POSITION DESCRIPTION

Position Title: Nanolithography Specialist Engineer
Organisation Unit: Centre for Microscopy and Microanalysis (CMM)
Position Number:
Type of Employment: Fixed Term (3.5 years)
Classification: HEW 8

THE UNIVERSITY OF QUEENSLAND

The University of Queensland (UQ) contributes positively to society by engaging in the creation, preservation, transfer and application of knowledge. UQ helps shape the future by bringing together and developing leaders in their fields to inspire the next generation and to advance ideas that benefit the world. UQ strives for the personal and professional success of its students, staff and alumni. For more than a century, we have educated and worked with outstanding people to deliver knowledge leadership for a better world.

UQ ranks well within the top 100 universities worldwide, measured through a number of major independent university rankings: the Academic Ranking of World Universities, Times Higher Education World University Rankings, US News Best Global Universities Rankings, QS World University Rankings and Performance Ranking of Scientific Papers for World Universities, and is indeed in the top 50 in some of these rankings. Over the past 3 years for which audited data are available UQ has attracted the highest (2013) or second highest (2012, 2014) amount of research funding of any Australian university.

UQ has an outstanding reputation for the quality of its teachers, its educational programs and employment outcomes for its students. Our students remain at the heart of what we do. The UQ experience – the UQ Advantage – is distinguished by a research enriched curriculum, international collaborations, industry engagement and opportunities that nurture and develop future leaders. UQ has a strong focus on teaching excellence, winning more national teaching excellence awards than any other in the country and attracting the majority of Queensland’s highest academic achievers, as well as top interstate and overseas students.

UQ is one of Australia’s Group of Eight, a charter member of edX and a founding member of Universitas 21, an international consortium of leading research-intensive universities.

Our 50,000-plus strong student community includes more than 13,000 postgraduate scholars and more than 12,000 international students from 144 countries, adding to its proud 230,000-plus alumni. The University has about 7,000 academic and professional staff and a $1.7 billion annual operating budget. Its major campuses are at St Lucia, Gatton and Herston, in addition to teaching and research sites around Queensland and Brisbane city. The University has six Faculties and four University-level Institutes. The Institutes, funded by government and industry grants, philanthropy and commercialisation activities, have built scale and focus in research areas in neuroscience, biomolecular and biomedical sciences, sustainable minerals, bioengineering and nanotechnology, as well as social science research.
UQ has an outstanding track-record in commercialisation of our innovation with major technologies employed across the globe and integral to gross product sales of $11billion+ (see http://uniquest.com.au/our-track-record).

UQ has a rapidly growing record of attracting philanthropic support for its activities and will have further success in this area as an important strategic aim going forward.

Organisational Environment

The position will be co-located between the CMM and the Australian Centre for Engineered Quantum Systems (EQuS) in the School of Mathematics of Physics.

The CMM is the University of Queensland’s electron and X-ray microscopy and microanalysis, core facility and the Queensland node of the national microscopy and microanalysis network (AMMRF). The platforms goals are to facilitate and provide research excellence through a focus on providing world-class facilities matched with an equally high level of expertise thereby meeting the characterisation requirements of local and national researchers and industry. It does this via a concept of supporting discovery from user inception of experiments to publication/outcomes through excellence in consultation, training, measurement and finally analysis.

The CMM comprises 26 academic, research, technical and administrative staff supporting a diverse range of instrument platforms including electron microscopy and microanalysis, X-ray diffraction and spectroscopy, e-beam lithography and novel imaging modalities. The CMM operates on four main sites on the St Lucia campus of The University of Queensland.

Information about the CMM may be accessed on the Faculty’s web site at http://www.uq.edu.au/cmm.

EQuS is an Australian Research Council Centre of Excellence hosted by UQ. The Centre seeks to apply quantum engineering techniques to deliver new scientific insights and fundamentally new technical capabilities across a range of disciplines. A key technical focus is the development of nanofabrication and control techniques for nanoscale quantum devices. The Centre spans UQ, the University of Sydney, Macquarie University, the University of New South Wales and the University of Western Australia; with 19 chief investigators, 48 postdoctoral research fellows, 6 technical staff and more than 100 research students.

Information about EQuS may be accessed via the web site www.equs.org

DUTY STATEMENT

Primary Purpose of Position

The position will be responsible for the construction, commissioning and ongoing management of a nanolithography facility in collaboration with key stakeholders from The University of Queensland.

In addition the position will be responsible for the provision of a range of services associated with the nanolithography facility including: client liaison and training, the preparation of designs and patterns for lithography, electron-beam lithography, e-beam deposition, and quality control via a range of inspection/metrology techniques.

Duties

Duties and responsibilities include, but are not limited to:
1. Manage the construction, installation and commissioning of, as well as the ongoing provision of services from, a nanolithography facility.

2. Provision of high-quality lithography/nanofabrication outcomes or services to clients including, but not limited to: the development of patterns, patterning via EBL and allied fabrication techniques, and the inspection and metrology of fabricated patterns.

3. Providing assistance to clients in the planning, execution and analysis of lithography workflows.

4. When appropriate, collaborate with researchers in the area of applied nanolithography to provide high-quality outcomes such as publications or grant submissions.

5. Develop and constantly improve the EBL capacity to meet future needs of UQ research groups

6. Provide cover for staff absences in the CMM facilities.

7. Be actively involved in periodic and special teaching events within the CMM and EQuS (e.g. undergraduate practicals and/or outreach).

8. Assist in the development of safe operating procedures, manuals, training document and courses relevant to the nanolithography facilities, or the CMM.

9. Assist in technical aspects associated with the Australian Nanotechnology Challenge, an EQuS/CMM school outreach activity.

10. Assist in the collection of user metrics and materials for reporting of activities as required.

11. Assist in the development and writing of applications for funding opportunities.

12. Assist in the development of strong and collaborative relations with national nanofabrication facilities and research institutes.

13. Be actively involved in the dissemination of the capabilities of the CMM to potential clients in both research organisations and industry and in the building of users communities.
Other

Ensure you are aware of and comply with legislation and University policy relevant to the duties undertaken, including:

- the University’s Code of Conduct
- requirements of the Queensland occupational health and safety (OH&S) legislation and related OH&S responsibilities and procedures developed by the University or Institute/School
- the adoption sustainable practices in all work activities and compliance with associated legislation and related University sustainability responsibilities and procedures
- requirements of the Education Services for Overseas Students Act 2000, the National Code 2007 and associated legislation, and related responsibilities and procedures developed by the University

Organisational Relationships

The position reports to the Head of CMM.
SELECTION CRITERIA

Essential

- A PhD or equivalent in a field relevant to applications of advanced nanolithography
- In depth knowledge of fundamentals of e-beam lithography and its associated health and safety.
- Knowledge of the design and provision of workflows for nanolithography including the operation of cleanroom facilities.
- Knowledge of GeniSys Beamer Software package for pattern and process preparation or similar knowledge for EBL resist patterning
- Demonstrated experience in the operation of a high-performance EBL system
- Demonstrated experience in the operation of scanning electron microscopes.
- Previous experience and knowledge in software for designing, creating and implementing patterns for nanolithography.
- Strong motivation and the proven ability to work independently as well as collaboratively in a multi-disciplinary and multi-laboratory team.
- Demonstrated ability to plan and coordinate activities and timeframes, prioritise workflow, and monitor performance in a multi-disciplinary environment.
- Demonstrated effectiveness in both written and oral communication, including good report writing skills, experience in preparing manuscripts for publication and giving presentations at conferences.

Desirable

- Previous experience in teaching/training users of scientific instrumentation and in the development of teaching materials and methods.
- Demonstrated experience in the operation of a broad range of nanofabrication and characterisation techniques.
- Excellent knowledge of the national nanofabrication landscape.

The University of Queensland values diversity and social inclusion.

Employment opportunities are not limited by race, ethnicity, religion, disability, age, sexuality, gender or other protected attributes. Applications are encouraged from Aboriginal and Torres Strait Islander peoples.

For further information please contact our Indigenous Employment Coordinator at: atsi.recruitment@uq.edu.au