POSITION DESCRIPTION

Position Title: Postdoctoral Research Fellow/ Research Officer
Organisation Unit: School of Mechanical and Mining Engineering
Position Number: NEW
Type of Employment: Full-time, Fixed Term until 2 April 2023
Classification: Academic Level A

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 in the world's top universities, as measured by several key independent ranking, including the CWTS Leiden Ranking (32), the Performance Ranking of Scientific Papers for World Universities (40), the US News Best Global Universities Rankings (42), QS World University Rankings (47), Academic Ranking of World Universities (54), and the Times Higher Education World University Rankings (66). Excluding the award component, UQ is now ranked 45th in the world in the ARWU, and is one of the only two Australian universities to be included in the global top 50.

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 53,000-plus strong student community includes more than 16,400 postgraduate scholars and more than 17,000 international students from 135 countries, adding to its proud 260,000-plus alumni. The University has more than 6,600 academic and professional staff (full-time equivalent) and a $2.15 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+.

UQ has a rapidly growing record of attracting philanthropic support for its activities and this will be a strategic focus going forward.

Organisational Environment

With an excellent reputation for quality graduate training and research performance, the School of Mechanical and Mining Engineering delivers a comprehensive range of programs in aerospace, materials, mechanical, mechatronic and mining engineering.

Boasting strong student enrolments in professionally accredited programs, combined with world-class researchers and facilities, we are focused on strengthening our position in the engineering community. We will develop global solutions to contemporary issues and mentor the leaders of tomorrow by attracting the brightest minds and fostering a truly innovative and collaborative work environment.

Our people are our greatest asset. We offer collaborative, inclusive work and study places, which are enriched by the significant diversity of our staff, students and community. We genuinely believe that creativity and innovation flourishes in an environment where people feel supported, valued and empowered. Mutual respect, inclusivity and accountability are at the cornerstone of UQ’s culture.

The School is committed to supporting the career growth of women researchers and have a number of initiatives to support women in developing and achieving a fulfilling research career at the School.

For more information about the School, please visit: http://www.mechmining.uq.edu.au/

Information for Prospective Staff

The School recognises and values equity and diversity, and encourages applications from any individual who meets the requirements of this position irrespective of gender, sexuality, race, ethnicity, religion, disability, age or other protected attributes. The School strives to provide an inclusive working environment, and along with the University is committed to supporting staff with family and caring responsibilities by providing policies, programs and initiatives to help balance work and family responsibilities.

Further information about life at UQ including staff benefits, relocation and UQ campuses is available at - http://www.uq.edu.au/current-staff/working-at-uq
The University of Queensland Enterprise Agreement outlines the position classification standards for Levels A to E.

DUTY STATEMENT

Primary Purpose of Position
The primary purpose of the position is to perform research associated with the newly awarded ARC Discovery Project "Intermetallic compounds for high reliability electronic interconnections" with our partner organisation, Kyushu University, Japan. The aim of this project is to optimise the properties of intermetallics so that they can provide connections between the elements of electrical and electronic circuitry that have greater long-term stability and reliability than can be delivered by the solder alloys currently used to make these connections. The outcome will be electronics, from smart phones to smart grids and electric vehicles in which the high reliability connections will be made with tailored intermetallic compounds rather than traditional solders.

Duties
Duties and responsibilities include, but are not limited to:

Research

- Undertake fundamental and applied research in the area of materials engineering—
  - Identify intermetallic compounds that have the potential to be the sole bonding material in the connections between the functional elements of electronic circuitry.
  - Optimise the properties of candidate intermetallic compounds for bonding applications by identifying and introducing appropriate dopant elements into the crystal structure.
  - Confirm by measurement of relevant mechanical and physical properties that the optimised intermetallic compounds can deliver the performance required by high reliability connections in electronic circuitry.
  - Develop and prove techniques for the formation of highly reliable intermetallic joints with the required properties that can used in commercial electronic production.

- Document research findings and publish scholarly papers in high-quality refereed international journals, books and conference proceedings.

- Attend technical meetings with research sponsors, and present regular research seminars within the group, the School, the Faculty, and to other external stakeholders.

- Actively participate in preparing applications for funding from internal and external sources including the Commonwealth research granting agencies, the state government and industry.

Teaching

- Contribute to teaching in undergraduate or postgraduate courses as needed.

- Supervise students undertaking undergraduate and postgraduate coursework engineering projects and participate in the supervision of Higher Degree by Research (MPhil and PhD students) if required.
Service and Engagement

- Perform a range of administrative functions in the laboratory and/or research group as needed, including an ability and willingness to serve as a Laboratory Manager if required.
- Foster relations with industry (including international partners), government departments, professional bodies and the wider community.
- Any other duties as reasonably directed by your supervisor.

Other

Ensure you are aware of and comply with legislation and University policy relevant to the duties undertaken, including but not exclusive to:

- 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 of 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 Professor Kazuhiro Nogita.

SELECTION CRITERIA

- PhD in the area of materials engineering with demonstrated skills relevant to the development of solder alloys.
- Demonstrated track record of publications in high quality outlets.
- Experience and demonstrated competence in the following:
  - Fabrication and analysis of metallic samples and interfaces that contain intermetallic compounds.
  - Synchrotron X-ray diffraction and in-situ X-ray imaging.
  - Data analysis techniques including experience with software related to the above electron microscopies and synchrotron techniques.
- Ability to:
  - Work independently with minimal supervision and as part of a team and organise multi-faceted projects.
  - Effectively present research findings to a broad range of audiences.
  - Promote and adhere to a positive safety culture including the ability and willingness to assume the role of laboratory manager if required.
• Demonstrated –
  o High level of drive and enthusiasm.
  o High-level interpersonal, written and verbal communication skills.
  o Industry and professional contacts and ability to liaise and collaborate with external agencies to develop cooperative research initiatives; or the ability to rapidly develop these skills.

Qualification Verification
An appointment to this position is subject to the verification of the highest academic qualification from the conferring institution.

The University of Queensland values diversity and inclusion and actively encourages applications from those who bring diversity to the University. Please refer to the University’s Diversity and Inclusion webpage (http://www.uq.edu.au/equity) for further information and points of contact if you require additional support.

This role is a full-time position; however flexible working arrangements may be negotiated.

Accessibility requirements and/or adjustments can be directed to the contact person listed in the job advertisement.