

Summary of Linkage Infrastructure Applications for Funding to Commence in 2006

Australian Capital Territory

The Australian National University

LE0668487 Prof MR Badger; Dr BJ Pogson; Adj/Prof CB Osmond; Dr DA Jones; Prof RE Williamson; Dr JR Evans; Dr S Von Caemmerer; Dr AB Nicotra; Dr C Linde; Dr U Mathesius; Prof MC Ball; Prof GD Farquhar; Dr J Masle; Dr RT Furbank; Dr MA Ayliffe; Dr DG Bonnett; Dr T Condon; Dr RG White; Dr RE Munns; Dr PJ Larkin

Approved Project Title **Plant Phenomics Imaging and Analysis Facility**

2006 : \$553,000

Primary RFCD 2704 BOTANY

Partner Organisation(s)

The Australian National University
CSIRO Plant Industry

Administering Institution The Australian National University

Project Summary

The Australian plant science community faces a major challenge in being able to comprehensively characterise the performance or phenotype of plants in a high throughput manner necessary for post-genomic era science with model plant species, smart-breeding of crop plants and to assess plant-environment interactions. Our capacity to accurately 'phenotype' either a new mutant or a new variety has fallen behind our capacity to generate novel genetic material. This facility will significantly boost research outputs across a range of disciplines pivotal to Australia's future agricultural plant productivity and environmental sustainability.

LE0668345 Dr JJ Brocks; Prof GD Farquhar; A/Prof K Grice; Dr RR Haese; Dr R Shalliker

Approved Project Title **A highly sensitive mass spectrometer for trace analysis of biomarker molecules to study changes in recent and ancient environments**

2006 : \$390,700

Primary RFCD 2603 GEOCHEMISTRY

Partner Organisation(s)

The Australian National University
Geoscience Australia
Curtin University of Technology
University of Western Sydney

Administering Institution The Australian National University

Project Summary

Maintaining the quality of water and soil is a critically important issue for Australia's economic and social development. To be able to predict and plan the future of our natural assets, it is critical to understand their ecological past and their state before and after European settlement. We will utilize the new instrument to develop and apply innovative technologies providing Australia with new knowledge about the causes and effects of toxic cyanobacterial blooms, eutrophication, and contamination of reservoirs by bush-fires. The new facility will also supply advanced oil fingerprinting techniques to the petroleum industry minimizing exploration risk and increasing the chance of the discovery of new oil deposits.

LE0668417 Dr WJ Foley; Prof M Westoby

Approved Project Title **New-Generation Near Infrared Spectrometer for Ecological Research**

2006 : \$108,667

Primary RFCD 3008 ENVIRONMENTAL SCIENCES

Partner Organisation(s)

The Australian National University
Macquarie University

Administering Institution The Australian National University

Project Summary

Sustainable use of the natural resources of Australia depends on studies that define how ecological communities respond to disturbance and change. An important part of this is understanding how the composition of plants and animals such as insects, change reflecting for example, increased concentrations of toxins. However making large numbers of analyses is expensive and slow. Near infrared spectroscopy is a non-destructive analytical method that allows the composition of materials to be deduced based on their interaction with light. Adopting these methods in ecology will allow many samples to be analysed quickly and cheaply and also stop waste and duplication of analytical work.

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LE0668026 Dr TR Griffiths; Dr D Langmore; Dr NP Brown; Prof DM Horner; Prof P Jalland; Prof SF Macintyre; Prof JS McCalman; Mr GJ McCarthy; Prof SR Garton; Prof JI Roe; Prof AG Mackinnon; A/Prof PJ Buckridge; Prof GJ Davison

Approved **The Australian Dictionary of Biography Online and Emerging National Information Systems:**

Project Title **Networking Research Capability**

2006 : \$350,000

Primary RFCD 4301 HISTORICAL STUDIES

Partner Organisation(s)

The Australian National University

The University of Melbourne

The University of Sydney

Macquarie University

University of South Australia

Griffith University

Monash University

National Library of Australia

National Museum of Australia

National Archives of Australia

Administering Institution The Australian National University

Project Summary

The Australian Dictionary of Biography Online and Emerging National Information Systems Project will link the dictionary's scholarly biographical articles with the resources of national cultural institutions, making visible and available to researchers everywhere an unprecedented number of sources for the lives of historical actors and a much larger volume of contextual information about them. Its leading-edge cultural informatics will make more efficient use of existing information infrastructure and stimulate further development. Researchers using the service will be enabled to make conceptual advances and produce new knowledge about Australian history and society.

LE0667994 Prof C Jagadish; Prof JS Williams; Prof B Luther-Davies; Prof YS Kivshar; Dr HH Tan; Dr L Fu; Dr Q Gao; Dr DN Neshev; Prof L Faraone; A/Prof JM Dell; A/Prof BD Nener; Dr CA Musca; Dr G Parish; Prof BJ Eggleton; Prof CM de Sterke; Prof RC McPhedran; Dr DJ Moss; Dr C Grillet; A/Prof DM Kane; Dr MJ Withford; A/Prof EM Goldys; A/Prof JM Dawes; A/Prof KP Esselle; Prof GM Lu; Prof H Rubinsztein-Dunlop; Dr J Zou; Mr AD Rakic; Dr P Meredith; Dr CJ Vale; Dr S Madden; Dr D Choi; Dr VS Craig; Dr YJ Wong-Leung; Dr M Buda; Prof WZ Krolikowski

Approved **National Nanolithography Facility**

Project Title

2006 : \$1000,000

Primary RFCD 2918 INTERDISCIPLINARY ENGINEERING

Partner Organisation(s)

The Australian National University

The University of Western Australia

The University of Sydney

Macquarie University

The University of Queensland

Administering Institution The Australian National University

Project Summary

Nanotechnology is expected to have a major impact on quality of life and global economy. It is predicted to generate revenues as big as the ICT sector in 20 years time. The National Nanolithography Facility will enhance the Australian capability in the field of nanoscale science and technology. This will enable Australian researchers to achieve major impacts in many areas of nanotechnology with a strong potential impact on industry sectors such as computers, communications, defence, health, bio-security. This facility has the potential for developing new technologies of fundamental as well as applied interest.

Summary of Linkage Infrastructure Applications for Funding to Commence in 2006

LE0668155 Prof BL Kennett; Dr GS Heinson; Prof SY O'Reilly
Approved Project Title Instrumentation for combined seismic and electromagnetic Earth sounding
2006 : \$350,000
Primary RFCD 2602 GEOPHYSICS

Partner Organisation(s)
The Australian National University
The University of Adelaide
Macquarie University

Administering Institution The Australian National University

Project Summary

The set of geophysical recorders will provide the means to enhance understanding of the structure of the Australian continent in 3-D. The interpretation of multiple images of Earth structure will help to link features in the crust and mantle beneath, and provide controls on the evolution and assembly of the present continent, with a major contribution to possible geotranssects as recommended in the 2003 National Strategic Plan for the Geosciences. Combining seismic and electromagnetic methods will provide both geochemical and geophysical constraints, e.g., on zones of alteration and shear with the potential for deep mineralisation.

LE0668442 Prof BP Schmidt; A/Prof AJ Green; Dr A Melatos; Dr RN Manchester; Dr MJ Drinkwater

Approved Project Title The Australian Virtual Observatory
2006 : \$330,000
Primary RFCD 2401 ASTRONOMICAL SCIENCES

Partner Organisation(s)
The Australian National University
The University of Sydney
The University of Melbourne
The University of Queensland
OTHER Australia Telescope National Facility

Administering Institution The Australian National University

Project Summary

The Australian Virtual Observatory, which is part of the International Virtual Observatory is an ambitious program to consolidate all astronomical data online, in a form which will be accessible to both professional astronomers and also to the wider public. The project will link data, computational resources, high level software and people in an advanced network, which will maximise investment in one of Australia's highest profile scientific programs.

LE0668019 A/Prof TJ Senden; A/Prof MA Knackstedt; Prof WV Pinczewski; Prof ST Hyde; Dr A Sakellariou; Dr AP Sheppard; Dr V Robins; Dr CH Arns; Dr T Aste; Dr RM Sok; Dr A Limaye; Dr Y Cinar

Approved Project Title An Advanced Computed Tomography Facility - high capacity and high resolution for dynamic studies in porous and granular materials.
2006 : \$240,000
Primary RFCD 2499 OTHER PHYSICAL SCIENCES

Partner Organisation(s)
The Australian National University
The University of New South Wales

Administering Institution The Australian National University

Project Summary

Characterising complex materials in 3D is an emerging discipline which is driving design concepts for new materials and assists in understanding properties of real world materials. The ANU/UNSW collaboration has developed an internationally recognized program in this emerging discipline and successfully applied the technology to applications in the oil and gas industry, groundwater remediation, tissue engineering, medical diagnosis of osteoporosis, granular packing and the design of new materials. The present application will give the collaboration the ability to study a larger number of systems and to image the dynamics of materials in 3D. This will significantly broaden the impact and scope of the applications of this new technology.