Western Australia

The University of Western Australia

LP0883812 Prof PA Cawood; Prof K Grice; Mr R Hocking; Prof JL Kirschvink; Dr P Montgomery; Dr PE Playford; Mr T Playton; Mr N Thompson; Dr JA Trotter; Prof P Ward

Approved Project Title **Chronostratigraphic Framework for the Devonian Canning Basin - A Multidisciplinary Record of Environmental Change**

2008 : $ 60,000
2009 : $ 162,500
2010 : $ 230,000
2011 : $ 127,500

Primary RFCD 2602 GEOPHYSICS

Collaborating/Partner Organisation(s)

Chevron Australasia Pty Ltd
ARC Energy
Geological Survey of Western Australia
MERIWA

Administering Organisation The University of Western Australia

Project Summary

Our detailed chronostratigraphic framework for Canning Basin and the biomarker data on source rock history provides an increased understanding of the resource potential of the basin and similar settings worldwide. Furthermore this high-fidelity data will be used by companies to develop the 'next' generation of hydrocarbon industry modelling workflows. Our research program also has important environmental implications; providing insight into drivers for Devonian mass extinctions and as periods of past biotic crises become increasingly understood they can provide critical insights into determining the thresholds of environmental change, which may potentially serve as analogues for present-day global climate change scenarios.

LP0883292 A/Prof JG Hartnett; Prof SJ Tingay; Mr JH Searls; A/Prof EN Ivanov; Prof ME Tobar; Dr GI Moore; Dr A Tzioumis

Approved Project Title **Application of ultra-high stability cryogenic sapphire oscillators to Very Long Baseline Interferometry**

2008 : $ 62,500
2009 : $ 107,500
2010 : $ 97,500
2011 : $ 52,500

Primary RFCD 2917 COMMUNICATIONS TECHNOLOGIES

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Poseidon Scientific Instruments

Administering Organisation The University of Western Australia

Project Summary

This project will develop a state-of-the-art commercial prototype of the cryogenic sapphire oscillator (CSO) optimised for use at remote sites. Proof of operation will be applied to the important niche market of Very-Long Baseline Interferometry (VLBI) radio astronomy, with improvements in image quality. The research will also significantly benefit the Australian bid for the SKA project, as the CSO is the only technology capable of synchronising the outputs of the telescopes arrays to the required signal to noise to attain the required image quality. The project will further Australia's status in radio astronomy as a world leader and add to our exports of precision scientific instruments.

LP0883902 Dr TR Martin; Dr RJ Lipscombe

Approved Project Title **Wheat biomarkers - the effect of nitrogen withdrawal on the proteome and peptidome**

2008 : $ 12,813
2009 : $ 25,627
2010 : $ 25,627
2011 : $ 12,813

Primary RFCD 3002 CROP AND PASTURE PRODUCTION

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Proteomics International P/L

Administering Organisation The University of Western Australia

Project Summary

Nitrogen is a crucial macroelement for plants. Its importance is highlighted by the wide use of agricultural nitrogen fertilizers in Australia and world wide. This comes at substantial costs for the environment and the economy, due to low nitrogen use efficiency of cereals and environmental impacts. By understanding plant responses to nitrogen we can improve nitrogen efficiency. This project will identify proteins and peptides as biomarkers of plant responses to nitrogen withdrawal. Such biomarkers can be used in plant breeding and in agricultural prediction of plant nitrogen requirements with the potential to reduce agricultural costs and environmental impacts.

LP0883914 Prof CL Raston; Dr KL Swaminatha-Iyer; Dr L Lim; Dr B Bosch

Approved Project Title **Targeted process development for drug delivery**

2008 : $ 51,383
2009 : $ 99,270
2010 : $ 97,299
2011 : $ 49,412

Primary RFCD 2918 INTERDISCIPLINARY ENGINEERING

Collaborating/Partner Organisation(s)

iCeutica, Inc.

Administering Organisation The University of Western Australia

Project Summary

Matrix assisted ball milling and continuous flow process intensification on rotating surfaces in the form of spinning discs and rotating tubes, and combinations of these, allow the fabrication of nanoparticles for the pharmaceutical industry, with the ability to fine tune the properties of the particles to improve their uptake profiles, while minimising side effects. The research will be conducted through the Centre for Strategic Nano-Fabrication with its science based attention to quality by design for product development at the inception of the science. This, coupled with the involvement of iCeutica which has a strong commercially focused R and D profile, provides a more innovative research culture, and excellent research training.

LP0884103 Dr AW Rate; Dr NW Radford

Approved Project Title **Evaluating a biogeochemical mechanism for soil anomaly formation using diffusive thin-film samplers in geochemical exploration**

2008 : $ 12,813
2009 : $ 25,627
2010 : $ 25,627
2011 : $ 12,813

Primary RFCD 2603 GEOCHEMISTRY

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Newmont Mining Corporation

Administering Organisation The University of Western Australia

Project Summary

We expect to develop new and effective technology for geochemical exploration for gold and base metals. This technology will take the form of: (i) increased understanding of, and a new conceptual model for, biogeochemical formation of soil geochemical anomalies in transported overburden; (ii) new chemical analysis techniques for soils and groundwater in mineralised areas. Improved models for anomaly formation will provide a clearer frame work for exploration in terrain under transported cover. New methodology has the potential to enhance anomaly detection for buried mineralisation, especially if the anomaly has formed biogeochemically.

LP0883979 Prof Z Rengel; Dr KA Meney

Approved Project Title **Optimising biodegradation and removal of organic and inorganic pollutants in wastewater using constructed wetlands**

2008 : $ 40,000
2009 : $ 77,500
2010 : $ 75,000
2011 : $ 37,500

Primary RFCD 2911 ENVIRONMENTAL ENGINEERING

Collaborating/Partner Organisation(s)

Syrinx Environmental Pty Ltd
Australian Laboratory Services Pty Ltd
King Island Council
Department of Water

Administering Organisation The University of Western Australia

Project Summary

The urgency of water recycling is dictated by drying climate and rapid expansion of population in Australia. Constructed wetlands are environmentally-benign way to purify wastewater by removing inorganics and facilitating biodegradation of organic pollutants, thus producing recycled water that can be used in a variety of fit-for-purpose applications. This project will produce a decision-support system for optimising wetland performance in removing inorganics and biodegrading organic pollutants from wastewater, thus enhancing water recycling and reuse in this drying continent of ours.