



2 PhD SCHOLARSHIPS

School of Physics, The University of New South Wales

NEMS Device Fabrication with Zyvex

The Atomic Electronic Devices Group at UNSW with ~ 15 international researchers is offering an industrially sponsored PhD in collaboration with Zyvex Laboratories, USA (www.zyvexlabs.com) to investigate the fabrication of nanoelectromechanical (NEMS) devices in silicon using scanning probe systems. The project will extend the group's recent success in the demonstration of a unique fabrication strategy for atomic-scale *electronic* devices in silicon and adapt this to *mechanical* device architectures. The student will work on a series of deliverables using state of the art scanning probe systems to realise atomically precise resonators in collaboration with a large consortium of researchers in Australia, the US and Singapore. The student would learn a series of fabrication and processing skills in world-class clean-room facilities and to travel in each year of the Scholarship to interact with collaborators and characterise devices produced.



Quantum Dot and Qubit architectures

The Centre for Quantum Computer Technology seeks a talented experimentalist to undertake a PhD project on the fabrication of atomic-scale devices in silicon using a combination of molecular beam epitaxy and scanning tunnelling microscopy. Having recently demonstrated the fabrication of single electron transistors with atomically controlled feature sizes below ~10nm, the team is now working towards the focussed goal of realising single donor qubit devices and architectures. The research project forms one of the core missions of the Centre of Excellence, and its additional research funding through the US government, to realise a solid state quantum computer in silicon. The student would be trained in all aspects of advanced silicon device fabrication, including electron beam and scanning probe lithography and low noise electrical measurement at cryogenic temperatures. The student would form part of a highly focussed team of researchers to realise well defined and aggressive research goals.

For further information on the projects please contact Professor Michelle Simmons on +612 9385 6313, email michelle.simmons@unsw.edu.au, or see the following website:

http://www.qcaustralia.org/bio/staff_simmons.php The scholarships are valued at \$20,000 per annum with a supplement of up to \$5000 per annum for first class honours or equivalent and is available for up to three-and-a-half years. The successful scholarship applicant will be expected to enrol for a PhD degree and should have an honours degree (level 1 or 2A) or equivalent, in Physics, Applied Physics, Material Science or a related subject. Applicants with a Masters degree are also encouraged to apply.

Applicants should submit a written application, with reference number PhD-Simmons, containing a complete resume including telephone numbers, email address, copies of academic transcripts and qualifications, and the full contact details of three academic referees to: Professor Michelle Simmons, School of Physics, University of New South Wales, Sydney NSW 2052. It is advisable to send an email confirming that you have sent your application to michelle.simmons@unsw.edu.au. You should get a confirmation within 1 week, otherwise please call Prof Simmons on +612 9385 6313. The scholarships will remain open until filled.