THE UNIVERSITY OF NEW SOUTH WALES
SYDNEY • AUSTRALIA

NON-CONFIDENTIAL DISCLOSURE

QUCOR™

NewSouth Innovations

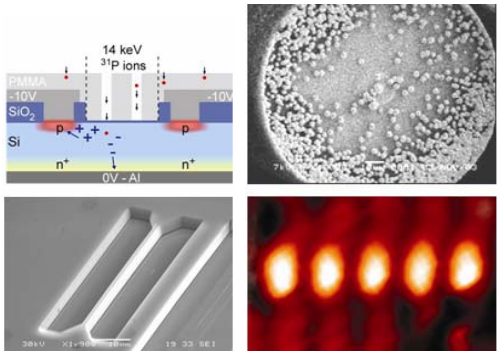
EXTREME NANOTECHNOLOGY
Revolutionary Single Atom and Single Photon Technologies

Business Opportunity

The global computing and communications industries rely for growth on continued increases in processing speed and reductions in device size. This dependence drives components towards the scale of a few atoms, well recognised by Moore's Law and industry roadmaps. There is a compelling need for next-generation products built on *extreme nanotechnology* – manipulating matter at the level of individual atoms and photons – and Qucor provides this capability now.

The Market

The $200Bn computer chip industry roadmap foresees few-atom devices reaching the market within ten years, and a development pathway of five years before that. Along this pathway, however, our nanotechnology capabilities are being applied to many other nearer-term needs. We are developing high-speed control electronics for the technical/scientific marketplace, we are in joint venture to prototype absolutely secure data encryption systems, and we are creating extremely precise silicon and diamond devices for a range of sensor and MEMS applications. Early industry partnerships are in place, and more are under negotiation.



The Technology

We manipulate individual atoms and ions in silicon. Our patented STM and ion-implantation techniques actually *count individual atoms into a silicon substrate*, in locations determined with nanometre precision. We can therefore implant a semiconductor with a precise number of dopant ions, in a precisely ordered layout or array. As a result, transistor size can be further reduced, more can be integrated onto a single chip, and their threshold voltage uniformity and reliability can be improved.

Our patented techniques for growing *single photon sources* directly into optical fibres have been demonstrated at laboratory scale.

Work is now underway via a Joint Venture to develop a lab prototype in fibre, and demonstrate its superiority over existing attenuated laser systems. This is a central component for the emerging range of quantum key distribution (QKD) systems, providing absolutely secure data transmissions for the financial, commercial and security markets.

For the rapidly-growing MEMS market, we have developed technology that enables ***micromachined devices and structures*** to be accurately fabricated in a single crystalline material. Using these patented techniques, and line widths of less than one micron, accurate trenches, channels and cantilevers can be constructed. This provides a means of creating micron-scale resonators, waveguides, and fluidic devices in materials such as single crystal diamond, which is highly durable, inert, thermally robust, and has accurately calibrated optical and mechanical properties.
Qucor maintains a robust patent portfolio in major international markets, with 13 active patent families and 11 granted patents.

Management & Scientific Team

Qucor's Managing Director brings 25 years' experience in the management of complex development projects in both the private and public sectors, including extensive experience commercialising new technologies. The Company is backed by the 140-strong technical team and the very substantial infrastructure of Australia's Centre for Quantum Computer Technology, headed by Professor Robert Clark, who is also a Director of Qucor. Other Directors bring wide experience across the IT industry with Honeywell, Sun Microsystems and Philips Electronics.

Investment Opportunity

Qucor's commercialisation strategy is to convert technologies into prototype products in partnership with leading industry corporations. We ensure that the technologies themselves are well-protected by patents, then enter into joint development projects with partners, in which our technical expertise and their product and market knowledge can be combined to create new prototype products.
Qucor has secured initial financial backing to position itself early in the nanotechnology arena, and has some initial partnerships in place. Enquiries regarding possible investment or industry partnering are welcomed.

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