

Summary of Linkage Infrastructure, Equipment and Facilities Proposals

New South Wales

The University of Sydney

LE0775598 A/Prof FC Braet; Prof SP Ringer; Dr L Soon; Dr Z Liu; Prof TW Hambley; Prof PA Lay; Prof GG Warr; Dr P Thordarson; Prof CR Murphy; Prof CG Dos Remedios; Prof AS Weiss; A/Prof RL Overall; Dr AR Parker; Dr IM Ramzan; Prof AL Cunningham; Dr PM Young; Prof LJ Copeland; Prof PR Munroe; Dr MA Stevens-Kalceff; Dr K Gaus; A/Prof JJ Gooding

Approved Project Title **High-Resolution Transmission Electron Tomographic Facility for Nanoanalytical Characterisation in the Life and Material Sciences**

2007 : \$1,000,000

Primary RFCD 2705 ZOOLOGY

Partner Organisations & Collaborating Organisations

The University of New South Wales

Administering Organisation The University of Sydney

Project Summary

The requested instrument will allow researchers in New South Wales to (i) visualize biological and physical samples in three-dimensions by electron tomography and modeling and (ii) image samples in a near-natural state and at high-resolution by cryogenic techniques. This essential research platform will provide novel information that faithfully presents both the surface and internal structure of samples down to the nanometre scale, enabling structural research to the highest scientific standards. The resulting knowledge is essential to diverse areas that range from development of cures to diabetes and cancer to creation of environmentally-friendly industrial catalysts to design of new nanoparticles and biosensors.

LE0775720 A/Prof H Chan; Prof PJ Stewart; Dr IC Larson; Dr PM Young; Dr D Traini; Prof AS Weiss; Prof M Murray; A/Prof F Dehghani; Dr DE Hibbs; Prof GG Warr

Approved Project Title **State-of-the-art high resolution thermal analysis suite for the life and material sciences**

2007 : \$ 100,000

Primary RFCD 3205 PHARMACOLOGY AND PHARMACEUTICAL SCIENCES

Partner Organisations & Collaborating Organisations

Monash University

Administering Organisation The University of Sydney

Project Summary

The facility, unique in Australia, will ensure that Australia will retain in a leading position in these research fields, will provide a basis to be competitive in international funding and support postgraduate training. The acquired equipments will strengthen the already existing infrastructures, enhancing understanding of intrinsic physico-chemical characteristics of various materials, to benefit the community such as characterising functional nanomaterials for high-tech technologies and use of inhalation aerosol drug delivery to benefit patients with respiratory diseases for an improved therapeutic and health outcome.

LE0775702 Prof DA Day; Prof DI Guest; Dr CR Warren; Prof SJ Simpson; Prof IR Kennedy; A/Prof RL Overall; Dr PM Smith; Dr C McArthur; Dr S Mansfield; Dr JC Gardiner; Dr RR McConchie; Prof LJ Copeland

Approved Project Title **Climate controlled physical containment 2 (PC2) and pathogen/ insect contained glasshouse facility**

2007 : \$ 337,000

Primary RFCD 2704 BOTANY

Partner Organisations & Collaborating Organisations

Administering Organisation The University of Sydney

Project Summary

The Australian economy relies heavily on agricultural production. The outcomes of the projects supported by these growth facilities will be of economic benefit to the nation by producing new knowledge of plant-insect and plant-pathogen interactions, how plants acquire essential nutrients, and how they respond to environmental stress. The research outcomes will benefit the environment by increasing legume production and so reducing land degradation and risk of nitrate contamination of waterways and lowering the environmental risk from agrochemicals by developing safer strategies for control of pests and diseases. In addition, a number of projects that will benefit from the glasshouse facilities aim to produce healthier and safer foods.

Summary of Linkage Infrastructure, Equipment and Facilities Proposals

LE0775771 Prof CJ Kepert; Prof Dr T Maschmeyer; Dr BJ Kennedy; Dr CD Ling; Dr SA Schmid; Prof Y Mai; Dr NJ Ekins-Daukes; Dr R Robinson; Dr JA Stride

Approved Project Title **Physical Property Measurement System for Materials Characterisation**

2007 : \$ 280,000

Primary RFCD 2502 INORGANIC CHEMISTRY

Partner Organisations & Collaborating Organisations

Australian Nuclear Science & Technology Organisation (ANSTO)

The University of New South Wales

Administering Organisation The University of Sydney

Project Summary

The Physical Property Measurement System (PPMS) is a versatile, state-of-the-art instrument that is capable of measuring a broad range of magnetic, electronic and thermodynamic materials properties. The instrument will greatly extend materials characterisation capabilities in the Sydney region, leading to major advances in fundamental and applied research and to essential postgraduate training in chemistry, physics and engineering. The importance of materials discovery and characterisation is vital to the development of new technologies over the next decade, as recognised in the national priority area 'Frontier Technologies for Building and Transforming Australian Industries'.

LE0775733 Prof B Vucetic; Prof VG Oklobdzija; Dr Y Li; Prof A Jamalipour; Dr G Mao; A/Prof J Yuan; Dr S Nooshabadi; A/Prof E Ambikairajah; Dr J Ning; A/Prof S Reisenfeld; Dr JI Agbinya; Dr SK Lal

Approved Project Title **Development of 4G wireless communication systems and wireless sensor networks**

2007 : \$ 200,000

Primary RFCD 2917 COMMUNICATIONS TECHNOLOGIES

Partner Organisations & Collaborating Organisations

The University of New South Wales

University of Technology, Sydney

Administering Organisation The University of Sydney

Project Summary

This LIEF application aims to build up the essential infrastructure for the development of future wireless technology and applications. The proposed project is the first step in a strategy to transform Australia's wireless communications research and industry to meet the challenges of future wireless systems and services. This strategy will ensure that Australia's unique domestic industrial and environmental needs are met in a timely manner, and at the same time position its wireless communications industry to pioneer, compete and dominate on an international level. It will give Australia a pathway to an entry into this potentially huge market segment, that will inevitably continue to grow.

LE0775643 Prof L Zhang; Dr J Wang; Prof HK Liu; Prof X Wang; Prof Y Mai; Prof L Ye; A/Prof Q Guo; Dr I Zarudi

Approved Project Title **A multiscale system for characterizing surface and subsurface properties of advanced materials**

2007 : \$ 380,000

Primary RFCD 2914 MATERIALS ENGINEERING

Partner Organisations & Collaborating Organisations

The University of New South Wales

University of Wollongong

Deakin University

Administering Organisation The University of Sydney

Project Summary

The installation of the proposed equipment will greatly strengthen the research capability and capacity of the leading Australian teams in the frontier areas of multiscale manufacturing and advanced materials technology. This will in turn lead to more significant innovations and sharpen Australia's competitive edge internationally. The facility will enable the advanced training of students and engineers most needed by the country.