

PhD Scholarship opportunity

RELAXOR FERROELECTRIC SINGLE CRYSTALS: CRYSTAL GROWTH & PROPERTY CHARACTERIZATION

UOW is offering PhD Scholarships on relaxor-PT ferroelectric crystal growth and property characterization. This project will be supervised by [Professor Shujun Zhang](#), a Fellow of the American Ceramic Society and the Institute of Electrical and Electronics Engineers, *NSW Premier's Prize for Excellence in Mathematics, Earth Sciences, Chemistry or Physics 2021* winner, and a 2021 Clarivate Highly-Cited Researcher.

Relaxor ferroelectric single crystals

Ferroelectric materials are at the heart of numerous electronic devices, such as ultrasonic transducers, piezoelectric sensors and energy harvesting, to name a few. Relaxor-PbTiO₃ ferroelectrics show good dielectric/piezoelectric properties, outperforming conventional ferroelectric PZTs, where relaxor-PT based ferroelectric crystals have been investigated over the last 20 years due to their ultrahigh piezoelectric coefficients and electromechanical coupling factors being on the order of >1500 pC/N and >0.9 respectively, and are at the forefront of advanced electroacoustic applications such as medical imaging and diagnostic. Following studies on relaxor-PT single crystals in the early 1990s, systematic studies on the piezoelectric properties poled along different crystallographic directions were reported in late 1990s and early 2000s. Today, relaxor ferroelectric crystals continue to be an exciting research area that promises even further discoveries, and have been commercialized with the help of the mature Bridgman crystal growth method. The project specifically seeks to build knowledge to crystal growth, and property characterization of relaxor-PT based ferroelectrics.

The PhD scholars will be expected to develop and carry out a project that supports the programs in developing local crystal growth foundry as well as advancing research in advanced piezoelectric materials. The project will be supervised by Prof. Shujun Zhang in the [Institute for Superconducting and Electronic Materials](#) (ISEM), [Australian Institute for Innovative Materials](#) (AIIM), [University of Wollongong](#). The PhD scholars will be supported through the active research programs and have the opportunity to interact with other researchers in ISEM, AIIM/UOW, UNSW, University of Sydney and local industry.

Scholarship Value

The successful candidate will receive a stipend of **\$45,000 pa (tax free)** for the duration of the award. The duration of the award shall be up to **4 years**.



Entry Requirements

To be eligible for this scholarship the applicant must:

- have completed a Bachelor/Master's degree in Material Science, Solid State Chemistry Science, Physics Sciences, or a related discipline with First-Class Honours, or be regarded by UOW as having an equivalent level of attainment
- be able to commence full-time higher degree by research by April 2022
- be Australian Citizens or Permanent Residents

Application Close

- Closing date: 20th March 2022

Application process

Applicants wishing to be considered for this scholarship should submit to Professor Shujun Zhang:

- a letter of application outlining your thematic interest in relation to ferroelectric materials, relevant experience and expertise in materials (maximum 2 pages)
- a CV with relevant academic transcripts
- a one-page summary of the proposed project

Upon successful outcome of application, the applicant will need to proceed with [a full Higher Degree Research \(HDR\) admission application](#) through the University of Wollongong.

Contact details

For all questions about the project and scholarship opportunity, and to apply for this scholarship contact Professor Shujun Zhang – shujun@uow.edu.au.

For any questions relating to the University of Wollongong Higher-Degree Research application process and Future Student matters, contact UOW Future Students - futurestudents@uow.edu.au / +61 2 4221 3218

