



Australia's  
Global  
University

## Position Description

# Research Associate

*Position Number: 00078025  
Position Title: Research Associate  
Date Written: September 2019*

*Faculty / Division: Faculty of Engineering  
School / Unit: Mechanical and Manufacturing  
Engineering  
Position Level: Level A*

### ORGANISATIONAL ENVIRONMENT

UNSW is currently implementing a ten year strategy to 2025 and our ambition for the next decade is nothing less than to establish UNSW as Australia's global university. We aspire to this in the belief that a great university, which is a global leader in discovery, innovation, impact, education and thought leadership, can make an enormous difference to the lives of people in Australia and around the world.

Following extensive consultation in 2015, we identified three strategic priority areas. Firstly, a drive for academic excellence in research and education. Universities are often classified as 'research intensive' or 'teaching intensive'. UNSW is proud to be an exemplar of both. We are amongst a limited group of universities worldwide capable of delivering research excellence alongside the highest quality education on a large scale. Secondly, a passion for social engagement, which improves lives through advancing equality, diversity, open debate and economic progress. Thirdly, a commitment to achieving global impact through sharing our capability in research and education in the highest quality partnerships with institutions in both developed and emerging societies. We regard the interplay of academic excellence, social engagement and global impact as the hallmarks of a great forward-looking 21st century university.

To achieve this ambition we are attracting the very best academic and professional staff to play leadership roles in our organisation.

### VALUES IN ACTION: OUR UNSW BEHAVIOURS

UNSW recognises the role of employees in driving a high-performance culture. The behavioural expectations for UNSW are below.



Demonstrates  
Excellence

Delivers high performance and demonstrates service excellence.



Drives  
Innovation

Thinks creatively and develops new ways of working. Initiates and embraces change.



Builds  
Collaboration

Works effectively within and across teams. Builds relationships with internal and external stakeholders to deliver on outcomes.



Values individual differences and contributions of all people and promotes inclusion.



Treats others with dignity and empathy. Communicates with integrity and openness.

## OVERVIEW OF RELEVANT AREA AND POSITION SUMMARY

The School of Mechanical and Manufacturing Engineering is one of the largest and most prestigious in Australia, with 2500 student enrolments, 80 academic staff, 25 professional staff, and total annual budget of over \$22 million including external research grants. Our mission is to prepare students for careers of leadership and innovation, create new scientific advances, and translate research outcomes to positively impact national and global industry and society. We are seeking to attract high-calibre researchers and educators to expand our thriving research programs and contribute to our education excellence in Aerospace, Mechanical Engineering, Advanced Manufacturing Engineering, Robotics and Mechatronics. For further information about the School, please visit <http://www.engineering.unsw.edu.au/mechanical-engineering/>

The School of Mechanical and Manufacturing Engineering has partnered with a manufacturer of transport vessels for corrosive chemicals made from advanced composite materials technology. The partner has launched the world's first carbon fibre composite tank containers, featuring unparalleled corrosion resistance and durability. The tanks have disrupted the market and the sector is now calling for new configurations for areas of unmet demand. This role supports a Global Innovation Linkages grant between UNSW and international partners, *Novel CFRP Transport Tank with Highly Durable Anti-surge Safety System*. Under the project, an innovative anti-surge system for a new line of products will be developed.

The Research Associate (RA) will work closely with the partner company engineers to design the anti-surge baffles and associated manufacturing process. The RA will develop multiphysics simulation frameworks to design the baffle configuration (FEA, CFD, fluid-structure interaction) and simulate the baffle manufacture (CFD, FEA, and possibly DEM/SPH). The RA will use the simulation tools assist with the design, manufacture and optimisation of new products to be exported for use in the European transport industry.

The role of Research Associate reports to Dr Garth Pearce and has no direct reports.

## RESPONSIBILITIES

Specific responsibilities for this role include:

- Conduct independent research in multi-physics numerical simulation (e.g. CFD, FEA, DEM, SPH, FSI, etc.) to support the design of structures and manufacturing processes.
- Collaborate closely with the project industry partner to coordinate research activities and meet project milestones.
- Contribute to the writing of scientific papers and reports for international journals and progress reporting to other researchers and industry partners.
- Contribute to the preparation of research proposal submissions to funding bodies and actively seek collaboration with industry partners as appropriate.
- Participate in and/or present at conferences and/or workshops relevant to the project as required.
- Assist with the supervision of research students in the research area where required.
- Cooperate with all health and safety policies and procedures of the university and take all reasonable care to ensure that your actions or omissions do not impact on the health and safety of yourself or others.

## SELECTION CRITERIA

- PhD (or soon to be awarded) in Engineering (Mechanical, Aerospace, Manufacturing, Industrial) or related area.
- Demonstrated ability to conduct independent research with limited supervision.
- Demonstrated track record of publications and conference presentations relative to opportunity.
- Demonstrated ability to work in a team, collaborate across disciplines and build effective relationships, particularly with industry partners.
- Strong interpersonal skills with demonstrated ability to communicate and interact with a diverse range of stakeholders and students.
- Demonstrated experience with complex multiphysics simulation, particularly with a focus on simulation of manufacturing processes. Specific experience with modelling granular materials and/or the polymer production processes are optional but highly desired.
- Knowledge of health and safety responsibilities and commitment to attending relevant health and safety training.

*It is not the intention of the position description to limit the scope or accountabilities of the position but to highlight the most important aspects of the position. The aspects mentioned above may be altered in accordance with the changing requirements of the role.*