



UNSW  
CANBERRA

# School of Science



## The 46th Annual Condensed Matter and Materials Meeting Wagga 2024

### We are looking for PhD Candidates interested in augmenting our current research

- **Magnetism and associated applications.**  
Studies into magnetic order, exotic magnetic structures and the application of magnetism in magnetic cooling, data storage and nano technologies.
- **Ionising radiation technologies.**  
Projects offered in three distinct areas: detector development, radiation protection and analysis of radiation damage of materials.
- **Micro-structural analysis of 3D printed materials.**  
Creating novel functional materials via 3D printing is a current possibility. Do these materials stand up to rigorous scrutiny via conventional analytical tools? Can we develop novel materials for new applications via feedback from such analysis?
- **Artificial quantum matter.**  
The aim of this project is to alter the electronic bandstructure of various classes of materials:
  - i) conventional semiconductor hetero-structures and
  - ii) atomically thin exfoliated materials via nanoscale patterning aiming to realise exotic electronic phases (correlated insulators, superconductivity, and magnetism) probed by electrical transport measurements at cryogenic temperatures.
- **Coherent transients in inorganic crystals by frequency-switching of diode lasers.** Coherent transient experiments, including optical free induction decay, photon echoes and optical nutation, facilitate an understanding of subtlest details of electronic structures in the solid state.
- **Samarium activated storage phosphors for personal radiation monitoring and medical imaging.** The project aims to exploit our recent discovery of a novel class of X-ray storage phosphors.

Curious? Learn more:



Our research is focused on characterising and understanding the fundamental properties and behaviour of advanced materials and devices to improve functionality, sustainability and manufacturing outcomes.

#### School of Science

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#### Future Student Enquiries

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