Summary of Linkage Infrastructure, Equipment and Facilities Proposals

Victoria

The University of Melbourne

LE0882936 Dr SK Arndt; Dr S Livesley; A/Prof J Beringer

Approved Project Title **MEGA - Mobile Ecosystem Gas-exchange Analyser for Australian landscapes**

2008 : $ 135,000

Primary RFCD 2799 OTHER BIOLOGICAL SCIENCES

Partner Organisations & Collaborating Organisations

The University of Melbourne
Monash University

Administering Organisation The University of Melbourne

Project Summary

This Mobile Ecosystem Gas-exchange Analyser will be able to continuously monitor water, energy, carbon and nitrogen exchange in a multitude of uniquely Australian ecosystems: from low-canopy forests (up to 20m) and afforested plantations to wetlands and agricultural grazing, cropping, horticulture and viticulture systems. This research capacity provides benefits and opportunities such as 1) community resource 2) monitoring tool for carbon and water budgets 3) mobile process laboratory 4) data for model validation. The susceptibility and vulnerability of ecosystems to changing temperature and extended drought will be determined.

LE0882890 A/Prof KJ Barnham; Prof AG Wedd; Prof AI Bush; Prof CL Masters; Dr PS Donnelly; Dr DI Stapleton; A/Prof R Cappai; Dr TD Mulhern

Approved Project Title **Investigating protein/protein interactions**

2008 : $ 130,000

Primary RFCD 2504 ANALYTICAL CHEMISTRY

Partner Organisations & Collaborating Organisations

The University of Melbourne

Administering Organisation The University of Melbourne

Project Summary

To establish and maintain a prominent position in scientific research, Australian scientists must have access to state of the art technology. The Bio21 Institute is a multidisciplinary research centre specialising in medical agricultural and environmental science and is ideally suited to house an SPR facility. SPR provides unique functional, kinetic and thermodynamic information on molecular interactions which give rise to both physiological and pathological outcomes. A detailed knowledge of molecular interactions is fundamental to the understanding of all biological systems. When placed at the Bio21 Institute, the facility will foster the development of diversified collaborations between the applicants and the wider research community.

LE0882889	Prof PA Grimshaw; Prof A Curthoys; Prof SL Swain; Prof ME Allen; Reader DE Kirkby; A/Prof JE Long; A/Prof PA Russell; Prof P Brock; Dr FK Paisley; Mr GJ McCarthy; Prof R Frances; A/Prof JB Smart; Dr TN Burrows; Prof JS McCalman; Ms J Evans; Ms J Heazlewood; Ms MH Shapley; Mr B Dewhurst
Approved Project Title	**History, the archives and new technologies: developing the Australian women's archives project**
2008 :	$ 150,000
Primary RFCD	4301 HISTORICAL STUDIES

Partner Organisations & Collaborating Organisations

The University of Melbourne
Monash University
The University of Adelaide
The University of Western Australia
La Trobe University
The University of Sydney
Griffith University
Edith Cowan University
National Foundation for Australian Women
Australian Catholic University
National Library of Australia
Public Record Office of Victoria
The Australian National University
RMIT University

Administering Organisation The University of Melbourne

Project Summary

This project will create and define generic tools and services to increase the productivity of those involved with the creation, maintenance and use of source material for humanities research. It will provide a pathway to move this infrastructure onto a more sustainable footing and address issues of information overload, authority and quality facing researchers in the networked digital age. This imperative is seen by scholars and representatives of the nation's major collecting institutions as a primary limiting factor in the contemporary research environment. The project will enhance Australia's reputation as a world leader in the development of web-based information infrastructure to support research and scholarship.

LE0882471	Prof I Marusic; Prof J Soria; Prof MS Chong; A/Prof A Ooi; Dr DR Honnery; Dr JP Monty; Dr N Hutchins; Dr CY Wong
Approved Project Title	**Three-Dimensional Optical Laser Velocimetry for the HRNBLWT (High Reynolds Number Boundary Layer Wind Tunnel)**
2008 :	$ 430,000
Primary RFCD	2918 INTERDISCIPLINARY ENGINEERING

Partner Organisations & Collaborating Organisations

The University of Melbourne
Monash University

Administering Organisation The University of Melbourne

Project Summary

The experimental information that can be gained from this infrastructure would lead to significant advances in understanding turbulent flows, which would impact a broad range of engineering and geophysical fields. Some specific examples include the development of efficient turbulence control strategies for the reduction of skin-friction drag and improved combustion processes, resulting in not only better fuel efficiency for vehicles but also reduced CO2 and pollutant emissions. Significant advances could also be made in the area of understanding the dispersion of particles, including pollutants, in the atmosphere; wind turbine design and implementation strategies, and climate change modelling.

LE0883073 A/Prof M Palaniswami; Prof R Kotagiri; Prof RS Tucker; A/Prof IM Atkinson; Dr PN Pathirana; Dr C Leckie; A/Prof PA Mendis; A/Prof R Buyya; Dr MR Duckham; A/Prof SK Halgamuge; Dr GS Woods; Dr L Kulik; Dr E Tanin; A/Prof S Dey; A/Prof B Vo; Prof KA Smith-Miles; Prof M Zukerman

Approved Project Title **BigNet - A Distributed Wireless Sensor Network Testbed**

2008 : $ 200,000

Primary RFCD 2911 ENVIRONMENTAL ENGINEERING

Partner Organisations & Collaborating Organisations

The University of Melbourne
James Cook University
Victorian Partnership for Advanced Computing
Deakin University
National Safety Agency

Administering Organisation The University of Melbourne

Project Summary

The infrastructure developed will be of national /international significance, given the rapid emergence of wireless sensor networks. This integrated facility will allow Australia to be a world leading player in the research and technology development as well as the socially responsible deployment of sensor networks. The facility has the explicit aim to ensure that Australia is a technology leader rather than solely a technology user in sensor networks. The test facility will mirror practical requirements for WSN implementation in the Great Barrier Reef and in timber plantation, which would offer substantial economic benefits to Australia.

LE0882913 Dr AW Purcell; Dr NA Williamson; Prof J Rossjohn; A/Prof M Aguilar; Prof J McCluskey; A/Prof TJ Lithgow; Prof RA O'Hair; Dr RB Pearson; Prof P Mcintyre

Approved Project Title **Mass spectrometry facility for the quantitation and analysis of post-translationally modified peptides**

2008 : $ 300,000

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Partner Organisations & Collaborating Organisations

The University of Melbourne
Monash University
Peter Maccallum Cancer Institute

Administering Organisation The University of Melbourne

Project Summary

This proposal will address a gap in our mass spectrometry capabilities and aid in our understanding of the cellular immune response and investigate the chemical diversity of the targets of immunity. This proposal has broad implications in the basic immunology of antigen presentation, in biomarker discovery as well as in the design of new vaccines in infectious disease and cancer and the development of therapies for autoimmune diseases. In addition to these key scientific outcomes this project will also facilitate the training of several new personnel in a skill area for which there is a critical shortage (mass spectrometry) and promote cross-disciplinary skills (immunology, biochemistry, proteomics).

LE0882576 A/Prof GG Qiao; Prof F Caruso; Prof WA Ducker; Prof GP Simon; Prof WD Cook; Dr X Zhang; Dr AJ O'Connor; Prof GW Stevens; Dr A Blencowe; A/Prof GV Franks; Dr SE Kentish; Dr RR Dagastine; A/Prof DE Dunstan; Dr SA Bateman; Dr N Birbilis; Dr JS Forsythe

Approved Project Title **Polymer Characterization Facility (PCF)**

2008 : $ 588,000

Primary RFCD 2505 MACROMOLECULAR CHEMISTRY

Partner Organisations & Collaborating Organisations

The University of Melbourne
Monash University
CSIRO-MMT

Administering Organisation The University of Melbourne

Project Summary

Future development of macromolecular and biotechnologies have the potential to revolutionize everyday life. Current applications include plastics for engineering, diagnostic devices for biochemical analysis, polymer therapeutics for drug delivery and prosthesis with specific functions. The proposed facility will provide the analytical tools required to probe and develop advanced materials with application in medicine, agriculture, composites, cosmetics, communications and electronics.

LE0882580 A/Prof RE Scholten; Prof KA Nugent; A/Prof A Roberts; Prof S Prawer; Dr AD Greentree; Prof GW Baxter; A/Prof SF Collins; Prof H Rubinsztein-Dunlop

Approved Project Title **Laser facility for quantum optics, imaging, and fabrication**

2008 : $ 400,000

Primary RFCD 2404 OPTICAL PHYSICS

Partner Organisations & Collaborating Organisations

The University of Melbourne
Victoria University
The University of Queensland

Administering Organisation The University of Melbourne

Project Summary

The laser facility will play a role in advancing high-profile leading-edge Australian research underpinning a diverse range of technologies, from quantum communications and quantum computing, to biomedical imaging, fibre sensing and nanofabrication.

LE0882509 A/Prof JP Walker; Prof W Moran; A/Prof JM Hacker; Prof CT Simmons; Prof DA Gray; A/Prof MJ Lynch; Dr L Ge

Approved Project Title **High resolution airborne radar for environmental research: soil moisture, vegetation, salinity and terrain mapping**

2008 : $ 400,000

Primary RFCD 2605 HYDROLOGY

Partner Organisations & Collaborating Organisations

The University of Melbourne
The Flinders University of South Australia
The University of Adelaide
Curtin University of Technology
The University of New South Wales

Administering Organisation The University of Melbourne

Project Summary

There is a rapidly increasing demand for a range of environmental data. For example, information on soil moisture status is required for efficient and sustainable water use. Moreover, irrigation practices and large scale clearing have led to serious land degradation through increased salinity from rising water tables. Combined soil moisture and salinity measurement will provide important insight to this complex issue. Further, understanding the complex and rich biodiversity of Australian flora and its adaptation to droughts and fire is essential to ensuring Australian ecosystem longevity. Knowledge of flora changes through time as a function of soil moisture content and salinity is key to gaining this understanding.

LE0882938	Prof RL Webster; Prof FH Briggs; Prof JM Dickey; A/Prof MJ Lynch; Prof LG Staveley-Smith; A/Prof AJ Green; Prof M Bailes; Dr CJ Lonsdale; Dr BJ Boyle; Dr LJ Greenhill; Prof RJ Sault
Approved Project Title	**MIRA Widefield Array: a new low frequency telescope**
2008 :	$ 750,000
2009 :	$ 680,000
Primary RFCD	2401 ASTRONOMICAL SCIENCES

Partner Organisations & Collaborating Organisations

The University of Melbourne
The Australian National University
University of Tasmania
Curtin University of Technology
The University of Western Australia
The University of Sydney
Swinburne University of Technology
MIT
CSIRO - Australia Telescope National Facility
Smithsonian Astrophysical Observatory

Administering Organisation The University of Melbourne

Project Summary

A new radio-quiet site for international radio astronomy is being developed at Boolardy in Western Australia. We have constructed a low frequency test array on the site, and established that the site is excellent for radio astronomy. We plan to build a telescope which will observe the early universe, when stars and galaxies where first born. This will be the first telescope capable of this type of measurement of the early universe. In addition, the telescope will measure the solar wind, and its potential interactions with the Earth.