

Summary of Linkage International Awards Proposals

University of Wollongong

LX0882706 Dr JL Beck; Prof NE Dixon; Prof C Robinson

Approved Project Title **Mass Spectrometric Investigations of Conformation and Dynamics of Biological Complexes**

2008 : \$ 11,000

2009 : \$ 13,000

2010 : \$ 13,000

Primary RFCD 2799 OTHER BIOLOGICAL SCIENCES

Collaborating Countries

Administering Organisation University of Wollongong

Project Summary

The new collaboration between the leading mass spectrometry groups at University Wollongong and Cambridge University will benefit both partners. Researchers at Wollongong will have access to an ion mobility mass spectrometry technology not currently available in Australia that will contribute to our understanding of complicated cellular processes such as chromosome replication. The researchers' experience with this technology will pave the way for introduction of the technology to Australia and benefit the wider scientific community in wide-ranging projects such as development of new antibiotics and vaccines. Students from both institutions will benefit from experiencing science from an international perspective.

LX0881890 Prof Dr S Dolnicar; Prof Dr F Leisch

Approved Project Title **Response style heterogeneity in empirical marketing research**

2008 : \$ 9,658

2009 : \$ 10,573

2010 : \$ 20,173

Primary RFCD 3502 BUSINESS AND MANAGEMENT

Collaborating Countries

Administering Organisation University of Wollongong

Project Summary

This study aims to improve the validity of empirical studies by accounting for different ways in which respondents answer questionnaires (response styles) while analysing the data. Response styles have been shown to depend on the cultural background of respondents. This work therefore is of particular importance in Australia given the large number of cultural backgrounds residents come from. The proposed method will be empirically tested in the context of surveys investigating sustainable tourism, public acceptance of alternative water sources and volunteering, three areas which are central to maintaining Australia's environmental sustainability and providing social and environmental services which are not covered by the commercial sector.

LX0881969 Prof SX Dou; Dr Y Zhao; Prof X Xi; Prof Dr G Ramanath; Prof QJ Li; Dr G Peleckis

Approved Project Title **Development of nano-structured thermoelectric materials for power generation from heat**

2008 : \$ 18,200

2009 : \$ 20,200

2010 : \$ 20,200

Primary RFCD 2918 INTERDISCIPLINARY ENGINEERING

Collaborating Countries

Administering Organisation University of Wollongong

Project Summary

To make thermoelectric technology attractive for practical power generation purposes, new high efficiency materials have to be developed. Our fabricated nanostructured thermoelectric materials will have improved performance due to the peculiarities in electrical and thermal transport. The novel thermoelectric materials and constructed prototype devices with high thermoelectric performance will be practically used for various power generation purposes. This offers a long-term solution to the global warming threat through decreasing amounts of waste heat presently generated. It will also strengthen Australia's position in world-wide research on thermoelectricity.

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LX0882106 Dr M Hagenbuchner; Prof A Tsoi; Prof M Gori; Prof F Scarselli; Prof A Sperduti

Approved Project Title **Investigations into machine learning applications in link analysis.**

2008 : \$ 3,100
2009 : \$ 12,000
2010 : \$ 7,900

Primary RFCD 3803 COGNITIVE SCIENCE

Collaborating Countries

Administering Organisation University of Wollongong

Project Summary

Link analysis is an emerging tool for the detection of patterns in structured data. The detection of pattern in such data can lead to the detection of fraud occurrence, security breaches in computer systems, and patterns of social interactions with a community. It is also popularly applied to applications such as Web search engine designs and marketing analysis. This project aims to advance the area of link analysis by allowing the incorporation of contextual information which accounts for relationships among actors properly. Advances in link detection will allow improvements in security and Web services on which a wide field of national bodies rely. This project can help to place Australia at the forefront of this research area.

LX0882882 A/Prof LT Lyons; Dr MT Ford; Prof H Cunningham; Prof J Heyman; Prof TM Wilson

Approved Project Title **Comparative Border Studies**

2008 : \$ 6,100
2009 : \$ 2,400
2010 : \$ 7,100

Primary RFCD 3601 POLITICAL SCIENCE

Collaborating Countries

Administering Organisation University of Wollongong

Project Summary

While borders are of increasing interest to Australian scholars and policy-makers, much existing research in Australia is focused on issues of border security or border integrity. There is an urgent need to supplement this work with theoretical and empirical insights drawn from the field of border studies. North America is a key site for international research in this field. Collaboration with North American scholars is thus an important step in developing and expanding Australian expertise in border studies. This project will provide the intellectual environment and collaborative networks necessary to establish the first dedicated Centre for Border Studies in Australia.

LX0882225 A/Prof X Wang; Prof S Lee

Approved Project Title **Mechanism and enhancement of supercurrent carrying ability in magnesium diboride superconductor**

2008 : \$ 12,900
2009 : \$ 18,350
2010 : \$ 18,350

Primary RFCD 2914 MATERIALS ENGINEERING

Collaborating Countries

Administering Organisation University of Wollongong

Project Summary

The newly discovered MgB₂ superconductor has great potential to replace the existing conventional superconductors for uses in various medical and industrial applications. This project brings together two world leading groups with complementary expertise to develop a fundamental understanding of the factors controlling MgB₂ performance and to find effective ways to significantly improve its supercurrent carrying capabilities for practical applications. The outcome of this project will be of benefit to both countries and will lead to many practical applications such as transformers, rotors, and transmission cables, as well as magnetic resonance imaging without using liquid helium, reducing greenhouse gas emissions and global warming.