Position Description

Research Associate

Position Number: 00063763 *Position Title: Research Associate* *Date Written: June 2018*	*Faculty / Division: Faculty of Engineering* *School / Unit: School of 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.

UNSW BEHAVIOURS

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

Please refer to the UNSW Behavioural Indicators for the expectations of your career level (level A).

Demonstrates Excellence	Drives Innovation	Builds Collaboration	Embraces Diversity	Displays Respect
Delivers high performance and demonstrates service excellence	Thinks creatively and develops new ways of working. Initiates and embraces change	Works effectively within and across teams. Builds relationships with internal/external stakeholders to deliver 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

This appointment will be based in the School of Mechanical and Manufacturing Engineering, which 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 position is an academic research role that aims to predict, using molecular dynamics methods, the evolution of key thermal and microstructural parameters of nuclear fuel with burn-up. Specifically, the project focuses on melting point, thermal conductivity, chemical diffusivity and bubble formation. These parameters may then be fed into meso- and micro-scale models and fuel performance codes. The Research Associate is expected to test and validate a recently developed approach for evaluating the melting point of ternary compounds, and then apply this to the complex case of high-burnup nuclear fuel, including UO_2-based fuel, ThO_2-based fuel and mixed oxides containing Pu. The Research Associate is also expected to develop methods for modelling the diffusivity of gaseous fission products and the formation and grown of bubbles in high burn-up fuel.

The Research Associate will report to Dr Patrick Burr and has no direct reports.

RESPONSIBILITIES

Specific responsibilities for this role include:

- Conduct a specified program of research and scholarship under the supervision and direction of the Principal Investigators according to the project plan and contractual obligations to the funder, and as specified in the Position Summary;
- Assist with the coordination of research activities and actively contribute to research outputs to 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 in Materials Science/Engineering, awarded in the last 5 years or to be awarded within the year of commencement, or equivalent research experience in an industry environment;
- Minimum 2 years of experience in computational materials modelling and strong coding skills in a scientific programming language;
- Proven experience in utilising molecular dynamics modelling packages such as LAMMPS, Gulp or equivalent;
- In-depth knowledge of nuclear materials and/or the nuclear fuel cycle;
- Demonstrated ability to conduct independent research with limited supervision;
- Demonstrated track record of publications and conference presentations relative to opportunity;
- Experience working with team members and research students to help build their research skills and knowledge and supporting their professional development;
- Demonstrated ability to work in a team, collaborate across disciplines and build effective relationships
- Strong interpersonal skills with demonstrated ability to communicate and interact with a diverse range of stakeholders and students;
- 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.