

Summary of Linkage Infrastructure, Equipment and Facilities Proposals

New South Wales

The University of New South Wales

LE0882778 A/Prof MG Burton; Dr MR Cunningham; Prof JW Storey; A/Prof AJ Green; Dr A Walsh; Dr ST Maddison; Dr PG Edwards

Approved Project Title **Water vapour radiometers for millimetre-wave phase correction for the Australia Telescope**

2008 : \$ 201,224

Primary RFCD 2401 ASTRONOMICAL SCIENCES

Partner Organisations & Collaborating Organisations

The University of New South Wales

The University of Sydney

James Cook University

Swinburne University of Technology

CSIRO Australia Telescope National Facility

Administering Organisation The University of New South Wales

Project Summary

Australia has a tradition of excellence in astronomy. Inspired by wonder about the cosmos, it stimulates public interest in science, so leading to the training of highly skilled graduates. In turn, this drives the development of technologies needed to pursue the science. The nation has invested in the technology for millimetre-wave astronomy, building the first interferometer in our hemisphere. This equipment will capitalise on this investment, extending the capabilities of the Australia Telescope to maintain it as a front line instrument, attracting the best scientists here to use it. This will help nurture a vigorous radio-science community, one able to actively participate in the billion-dollar investment being made internationally in the field.

LE0882295 Prof PM Curmi; Dr RL Malby; Prof NE Dixon; Prof R Cavicchioli; Prof PJ Hogg; Dr PJ Lewis

Approved Project Title **X-ray crystallography resource for membrane proteins and large macromolecular complexes**

2008 : \$ 225,000

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Partner Organisations & Collaborating Organisations

The University of New South Wales

The University of Newcastle

University of Wollongong

Administering Organisation The University of New South Wales

Project Summary

Structural biology is the underpinning of biotechnology, biopharmaceuticals and rational therapeutic design. The most successful technique for determining the structures of proteins and large macromolecular complexes is x-ray crystallography. This proposal will set up a network of state of the art resources in the Sydney region to capitalise on expertise in these areas. The facilities will foster basic research and collaborations with industry, which will enhance Australia's profile and commercialisation of research. The facility will enhance the usage of the Australian synchrotron, producing flagship projects on the edge of technical possibilities.

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LE0882512 Prof IW Dawes; Em/Prof PL Bergquist; Prof RJ Trent; Prof RJ Scott; Prof PJ Hogg; Prof MR Wilkins; Prof JK Reichardt; Prof NH Hunt; Prof MS Baker; Prof PR Dunkley

Approved Project Title **Advanced high throughput functional genomics and gene mapping**

2008 : \$ 400,000

Primary RFCD 2702 GENETICS

Partner Organisations & Collaborating Organisations

The University of New South Wales

The University of Sydney

Macquarie University

The University of Newcastle

Administering Organisation The University of New South Wales

Project Summary

Infrastructure requested will expand the capacity of researchers in NSW to undertake experiments using state-of-the-art technologies based on the recent advances in genomic and proteomic analysis. It will ensure the retention of leading researchers in the exciting areas of functional genomics and systems biology as contribute to biomolecular research in medicine, agriculture and environmental biology, thereby providing major benefits to the wider community. The application aims to enhance existing genomic technologies by adding platforms that will increase the scope of experiments that can be performed as well as providing automation and increased capacity to handle the increasing demand for these techniques

LE0882855 Dr K Gaus; Prof LM Khachigian; A/Prof M Kavallaris; Prof MD Willcox; Prof IW Dawes; Prof SL Kjelleberg; A/Prof JJ Gooding; Prof R Amal; A/Prof LA Poole-Warren; Prof R Stocker; Prof NJ King; Prof MA Vadas; Prof CR Murphy; A/Prof FC Braet; A/Prof AD Conigrave; Prof AS Weiss; Prof TW Hambley; Dr P Thordarson; Dr AR Parker; Prof EM Goldys; Prof HK Nevalainen; Prof NH Packer; Dr JR Rabeau

Approved Project Title **High-resolution imaging of live cells and tissue**

2008 : \$ 900,000

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Partner Organisations & Collaborating Organisations

The University of New South Wales

The University of Sydney

Macquarie University

Administering Organisation The University of New South Wales

Project Summary

Understanding the machinery of life and developing technologies that support life's processes requires biological and physical scientists and engineers to monitor molecular events in living systems. The aim is to take advantage of very recent developments in light microscopy to enable the non-invasive imaging of live cells and tissue at a previously unreachable level of detail. The instruments will form the nucleus of a new imaging facility. Significant advances in research areas including vascular research, cancer, immunology, cell and molecular biology, functional genomics, biotechnology, nanotechnology and material engineering will be of major benefit both nationally and globally.

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LE0882782 Prof GW Greenleaf; Prof AS Mowbray; Prof T Carlin; Dr F Wheeler; Mrs H Culshaw; A/Prof AT Kenyon; Prof MA Adams

Approved **The Australian Legal Scholarship Library - enhancing research infrastructure for**

Project Title **Australian law**

2008 : \$ 169,776

Primary RFCD 2801 INFORMATION SYSTEMS

Partner Organisations & Collaborating Organisations

The University of New South Wales

University of Technology, Sydney

Macquarie University

The Australian National University

The University of Melbourne

University of Western Sydney

The Flinders University of South Australia

Administering Organisation The University of New South Wales

Project Summary

It is difficult to find Australian legal scholarship of the last 50 years because too little of it is available online or searchable from any central location. The Australian Legal Scholarship Library, located on AustLII, will remedy that by creating a comprehensive repository for Australian academic and non-profit law journals, law school repositories for all of their new scholarship no matter where it is eventually published, and smart methods of finding how legal documents relate to each other. People researching Australian law, whether for business, academic or community purposes, will benefit from better access to this wealth of expertise.

LE0882224 A/Prof AR Hamilton; Dr AP Micolich; Prof R Newbury; Dr A Fuhler; Dr T Martin; A/Prof PC Dastoor; Dr UK Divakar; Dr BJ Powell

Approved **Vector Magnetic Field Facility for Nanoscale Spintronic Materials and Device Research**

Project Title

2008 : \$ 440,000

Primary RFCD 2402 THEORETICAL AND CONDENSED MATTER PHYSICS

Partner Organisations & Collaborating Organisations

The University of New South Wales

The University of Newcastle

The University of Queensland

Administering Organisation The University of New South Wales

Project Summary

Electronic devices underpin a trillion dollar industry worldwide and are an essential part of modern life. Spintronics (spin-electronics) is an emergent technology that combines the electrical and magnetic properties of electrons to represent and process information. Spintronic chips are expected to be fast, versatile, capable of simultaneous data storage and processing, while at the same time consuming less energy. Industry analysts suggest the spintronic market will exceed \$10 billion. This facility will provide the critical infrastructure needed to study the electronic and magnetic properties of nanostructured materials, providing the underpinning knowledge to develop the next generation of spintronic devices.

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LE0882388 Dr P Le-Clech; A/Prof V Chen; A/Prof RM Stuetz; A/Prof GL Leslie; Dr SJ Khan; Dr HM Coleman; A/Prof DE Wiley; Prof TD Waite; Prof S Vigneswaran; Dr HK Shon
Approved Project Title **Advanced characterisation of organics and biopolymers in water and wastewater treatment**
2008 : \$ 130,000
Primary RFCD 2505 MACROMOLECULAR CHEMISTRY

Partner Organisations & Collaborating Organisations

The University of New South Wales
University of Technology, Sydney

Administering Organisation The University of New South Wales

Project Summary

Although membrane technology is increasingly used for water production, wastewater treatment and reclamation, fouling by complex bio-organics is a major limitation. The liquid chromatography-organic carbon detection and the Flow FFF equipments give detailed analyses of the complex organics, thereby helping to understand the fouling and organic removal mechanisms allowing process optimisation. The availability of these equipments will dramatically improve the quality of a number of research projects currently funded and being developed in Australia. This equipment would provide necessary infrastructure to keep Australian researchers world leaders in this research field (one of Australian top research priorities) and attract national and international collaborations.

LE0882833 Prof E Leonardi; Dr G Rosengarten; Prof BS Haynes; A/Prof CY Kwok; Dr T Trupke; Prof AG Aberle; Dr RE Nordon
Approved Project Title **Advanced infrared imaging facility for micro to macro systems**
2008 : \$ 120,000
Primary RFCD 2918 INTERDISCIPLINARY ENGINEERING

Partner Organisations & Collaborating Organisations

The University of New South Wales
The University of Sydney

Administering Organisation The University of New South Wales

Project Summary

This state-of-the-art infrared imaging equipment will provide significant benefits towards research and development in a wide variety of important areas such as: green house gas reduction through efficient and clean energy production and usage, using solar thermal and solar photovoltaic energy; understanding fire propagation in buildings, and efficiently growing stem cells. This equipment will help maintain Australia's position as a leader in these fields, and thus attract international customers to research and development services in rapidly growing markets such as alternative/renewable energy and biotechnology.

LE0883056 Dr SS Li; Prof C Zhang; Prof MJ Hoffman; Prof J Nowotny; Dr N Valanoor; Dr JA Stride; Dr T Bak; Prof HK Liu; Dr AV Pan; Dr ZP Guo; Dr J Horvat; A/Prof MR Phillips; Dr RY Yang; Dr R Zheng; Dr Y Liu
Approved Project Title **Vacuum Ultraviolet Spectrophotometer and Rapid Photoluminescence Mapping System for Development of Advanced Materials and Biosystems**
2008 : \$ 300,000
Primary RFCD 2914 MATERIALS ENGINEERING

Partner Organisations & Collaborating Organisations

The University of New South Wales
University of Wollongong

Administering Organisation The University of New South Wales

Project Summary

Australia's energy and renewable energy, defence, biosystem and pharmaceutical 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 is expected to be largely driven by advances in materials and biosystems. The installation of the proposed facilities will add a new dimension to high-level research performance and significantly enhance the capability for characterization of various forms of materials and biosystems in Australia. The continual development of advanced material and biosystem technology will potentially provide a sustainable means for meeting the increasing global challenge for the industries.

Summary of Linkage Infrastructure, Equipment and Facilities Proposals

LE0883038 A/Prof G Peng; Prof J Canning; Dr GE Town; Dr JL Holdsworth; A/Prof CY Kwok

Approved Project Title Upgrade key fabrication equipment for specialty fibre and device research and development

2008 : \$ 160,000

Primary RFCD 2917 COMMUNICATIONS TECHNOLOGIES

Partner Organisations & Collaborating Organisations

The University of New South Wales

The University of Sydney

The University of Newcastle

Administering Organisation The University of New South Wales

Project Summary

Australia remains a world leader in enabling technologies spanning information and communication, lasers, photonic sensing and diagnostics and much more. Underpinning much of this have been key backbone facilities at UNSW and at Sydney. Optical fibre research internationally is moving in new directions and for Australia to continue its leadership role, dedicated facilities for new generation structured optical fibres, which are already impacting much more significantly than conventional fibres, must be available. The upgrade at UNSW will position Australia to continue its leadership and introduce educational and vocational training for the new industries that will depend on these core technologies.

LE0883080 A/Prof RM Stuetz; Dr SJ Khan; Prof J Keller; A/Prof R Lim; Dr JF Mueller; Prof TD Waite; Prof BA Neilan; Prof S Vigneswaran; Dr P Le-Clech; Dr F Pomati; Dr ME Bartkow; Dr HK Shon; Dr K Rabaey; Dr PL Bond; Dr DJ Batstone

Approved Project Title Detection of Trace Concentrations of Chemical Contaminants in Urban Water Systems

2008 : \$ 490,000

Primary RFCD 2908 CIVIL ENGINEERING

Partner Organisations & Collaborating Organisations

The University of New South Wales

Sydney Water Corporation

The University of Queensland

University of Technology, Sydney

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 is becoming more prevalent. The presence of chemical contaminants such as low concentrations (ng/L) of pharmaceutically active compounds (PhACs), endocrine disruptors (EDCs) and other organic micropollutants in the aquatic environment has received much attention around the world including Australia due to their potential biological impact in urban water systems. The proposed equipment aims to establish analytical techniques and instrumental capacity for the selective analysis of chemical contaminants in order to improve our understanding of the fate of these compounds through different urban water systems.