Summary of Linkage Infrastructure, Equipment and Facilities Proposals by State & Organisation to commence in 2007

New South Wales	
Macquarie University	4
The University of New South Wales	7
The University of Newcastle	1
The University of Sydney	6
University of Wollongong	2
New South Wales	**20**
Victoria	
Deakin University	1
La Trobe University	3
Monash University	9
RMIT University	1
Swinburne University of Technology	1
The University of Melbourne	9
Victoria	**24**
Queensland	
Griffith University	2
James Cook University	1
Queensland University of Technology	1
The University of Queensland	7
Queensland	**11**
South Australia	
The Flinders University of South Australia	1
The University of Adelaide	3
University of South Australia	1
South Australia	**5**
Western Australia	
Curtin University of Technology	1
Murdoch University	1
The University of Western Australia	5
Western Australia	**7**
Tasmania	
University of Tasmania	1
Tasmania	**1**
Northern Territory	
Charles Darwin University	1
Northern Territory	**1**
Australian Capital Territory	
The Australian National University	4
Australian Capital Territory	**4**
Total Number of Successful Proposals	**73**

Summary of Linkage Infrastructure, Equipment and Facilities Proposals by State & Organisation to commence in 2007

New South Wales

Macquarie University

LE0775587 Prof PL Bergquist; Prof MS Baker; Dr BC Ferrari; Prof IW Dawes; Prof RM Graham; Dr D Stock; Prof RJ Trent; Prof NH Hunt; Prof JK Reichardt; Prof RJ Scott

Approved Project Title **Correlating Genomics and Proteomics for Systems Biology: integrating the '-omics'**

2007 : $ 532,000

Primary RFCD 2702 GENETICS

Partner Organisations & Collaborating Organisations

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

Administering Organisation Macquarie University

Project Summary

Acquisition of the infrastructure requested will maintain and extend the expertise developed by researchers in NSW and will allow retention and attraction of leading researchers who can contribute to understanding how genes and proteins interact in the development of the organism - the central focus of systems biology. The enhancement of the facility will allow a better understanding of biomolecular interactions in health and disease, providing both community and national benefits. The focus of this LIEF application is to provide infrastructure platforms for the study of the systems biology of organisms and additional capacity by the facility for the expected increased demand for this technology in this new area.

LE0775529 A/Prof PA Haynes; Dr SJ Cordwell; A/Prof BR Herbert; Dr MA Djordjevic; Prof MS Baker; A/Prof MP Molloy; A/Prof PH Karuso; Dr F Liu; Dr TH Roberts; A/Prof RD Willows; Dr J Jamie; Prof HK Nevalainen

Approved Project Title **Structural elucidation by chemical degradation mass spectrometry using a linear ion trap with electron transfer dissociation**

2007 : $ 300,000

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Partner Organisations & Collaborating Organisations

The University of Sydney
University of Technology, Sydney
The Australian National University

Administering Organisation Macquarie University

Project Summary

The mass spectrometric instrumentation that we plan to acquire represents a true breakthrough in technology, and will be the first of its kind in operation in Australia. The instrument to be purchased will improve the ability of a wide cross section of researchers to characterize compounds important in fields as varied as medical research, agricultural biotechnology, and natural product characterization. All types of chemical research, from fundamental to applied, will benefit from access to this system, which has clearly positive implications with regard to societal impact. Implementing this type of frontier technology is an essential step in maintaining the world class capabilities of the Australian research community.

LE0775523 Dr QA Parker; Prof KC Freeman; Dr GF Lewis; Prof M Steinmetz; Prof BK Gibson; Dr J Bland-Hawthorn

Approved Project Title **A new field plate for the 6DF multi-object spectroscopy system on the Anglo-Australian Observatory's Schmidt telescope**

2007 : $ 223,000

Primary RFCD 2401 ASTRONOMICAL SCIENCES

Partner Organisations & Collaborating Organisations

The University of Sydney
The Australian National University
Anglo-Australian Observatory
University of Central Lancashire
Astrophysical Institute Potsdam

Administering Organisation Macquarie University

Project Summary

Astronomy engages the public like no other science. This flagship project is Australian based, uses Australian technology and although international has a strong Australian flavour in scientific leadership and participation. The experiment will yield a massive leap forward in our understanding of our Milky Way Galaxy. Australia 'punches above its weight' in astronomy because of our innovation, ability to maximise limited resources and to cannily target projects with high return for the investment applied. The same rationale here is delivering excellent science. To secure this return into the second, most productive phase requires modest additional investment by Australia and our partners in the necessary project infrastructure.

LE0775668	Dr MJ Withford; Prof JA Piper; Dr A Fuerbach; Dr G Marshall; A/Prof JM Dawes; Prof BJ Eggleton; Prof CM de Sterke; Dr SD Jackson; Dr DG Lancaster
Approved Project Title	**Direct write - microphotonics fabrication facility**
2007 :	$ 210,000
Primary RFCD	2917 COMMUNICATIONS TECHNOLOGIES

Partner Organisations & Collaborating Organisations

The University of Sydney
Defence Science & Technology Organisation (DSTO)

Administering Organisation Macquarie University

Project Summary

Direct write-microfabrication, where an ultrafast laser is focussed to a small, intense spot and translated under computer control with respect to a target sample, has emerged as a significant enabling technology creating new opportunities in microphotonics. The proposed facility will enable researchers to modify the internal properties of glass blocks and write 'optical wires' (or waveguides). By combining waveguides with other laser written functional components researchers will develop devices capable of processing optical information. Outcomes will include demonstrations of compact lasers and slow light generation.

The University of New South Wales

LE0775739	Prof MA Adams; Dr SD Maleknia; Dr J Jankowski; Prof RE McMurtrie; Prof D Eamus; Prof JP Conroy; Prof H Rennenberg; Dr MM Barbour; Prof H Griffiths; Prof TE Dawson; Dr E Dreyer; A/Prof IM Suthers; Prof CG Skilbeck; Dr BP Kelaher; Prof D Tissue
Approved Project Title	**Environmental Research Isotope Ratio Mass Spectrometer (ERIRMS)**
2007 :	$ 135,000
Primary RFCD	2707 ECOLOGY AND EVOLUTION

Partner Organisations & Collaborating Organisations

University of Western Sydney
University of Technology, Sydney

Administering Organisation The University of New South Wales

Project Summary

The projects supported by this facility are esential to: sustainable management of Sydney's surface and groundwater; understanding food webs and trophic interactions in Sydney Harbour and elsewhere on the eastern seaboard; developing predictive models for the impacts of climate change on Australia's forests, especially carbon sequestration and water yield; understanding the trade-offs involved in managing fire risks through prescribed burning, especially trade-offs involving carbon and water; and understanding and predicting air quality and the effects of emissions from cars, industry, fires and natural sources.

LE0775513	Prof AA Adesina; Prof GH Fleet; Prof PL Rogers; A/Prof TQ Pham; Dr FP Lucien; A/Prof EM Kennedy; A/Prof JC Mackie; Dr SW Donne; Prof WS Price
Approved Project Title	**Advanced Process Tomography Research Facility for Multiphase System Studies**
2007 :	$ 400,000
Primary RFCD	2906 CHEMICAL ENGINEERING

Partner Organisations & Collaborating Organisations

The University of Newcastle
University of Western Sydney

Administering Organisation The University of New South Wales

Project Summary

The establishment of an advanced process tomography facility at UNSW has several important national benefits, including; increased capacity of the collaborating institutions to train highly qualified personnel to meet new and growing demands in the processing industries; the transfer of research-based cheap and efficient technologies to our industries to enhance their position in a competitive global market; the improvement in our culture and living standards through superior and inexpensive food, biomedical, water, environmental, materials and military products; and the strengthening of Australian position, through international linkage projects, as a world leader in the development of novel processing technologies.

LE0775548 Prof R Amal; Prof GM Lu; Dr GS Kannangara; Dr VK Pareek; Dr K Chiang; Dr JA Scott; Dr AJ Smith; A/Prof C Barner-Kowollik; Dr AS Milev; Dr NH Tran
Approved Project Title **Advanced characterisation facilities for functional nanostructured materials**
2007 : $ 180,000
Primary RFCD 2918 INTERDISCIPLINARY ENGINEERING

Partner Organisations & Collaborating Organisations

The University of Queensland
University of Western Sydney
Curtin University of Technology

Administering Organisation The University of New South Wales

Project Summary

A critical factor that enhances frontier research is a set of advanced core research experimental facilities for material characterisation purposes. The proposed equipment aims to: (1) provide research facilities for advanced nanomaterial research; (2) improve national competitiveness and growth in a knowledge-based economy; and (3) foster local talented researchers in order to meet the strategic needs of the nation for a sustainable environment. These activities will revitalise Australia's leading role in creating new technologies with particular relevance to using advanced nanostructures for the production of clean air and water, and sustainable energy alternatives.

LE0775602 A/Prof MG Burton; Prof JW Storey; Dr MR Cunningham; A/Prof AJ Green; Dr PJ Barnes; A/Prof MJ Wardle; Prof Y Fukui; Prof Dr J Stutzki
Approved Project Title **A ground station for the NANTEN2 sub-millimetre wave telescope**
2007 : $ 100,000
Primary RFCD 2401 ASTRONOMICAL SCIENCES

Partner Organisations & Collaborating Organisations

The University of Sydney
Macquarie University
University of Nagoya
University of Cologne

Administering Organisation The University of New South Wales

Project Summary

Australia has a tradition of excellence in astronomy. Inspired by our natural wonder about the cosmos, it helps stimulate public interest in science, so leading to the training of highly skilled graduates. This in turn drives development of technologies needed to pursue the science. The nation has invested in technology for millimetre-wave astronomy, building the first interferometer in our hemisphere. We aim to capitalise on this investment, leveraging it to access a frontline facility under construction on the Atacama plateau in Chile. This will help nurture a vigorous radio-science community, one able to actively participate in the billion-dollar investment being made by the international community in astronomical facilities there.

LE0775746 A/Prof M Guilhaus; Prof IW Dawes; Prof PD Steinberg; Dr M Manefield; Prof K Ho
Approved Project Title **GC/MS facility for medical, bioanalytical and environmental research**
2007 : $ 102,000
Primary RFCD 2703 MICROBIOLOGY

Partner Organisations & Collaborating Organisations

Administering Organisation The University of New South Wales

Project Summary

The research will contribute to the bioremediation of heavily polluted sites in Sydney and the knowledge gained and the technology developed will be applicable to sites all over the world. Fundamental knowledge in Systems Biology will have applications to advance Australian export industries based on fermentation. Advances in chemical ecology and biotechnology will impact in areas such as contact lenses, implants, therapeutics and water treatment. Probing pituitary hormone action will lead to greater understanding of health issues such as abnormal body composition, obesity and diabetes.

LE0775489 Prof VJ Johnson; A/Prof J Mendelssohn; Mr AM Wells; Prof NC Brown; A/Prof J Bennett; Dr DS Losche; Mr H Amos; Dr CM De Lorenzo; Prof R Benjamin; Dr CD Moore; Dr AJ Callaway; Dr A Marsh; Dr D Palmer; Dr CM Speck; Mr R Choate; Mr R Butler; Dr A Gray; Ms J Volker; Ms M Burn; Mr AD Bond; Ms AD Ryan; Ms S Schmocker; Ms EH Ellis; Mr RA Neville; Ms JM Ewington

Approved Project Title **Dictionary of Australian Artists Online, DAAO: public release version**

2007 : $ 300,000

Primary RFCD 4102 VISUAL ARTS AND CRAFTS

Partner Organisations & Collaborating Organisations

The University of Sydney
Monash University
The University of Adelaide
National Gallery of Australia
National Library of Australia
Art Gallery of NSW
State Library of NSW
Queensland Art Gallery

Administering Organisation The University of New South Wales

Project Summary

The DAAO is already positioned as the sole system for the creation and discovery of research into art history in Australia. The DAAO will provide global exposure of Australian research and artists with tangible benefits both economically for cultural industries (including the art industry and tourism) and socially. It will also increase the breadth and depth of general knowledge of Australian art, contributing to the development of national identity through the diversity and richness of Australia's visual cultures.

LE0775511 Dr SS Li; Dr PA Walls; Prof HK Liu; A/Prof MJ Hoffman; A/Prof M Ferry; Prof CC Sorrell; Dr AV Pan; Prof O Ostrovski; Prof PR Munroe; Dr GS Srzednicki; Dr Y Liu; A/Prof B Ben-Nissan; A/Prof TQ Pham; Dr GL Heness; Dr ZP Guo; Dr ER Vance; Dr Z Chen

Approved Project Title **Laser Flash Thermophysical Properties Analyzer for the Development of Advanced Materials, Food Processing Technologies and Biomedical Components**

2007 : $ 300,000

Primary RFCD 2914 MATERIALS ENGINEERING

Partner Organisations & Collaborating Organisations

Australian Nuclear Science & Technology Organisation (ANSTO)
University of Wollongong

Administering Organisation The University of New South Wales

Project Summary

The Australian's energy, mining, metallurgical and food industries spearhead the advancement of technologies in the global competitive market. They are the locomotive of Australian economy's strength. Future progress of these industries will be largely driven by advances in materials and food processing technology. The installation of the proposed facility will add a new dimension to high-level research performance and significantly enhance the capability for characterization of various forms of materials, foods and biomedical components in Australia. The continual development of advanced materials and food processing technology will potentially provide a sustainable means for meeting the increasing global challenge for the industries.

The University of Newcastle

LE0775649 A/Prof B Moghtaderi; Prof GM Evans; Prof BS Haynes; Prof AR Masri; Prof KD King; Dr ZT Alwahabi; Dr J Liow; A/Prof Y He; Prof KP Galvin; Prof BZ Dlugogorski; A/Prof EM Kennedy; Dr L Djenidi

Approved Project Title **An Integrated Multi-Node Microfluidics Facility**
2007 : $ 400,000
Primary RFCD 2999 OTHER ENGINEERING AND TECHNOLOGY

Partner Organisations & Collaborating Organisations

The University of Sydney
The University of Adelaide
James Cook University

Administering Organisation The University of Newcastle

Project Summary

The establishment of the proposed facility will enhance Australia's position in microfluidics research, thus contributing to all National Priority areas, particularly the National Priority area 3 through advancement in breakthrough science and frontier technologies. In addition to researchers from participating institutions, the Facility will be made available to other Australian researchers from non-participating organisations at minimum cost. The socio-economic potentials of the research carried out using the proposed facility are significant and include: R&D development, small scale high technology manufacture, exports, and improved methods of biochemical processing and medical diagnostics.

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 retains 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 characteristic 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.

Summary of Linkage Infrastructure, Equipment and Facilities Proposals by State & Organisation to commence in 2007

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.

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.

University of Wollongong

LE0775666	A/Prof WA Buttemer; Prof LB Astheimer; Prof MM Olsson; Prof MJ Walker; A/Prof K French; Prof MR Wilson; A/Prof SA Robinson; Dr T Uller; Dr R Zhang; Dr JA Aquilina; Dr M Dowton; Prof DJ Ayre; Prof AJ Hulbert; Dr DF Jolley; Dr JF Wallman; Dr TE Minchinton; A/Prof AR Davis; Dr TR Madsen; Dr B Ujvari; Prof RJ Whelan; Dr RA Bradstock; A/Prof RJ West; A/Prof MA Ranson
Approved Project Title	**Flora and Fauna Research Facility**
2007 :	$ 200,000
Primary RFCD	2707 ECOLOGY AND EVOLUTION

Partner Organisations & Collaborating Organisations

Administering Organisation University of Wollongong

Project Summary

Our ability to make informed decisions regarding conservation and management of unique Australian ecosytems depends greatly on our understanding of the organisms inhabiting them. Researchers at the University of Wollongong are addressing this need through a wide range of studies including the: effects of climate change on plants, biology of invasive species, possible causes for declining frog populations, role of the immune system in aging and natural selection, effects of maternal hormones on offspring, effects of pesticides on native vertebrates, and impacts of bushfires on ecosystems. The infrastructure requested will enable research in these and other important areas.

LE0775559	Prof SX Dou; Prof C Zhang; A/Prof R Ramer; Prof JG Zhu; A/Prof X Wang; A/Prof RA Lewis; Em/Prof SJ Campbell; Dr J Horvat; Dr SS Li; Dr AV Pan; Dr N Valanoor; Dr MJ Qin; Dr G Wang; Dr KK Konstantinov; Dr J Wang; Dr Z Cheng; Dr D Shi; Mr Y Zhao; Mr Y Guo; Dr ZW Lin; Dr A Dowd
Approved Project Title	**16 Tesla Physical Property Measurement System (PPMS)**
2007 :	$ 400,000
Primary RFCD	2402 THEORETICAL AND CONDENSED MATTER PHYSICS

Partner Organisations & Collaborating Organisations

The University of New South Wales
University of Technology, Sydney

Administering Organisation University of Wollongong

Project Summary

Success of this proposal will enhance national and international collaboration through access to the proposed 16-Tesla PPMS by a large number of collaborating groups. This state-the-art facility will substantially enhance the materials characterisation capability of Australia. Equipped with this 16-Tesla PPMS and other related facilities the Institute for Superconducting and Electronic Materials at the University of Wollongong will continue as an important national and international centre for physical property characterisation. It will allow Australian researchers to remain competitive in this important of materials research.

Victoria

Deakin University

LE0775721 Prof PD Hodgson; Prof BC Muddle; Prof JH Beynon; A/Prof M Ferry; A/Prof E Pereloma; A/Prof CH Davies; Dr J Nie; Prof M Brandt; Dr MR Barnett; Dr I Timokhina; Dr C Wen; Dr I Sabirov; Dr Y Durandet; Dr H Beladi; Dr RT Deam

Approved Project Title **Near Net Shaped Casting and Alloy Development Facility**

2007 : $ 520,000

Primary RFCD 2913 METALLURGY

Partner Organisations & Collaborating Organisations

Monash University
Swinburne University of Technology
The University of New South Wales

Administering Organisation Deakin University

Project Summary

Nearly all metal production is based around an initial casting phase, often followed by other deformation and thermal processes. This facility will allow us to study current and future advanced alloys and processing routes, including metals of strategic importance to Australia such as aluminium, titanium and magnesium. One of the major innovations for these metals is to directly cast to strip, followed by minimal processing to provide strip products with novel properties, low capital costs and short lead times. The outcomes from this research will support the development of existing and new metal industries in Australia.

La Trobe University

LE0775708 Dr AG Peele; Prof L Tilley; Dr MT Ryan; Prof KA Nugent; Dr TA Smith; Prof LV Dao; Prof RA Lewis

Approved Project Title **X-ray Diffraction Microscope**

2007 : $ 289,680

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Partner Organisations & Collaborating Organisations

The University of Melbourne
Swinburne University of Technology
Monash University

Administering Organisation La Trobe University

Project Summary

The results of the research will substantially expand Australia's knowledge base in the area of diffraction, imaging and structural biology. It will build up our expertise in x-ray optics and synchrotron technology, and will open up a new approach to x-ray imaging and structure determination. This will revolutionize our understanding of cellular and sub-cellular organisation with implications for the treatment of disease while the ability to determine structures of membrane proteins will open the door to fresh opportunities in rational drug design and biotechnology that will promote innovation in this industry, and the likely foundation of new start-up companies.

LE0775646 Prof JD Riley; Prof RC Leckey; A/Prof PJ Pigram; Dr N Janke-Gilman; A/Prof BF Usher; Prof CM Stampfl; Prof JF Williams; A/Prof RL Stamps; Dr AE Smith; Prof J O'Connor; A/Prof PC Dastoor

Approved Project Title **Surface and Magnetic structure of crystalline materials**

2007 : $ 636,000

Primary RFCD 2402 THEORETICAL AND CONDENSED MATTER PHYSICS

Partner Organisations & Collaborating Organisations

Monash University
The University of Sydney
The University of Newcastle
The University of Western Australia

Administering Organisation La Trobe University

Project Summary

This proposal brings together significant research groups in La Trobe University, Monash University, the University of Western Australia, Newcastle University and Sydney University to establish a unique materials characterisation facility which will enable surface and magnetic structures of technologically significant materials to be determined. It will support developments in the areas of new magnetic phenomenon which is used in magnetic sensing and in the exploration of processes of size reduction for electronic devices. It will enable this new, world leading technology, to be applied to surface structures relevant in the areas of nanotechnology and catalysis.

LE0775758 Prof DL Vaux; Prof NJ Hoogenraad; Prof L Tilley; Prof MA Anderson; Dr MT Ryan; Dr DA Dougan; Dr KN Truscott; A/Prof AB Hughes; Prof RT Brownlee

Approved Project Title **A Mass Spectrometry and Proteomics Facility**

2007 : $ 587,000

Primary RFCD 3299 OTHER MEDICAL AND HEALTH SCIENCES

Partner Organisations & Collaborating Organisations

Administering Organisation La Trobe University

Project Summary

This facility will support a large group of nationally and internationally recognised scientists working on a range of projects in the National Interest: the role of apoptosis in normal and diseased cells, mitochondrial biogenesis and genetic diseases resulting from defects in mitochondrial function, malarial vaccine and drug development, plant biotehnology, design and synthesis of drugs, DNA-anticancer drug interactions and biomarker discovery. By supporting this wide range of well funded researh, the mass spectrometry facility will support the emerging Biotechnology sector and National Research Priorities.

Monash University

LE0775544 A/Prof AY Nikulin; Prof BC Muddle; Dr AG Peele

Approved Project Title **X-Ray Facility for 3-D High Resolution Diffraction Imaging of Nanostructures**

2007 : $ 350,000

Primary RFCD 2402 THEORETICAL AND CONDENSED MATTER PHYSICS

Partner Organisations & Collaborating Organisations

La Trobe University

Administering Organisation Monash University

Project Summary

Australian advances in quantitative x-ray imaging are at the leading edge of international efforts to permit 3D characterisation of the structure of materials and dynamic studies of structural changes. They have proven to be sensitive to local arrangement of materials at the nanometre scale, and they are emerging as critical tools in the development of advanced materials, which is a national research priority. This facility will allow the non-destructive 3D imaging of nanostructured materials to be performed as continual experimental development - something that is very difficult to achieve at synchrotron sources where access can be sporadic. The newly developed techniques will be applied to critical problems in emerging nanotechnologies.

LE0775616 Dr RG Pathegama; Prof DW Smith; Dr JK Kodikara; A/Prof DW Airey; Dr A Bouazza; Dr A Haque

Approved Project Title **Advanced Testing Facility for Geological Sequestration of Greenhouse Gases**

2007 : $ 350,000

Primary RFCD 2907 RESOURCES ENGINEERING

Partner Organisations & Collaborating Organisations

The University of Melbourne
The University of Sydney

Administering Organisation Monash University

Project Summary

Predicted climate changes can cause disastrous impacts on nation's human health, agriculture, infrastructure and natural ecosystems. The reduction of greenhouse emissions as required by Kyoto Protocol while protecting Australian industries and jobs is a massive challenge. The long-term sequestration of CO2 in deep geological formations is considered to be the most viable solution. This technology, however, is at its infancy and a concerted national research effort is urgently required. The multi-user Facility will enable closer collaboration with researchers in academia and industry, and will be integral in training the next generation of Australian scientists in the geological sequestration and wealth from the earth and the ocean.

LE0775725 Dr AJ Robinson; Dr LL Martin; A/Prof SJ Langford; A/Prof PC Junk; Prof WR Jackson; Dr KL Tuck; Prof M Augustin; Prof PJ Marriott; A/Prof HM Hügel; Dr CG Li; Dr EC Pang; Prof IA Smith; Prof DR MacFarlane

Approved Project Title **Molecular separation and characterisation - A facility for advanced mass spectroscopy and chromatography**

2007 : $ 465,000

Primary RFCD 2504 ANALYTICAL CHEMISTRY

Partner Organisations & Collaborating Organisations

RMIT University

Administering Organisation Monash University

Project Summary

Characterising molecular composition is a basic need for the progress of many sciences. It is used to examine traditional and modern medicinal chemistry, bio-active peptides, molecular modulation of chemical properties, markers of disease and system status, and can also be used to elucidate molecular mechanisms and interactions in a system. This can only be achieved through precise measurement using the frontier technologies described in this grant. This proposal ensures international competitiveness on a broad front, and supports highest level research training and bio/chemical/medical research in several priority research areas.

LE0775673 Prof J Rossjohn; A/Prof MC Wilce; Dr JC Whisstock; Dr SP Bottomley; Prof IA Smith; Prof J McCluskey; Dr AW Purcell; Dr A Brooks

Approved Project Title **A high throughput protein crystallization & imaging facility**

2007 : $1,200,000

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

Partner Organisations & Collaborating Organisations

The University of Melbourne

Administering Organisation Monash University

Project Summary

Protein crystallography is an important field of research that enables us to understand the precise shape of proteins. The precise shape of a protein determines the function of a protein. This information is essential in understanding the physiological role of a protein and may be used for the development of therapeutics, where approrpiate. We aim to develop a high-throughput robotics system that will enable us to determine the shape of many proteins more rapidly, thereby greatly accelerating the pace of biomedical research.

LE0775660 Prof H Schmidt; Dr S Selemidis; Dr K Wingler; Prof BP McGrath; A/Prof HC Parkington; A/Prof MJ Morgan; Prof KS Murray; Prof AM Bond; Dr KL Tuck; Prof L Spiccia; A/Prof SJ Langford; A/Prof MC Thompson; A/Prof CG Young; Dr SP Best; Prof AG Wedd; Prof F Separovic; Dr PS Donnelly; Dr C Boskovic; Prof CL Masters; Dr KJ Barnham; Prof GR Hanson; Prof B Martinac; A/Prof LR Gahan; Dr G Schenk; A/Prof MJ Riley

Approved Project Title **A National Biomedical Electron Paramagnetic Resonance and Molecular Imaging Centre**

2007 : $ 500,000

Primary RFCD 2499 OTHER PHYSICAL SCIENCES

Partner Organisations & Collaborating Organisations

The University of Melbourne
The University of Queensland

Administering Organisation Monash University

Project Summary

Multifrequency continuous wave and pulsed electron paramagnetic resonance spectroscopy and molecular imaging instrumentation will provide forefront technologies in identifying, characterising, quantifying, visualising and manipulating fundamental chemical and biologically relevant processes involving free radicals, metalloproteins and metal ions. This technology is crucial in validating these functional processes at the cellular and tissue level and for providing invaluable and unique biomedical information under physiological conditions. This synergistic and highly integrative approach will make available new techniques for identifying major disease mechanisms such as cardiovascular disease with a potential to improve and maintain health.

LE0775747 Prof HW Schmidt; Dr RJ Beare; Prof WF Appelbe; Dr S Petrou; Prof JY Tu

Approved Project Title **Distributed Medical Image Analysis and Visualisation Engine (MedVis)**

2007 : $ 160,000

Primary RFCD 3207 NEUROSCIENCES

Partner Organisations & Collaborating Organisations

VPAC
Howard Florey Institute
RMIT University

Administering Organisation Monash University

Project Summary

Improved understanding of neurological processes is crucial to improving clinical outcomes for patients. MedVis will contribute in three ways: support development of new methods of interpretation and analysis of complex neurological studies, allowing current methods to be applied more efficiently, and enabling distributed simulations and visualisations in real-time from remote sites. The leading-edge, grid-based, software and computational techniques developed for the project will enable visualization, analysis and modelling of massive volumes of image and other visualisation data. This capability is important in medical research where large visualisation data volumes are being created and studied by experts remote from each other.

LE0775692 A/Prof B Shirinzadeh; Prof S Nahavandi; Prof JA Smith; Prof J Soria; A/Prof M Aguilar; A/Prof Y Chen; Dr RJ Prankerd; Dr DR Honnery; Dr HM Trinh; Dr DN Oetomo; Dr Y Zhong; Dr VH Mak; Dr PN Pathirana; Dr D Creighton

Approved Project Title **Micro/nano optomechatronics sensing, measurement, and control research facility**

2007 : $ 430,000

Primary RFCD 2918 INTERDISCIPLINARY ENGINEERING

Partner Organisations & Collaborating Organisations

Deakin University

Administering Organisation Monash University

Project Summary

This project aims to establish a facility that enhances the capabilities for sensing, positioning, and manipulating of micro/nano scale objects and environment, and as such constitutes the building block for many frontier technologies such as nanotechnology, bio/nano medicine, microsurgery and neurosurgery, biotechnology, microbiology, microfluidics, and micro/nano manufacturing, all of which are still in their infancy and promise to be the challenging areas of research for the next two decades. The outcomes will strengthen Australia's position in world-class innovative scientific research. It also strengthens collaboration between major engineering institutions and medical experts for innovative research and training of researchers.

LE0775582 Prof A Tsoi; Prof BA Pailthorpe; Prof BP Schmidt; Prof ST Hyde; Prof RA Lewis; Prof MA Ragan; Prof S Crozier; Prof DA Abramson; Prof PA Lindsay; Prof MA Knackstedt; A/Prof MJ Drinkwater; Prof PD Drummond; Dr P McConvell; Prof AK Whittaker; Dr B Evans; A/Prof SR Phinn; Dr A Khan

Approved Project Title **Data Grid -- Access Layer**

2007 : $ 530,000

Primary RFCD 2916 COMPUTER HARDWARE

Partner Organisations & Collaborating Organisations

The University of Queensland
The Australian National University
QPSF Ltd

Administering Organisation Monash University

Project Summary

Vast increases in computing power and the arrival of new scientific instruments are contributing to the so-called data deluge of the 21st century. Accessing and archiving these data is essential to research. While the underlying computing and network requirements are well resourced, data access has been relatively neglected in Australia. A continuing problem in Australian research communities is the absence of coordinated access to digital storage resources. In many cases computational and experimental data are stored on ad-hoc resources, such as local university servers, PC disc drives, and are not generally accessible. The central goal of this proposal is to provide access to an integrated scientific data storage capacity for Australia.

LE0775550	Dr PA Webley; A/Prof AL Chaffee; Dr K Suzuki; Dr SE Kentish; Dr RA Caruso; Prof GW Stevens; Dr GG Qiao
Approved Project Title	**Characterisation Equipment for Advanced Gas Separation Applications**
2007 :	$ 345,000
Primary RFCD	2906 CHEMICAL ENGINEERING

Partner Organisations & Collaborating Organisations

The University of Melbourne

Administering Organisation Monash University

Project Summary

The proposed research will lead to the synthesis of new advanced materials capable of performing new and existing separations more efficiently than previous methods. We therefore expect the new materials to directly benefit the community through improved removal and recovery of a wide range of pollutants which would otherwise enter the environment. This research is directly aligned to the National Research Priority of Frontier Technologies for Building and Transforming Australian Industries: Advanced Materials.

RMIT University

LE0775679	A/Prof DG McCulloch; Prof P Coloe; Prof SK Bhargava; Prof DE Mainwaring; Dr AS Holland; Dr J Etheridge; Dr PR Miller; Prof ED Doyle; Prof M Gu; Prof P Mulvaney; Prof DN Jamieson
Approved Project Title	**Advanced Microscopy Infrastructure for use in Frontier Technologies**
2007 :	$ 700,000
Primary RFCD	2499 OTHER PHYSICAL SCIENCES

Partner Organisations & Collaborating Organisations

Monash University
Swinburne University of Technology
The University of Melbourne

Administering Organisation RMIT University

Project Summary

This proposal seeks to establish key microscopy facilities to support the research projects from leading researchers from four major Universities. The new facilities build on the close collaborative links between the partner organisations and the request is for specialised equipment that is complementary to that available at, for example, the Australian Synchrotron. The new facilities will enhance progress in the the important areas of nanotechnology, biotechnology and advanced materials to the benefit of the community and will play a crucial role in training the next generation of researchers to drive these critical areas of science and technology.

Swinburne University of Technology

LE0775656	Prof JH Beynon; Prof PD Hodgson; Prof G Lu; Prof JL Wilson; Prof M Brandt; Dr BF Rolfe; Dr C Wen; Dr I Sabirov; Dr H Beladi; A/Prof PA Mendis; Dr EF Gad; Dr Y Durandet
Approved Project Title	**High Rate Testing System for Materials and Structures**
2007 :	$ 490,000
Primary RFCD	2905 MECHANICAL AND INDUSTRIAL ENGINEERING

Partner Organisations & Collaborating Organisations

Deakin University
The University of Melbourne
CRC for Advanced Automotive Technology
CRC for CAST Metals Manufacturing

Administering Organisation Swinburne University of Technology

Project Summary

Human or natural disasters such as terrorist attack or tsunami take place and they have catastrophic consequences, in terms of fatalities and psyche of fear among the population, as well as enormous financial loss. Vehicle accident is another example. In Australia, 1636 people were killed in 1481 road crashes, in 2005 alone. There is a great demand for research into devising novel materials and structures for optimum performance under such circumstances. The proposed new high rate testing system will significantly advance research in this area. The facility will directly support a range of research projects in material and structural design in military and civil vehicles, aerospace industry and defence.

The University of Melbourne

LE0775534 Prof A Bacic; Dr U Roessner; Prof MA Tester; Dr JC Stangoulis; Prof GB Fincher; Prof P Langridge

Approved Project Title **A liquid chromatograph-mass spectrometer for plant metabolomics**

2007 : $ 300,000

Primary RFCD 2708 BIOTECHNOLOGY

Partner Organisations & Collaborating Organisations

The University of Adelaide
Australian Centre for Plant Functional Genomics

Administering Organisation The University of Melbourne

Project Summary

The Australian Agrifood sector will benefit significantly from the establishment of functional genomics platform technologies, such as metabolomics, that underpin 'Systems Biology'; a new branch of biology that attempts to discover and understand biological properties that emerge from the interactions of many system elements. Australian agriculture will benefit through the development of techniques to improve both yield and quality through minimising the effects of abiotic and biotic stresses, and a reduced dependence on inputs (eg fertilisers) leading to environmentally sustainable production systems. Ultimately this will result in enhanced food quality and analytical methods to monitor quality and safety characteristics of food.

LE0775612 Prof F Caruso; Prof K Hourigan; Prof M Gu; A/Prof SJ Kent; Prof PJ Scales; Prof T Sridhar; Prof J Sheridan; Dr JY Scheerlinck; A/Prof DE Dunstan; Dr GG Qiao; Dr JF Quinn; Dr AP Johnston; Dr D Day; Dr GA Thouas; Dr DL Greenwood

Approved Project Title **Nanomaterials Optical Characterisation Facility**

2007 : $ 700,000

Primary RFCD 2918 INTERDISCIPLINARY ENGINEERING

Partner Organisations & Collaborating Organisations

Monash University
Swinburne University of Technology

Administering Organisation The University of Melbourne

Project Summary

Nanotechnology is expected to revolutionize a wide variety of fields, from medicine to agriculture, communications and electronics. However, the small length scales involved present significant challenges with regard to characterising the nanomaterials produced. The Nanomaterials Optical Characterisation facility will provide state-of-the-art equipment for examining the properties of nanomaterials. The equipment will be pivotal in assisting the development of next-generation medicines, implants, optical devices and surface coatings, further strengthening Australia's formidable reputation in these areas.

LE0775518 A/Prof B Dave; Prof MC Burry; Dr S Datta; Dr GJ Treloar

Approved Project Title **Advanced Computational Modelling Infrastructure Network in Built Environment**

2007 : $ 170,000

Primary RFCD 3101 ARCHITECTURE AND URBAN ENVIRONMENT

Partner Organisations & Collaborating Organisations

RMIT University
Deakin University

Administering Organisation The University of Melbourne

Project Summary

The infrastructure will support and complement existing areas of specialisation at the three collaborating Victorian schools of architecture including research in urban modelling and simulation, building management and life-cycle simulations, spatial decision-making, automated data capture and modelling of complex building geometries for heritage applications. The broader aim of this network infrastructure is to provide a network of information sharing that will be useful to the built environment professional decision-makers including architects, planners, environmental scientists, geographers, and emergency planners, all of whom we trust will ultimately subscribe to the network once it is established.

LE0775715 Dr KA Gross; A/Prof E Pereloma; Prof J Soria; Dr A Ooi; Prof GW Stevens; Dr DR Honnery; Prof S Nahavandi; Dr W Gao; A/Prof WK Chiu; Dr R Manasseh

Approved Project Title **Advanced facility for ultra high-speed visualisation and real-time diagnostics of particles and droplets**

2007 : $ 370,000

Primary RFCD 2999 OTHER ENGINEERING AND TECHNOLOGY

Partner Organisations & Collaborating Organisations

Monash University
Deakin University
CSIRO - Manufacturing and Infrastructure Technology

Administering Organisation The University of Melbourne

Project Summary

The proposed research facility will offer new tools for advanced manufacturing in Melbourne and provide support for research at the leading universities involved in engineering and science. Testing and characterization equipment can support activities by researchers across different faculties including those of Federation fellows working in the area of nanotechnology and advanced materials. It fills a desperate need in a niche area. The research is directly aligned to the National Research Priority of Frontier Technologies for Building and Transforming Australian Industries: Advanced Materials.

LE0775562 Prof P Mulvaney; Prof S Prawer; Prof F Caruso; A/Prof JE Sader; Prof KA Nugent; Dr ST Huntington; A/Prof DE Dunstan; A/Prof DG McCulloch; Prof PN Johnston; Prof W Wlodarski; Dr K Kalantar-zadeh; Dr AR Wilson; Dr TJ Davis

Approved Project Title **The Melbourne Nanofabrication Facility**

2007 : $ 500,000

Primary RFCD 2918 INTERDISCIPLINARY ENGINEERING

Partner Organisations & Collaborating Organisations

RMIT University
CSIRO - Manufacturing and Infrastructure Technology
Defence Science & Technology Organisation (DSTO)

Administering Organisation The University of Melbourne

Project Summary

Australia is desperately short of facilities for actual fabrication, prototyping and construction of advanced micromechanical and nanoscale systems. This is impeding both academic researchers and industrial developers in the materials, optics and biotechnological industries. The proposed instrument would complete the development of Australia's newest high resolution microscopy centre and enable a wide range of users to image, measure, build and design complex nanostructures at the atomic level and upwards.

LE0775545 Dr CI Pakes; Prof DN Jamieson; Prof S Prawer; Prof CM Stampfl; Dr AP Stampfl; Dr J Bartlett; Dr PJ Evans

Approved Project Title **Infrastructure for Surface and Molecular-level Electronic and Spintronic Materials Measurement**

2007 : $ 445,000

Primary RFCD 2402 THEORETICAL AND CONDENSED MATTER PHYSICS

Partner Organisations & Collaborating Organisations

The University of Sydney
Australian Synchrotron Research Program, ANSTO
Institute of Materials and Engineering Science, ANSTO

Administering Organisation The University of Melbourne

Project Summary

It is recognised that molecular-state materials will play an important role in the development of new approaches to metrology, information processing and sensitive detection. Building on our existing expertise and infrastructure for nanoscale fabrication and surface analysis, we will develop a measurement capability for the study of atomic-scale and molecular-state materials, such as doped fullerenes, bio-materials, magnetic molecules, single implanted atoms and isolated optical centres, which show great promise for breakthrough fundamental science and the application of quantum phenomena to frontier nanoelectronics industries.

LE0775488 Prof GN Taylor; Dr E Barberio; A/Prof ME Sevior; Dr SN Tovey; Dr KE Varvell; A/Prof LS Peak; Prof AB Rozenfeld

Approved Project Title **Support for the Australian Experimental High Energy Physics Program**

2007 : $ 270,000
2008 : $ 270,000
2009 : $ 270,000
2010 : $ 270,000
2011 : $ 270,000

Primary RFCD 2403 ATOMIC AND MOLECULAR PHYSICS; NUCLEAR AND PARTICLE PHYSICS; PLASMA PHYSICS

Partner Organisations & Collaborating Organisations

The University of Sydney
University of Wollongong

Administering Organisation The University of Melbourne

Project Summary

This project will support physicists in the expected era of discovery in the knowledge of fundamental particles that makes up our Universe. Having participated in developing the giant $½ billion ATLAS experiment, Australian scientists will be making major discoveries in this era. ATLAS will hunt down the Higgs boson, to understand the origin of mass of fundamental particles. ATLAS will also search for particles to explain Dark Matter, which makes 25% of our Universe. ATLAS will search for undiscovered laws of nature to help us unify our understanding of the forces of nature. Excellent training, public interest, international cooperation and networking, and national pride will be enhanced by this project.

LE0775621 Prof RL Webster; Prof FH Briggs; A/Prof MJ Lynch; Prof JM Dickey; Asst Prof BM Gaensler; Dr LG Staveley-Smith; Dr CJ Lonsdale; Dr BJ Boyle; Dr LJ Greenhill

Approved Project Title **Mileura Widefield Array: A New Low Frequency Telescope**

2007 : $ 494,000

Primary RFCD 2401 ASTRONOMICAL SCIENCES

Partner Organisations & Collaborating Organisations

The Australian National University
Curtin University of Technology
University of Tasmania
The University of Sydney
The University of Western Australia
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 Mileura 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.

LE0775481	A/Prof JM White; Dr BF Abrahams; A/Prof O El-Kabbani; Prof PJ Scammells; Dr PS Donnelly; Prof AB Holmes; Dr SD Kolev; Dr RA O'Hair; Prof CH Schiesser; Prof AG Wedd; A/Prof CG Young; Prof R Robson; Dr HC Cheng; Dr C Boskovic; Prof D Dakternieks; Mr A Duthie; Dr CA Hutton; Dr SJ Williams; A/Prof MA Rizzacasa; Dr RJ Prankerd; Dr J Jazayeri; Dr PE Thompson; Dr JS Simpson; Dr U Wille
Approved Project Title	**X-ray Molecular Structure Elucidation Facility (MSEF)**
2007 :	$ 304,000
Primary RFCD	2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Partner Organisations & Collaborating Organisations

Monash University
Deakin University

Administering Organisation The University of Melbourne

Project Summary

X-ray diffraction plays a key role in identification and molecular characterization. X-ray techniques are the single most widely used analytical resource in structure determination and provide invaluable information for scientists working in the fields of synthesis, nanotechnology, polymer chemistry, and protein chemistry amongst many others. The facility brings together a multidisciplinary team of scientists and provides state-of-the-art research and training facilities.

Queensland

Griffith University

LE0775637	Dr D Kielpinski; Dr RT Sang; Prof B Lohmann; Dr A Fuerbach; A/Prof AN Luiten; Prof H Rubinsztein-Dunlop; Dr P Meredith
Approved Project Title	**An Australian Attosecond Science Facility**
2007 :	$ 450,000
Primary RFCD	2404 OPTICAL PHYSICS

Partner Organisations & Collaborating Organisations

Macquarie University
The University of Western Australia
The University of Queensland

Administering Organisation Griffith University

Project Summary

The laser facility requested here will provide Australian researchers with the ability to take snapshots of physical and biological processes at unprecedented time resolution. Such a facility will enable Australian researchers to remain competitive and continue to contribute significantly to scientific research on an international scale. The facility will provide excellent training for research higher degree students, preparing them for work in high-tech industries based on cutting-edge discoveries in physics and biology.

LE0775768	Prof A Mackay-Sim; Dr CA Wells; A/Prof VM Avery; Prof Z Upton; Dr D Leavesley; Dr SE Bottle; Prof BA Reynolds
Approved Project Title	**High-throughput automated cell culture facility**
2007 :	$ 400,000
Primary RFCD	3299 OTHER MEDICAL AND HEALTH SCIENCES

Partner Organisations & Collaborating Organisations

Queensland University of Technology
The University of Queensland

Administering Organisation Griffith University

Project Summary

This facility, the first of its kind in Australia, is a state-of-the art, robotic technology for large scale cell culture for high throughput production of cells for stem cell biology, drug discovery, and cancer research. It brings together research teams to apply frontier technologies in stem cell biology, genome biology and drug development to better understand and find treatments for diseases, especially brain disorders and diseases. It will be located at Griffith University complementing the most advanced suite of high throughput instruments currently available internationally. It will be shared by Australia's leaders in adult stem cell biology, wound repair and natural products drug discovery at Queensland's three leading Universities.

James Cook University

LE0775614	Dr MV Jacob; Prof CC Berndt; Prof ME Tobar; Prof JE Mazierska; Dr RD White; Prof ML Heron; Prof Y Ho; Dr JG Hartnett; Dr GS Woods; A/Prof CJ Kikkert; Dr V Jegatheesan; Prof J Krupka
Approved Project Title	**National Electromagnetic Characterization Facility for Advanced Electronic and Biomaterials**
2007 :	$ 150,000
Primary RFCD	2917 COMMUNICATIONS TECHNOLOGIES

Partner Organisations & Collaborating Organisations

The University of Western Australia
Massey University
Warsaw University of Technology

Administering Organisation James Cook University

Project Summary

The proposed Material Characterisation Facility using non-destructive methods will be unique to Australia. Precise characterisation of advanced materials such as dielectrics and superconductors using the facility will progress emerging technologies within the electronic and communication research area. The inclusion of a microwave scanning test bed within the laboratory will allow engineers, scientists, biologists and medical scientists to safely detect the intrinsic electromagnetic properties of electronic materials and tumours in biological tissues or poor quality agricultural produce. This comprehensive material characterisation facility will therefore benefit the peoples of Australasia in many significant and diverse ways.

Queensland University of Technology

LE0775590	Dr J McMurtrie; Prof PC Healy; Dr SE Bottle; Prof Dr RL Frost; Dr DP Arnold; Dr G Smith; A/Prof WA Loughlin; Dr S Poulsen
Approved Project Title	**A single crystal X-ray diffractometer with CCD detector for structural analysis of small molecules**
2007 :	$ 200,000
Primary RFCD	2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Partner Organisations & Collaborating Organisations

Griffith University

Administering Organisation Queensland University of Technology

Project Summary

In recent years their have been major advances in the capacity of instrumentation to determine the crystal and molecular structure of chemical compounds and materials which in turn has resulted in a rapidly growing understanding of the relationship between the structure of molecules and their function in the design of new materials and as drugs for the treatment of disease and pain. This infrastructure also provides training of an international standard for undergraduate and post graduate students, thus building the skills capabilities of Australian scientists in the workforce.

The University of Queensland

LE0775613 Prof DJ Adams; A/Prof JW Lynch; Prof B Martinac; Prof RF Minchin; Prof P Sah; Prof PF Bartlett; A/Prof AJ Hoey

Approved Project Title **Automated Patch Clamp System**

2007 : $ 467,000

Primary RFCD 2499 OTHER PHYSICAL SCIENCES

Partner Organisations & Collaborating Organisations

University of Southern Queensland

Administering Organisation The University of Queensland

Project Summary

Ion channels are membrane proteins that underlie cell function and are therefore important drug targets. The patch clamp technique is the most powerful tool available to study the function of single ion channels. The recent automation of this technology represents a quantum leap in our ability to perform high throughput screening of novel natural and synthetic compounds as drug leads. This will lead to an urgently needed increase in capacity, increasing the volume of research and its outcomes, which will benefit the Australian pharmaceutical industry and biosciences research community.

LE0775676 A/Prof PV Bernhardt; Prof GA Lawrance; Dr P Burn; Prof DP Fairlie; Dr JJ De Voss; A/Prof LR Gahan; Prof MJ Garson; Prof I Toth; Prof C Wentrup; Dr CM Williams

Approved Project Title **An X-ray Diffraction Facility for Molecular Structure Determination**

2007 : $ 290,000

Primary RFCD 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Partner Organisations & Collaborating Organisations

The University of Newcastle

Administering Organisation The University of Queensland

Project Summary

Characterisation of new chemical compounds demands proof of molecular structure. Whether for the identification of a new drug candidate, a material with novel properties or in the exploration of previously unknown types of compounds, X-ray crystallography is the definitive technique for this purpose. This proposal is for an X-ray diffractometer that will significantly enhance the capabilities of all synthetic and natural products chemistry research programs undertaken at the Universities of Queensland and Newcastle, all currently in receipt of ARC funding. This research is aligned with the ARC National Research Priorities, of Promoting and Maintaining Good Health and Frontier Technologies for Building and Transforming Australian Industries.

LE0775592 Prof J Drennan; Dr J Zou; A/Prof JJ Cooper-White; Dr BW Cribb; Prof BM Degnan; Prof HB Harrison; Prof S Dimitrijev; A/Prof EM Gray

Approved Project Title **A High Resolution Analytical Scanning Electron Microscope for South-East Queensland**

2007 : $ 388,000

Primary RFCD 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Partner Organisations & Collaborating Organisations

Griffith University

Administering Organisation The University of Queensland

Project Summary

Scanning electron microscopy is the major visualization tool for a diverse range of research disciplines. This new generation of instrument will be able to image features close to atomic resolution and obtain quantitative analytical information from regions only a few atoms across. Because of the nature of the way the electron beam is produced, the new instrument will be able to examine particularly sensitive materials, such as soft bio-materials, without any loss in resolving power. This machine will be unique in Australia and be available to researchers from diverse fields of study working towards building and transforming Australian Industries and underpinning scientific discovery in nanotechnology, materials science and bioengineering.

LE0775619 Prof JA Hay; A/Prof RA Fotheringham; Prof DJ Carter; Prof RW Dixon; Ms KM Kilner; Dr L Dale; Prof BH Bennett; Prof PR Eggert; Prof EA Webby; Mr RH Coleman; Mr JF Arnold; A/Prof W Ommundsen; Ms AH Horn; Prof CM Bradford; Dr CM Taylor; Dr P Mead; Prof GR Worby; Dr RA Phiddian; Prof DJ Haskell; Ms DM Bird; Dr TN Burrows

Approved Project Title **AustLit: Phase Two - humanities research infrastructure development, augmentation and expansion**

2007 : $ 350,000

Primary RFCD 4202 LITERATURE STUDIES

Partner Organisations & Collaborating Organisations

The University of New South Wales
The University of Sydney
Monash University
Deakin University
James Cook University
University of Tasmania
The Flinders University of South Australia
The University of Western Australia
University of Wollongong

Administering Organisation The University of Queensland

Project Summary

With ARC support, the university and library collaborators will deliver a unique national information service revealing the wealth of Australian's literary and cultural endeavours over time. Enquirers from across the research, education and library sectors will be able to access the results of decades of scholarship in Australian literary, theatre, critical and Indigenous culture. Senior and emerging researchers will be able to continue building AustLit over time, using the infrastructure as a source of existing information to interrogate, and as a repository for new data that can be analysed and enhanced as research in new areas is pursued.

LE0775726 Prof JS Mattick; Prof MA Ragan; Prof BM Degnan; Prof V Brusic; Dr MJ Pheasant; Dr CA Wells; Prof LR Griffiths; Dr JM Hogan; A/Prof P Roe; Prof P Timms; Dr BP Dalrymple

Approved Project Title **Australian Mirror of the UCSC Genome Database and Browser**

2007 : $ 306,270

Primary RFCD 2708 BIOTECHNOLOGY

Partner Organisations & Collaborating Organisations

Queensland University of Technology
Griffith University
CSIRO - Livestock Industries

Administering Organisation The University of Queensland

Project Summary

Modern medical, biological, agricultural, and environmental research and industries are being transformed by access to genomic information that details the DNA sequence of various species, as well as of different strains and individuals within populations. This information is being generated at an exponentially increasing speed, and requires large computational resources. This facility will provide Australian researchers, R&D organizations and industry with state-of-the-art genomic data storage and analysis capability, which will permit both public and proprietary access, and accelerate Australian research and development in genetic medicine, pharmaceuticals, animal breeding and biodiversity.

LE0775716 Prof RJ Stimson; Prof MC Western; Prof JL Hunter; Prof BA Pailthorpe; Prof GJ Hugo; Prof AM Harding; Prof WF Mitchell

Approved Project Title **Infrastructure for a Spatially Integrated Social Science e-Research Facility**

2007 : $ 150,000

Primary RFCD 3704 HUMAN GEOGRAPHY

Partner Organisations & Collaborating Organisations

The University of Adelaide
University of Canberra
The University of Newcastle
Australian Bureau of Statistics

Administering Organisation The University of Queensland

Project Summary

The requested facility with its Nationally Distributed Socio-Spatial Data System and On-Line Analysis, Modeling and Visualisation Research Facility will enhance Australia's national research capacity for secondary data analysis and modeling of socio-spatial information with visualisation, substantially reducing the cost of innovative research conducted at various levels of spatial scale to investigate both local and nationally significant demographic, social, economic and behavioural issues. It will deliver national/community benefits through enabling hundreds of researchers and graduate students across the university system to investigate demographic, economic and social issues at various levels of spatial scale.

LE0775684	Prof AK Whittaker; A/Prof PJ Halley; Dr I Blakey; Prof GP Simon; A/Prof WD Cook; A/Prof GH Edward; Dr JS Forsythe
Approved Project Title	**The polymer pharmaceutical/drug characterization and processing facility**
2007 :	$ 230,000
Primary RFCD	2505 MACROMOLECULAR CHEMISTRY

Partner Organisations & Collaborating Organisations

Monash University

Administering Organisation The University of Queensland

Project Summary

The Australian population is ageing, and this is leading to ever increasing burdens upon our health system. In addition new understanding of disease states has lead to a demand for improved materials for drug delivery and for tissue regeneration. This proposal will lead to novel biomaterials designed to meet these demands. Polymers are seen as essential elements for construction of such biomedical devices due to the myriad forms in which they can be made, and the large number of different materials to choose from. This proposal will lead to the formation of the PolyPharma network which will produce polymeric biomaterials to benefit our health industries.

South Australia

The Flinders University of South Australia

LE0775527	Prof JM Holledge; Dr JJ Bollen; Ms NL Hassall; Mr GJ Milne; Dr HM Grehan; Dr PB Makeham; Ms KL Durban; Prof AR Kiernander; Dr DM Watt; A/Prof JE Tompkins; Dr IA Maxwell; Mr JD McCallum; Mr RD Murphet; Dr G McGillivray; Prof PH Fitzpatrick; Ms C Fowler; Mr KA Hanna; Mr RT Stone; Dr G D'Cruz; A/Prof TM Burvill; Mr R Choate; Mr T Maddock; Dr JM Lo
Approved Project Title	**AusStage: Gateway to Australian live performance, phase 3 - enhancing collaborative research methodologies through digital networking technologies**
2007 :	$ 300,000
Primary RFCD	4101 PERFORMING ARTS

Partner Organisations & Collaborating Organisations

Edith Cowan University
La Trobe University
Murdoch University
Queensland University of Technology
University of Ballarat
The University of Melbourne
The University of New England
The University of New South Wales
The University of Newcastle
The University of Queensland
The University of Sydney
University of Western Sydney
Monash University
Deakin University
Australia Council for the Arts
Performing Arts Special Interest Group, Museums Australia
Windmill Performing Arts
Macquarie University
The University of Adelaide

University of Wollongong
Dr JM Lo

Administering Organisation The Flinders University of South Australia

Project Summary

AusStage provides an accessible information gateway for investigating live performance as a wealth-creating industry, a generator of social capital and an indicator of cultural vitality. Australia stages some of the most ambitious, innovative and socially significant live events. Live interaction at communal events is essential to the cultural life of the nation and innovative live performances project images of Australian culture to audiences here and overseas. AusStage uses new technologies to monitor the evolution of Australian live performance, to track innovation and excellence in the live performance industry, and to develop new methods of collaborative e-research.

The University of Adelaide

LE0775482 Prof MJ McLaughlin; Prof JD Foden; Dr S Walker; Dr AS Collins; Dr P Marschner; Prof SE Smith; Prof FA Smith; Dr DJ Chittleborough; Prof A Ball; Dr JC Stangoulis; Dr JK Kirby; Mr BA Zarcinas; Dr MP Hand; Dr BM Gillanders; Dr GP Halverson

Approved Project Title **Ultratrace element and isotope analysis facility**

2007 : $ 500,000

Primary RFCD 2504 ANALYTICAL CHEMISTRY

Partner Organisations & Collaborating Organisations

CSIRO - Land & Water
The Flinders University of South Australia

Administering Organisation The University of Adelaide

Project Summary

Analysis of trace concentrations of contaminants in food, water and biota is essential for proper environmental and human health protection, and the ability to analyse different isotopes of nutrients will improve our capability to develop techniques to fortify foods with essential micronutrients. The instrumentation will also assist our understanding of the geological processes, climate and environmental change and the formation and location of mineral deposits having economic potential in Australia. By improving forensic identification techniques, the instrumentation will allow identification and tracking of environmental contamination of the food chain and water supplies, and to identify and track criminal and terrorist activity.

LE0775503 Prof MA Tester; Prof P Langridge; Prof A Bacic

Approved Project Title **Robotics for plant genomics: Increasing throughput in plant genetic analyses**

2007 : $ 255,000

Primary RFCD 2702 GENETICS

Partner Organisations & Collaborating Organisations

The University of Melbourne
Australian Centre for Plant Functional Genomics

Administering Organisation The University of Adelaide

Project Summary

Plant genomics has direct benefit to crop improvement, especially as focussed in the applicants' laboratories. Thus, the Australian agri-food sector will benefit substantially from the acceleration in plant functional genomics that will arise from the installation of the robotics equipment described in the current application, by both underpinning more applied research and also being used directly in crop improvement programs such as are based at the Waite Campus. The outputs will include crops with increased tolerance to biotic and abiotic stresses, a reduced dependence on chemical inputs such as fertilisers and improved food quality, with consequent benefits to the environment and human health and nutrition.

LE0775778 Prof WD Tilley; Prof JA Owens; A/Prof ML Whitelaw; Dr SA Koblar; Dr MR Beard; Dr GJ Goodall; Prof RA McKinnon; Prof D Watson

Approved Project Title **A microarray platform for gene expression analysis and genotyping in biological systems**

2007 : $ 196,000

Primary RFCD 2702 GENETICS

Partner Organisations & Collaborating Organisations

University of South Australia
The Flinders University of South Australia
Institute of Medical and Veterinary Science

Administering Organisation The University of Adelaide

Project Summary

This technology has substantial benefits for basic science and biotechnology. The ability to rapidly study changes in gene expression in living organisms will benefit agriculture, animal and biomedical science and biotechnology. The Affymetrix platform creates opportunities for new avenues of research, such as studying epigenetic (DNA and protein modifications) mechanisms in development, ageing and disease. The project falls within the designated national research priority areas of 'promoting and maintaining good health" and the priority goals of "a healthy start to life", "aging well", "aging productively" and "preventative health care."

University of South Australia

LE0775773 A/Prof NR Choudhury; Dr NK Dutta; Dr NH Voelcker; Dr S Bandyopadhyay

Approved Project Title **Integrated electrochemical facility**

2007 : $ 150,000

Primary RFCD 2504 ANALYTICAL CHEMISTRY

Partner Organisations & Collaborating Organisations

The Flinders University of South Australia
The University of New South Wales

Administering Organisation University of South Australia

Project Summary

The proposed facility will significantly enhance the capabilities of the collaborating Universities, provide excellent framework to support both fundamental and applied research, promote research activities to form commercial linkages and partnership with national/international players in a wide range of disciplines. It will bring direct benefit to many organizations through providing services for scientific development, create graduates of high quality, increased capacity for contract research and direct application of research results. The project falls within the state government's key targets of 10 Years Vision for science, technology and innovation (STI 10) towards the formation of highly equipped research precincts.

Western Australia

Curtin University of Technology

LE0775553 Prof A van Riessen; Prof GM Parkinson; Dr M Saunders; A/Prof I Low; Dr SM Reddy; Prof KV Wright; Dr S Hinckley; Dr I Howard; Dr RD Hart; Dr IJ Davies; Dr WR Richmond; Dr H Yang; Dr CA Musca; Dr G Parish; Prof B O'Connor; Prof RN Martins; Prof PJ Jennings; Dr A Mulders; Prof R Newton

Approved Project Title **The Nanoscale Characterisation Centre WA Focussed Ion Beam Nanofabrication and Milling Facility**

2007 : $ 500,000

Primary RFCD 2402 THEORETICAL AND CONDENSED MATTER PHYSICS

Partner Organisations & Collaborating Organisations

The University of Western Australia
Edith Cowan University
Murdoch University

Administering Organisation Curtin University of Technology

Project Summary

The advanced capabilities of the proposed nano-machining scanning electron microscope will facilitate research at the forefront of materials science and engineering. The proposed facility will play a key role in leading applied research across a wide range of areas including materials technology, nanochemistry, corrosion research, geology, sensor development, minerals processing and environmental research. The proposed facility to be used

by scientific and industrial researchers will deliver applied interdisciplinary research of an international standard and allow Australian industries to remain internationally competitive.

Murdoch University

LE0775763 Prof MG Jones; Prof R Appels; Prof DJ Hampson; Dr RP Tiwari; Dr DM Groth; Dr GW O'Hara; Dr C Li; A/Prof GE Hardy; Dr W Ma; A/Prof RD Trengove; Dr GI Dwyer; Prof GE Wilcox; Dr M Francki; Dr RJ Lipscombe

Approved Project Title **High throughput orthogonal mass spectrometer for biotechnology research in WA**

2007 : $ 189,000

Primary RFCD 2708 BIOTECHNOLOGY

Partner Organisations & Collaborating Organisations

Curtin University of Technology
The Department of Agriculture and Food WA
Saturn Biotech Pty

Administering Organisation Murdoch University

Project Summary

The new 'orthogonal' mass spectrometer will be housed at the WA State Agricultural Biotechnology Centre at Murdoch University (SABC). The SABC is a multi-user university centre that provides equal access for researchers from all universities, state government and industry to major facilities. The equipment will provide a competitive advantage to researchers undertaking fundamental and applied projects that underpin new developments in plant and animal agriculture. Outcomes include: development of new molecular markers to speed crop improvement and quality, animal genetic improvement and health, and support for new biotechnology companies. This will benefit the community through more productive, competitive and sustainable agriculture.

The University of Western Australia

LE0775672 A/Prof M Bennamoun; Prof RA Owens; Dr DD Lichti; A/Prof MP Stewart; A/Prof AL Rohl; Prof MA Spackman; Prof GM Parkinson; A/Prof MI Ogden; Prof DD Sampson; Prof JP Trevelyan; A/Prof K Haines; Dr F Boussaid; Prof SA Worden; Dr IC Fitzsimons

Approved Project Title **3D Scanning and Printing Facilities (3DSPF)**

2007 : $ 150,000

Primary RFCD 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

Partner Organisations & Collaborating Organisations

Curtin University of Technology

Administering Organisation The University of Western Australia

Project Summary

A one-stop shop is proposed to accommodate 3D scanning and printing facilities in WA to advance a range of research projects currently undertaken by internationally renowned researchers in their respective fields. The facility will impact on our research programs in a wide range of disciplines including rapid prototyping, robotics, geomatics, demining, nanotechnology, and molecular modeling. These projects are of high significance and will advance research in most of the national priorities. The facility can also be used for training and teaching purposes. The facility builds on a previous long range scanning facility and on the State Government's support of leading edge computational and visualization facilities.

LE0775650 Dr PF Greenwood; Prof RJ Watling; A/Prof K Grice; Dr M Tibbett; Dr PF Grierson; Prof RI Kagi; Dr CJ Boreham; Dr B van Aarssen; Dr A Heitz

Approved Project Title **Advanced multi-purpose analytical pyrolysis facility**

2007 : $ 170,000

Primary RFCD 2504 ANALYTICAL CHEMISTRY

Partner Organisations & Collaborating Organisations

Curtin University of Technology
OTHER (John de Later Centre)
OTHER (CRCWQT)
Geoscience Australia (GA)

Administering Organisation The University of Western Australia

Project Summary

Investment by the ARC, two WA universities, a government research agency, a CRC (and idirectly by a water utility) demonstrate the national need for this analytical facility and the broad commitment to maintain Australia's reputation in the field of analytical pyrolysis. An innovative laser micropyrolysis facility will be concurrently used with a recent commercially available unit to support research of present day and palaeo-environmental occurrences of OM, directly assisting an eclectic range of research activities including environmental protection and petroleum exploration. This facility will also aid the chemical fingerprinting of minute forensic evidence, ultimately helping to convict perpetrators of crime.

LE0775642	Dr PF Grierson; Dr NJ McNaughton; A/Prof K Grice; Dr DV Murphy; Prof DI Walker; A/Prof GA Kendrick; Dr L Barton; A/Prof JD Roberts; Dr N Brueggemann; Prof H Rennenberg
Approved Project Title	**Stable isotope facility for biological, ecological, and geological applications - West Australian Biogeochemistry Centre**
2007 :	$ 350,000
Primary RFCD	3008 ENVIRONMENTAL SCIENCES

Partner Organisations & Collaborating Organisations

Curtin University of Technology
John de Laeter Centre for Mass Spectrometry
Albert Ludwigs University, Freiburg
Karlsruhe Research Center Institute for Meteorology and Climate Research (IMK-IFU), Germany

Administering Organisation The University of Western Australia

Project Summary

Stable isotope science underpins many disciplines of research, from forensic identification of sources of counterfeit money through to understanding the formation of gold and other mineral deposits. Stable isotope science also provides insights that will improve management of water and land resources, including the impacts of utilisation of groundwater, reducing gaseous emissions from land-use change and knowledge of food webs in marine systems. While a handful of laboratories utilise IRMS around Australia, equipment is fully utilised, outdated and limiting progress. A new IRMS will transform capabilities in WA and enhance projects in terrestrial and marine ecology, ecosystem science and geochemistry of mineral deposits.

LE0775499	Dr A Keating; A/Prof JM Dell; Prof L Faraone; Dr G Parish; A/Prof Y Liu; Prof X Hu; Prof K Alameh; Prof C Jagadish; Mr A Tarr
Approved Project Title	**High Performance Optical Profilometer for mapping micro/meso/macroscopic topography**
2007 :	$ 130,000
Primary RFCD	2909 ELECTRICAL AND ELECTRONIC ENGINEERING

Partner Organisations & Collaborating Organisations

The Australian National University
Edith Cowan University
Department of Agriculture and Food, WA

Administering Organisation The University of Western Australia

Project Summary

Developing advanced, high performance new materials requires an understanding of surfaces and interfaces. Making a small area, low yield material or device is a regular occurrence within the Australian research community. The ability to create reproducible, high yield materials requires greater understanding of the stresses, uniformities and deformations in a material over large areas. The proposed instrument can measure topography over many centimeters-squared with sub-micron spatial resolution, currently beyond the capabilities of researchers in Australia. By providing a quantitative method to measure surface textures, the instrument will also support Australian industries looking for improved process control.

LE0775551	Prof CL Raston; Prof MA Spackman; A/Prof CE Buckley; A/Prof MV Baker; Prof SJ Berners-Price; A/Prof D Jayatilaka; Dr GA Koutsantonis; A/Prof Y Liu; Dr M Makha; Dr AJ McKinley; Dr MJ Piggott; Dr CB Smith; A/Prof TG St Pierre; A/Prof RL Stamps; Dr SG Stewart; Dr KL Swaminatha-Iyer; Prof JD Gale; Dr RD Hart; Prof B O'Connor; A/Prof MI Ogden; Dr WR Richmond; Prof A van Riessen
Approved Project Title	**Integrated Advanced X-ray Diffraction Facility**
2007 :	$ 550,000

Primary RFCD 2501 PHYSICAL CHEMISTRY (INCL. STRUCTURAL)

Partner Organisations & Collaborating Organisations

Curtin University of Technology
Advanced Nano-Technologies

Administering Organisation The University of Western Australia

Project Summary

The new equipment will provide a unique facility for single crystal, powder and thin film structure elucidation using X-ray diffraction techniques. No other techniques have the capabilities in structure determination of materials at an atomic level which are necessary for delivering applications in nano-technology, health care products, amongst many fields, for the benefit for the community at large. The facility will foster a more innovative research culture and provide excellent research training at the highest international level, and will provide a platform to maximise access to the new Opal Research Reactor and Australian Synchrotron.

Tasmania

University of Tasmania

LE0775570 Prof JB Reid; Prof AJ Canty; Dr MG Gardiner; A/Prof AK West; Prof S Foote; Dr EF Hilder; Dr NW Davies; Dr JJ Ross; A/Prof BM Potts

Approved Project Title **Purchase of a high resolution organic mass spectrometer**

2007 : $ 570,000

Primary RFCD 2702 GENETICS

Partner Organisations & Collaborating Organisations

Administering Organisation University of Tasmania

Project Summary

The diverse research supported by the new instrument is expected to encompass a wide range of beneficial outcomes in the areas of health, plant genetics and breeding, horticulture, chemistry and novel analytical technologies. Genetic studies will lead to improved plant crops and are expected to contribute to new treatments for multiple scleroris and diabetes. Investigations in organic and organometallic chemistry will lead to the production of better materials, more efficient catalysts and novel drugs. This instrument will provide infrastructure essential to enabling researchers to maintain internationally competitive profiles in these areas.

Northern Territory

Charles Darwin University

LE0775760 Dr W Ahmad; Prof DM Bowman; Dr G Boggs; Dr DM Pearson; Prof ST Garnett

Approved Project Title **Satellite remote sensing and GIS data processing facilities at Charles Darwin University, Darwin**

2007 : $ 101,967

Primary RFCD 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

Partner Organisations & Collaborating Organisations

Administering Organisation Charles Darwin University

Project Summary

Northern Australia is vast, remote and spreads across diverse and extensive landscapes. There is no centralised remote sensing and GIS facility within 2000 kilometres of the CDU, Darwin. The upgraded infrastructure at CDU will assist in strengthening the research base in this remote part of Australia. This will allow the NT researchers to focus on the environmental applications of remote sensing and GIS technologies which will have many community benefits through better management of water resources, land degradation, wetlands, cultural knowledge and sustainable use of Australian biodiversity. The infrastructure will also assist in the training of new researchers within this developing field.

Australian Capital Territory

The Australian National University

LE0775546 Prof MS Bessell; Prof MA Dopita; Prof M Colless; Prof RW Hunstead; A/Prof MC Ashley; A/Prof MJ Drinkwater

Approved Project Title **Construction of the blue-arm of the ANU 2.3m telescope Wide-Field Spectrograph**

2007 : $ 370,000

Primary RFCD 2401 ASTRONOMICAL SCIENCES

Partner Organisations & Collaborating Organisations

Anglo Australian Observatory
The University of Sydney
The University of New South Wales
The University of Queensland

Administering Organisation The Australian National University

Project Summary

The new blue and red arms of the WiFeS spectrograph on the SSO 2.3m telescope utilizes new optical techniques and advances in detector technology to provide unique capabilities for front-line research and student training. The novel integral field units on WiFeS extract spectra across the face of faint, distant galaxies enabling the dynamics of the stellar and gas content to be analysed in unprecedented detail. Another important project will be to follow-up interesting objects discovered by the new SkyMapper telescope and establish those that need to be observed on 8 m telescopes such as Gemini, Magellan or VLT.

LE0775729 Prof RG Elliman; Prof B Luther-Davies; A/Prof TJ Senden; A/Prof Y Chen; Dr JE Bradby; Dr L Fu; Prof I Jackson; Dr IS Williams; Dr JD Fitz Gerald; Prof RL Withers; Dr S Welch; Dr ZH Stachurski; Dr KJ Weber

Approved Project Title **Improved understanding of nanoscale materials - structure, composition, crystallography and defects revealed by electron imaging and analysis at high spatial resolution**

2007 : $ 420,000

Primary RFCD 2402 THEORETICAL AND CONDENSED MATTER PHYSICS

Partner Organisations & Collaborating Organisations

Administering Organisation The Australian National University

Project Summary

Modern materials scientists and engineers are driven by world-wide competition to develop new technology and manufactured devices. The trend has for some time been towards miniaturisation and one of the main challenges lies in effectively characterising nanostructures that are produced as a key step in research and development of advanced materials. The proposed electron microscope and detectors will provide a state-of-the-art analytical facility to support the cross-disciplinary materials science and nanotechnology research at the Australian National University. It will also provide an important training facility for students and early-career researchers and will be available to investigators from other Australian institutions.

LE0775533 Dr M Honda; Dr D Phillips; Prof TM Harrison; Prof JM Chappell; Dr BJ Pillans; Prof GS Lister; Prof LK Fifield; Prof AJ Gleadow; A/Prof BP Kohn; Prof AR Chivas; Prof SY O'Reilly; A/Prof DR Cooke; Prof RG Roberts; Prof CV Murray-Wallace

Approved Project Title **A New Generation Noble Gas Mass Spectrometer Facility for Advanced Research in the Earth, Planetary and Environmental Sciences**

2007 : $ 700,000

Primary RFCD 2603 GEOCHEMISTRY

Partner Organisations & Collaborating Organisations

The University of Melbourne
University of Wollongong
Macquarie University
University of Tasmania

Administering Organisation The Australian National University

Project Summary

The current proposal, to establish a new Noble Gas Analytical Consortium for noble gas chronological and geochemical analyses, will generate new knowledge on the evolution of the Earth, with profound implications for past climate change, landscape evolution, formation of ore bodies, and terrestrial geodynamics. Consequently, the facility will conform to the National Research Priority of 'An Environmentally Sustainable Australia'. The new facility will ensure that Australian research remains at the forefront of international science development and will also provide essential training for the next generation of Australian scientists.

LE0775510	Dr DA Mitchell; Prof MC Western; Prof MS Humphreys; A/Prof DN Denemark; Prof PG Saunders; Prof HL Kendig; Dr HA Evans; Dr TM Rowse; Dr LR Smith; Prof I McAllister; Ms SK Holloway; Mr SC Hungerford; Dr TL Phillips; Dr AE Smith; A/Prof M Emmison; Dr LA Cheshire; Dr AF Broom; Dr BW Bradbury; Prof RJ Stimson; Dr B Evans
Approved Project Title	**Australian Social Science Data Archive: Network Extension and Sub-archive Development**
2007 :	$ 400,000
Primary RFCD	2801 INFORMATION SYSTEMS

Partner Organisations & Collaborating Organisations

The University of Queensland
The University of Western Australia
The University of New South Wales
Australian Consortium for Social and Political Research

Administering Organisation The Australian National University

Project Summary

The Australian Social Science Data Archive is a national facility that allows all researchers and members of the public to access a wide range of social science data sets for on-line analysis. The archive contains data that covers forty years of social, political and economic surveys. The archive also acts as a gateway for social science researchers to access data from equivalent overseas institutions in North America, the European Union and OECD countries.