



UNSW
SYDNEY



Nano/Micro Optical, Electrical and Mechanical Systems on Silicon Chips and Integrated Circuits

Design, fabrication and measurement of nano- and micro-scale systems with mechanical, electrical and/or optical functionalities on a silicon substrate or CMOS integrated circuit, enabling the development of novel and advanced sensors and actuators.

Competitive advantage

A suite of novel patent-protected technologies, which include:

- High aspect ratio sharp nanotips — CMOS compatible and integration with nano-scale devices at unprecedented density, not possible with any other technology
- PZT microlens micro-actuators — record-breaking large displacement and resonance frequency and small footprint micro-lens piezoelectric actuators for micro-optics application
- Low thermal budget polysilicon films — thick and low stress silicon film with low thermal budget suitable for microelectromechanical systems (MEMS) formation on top of CMOS
- Delivering record-breaking high gauge factor piezo-resistive polysilicon films with low thermal budget

Impact

- New devices for next-generation electronics

Capabilities and facilities

- Advanced semiconductor manufacturing tools in ANFF at UNSW and other nodes around Australia
- Mark Wainwright Analytical Centre (MWAC) for process monitoring, diagnostic and film characterisation
- MEMS measurement lab equipped with Polytech MSA-500, providing the capability to measure dynamics of nano/micro structures with sub-nanometre displacement resolution
- Silicon photonics characterisation optical bench set-up with automatic nano-positioners, deterministic polarisation controller, and 7.5 GHz spectrum analyser

More Information

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