

Position Title:	Research Associate / Research Fellow - Micro/Nanofabrication – Infrared detector and imaging technologies
Position Classification:	Level A/B
Position Number:	NEW
Faculty/Office:	Faculty of Engineering and Mathematical Sciences
School/Division:	Electrical, Electronic and Computer Engineering
Centre/Section:	ARC Centre of Excellence for Transformative Meta-Optical Systems
Supervisor Title:	Associate Professor and Professor
Supervisor Position Number:	300660 / 104165

About the work area

An exciting opportunity to join the newly established Australian Research Council (ARC) Centre of Excellence for Transformative Meta-Optical Systems within the Faculty of Engineering and Mathematical Sciences at UWA. We are looking for an enthusiastic researcher with expertise in nanofabrication and nanophotonic characterisation to contribute to the emerging area of meta-optics.

The ARC Centre of Excellence for Transformative Meta-Optical Systems (TMOS) brings together five Australian and 13 leading international universities as well as Australian and global companies to create entirely new optics-based technologies with enormous market potential. The Centre has received \$34.9 million funding from the Australian Research Council to operate from 2020-2027.

TMOS will develop the next-generation of miniaturised optical systems with functionalities beyond what is conceivable today. By harnessing the disruptive concept of meta-optics, the Centre will overcome complex challenges in light generation, manipulation and detection at the nanoscale. The Centre brings together a trans-disciplinary team of world-leaders in science, technology and engineering to deliver scientific innovations in optical systems for the Fourth Industrial Revolution.

As a Centre, we strongly believe that diversity improves ideas and innovation and leads to better outcomes and productivity. Diversity and fostering a culture of inclusiveness will be a key contributor to the scientific excellence of TMOS. Along with other initiatives, we will provide carer grants to support our centre members with caring / family responsibilities to participate in professional activities.

TMOS aims to develop a multidisciplinary, dynamic, interactive and collaborative culture fostering future research leaders who thrive in academic excellence and are equipped with strong transferable skills. The centre will also offer a mentoring program for early career researchers while providing opportunities to hone other skills such as outreach, industry engagement, and building international networks.

Reporting Structure

Reports to: Associate Professor and Professor

Role statement

As the appointee, you will contribute to optoelectronic device design and modelling, fabrication and clean room processing, and testing/characterisation in support of the ARC Centre of Excellence for Transformative Meta-Optical Systems, including process development and maintenance, equipment development and maintenance, and the training and educating of students.

Key responsibilities

Work on ARC Centre of Excellence for Transformative Meta-Optical Systems funded R&D projects contributing to:

Design and modelling of infrared optoelectronic devices,

Fabrication process design and development,
Equipment development and calibration, and cleanroom facility maintenance.
Infrared optoelectronic device fabrication, clean room processing, and testing/ characterisation.
Operate as the key interface between lab management, technical staff, researchers, postgraduate students, and facility users.
Guide technical staff, researchers, postgraduate students, and facility users,
Interface with management, technical staff and facility users to ensure timely action, and minimal tool downtime,
Train cleanroom users in appropriate cleanroom practices, tool usage and workplace safety, and policing of cleanroom practices and processes.
Maintain detailed records associated with projects.
Produce academic output, including scientific publications, Higher Degree by Research (HDR) student completions, and research income.
Ensure that health and safety standards are maintained and adhered to.
Other duties as directed

Specific work capabilities (selection criteria)

Essential:

PhD degree in physics, electrical engineering or equivalent.

Experience in cleanroom fabrication process design, including photomask design, photolithography, thin-film deposition, and etching.

Experience in the design of infrared optoelectronic devices; and associated material characterisation techniques such as X-ray diffraction, scanning and transmission electron microscopy, and fourier transform infrared spectroscopy; and device characterisation techniques such as dark current, spectral response, and noise characterisation.

Experience in cleanroom operations and semiconductor device processing.

Excellent written and verbal communication skills

A can-do attitude and a willingness to contribute to and operate as part of a cohesive and supportive team.

Desirable:

Expertise in using L-Edit mask design software and/or semiconductor device modelling tools.

Experience with various thin-film deposition and etching technologies and systems, including e-beam deposition, PECVD, and RIE.

Experience with wire and flip-chip device bonding and packaging.

Experience in HgCdTe device fabrication and technology.

Experience with HgCdTe growth via molecular beam epitaxy (MBE).

Special Requirements

None

Compliance

Workplace Health and Safety

All supervising staff are required to undertake effective measures to ensure compliance with the Occupational Safety and Health Act 1984 and related University requirements (including Safety, Health and Wellbeing Objectives and Targets).

All staff must comply with requirements of the Occupational Safety and Health Act and all reasonable directives given in relation to health and safety at work, to ensure compliance with University and Legislative health and safety requirements.

Details of the safety obligations can be accessed at <http://www.safety.uwa.edu.au>

Equity and Diversity

All staff members are required to comply with the University's Code of Ethics and Code of Conduct and Equity and Diversity principles. Details of the University policies on these can be accessed at http://www.hr.uwa.edu.au/publications/code_of_ethics, <http://www.equity.uwa.edu.au>