



# CENTRE FOR QUANTUM COMPUTER TECHNOLOGY

AUSTRALIAN RESEARCH COUNCIL CENTRE OF EXCELLENCE

## 2 PhD Scholarships, School of Physics, The University of New South Wales

### Atomic-Scale Device Fabrication

The Centre for Quantum Computer Technology seeks talented experimentalists to undertake two separate PhD projects on the fabrication of atomic-scale devices in silicon using a combination of molecular beam epitaxy and scanning tunneling microscopy. In particular the projects involve the use of atomic-scale lithography using a scanning probe to place individual dopants in silicon with atomic-precision; and then encapsulate them in high quality epitaxial silicon. This fabrication strategy allows the fabrication of a unique range of atomic-scale devices in silicon, including the possibility of a scaleable solid-state quantum computer prototype.

The successful candidates will be based at the Atomic Fabrication Facility within the School of Physics at UNSW, utilising the excellent scanning probe and crystal growth facilities at this site. They will collaborate with other scanning probe groups at Los Alamos National Laboratories in the USA, and work in close collaboration with other groups of the Centre at UNSW. For further information on the projects contact Michelle Simmons, tel (02) 9385 6313, email [michelle.simmons@unsw.edu.au](mailto:michelle.simmons@unsw.edu.au), or see the following website:

[www.qcaustralia.org/bio/staff\\_simmons.htm](http://www.qcaustralia.org/bio/staff_simmons.htm) or [www.crp\\_mys.htm](http://www.crp_mys.htm)

The scholarship is valued at \$18009 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 containing a complete resume including telephone numbers, email address, copies of academic transcripts and qualifications, and the full contact details of two academic referees to: Prof. Michelle Simmons, School of Physics, University of New South Wales, Sydney NSW 2052. Please quote the reference number PhD-Simmons in the application. It is advisable to send an email confirming that you have sent your application to [michelle.simmons@unsw.edu.au](mailto:michelle.simmons@unsw.edu.au). You should get a confirmation within 1 week; otherwise, please call Prof. Simmons on (02) 9385 6313. The scholarships will remain open until filled.