



## Examples of new *Linkage Projects* in 2010

### Physical, Chemical and Earth Sciences

**The University of Queensland** (Contact: 07 3365 1120)

*Impact of reforestation on the mitigation of climate extremes in eastern Australia resulting from global warming* (LP100100738)

**Summary:** This project will provide new information for climate change policy development and the goal of an Environmentally Sustainable Australia. It has a strong policy-management imperative, investigating the need for the maintenance and restoration of healthy native vegetation cover as part of Australia's climate change mitigation and adaptation strategies. Our previous research has shown that land clearing has contributed to climate change, including more severe and persisting droughts, in eastern Australia. Successful implementation of the research findings will lead to an increased ability of regional landscapes to buffer against a more extreme future climate driven by increased concentrations of greenhouse gases.

*Chief Investigator: Dr Clive McAlpine*

**ARC funding:** \$385,000 over 3 years

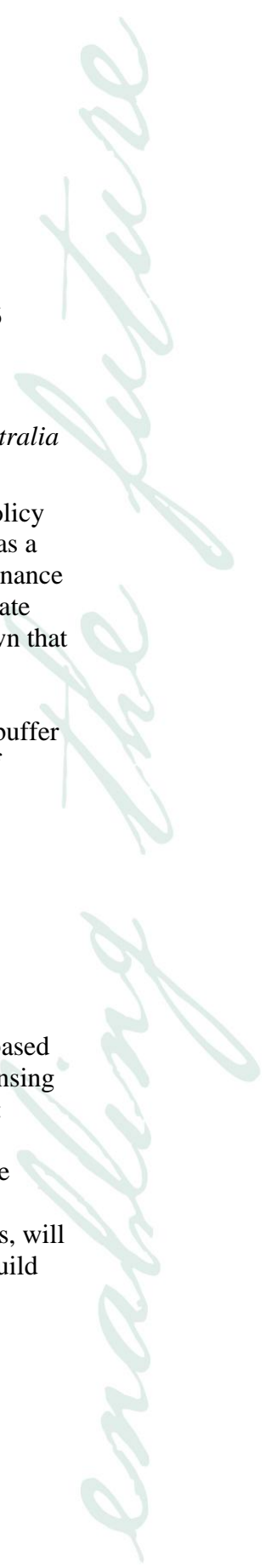
**The University of South Australia** (Contact: 08 8302 0966)

*Microchip impedance biosensor for biomedical diagnostics* (LP100100272)

**Summary:** This research project uses an innovative engineering approach based on novel nanomaterials with the aim of developing a new and generic biosensing technology with the potential to be widely applied in many areas, including: medical diagnostics, environmental control, industry and biosecurity. The outcomes from this project will benefit Australia by contributing through the development of novel materials, new technologies and new devices. The development of technological innovations based on fabricated nanomaterials, will also enhance capacity in frontier technology such as nanotechnology, and build Australia's strength in using new biosensing technologies.

*Chief Investigator: Dr Dusan Losic*

**ARC funding:** \$119,000 over 3 years





**Monash University** (Contact: 03 9903 4840)

*Study the utility of novel drug polymer conjugates (LP100100894)*

**Summary:** The products likely to arise from the technology in this project could have application in medical, veterinary and agricultural industries. It offers the potential to treat diseases that are at present poorly treated by enabling delivery direct to the diseased organ (e.g. eye - bacterial endophthalmitis). Completion of the project will also assist a fledgling biotech company transition to a development company with a multiple product portfolio, which will have a direct economic benefit to Australia both in terms of potential export earnings and as an employer of highly skilled staff. The project will also provide research training and career opportunities for developing Australian based researchers.

*Chief Investigator: Professor Barrie Finnin*

**ARC funding:** \$240,000 over 2 years

**The University of Adelaide** (Contact: 08 8303 4829)

*Establishing baseline ecological conditions for the Lower Lakes, South Australia: the applications of palaeoecology to sustainable resource management (LP100100215)*

**Summary:** The Lower Lakes of the Murray River are in a critical ecological state due to record low water levels. Management of these lakes needs to integrate water security demands with maintaining healthy ecosystem functions. Proposed management options such as allowing seawater incursion and the construction of a weir to impede freshwater flows are based on assumptions about what the Lakes were like naturally (pre-European). This study will reconstruct environmental variability within the Lower Lakes over the past 7000 years, concentrating on salinity to document the extent of marine incursion, and pH to examine the impacts of acid sulphate release from exposed sediments during low flow events.

*Chief Investigator: Dr Jennie Fluin*

**ARC funding:** \$145,000 over 2 years

**The University of Melbourne** (Contact: 03 8344 4123)

*Narrowing the scatter and assessing the uncertainty of climate change projections of Australian river flows (LP100100756)*

**Summary:** Recent prolonged dry conditions in south-eastern Australia have triggered water restrictions in major cities, zero irrigation allocations in the Murray-Darling region and highlighted the importance of water to this country. This project represents an integrated package of research that will enhance our understanding of the uncertainty of future annual river flows, leading to more informed decision making for the sustainable management of Australia's increasingly scarce water resources. The outcomes from this project are highly relevant to the national research priority An Environmentally Sustainable Australia, particularly priority goals Water - a critical resource and Responding to climate change and variability.

*Chief Investigator: Emeritus Professor Thomas McMahon*

**ARC funding:** \$240,000 over 3 years