caponecchia; Ms R Friswell; Dr J Hatfield; Dr RF Job; Ms P Albany; Dr D Friedman; Mr I Cameron

Approved Project Title **Rollover Crash Research Infrastructure Capacity Building**

2009 : \$ 300,000

Primary RFCD 3212 PUBLIC HEALTH AND HEALTH SERVICES

Partner Organisations & Collaborating Organisations

The University of New South Wales

Monash University

NSW Centre for Road Safety

Motor Accidents Authority

Centre for Injury Research USA

Office of Road Safety WA

Administering Organisation The University of New South Wales

Project Summary

Around 1 in every 3 vehicle occupants die in a crash where the vehicle rolls over. This crash mode also accounts for around 25% of spinal injuries and cost the community around \$2.5 billion annually. There are no rollover crash standards or consumer crash tests. The equipment purchased will be used to develop a rollover crashworthiness test protocol that can be adopted by consumer testing groups, to understand the role of fatigue in precipitating rollover crashes, and to develop a driver fatigue metric. It is estimated this research will result in saving around 150 lives, reducing serious spinal and head injuries and save the Australian community around \$800 million per annum.

LE0989946 Prof M Guilhaus; Prof DB Hibbert; Prof LD Field; Prof BA Messerle; Prof JJ Gooding; Prof MM Harding; Prof C Barner-Kowollik; A/Prof MJ Monteiro; Dr AS Micallef; Dr MR Whittaker

Approved Project Title **High Resolution LC/MS and MALDI for Molecular and Macromolecular Characterisation**

2009 : \$ 357,000

Primary RFCD 2503 ORGANIC CHEMISTRY

Partner Organisations & Collaborating Organisations

The University of New South Wales

The University of Queensland

University of Karlsruhe

Administering Organisation The University of New South Wales

Project Summary

The provision of high-resolution and matrix assisted laser desorption ionisation mass spectrometers configured for the molecular and macromolecular research of high quality research groups will lead to earlier and better fundamental discoveries that are directed at important practical developments in medicine, biotechnology, nanotechnology, light-energy harvesting, polymer materials and sensors. These include anticancer agents, nanodevices for drug delivery, better polymers with more energy efficient industrial processes, bioactive molecules for industrially important nitrogen fixation and many more.

LE0989760 Prof AR Hamilton; Dr AP Micolich; Prof R Newbury; Dr OV Klochan; Dr T Martin; Dr L Taskinen

Approved Project Title **Upgrading Australia's highest magnetic field facility for high speed measurements of quantum devices at cryogenic temperatures**

2009 : \$ 100,000

Primary RFCD 2402 THEORETICAL AND CONDENSED MATTER PHYSICS

Partner Organisations & Collaborating Organisations

The University of New South Wales

Administering Organisation The University of New South Wales

Project Summary

Electronic devices are a trillion dollar industry, and underpin our information-based society. Research at liquid helium temperatures (below -270 °C) is an essential step in developing new electronic devices, and has resulted in breakthroughs such as the laser, the high capacity hard disc drive, and the high speed chips used for satellite telecommunications. This proposal will upgrade Australia's existing capabilities to allow ultra-high speed measurements of advanced nanoscale devices at temperatures close to absolute zero, and in magnetic fields up to 17 Tesla, allowing Australia to continue play a leading role in the development of quantum technologies.

Summary of Linkage Infrastructure, Equipment and Facilities Proposals

LE0989858 Dr SS Li; Dr N Valanoor; Prof C Zhang; Prof MA Green; Dr R Zheng; Dr D Yu; Prof AB Yu; Prof Y Zhao; Prof CC Sorrell; A/Prof AV Pan; Dr J Horvat; A/Prof AJ Ruys; Dr Y Liu; Dr MZ Quadir; Dr JZ Wang; Dr Y Zhang

Approved Project Title **Fabrication Facilities of Atomic-Scale and Nanostructured Materials for the Development of Novel Devices, Sensors, and Biomedical Components**

2009 : \$ 857,230

Primary RFCD 2918 INTERDISCIPLINARY ENGINEERING

Partner Organisations & Collaborating Organisations

The University of New South Wales

University of Wollongong

Australian Nuclear Science & Technology Organisation (ANSTO)

The University of Sydney

Administering Organisation The University of New South Wales

Project Summary

Australia's energy, mining, metallurgical, defence, biomedical industries are spearheading the advancement of technologies in the global competitive market. They are the engines of Australian economy's strength. Future progress of these industries will be largely driven by advances in materials. The installation of the proposed facilities will add a new dimension to high-level research performance and significantly enhance the capability for the development of advanced materials and biomedical components in Australia. The continual development of advanced material and biomedical components will potentially provide a sustainable means for meeting the increasing global challenge for the industries.

LE0989541 Prof BA Messerle; Prof TP Davis; Prof LD Field; Prof C Rae; A/Prof M Stenzel; Dr GE Ball; Dr JM Hook; Prof Dr T Maschmeyer; Prof CJ Kepert; Dr JP Mackay; Prof PW Kuchel; Prof G Otting; Mr JV Hanna

Approved Project Title **High Field Solid State and Multinuclear NMR Spectrometer for Structure/Function Analysis of Materials**

2009 : \$1,000,000

Primary RFCD 2499 OTHER PHYSICAL SCIENCES

Partner Organisations & Collaborating Organisations

The University of New South Wales

The University of Sydney

The Australian National University

Australian Nuclear Science & Technology Organisation (ANSTO)

Administering Organisation The University of New South Wales

Project Summary

Projects requiring the proposed infrastructure are aligned with two of the National Research Priorities. The research will lead to the development of novel materials, polymers and drugs, in particular nanoporous molecular frameworks, as well as reactive catalysts. The understanding of protein structure, disease and metabolic pathways which will be established using the proposed equipment will contribute to the priority area 'Promoting and Maintaining Good Health'. In addition, the new equipment will extend capabilities and postgraduate training in chemistry, nanotechnology, and biomedicine (the priority area of 'Frontier Technologies for Building and Transforming Australian Industries').

Summary of Linkage Infrastructure, Equipment and Facilities Proposals

LE0989680 Prof CC Sorrell; A/Prof DB Gore; Prof TD Waite; Prof RP Burford; Prof DB Hibbert; Dr IT Graham; A/Prof ID Goodwin; Prof M Westoby; Dr GC Hose; Prof N Kanawati; Dr MR Leishman

Approved Project Title **Interuniversity Elemental and Structural Analytical Facility**

2009 : \$ 300,000

Primary RFCD 2603 GEOCHEMISTRY

Partner Organisations & Collaborating Organisations

The University of New South Wales

Macquarie University

Administering Organisation The University of New South Wales

Project Summary

The items in this proposal will form the first stage of a larger facility for Elemental and Structural analytical programs in materials engineering and the natural sciences. The vision is to create an analytical facility which will have at its core and at the outset true collaboration leading to great national benefit. The equipment will be available via on-line access management allowing equitable and transparent access for users from multiple institutions. The resulting facility will complement existing microstructural capabilities and networks and will be open for all researchers and collaborators to use, further enhancing the national benefit.

LE0989347 Prof CG Tinney; Prof M Colless; Prof TR Bedding; Dr L Kiss; Prof KC Freeman; Prof JE Norris; Prof GS Da Costa; Prof JC Lattanzio; Dr BD Carter; Dr SC Marsden

Approved Project Title **CYCLOPS - A Better Way to Find Extrasolar Planets**

2009 : \$ 350,000

Primary RFCD 2401 ASTRONOMICAL SCIENCES

Partner Organisations & Collaborating Organisations

The University of New South Wales

Anglo-Australian Observatory

The University of Sydney

The Australian National University

Monash University

Administering Organisation The University of New South Wales

Project Summary

The primary scientific driver for this new facility is the search for planets orbiting other stars. Australian astronomers, and the Anglo-Australian Telescope, have played a leading role in this new frontier for astronomy, detecting 25 of the 250-odd extrasolar planets known to orbit nearby stars. The CYCLOPS project brings together a team of leading Australian astronomers to build on this track record with a new facility that further advances Australia's capabilities in both this field, and several other high-profile astronomical endeavours: including the study of seismology in stellar interiors, the detailed measurement of elemental abundances in stars throughout our Galaxy, and the mapping of spot features on the surfaces of stars.