# Oxide Nanoelectronics Technology

**Oxide nano-electronic materials promise dramatic improvements in the performance and lifespan of electronic devices. Due to these superior properties, the materials have been implemented in radiation-hardened circuits for space applications, in an array of sensors and actuators, and within next-generation electronics such as ferroelectric memory.**


## More Information

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## Competitive advantage

- Pioneering research into conducting materials with nanoscale topological features
- Key skills in design of materials with sub-nanometer ion channels
- Advanced scanning probe microscopy including instrument development
- Demonstrated first domain wall electronics elements
- A leading publication and IP profile within this critical research field
- As a member of the Australian Research Centre (ARC) Centre of Excellence in future low-energy electronics technologies, this group has access to state-of-the-art nanoelectronics characterisation equipment.

## Impact

- Potential use in reconfigurable electronics, ultralow energy technology, domain wall memory, radiation detectors, sub-nanometer ion channels, and radiation hardened electronics

## Successful applications

- Domain wall memory, utilising magnetic oxides is approaching commercial implementation, team holds key IP in the field
- Characterisation of bespoke circuits for critical hardened electronics applications

## Capabilities and facilities

- Specialised tools and expertise in materials synthesis using ultra-high vacuum technology and pulsed laser deposition
- State-of-the art scanning probe microscopy material characterisation techniques

## Our partners

- US Office of Naval Research
- Intel Corporation
- Australian semiconductor manufacturers (Silanna, among others)