

Summary of Linkage Infrastructure Applications for Funding to Commence in 2006

New South Wales

The University of Sydney

LE0668257 Prof MM Bilek; Dr N Valanoor; Prof DR McKenzie; Prof J O'Connor; Prof MA Green; Prof PA Lay; Dr NJ Ekins-Daukes; A/Prof BV King; A/Prof BW James; Dr GJ Conibeer; A/Prof SH Kable; Dr T Schmidt; Dr K Ostrikov; A/Prof MJ Hoffman; Dr DP Riley; A/Prof M Ferry

Approved Project Title **Combinatorial Deposition and Characterisation Facility for New Alloy Thin Film Materials**

2006 : \$1200,000

Primary RFCD 2914 MATERIALS ENGINEERING

Partner Organisation(s)

The University of Sydney
The University of New South Wales
The University of Newcastle

Administering Institution The University of Sydney

Project Summary

Australia's competitive edge in materials research is key to maintaining our economic prosperity. Infrastructure that enables our researchers to synthesize novel materials with precise control over composition and structure is crucial to maintaining our strengths in this field. The proposed infrastructure will accelerate progress on the preparation and characterisation of new alloy and nanostructured materials and will pay dividends by providing early access to the best materials. This will give our energy technology, biomedical engineering, tooling, electronics and mining industries a competitive edge. Access to this new generation equipment will enhance our pool of highly skilled materials technologists.

LE0668490 Prof BJ Eggleton; Dr DJ Moss; Dr A Mitchell; Prof SC Fleming; Prof CM de Sterke; Dr JA Bolger; Dr IC Littler; Prof MW Austin; Prof I Cosic

Approved Project Title **Ultra-high speed optical transmission test-bed for testing next generation photonic devices**

2006 : \$207,000

Primary RFCD 2917 COMMUNICATIONS TECHNOLOGIES

Partner Organisation(s)

The University of Sydney
RMIT University
National ICT Australia (NICTA)

Administering Institution The University of Sydney

Project Summary

This test facility will enable Australian researchers to validate optical technologies that are crucial for the development and deployment of ultrahigh speed optical networks in Australia. These next generation networks will make broadband internet connectivity more widespread and affordable for individuals and business. They provide the backbone for long haul, ultrahigh speed data transmission that link regional and urban communities within Australia and with the rest of the world, and enable a range of video on demand services including e-meetings, virtual classrooms and remote medical consultations. Demand for these services will drive new business opportunities for the Australian ICT sector.

LE0668542 Prof D Feng; Dr W Cai; Dr Z Wang; Prof DE Everitt; Prof PD Eades; Prof DB Hoang; Prof RJ Gibson; Prof EA Edmonds; A/Prof M Piccardi; Dr VC Gay; Prof HR Wu; Dr J Wang; Prof ME Orlowska; Prof X Zhou

Approved Project Title **Multimedia Computing, Production, Management and Distribution for HDTV and its Applications**

2006 : \$425,000

Primary RFCD 2801 INFORMATION SYSTEMS

Partner Organisation(s)

The University of Sydney
University of Technology, Sydney
RMIT University
The University of Queensland

Administering Institution The University of Sydney

Project Summary

Australia is the first country to launch digital TV nationally. Increasingly, this platform will be used for consuming multimedia information; also the HDTV infrastructure is being applied to other domains such as telemedicine/e-Health to lower costs and improve effectiveness. For Australia to be a step ahead in the development of these applications that are beneficial to a wider community, we have to look forward and establish adequate infrastructure for the development of needed applications of the future. It is strongly believed that by doing so we can position ourselves ahead of other communities in anticipating and providing essential services to our modern society and this in turn will greatly benefit the Australian economy.

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LE0668479 Prof NJ King; Prof IW Dawes; Prof LM Khachigian; Prof KW Beagley; Prof IL Campbell; Prof DI Cook; Prof J Black; Prof G Halliday; Prof JW McAvoy; Prof NH Hunt; Dr PW Gunning; Prof JD Pollard; Prof M Murray; Prof WJ Britton

Approved Project Title **Advanced Imaging Flow Cytometry Facility for NSW**

2006 : \$265,000

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Partner Organisation(s)

The University of Sydney
The University of New South Wales
The University of Newcastle

Administering Institution The University of Sydney

Project Summary

The scientific advances that will be possible with the acquisition of this novel, cutting-edge instrument will enhance the research outputs of all investigators using it. Projects where the investigation of single cells is used to elucidate the basic life processes of eukaryotic cells across all species of animals, including the investigation of both normal and abnormal function, will be immeasurably enhanced by both the qualitative and quantitative statistical information about these processes that is generated by this instrument. This in turn will inform new approaches to improve and maintain the health of the human and animal community.

LE0668302 Dr CD Ling; Dr BJ Kennedy; Dr SA Schmid; Dr R Robinson; Dr C Curfs; Prof TR Welberry; Prof RL Withers; Dr AP Stampfl

Approved Project Title **Floating-zone Crystal Growth Facility**

2006 : \$210,000

Primary RFCD 2502 INORGANIC CHEMISTRY

Partner Organisation(s)

The University of Sydney
ANSTO
The University of Newcastle
The Australian National University

Administering Institution The University of Sydney

Project Summary

Optical floating-zone furnaces are powerful and efficient tools for the discovery and characterisation of new materials. They are widely used in the solid-state chemistry, condensed-matter physics, materials science, and engineering communities. This optical floating-zone furnace, the first in Australia, will support and encourage the growing number of local researchers in these fields. It will allow them to take much better advantage of the new research reactor and synchrotron being constructed in Australia by maximising their ability to grow crystals of technologically and scientifically important materials, particularly electronic and magnetic materials, for fundamental and applied research at those facilities.

LE0668439 Prof Dr T Maschmeyer; Prof PA Lay; A/Prof SH Kable; A/Prof PH Karuso; Dr DB Gore; Dr KM Downard; Dr MD McLeod; Dr KA Jolliffe; Prof GA Johnston; Dr JR Hanrahan; Dr KJ Fisher

Approved Project Title **Elemental and Structural Analysis Facility Comprising a FTICR Mass Spectrometer and a CHNS Analyser**

2006 : \$730,000

Primary RFCD 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Partner Organisation(s)

The University of Sydney
Macquarie University

Administering Institution The University of Sydney

Project Summary

The determination of molecular structure is important in many fields of chemistry, biochemistry and material science. Without such determinations much chemical research would be viewed as incomplete and rendered unpatentable as well as unpublishable. The two state-of-the-art instruments to be purchased will improve the ability of a wide cross-section of researchers to rapidly characterize compounds important in fields as varied as medicinal chemistry, material science and geosciences. All types of chemical research, from fundamental to applied, will benefit from these instruments with clear and positive implications regarding societal impact.

Summary of Linkage Infrastructure Applications for Funding to Commence in 2006

LE0668549 Prof PR Reeves; Prof MJ Hynes; Dr EJ Newbigin; Dr RJ Daly; A/Prof EA Musgrove; Prof RJ Trent; Prof FW Nicholas; Dr A Andrianopoulos
Approved **Major upgrade of the computing hardware and software for the widely used BioManager**
Project Title **bioinformatic service**
2006 : \$280,000
Primary RFCD 2399 OTHER MATHEMATICAL SCIENCES

Partner Organisation(s)

The University of Sydney
Garvan Institute of Medical Research
The University of Melbourne

Administering Institution The University of Sydney

Project Summary

ANGIS has been an Australian national facility for bioinformatics since 1991, now with over 4000 users across 150 university schools or departments, government departments, hospitals and research institutes. The grant will provide the computer upgrade and software support needed to handle the enormous increases in database size and complexity and expand the service into new areas of bioinformatics. Bioinformatics is critical to much of modern biology, and the improvements will enhance research and data analysis in many areas of research, leveraging more value from the research being undertaken by users.

LE0668351 Dr JG Robertson; Prof PD Sackett; Prof WJ Couch; Prof RL Webster; Dr BJ Boyle; Dr M Colless; Prof DA Forbes; Dr MJ Drinkwater; Dr JC Lattanzio; Dr QA Parker; Dr BD Carter
Approved **Australian Membership of the International Gemini Partnership**
Project Title
2006 : \$1462,325
2007 : \$1521,200
Primary RFCD 2401 ASTRONOMICAL SCIENCES

Partner Organisation(s)

The University of Sydney
The Australian National University
The University of New South Wales
The University of Melbourne
CSIRO - Australia Telescope National Facility
Swinburne University of Technology
Anglo-Australian Observatory
The University of Queensland
Macquarie University
University of Southern Queensland
Monash University

Administering Institution The University of Sydney

Project Summary

No science better captures public attention than astronomy. Through its membership of the international Gemini consortium that operates the Gemini telescopes, Australia has assured its astronomers of access to two of the finest large ground-based telescopes. Located in Hawaii and Chile, the telescopes enable Australian astronomers to pursue major questions such as how the universe evolved, the nature of dark matter and dark energy, how galaxies formed, and how stars and their planets formed. Australia has long been known for 'punching above its weight' in astronomy, and membership of Gemini is a vital step in assuring that this prominence in the field is maintained.

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LE0668496 Prof J Trehella; A/Prof PM Curmi; Dr BC Mabbutt; Prof GG Warr; Prof HW Stokes; A/Prof R Cavicchioli

Approved Project Title Facility for Structural Analysis of Bio-Molecular Complexes and Self Assembly

2006 : \$950,000

Primary RFCD 2505 MACROMOLECULAR CHEMISTRY

Partner Organisation(s)

The University of Sydney

The University of New South Wales

Macquarie University

Administering Institution The University of Sydney

Project Summary

The research will advance our understanding of biological systems and this new knowledge will lead to innovative approaches to healthy living (therapeutics, drugs). We will have a better understanding of genetic diversity in the microbial environment and of biological adaptation that provides a foundation for environmental management as well as opportunities for biotechnology development. Studies of self-assembling systems will advance fundamental and applied research in biology, as well as our understanding of the forces driving self-assembly that can lead to the development of new materials. The facility will provide unique opportunities for collaboration with biotechnology and biomedical industry partners.