

Summary of Successful Linkage - Projects Proposals for Funding to Commence in 2010 by State and Organisation

New South Wales

Macquarie University

LP100100312 Prof Deborah M Kane, Prof Paul D Smith, Dr Robert J Carman, Prof Chennupati Jagadish, Dr Lan Fu

Approved Project Title **Integrated Photonics for Secure Communication and Related Applications in Financial Transaction Data Analysis**

2010 \$180,000.00

2011 \$190,000.00

2012 \$230,000.00

Primary FoR 0205 OPTICAL PHYSICS

Partner Organisations

Arq Indigo Research and Development Pty Ltd

Administering Organisation Macquarie University

Project Summary

The project includes excellent basic science, semiconductor device fabrication and applied mathematics with explicitly identified consequences for innovation. There is strong potential for national economic benefits through the manufacture of new integrated photonic devices, the application of these devices in secure communication systems, the research of advanced non-linear analysis protocols, and the implementation of these in financial transaction analysis. Professional development and research education of postgraduate students and early career researchers will be carried out in a multi-disciplinary research environment with ongoing uptake of the research in industry and commercial sectors.

LP100100256 Prof Graham E Town, Prof Neil H Weste

Approved Project Title **Integrated energy conversion and management systems in silicon-on-sapphire.**

2010 \$119,661.00

2011 \$109,339.00

2012 \$111,000.00

Primary FoR 0906 ELECTRICAL AND ELECTRONIC ENGINEERING

APAI_IT 1

Partner Organisations

Sapphicon Semiconductor Pty Ltd

Administering Organisation Macquarie University

Project Summary

The aim of this research is to develop specialised "power-supply-on-a-chip" integrated circuits (ICs) for efficient conversion and management of electrical energy. The project will utilise and develop the unique local expertise and IC fabrication capability in silicon-on-sapphire technology in partnership with Sapphicon Semiconductor Pty. Ltd. The ICs developed will be used to improve the performance of small-scale electric power and transport systems based on alternative energy sources, thereby assisting energy self-sufficiency in rural and remote communities and reducing Australia's dependence on fossil and other non-renewable fuels. Sales of the ICs will also generate export income for Australian industry.