

**New South Wales**

**University of Wollongong**

**FT0990391** Dr Z Cheng

**Approved Project Title** **Manipulation of Spin by Electric Field**

**2009 :** \$ 85,800  
**2010 :** \$ 171,600  
**2011 :** \$ 171,600  
**2012 :** \$ 171,600  
**2013 :** \$ 85,800

**Primary RFCD** 2914 MATERIALS ENGINEERING

**Administering Organisation** University of Wollongong

**Project Summary**

Spin manipulation is one of the most challenging topics in the new emerging spintronics technology. This project will develop a novel solution for the problem of spin manipulation and falls into the National Research Priority: Frontier Technologies for Building and Transforming Australian Industries. This project will provide training for postgraduate students and develop patentable science and technologies. The successful accomplishment of this project will consolidate the knowledge and technology background that is needed for Australia to develop the next generation of spin-base electronics. In the long term, spin-based electronics with high efficiency and very low energy consumption will benefit the Australian manufacturing industry.

**FT0991986** A/Prof B Garner

**Approved Project Title** **Targeting brain lipid homeostasis to treat Alzheimer's disease**

**2009 :** \$ 98,600  
**2010 :** \$ 197,200  
**2011 :** \$ 197,200  
**2012 :** \$ 197,200  
**2013 :** \$ 98,600

**Primary RFCD** 3207 NEUROSCIENCES

**Administering Organisation** University of Wollongong

**Project Summary**

Dementia affects approximately 250,000 people in Australia at an estimated cost (in 2002) of \$6.6 billion per annum. The major cause of dementia (accounting for approximately 70% of all cases) is Alzheimer's disease (AD); a progressive neurodegenerative illness for which there is no curative or disease-stalling treatment. Due to increases in life expectancy, the incidence of AD is predicted to triple by 2050 unless disease-modifying treatments are developed. This research program will provide novel realistic pharmaceutical approaches to treat AD. Even if the onset of AD could be delayed by a few years the personal and financial benefits would be enormous. The potential for this research to generate commercially viable Australian intellectual property is also significant.

## Summary of ARC Future Fellowships Proposals for Funding to Commence in 2009

**FT0991193** A/Prof CR Gibson

**Approved Project Title** **Crisis and change: cultural-economic research on the adaptability and sustainability of Australian households**

**2009 :** \$ 85,800  
**2010 :** \$ 171,600  
**2011 :** \$ 171,600  
**2012 :** \$ 171,600  
**2013 :** \$ 85,800

**Primary RFCD** 3704 HUMAN GEOGRAPHY

**Administering Organisation** University of Wollongong

### Project Summary

This research will enable better understanding of the ways in which households respond to governmental imperatives to become more sustainable in their own circumstances. It will reveal unheralded patterns of adaptation and innovative responses among ordinary households to the problems of climate change, financial crisis, and demographic transition. Funding this research will provide an opportunity for government to listen to Australian households, and to learn from their experiences as they grapple with contemporary economic, environmental and demographic challenges. It will enhance Australia's ability to become more environmentally sustainable, strengthen the social fabric of communities and reveal vernacular forms of innovation culture.

**FT0990846** Dr MP in het Panhuis

**Approved Project Title** **Soft carbon nanotube materials**

**2009 :** \$ 85,800  
**2010 :** \$ 171,600  
**2011 :** \$ 171,600  
**2012 :** \$ 171,600  
**2013 :** \$ 85,800

**Primary RFCD** 2915 BIOMEDICAL ENGINEERING

**Administering Organisation** University of Wollongong

### Project Summary

There is no doubt that the realisation of new bionic materials will dramatically improve quality of life for many individuals. The new soft conducting materials proposed will impact on several areas of bionics, including the development of the next generation Bionic Ear, conduits for spinal cord regeneration as well as muscle regeneration and other applications. This project will further enhance the international profile of the ARC Centre of Excellence for Electromaterials Science in the field of Bionics. The end-user network already in place will ensure all opportunities are fully exploited.

**FT0992328** Prof VC Mackie

**Approved Project Title** **From Human Rights to Human Security: Changing Paradigms for Dealing with Inequality in the Asia-Pacific Region**

**2009 :** \$ 111,400  
**2010 :** \$ 222,800  
**2011 :** \$ 222,800  
**2012 :** \$ 222,800  
**2013 :** \$ 111,400

**Primary RFCD** 4301 HISTORICAL STUDIES

**Administering Organisation** University of Wollongong

### Project Summary

This project is particularly timely as we celebrate the 60th anniversary of the Universal Declaration of Human Rights. It is clearly aligned with the national research priority goals of Understanding our Region and the World and Strengthening Australia's Social and Economic Fabric. The question of human rights is a pressing issue throughout the Asia-Pacific region and much is to be gained by a comparative approach which considers strategies for embedding human rights practice and principles in particular local contexts and how they may be adapted in other national contexts.

## Summary of ARC Future Fellowships Proposals for Funding to Commence in 2009

**FT0990287** Dr AJ Oakley  
**Approved Project Title** **Fragment Based Screening for new Antibiotics by Protein X-Ray Crystallography**  
**2009 :** \$ 85,800  
**2010 :** \$ 171,600  
**2011 :** \$ 171,600  
**2012 :** \$ 171,600  
**2013 :** \$ 85,800  
**Primary RFCD** 2701 BIOCHEMISTRY AND CELL BIOLOGY  
**Administering Organisation** University of Wollongong

### Project Summary

Due in part to rising levels of antibiotic resistance, the death toll from pathogenic bacteria is expected to skyrocket over the next 15 years. There is therefore a pressing need for new antibiotics to treat bacterial infection. This project will use a relatively new discovery tool called fragment based screening to discover a new generation of antibacterial agents. This tool will allow for the rapid economical discovery of new drugs, and will complement other investments in Australian biotechnology infrastructure.

**FT0991397** A/Prof W Susilo  
**Approved Project Title** **Secure and Efficient Fair Exchange Protocols**  
**2009 :** \$ 85,800  
**2010 :** \$ 171,600  
**2011 :** \$ 171,600  
**2012 :** \$ 171,600  
**2013 :** \$ 85,800  
**Primary RFCD** 2805 DATA FORMAT  
**Administering Organisation** University of Wollongong

### Project Summary

Information security is becoming increasingly important in the rapidly growing field of e-commerce. This project will enable the development of secure fair exchange protocols and schemes, which will be absolutely crucial to Australia's national security. The project will also strengthen international collaboration through the reciprocal exchange of researchers leading to a more collaborative and productive research environment. Furthermore, the project will help to maintain the high research profile of Australian researchers and provide cutting-edge information technology for the Australian telecommunication industry, business and government.