

## Australian Capital Territory

### The Australian National University

**LE0989474** Prof MG Banwell; Prof CJ Easton; Prof LN Mander; A/Prof MS Sherburn; Dr MD McLeod

**Approved Project Title** **Organic Synthesis and Reaction Processing Facility**

**2009 :** \$ 200,000

**Primary RFCD** 2503 ORGANIC CHEMISTRY

#### Partner Organisations & Collaborating Organisations

The Australian National University

**Administering Organisation** The Australian National University

#### Project Summary

Chemical synthesis is not only an important activity in its own right but one that provides compounds required in biology and physics. This enterprise is thus pivotal to many activities associated with a modern economy. Accordingly, it is vital to maintain a cutting-edge capacity in synthetic organic chemistry. The requested equipment will be assembled to create a state-of-the-art facility serving the needs of some sixty researchers engaged in diverse aspects of organic synthesis including those associated with the development of new antibiotics, drug delivery systems and molecular machines.

**LE0989731** Dr SM Eggins; Dr MJ Ellwood; Prof WA Maher; Prof MT McCulloch; Prof AR Chivas; Dr SD Foster; Dr DF Jolley; Dr MH Wille; Prof P De Deckker; Dr SJ Fallon

**Approved Project Title** **Instrumentation for Innovative Marine Biogeochemistry**

**2009 :** \$ 700,000

**Primary RFCD** 2604 OCEANOGRAPHY

#### Partner Organisations & Collaborating Organisations

The Australian National University

University of Canberra

University of Wollongong

**Administering Organisation** The Australian National University

#### Project Summary

Rising greenhouse gases are changing the chemistry of the oceans, by altering the availability of nutrients and causing ocean acidification. Along with local pollutants, these changes pose significant threats to the productivity and sustainability of Australia's marine ecosystems. The proposed instrumentation will support world-leading research into the nature, impact, and potential for mitigating these changes. This will underpin our ability to manage and preserve the environmental, societal and economic values of our coastal and open ocean marine resources.

**LE0989072** Prof WJ Foley; Prof DB Lindenmayer; Dr IR Wallis; A/Prof K French; Prof WA Buttemer

**Approved Project Title** **High throughput nitrogen analysis for ecological studies**

**2009 :** \$ 100,000

**Primary RFCD** 2707 ECOLOGY AND EVOLUTION

#### Partner Organisations & Collaborating Organisations

The Australian National University

University of Wollongong

**Administering Organisation** The Australian National University

#### Project Summary

Australian environments are unproductive partly because they contain little Nitrogen (N) and changes in atmospheric CO<sub>2</sub> will exacerbate this. Furthermore, animals cannot extract all the N from the plants they eat. An assay has been developed that measures how much they can extract (available N) and it is intended to use it to measure habitat quality and the effects of climate change over large tracts of land. This requires thousands of N analyses. The equipment we are requesting - a LECO combustion analyser, allows us to analyse samples quickly and safely and uses fewer chemicals and much less water than do traditional machines.

## Summary of Linkage Infrastructure, Equipment and Facilities Proposals

**LE0989624** Dr MK Gagan; Prof P De Deckker; Dr SM Eggins; Dr BN Opdyke; Dr MJ Ellwood; Dr SJ Fallon; Dr LK Ayliffe; Prof Dr R Grün; Prof GD Farquhar; Dr JJ Brocks; Dr SL O'Connor; Dr SG Haberle; Prof SF Cox; Dr MD Norman; Prof TR Ireland; Dr IS Williams; Dr A Dutton; Dr PC Treble; Prof JR Dodson; Dr D Fink; Dr Q Hua; A/Prof ID Goodwin; Dr P Hesse; Dr S Frisia; Dr GJ Prideaux

**Approved Project Title** **A high performance stable-isotope microanalytical facility for environmental Earth science and climate change research**

**2009 :** \$ 200,000

**Primary RFCD** 2606 ATMOSPHERIC SCIENCES

### **Partner Organisations & Collaborating Organisations**

The Australian National University  
Australian Nuclear Science & Technology Organisation (ANSTO)  
Macquarie University  
The University of Newcastle  
The Flinders University of South Australia

**Administering Organisation** The Australian National University

### **Project Summary**

Australia is exceptionally well positioned to play a lead role in the international effort to predict climate change, human impacts on the environment, and great submarine earthquakes and tsunamis. The new-generation stable-isotope microanalytical facility will give Australia unprecedented technical and modelling capacities and maximise the impact of high-profile research in the earth sciences. Every Australasian nation will benefit from new knowledge that is essential to address civilisation's most serious environmental threats. The new facilities will foster outstanding opportunities for collaboration, post-graduate education, and research training with outcomes that will engage the public in the excitement of scientific discovery.

**LE0989408** Dr W Hillier; A/Prof RJ Pace; Prof TJ Wydrzynski; Dr OK Atkin; Prof MR Badger; A/Prof GD Price; Dr JR Evans; Dr SM Whitney; Prof S Von Caemmerer; Prof GD Farquhar

**Approved Project Title** **A multiple-ion membrane inlet mass spectrometer**

**2009 :** \$ 150,000

**Primary RFCD** 2704 BOTANY

### **Partner Organisations & Collaborating Organisations**

The Australian National University

**Administering Organisation** The Australian National University

### **Project Summary**

There is a compelling need for a modern isotope-ratio mass spectrometer to facilitate a range of innovative studies of chemical and biochemical processes. Mass spectrometers operated with a thin permeable membrane over a vacuum inlet allow small gas molecules to be continuously monitored inside specific gas or liquid phase sample chambers. The proposed instrumentation will enable simultaneous and highly sensitive measurement of 10 different isotopic species and the capability for detection of hydrogen. This equipment will provide the many researchers and students with opportunities to determine isotopic signatures of isolated chemical reactions through to complex biochemical systems of whole living cells.

## Summary of Linkage Infrastructure, Equipment and Facilities Proposals

**LE0989093** Prof DE McClelland; Prof J Munch; Dr BJ Slagmolen; A/Prof PJ Veitch; Dr DA Shaddock; Dr DH Shoemaker; Dr SE Whitcomb; Dr A Lazzarini; Dr JN Marx

**Approved Project Title** **Australian Partnership in Advanced LIGO**

**2009 :** \$ 400,000

**2010 :** \$ 500,000

**2011 :** \$ 500,000

**2012 :** \$ 400,000

**Primary RFCD** 2401 ASTRONOMICAL SCIENCES

### **Partner Organisations & Collaborating Organisations**

The Australian National University

The University of Adelaide

California Institute of Technology

**Administering Organisation** The Australian National University

### **Project Summary**

Advanced Interferometer Gravitational-Wave Observatory (LIGO) (AdvLIGO) will be the first gravitational wave observatory capable of frequent observation of known sources of gravitational waves leading to the birth of gravitational wave astronomy. The development of instruments capable of doing this is driving technology in fields such as lasers, optics, photonics and data analysis. By playing a key role in this facility, Australia will reap the scientific and technical rewards of being part of the most exciting frontier of physics in the 21st Century whilst training scientists and technologists for tomorrow.

**LE0989083** Dr DA Mitchell; Dr BJ Evans; Prof MC Western; A/Prof DN Denmark; Mr GJ McCarthy; Prof NM Nakata; Prof L Mazerolle; Dr JA Byrne; Prof JR Wiseman; Dr MP Crozier; A/Prof AT Kenyon; A/Prof JE McLeod; Prof CB Ferguson; Prof PR Boreham; Dr LA Cheshire; Dr TN Burrows; Dr RJ Denning; Prof Dr LY Behrendt; Prof A Jakubowicz; Prof PF McDonald; Prof I McAllister; Dr EE Gray; Dr LR Smith; Mr SC Hungerford; Ms SK Holloway

**Approved Project Title** **Australian Social Science Data Archive: Provision of Advanced Research Infrastructure and Collaborative Environment**

**2009 :** \$ 550,000

**Primary RFCD** 3602 POLICY AND ADMINISTRATION

### **Partner Organisations & Collaborating Organisations**

The Australian National University

The University of Queensland

The University of Western Australia

The University of Melbourne

Griffith University

University of Technology, Sydney

Other Peak Body: Aust Consortium for Social and Political Research Inc

**Administering Organisation** The Australian National University

### **Project Summary**

The Australian Social Science Data Archive (ASSDA) supports researchers in a wide range of social science and humanities disciplines. These researchers are both primary and secondary users of data collected across a range of economic, social, political and cultural areas. Increasingly, complex public policy problems require multi-disciplinary solutions based on a range of data sources to address these problems. This proposal provides a means for Australia's leading edge researchers to advance the knowledge base that can lead to the development of strong evidence based policy. The open access policies of ASSDA ensures that the general public, media, non-government organisation (NGOs) and government agencies are able to examine the public use data sets that are used by researchers to arrive at their conclusions.

## Summary of Linkage Infrastructure, Equipment and Facilities Proposals

**LE0989759** Dr MC Ridgway; Prof PA Lay; Prof R De Marco; Dr CT Dillon; Dr HH Harris; Dr RN Collins; A/Prof I Low; Prof SK Bhargava; A/Prof IR Gentle; Prof AR Gerson; Prof TD Waite; Prof DC Creagh; Dr RF Garrett

**Approved Project Title** **Australian Access to and Operation of Advanced Synchrotron Radiation Facilities at the Photon Factory**

**2009 :** \$ 180,000  
**2010 :** \$ 180,000

**Primary RFCD** 2402 THEORETICAL AND CONDENSED MATTER PHYSICS

### Partner Organisations & Collaborating Organisations

The Australian National University  
The University of Sydney  
Curtin University of Technology  
University of Wollongong  
The University of Adelaide  
The University of New South Wales  
RMIT University  
The University of Queensland  
University of South Australia  
University of Canberra  
Australian Synchrotron Research Program/Australian Synchrotron  
Australian Nuclear Science & Technology Organisation (ANSTO)  
Institute of Materials Structure Science/The Photon Factory, Japan

**Administering Organisation** The Australian National University

### Project Summary

The primary national benefit of this application will be continued access by peer review for Australian scientists to the advanced synchrotron-radiation capabilities of the Australian National Beamline Facility and other complementary beamlines at the Photon Factory, Japan. This proposal is consistent with the National Research Priorities of An Environmentally Sustainable Australia, Promoting and Maintaining Good Health and Frontier Technologies for Building and Transforming Australian Industries and will generate science to support and stimulate domestic industry, enhance the domestic knowledge base and international research profile, train students and future synchrotron scientists and foster domestic and international collaborations.

**LE0989589** Dr MF Shannon; Dr ES Dennis; Dr DB McNevin; Dr JG Oakeshott; Dr GE Allison; Dr CI Cazzonelli; Dr MC Cook; Prof MD Crisp; Prof S Eastal; Prof WJ Foley; Prof A Georges; Prof CC Goodnow; Dr DM Gordon; Prof JA Graves; Prof AR Hardham; A/Prof JS Keogh; Dr C Linde; Prof S Mahalingam; Prof R Peakall; Dr BJ Pogson; Prof RB Saint; Prof MJ Spriggs; Dr DJ Tremethick; Dr AG Young

**Approved Project Title** **A massively parallel genome analysis facility for the ACT region**

**2009 :** \$ 550,000

**Primary RFCD** 2707 ECOLOGY AND EVOLUTION

### Partner Organisations & Collaborating Organisations

The Australian National University  
CSIRO - Plant Industry  
University of Canberra  
CSIRO - Entomology

**Administering Organisation** The Australian National University

### Project Summary

Maintaining a healthy environment, supporting a sustainable agriculture industry and providing excellent healthcare are three key requirements for the future of Australia and Australians. Modern biological research has a major role to play in all three areas. The success and application of this research requires a serious investment in the new technologies that enable a systems-wide high throughput approach to biological questions. Co-investing in a massively parallel genome analysis facility to underpin cutting edge environmental, agricultural and biomedical research in the ACT region, will facilitate progress in areas of the utmost importance to the community and future of the nation.