



POSITION DESCRIPTION

School of Electrical, Mechanical and Industrial Engineering
Faculty of Engineering and Information Technology

Research Fellow in Multiscale Computational Soft Matter

POSITION NO	0052447
CLASSIFICATION	Level A – Research Fellow
SALARY	\$73,699 - \$99,964 p.a. (pro rata for part-time)
SUPERANNUATION	Employer contribution of 9.5%
WORKING HOURS	Full-time (1.0 FTE)
BASIS OF EMPLOYMENT	Fixed-term for 12 months Applications for part-time or other flexible working arrangements will be welcomed and will be fully considered subject to meeting the inherent requirements of the position
OTHER BENEFITS	https://about.unimelb.edu.au/careers/staff-benefits
HOW TO APPLY	Online applications are preferred. Go to http://about.unimelb.edu.au/careers , select the relevant option ('Current Opportunities' or 'Jobs available to current staff'), then find the position by title or number.
CONTACT FOR ENQUIRIES ONLY	Dr Ellie Hajizadeh Tel +61 3 8344 2777 ellie.hajizadeh@unimelb.edu.au <i>Please do not send your application to this contact</i>

For information about working for the University of Melbourne, visit our website:
about.unimelb.edu.au/careers

Acknowledgement of Country

The University of Melbourne acknowledges the Traditional Owners of country throughout Australia. The University recognises the unique place held by Aboriginal and Torres Strait Islander peoples as the original custodians of country and their continued connection to the land, waterways, songlines and culture. The University respects all Aboriginal and Torres Strait Islander People and warmly embrace those students, staff, Elders and collaborators who identify as First Nations.

Commitment to Diversity and Inclusion

The Faculty of Engineering and Information Technology (FEIT) is committed to creating a diverse and inclusive environment that welcomes and values all people. We recognise that diversity is essential in contributing to the success of the Faculty. Women, Aboriginal and Torres Strait Islanders, the LGBTIQ+ community, people living with disability and those from a culturally and linguistically diverse background, are strongly encouraged to apply. Those seeking support in submitting an application are welcome to contact the HR team at feit-hr@unimelb.edu.au

Position Summary

We are seeking to appoint a Postdoctoral Research Fellow for a fixed term position (initially one year and possible extension for a second year based on the appointee's performance) in the field of multiscale simulation of soft matter. A PhD in polymer physics, statistical mechanics, mechanical/chemical engineering or an equivalent discipline is essential. Knowledge in statistical mechanics of soft matter, polymer physics, structure and rheology of polymers and multicomponent colloidal systems are highly desirable. This exciting research project involves collaboration between teams at University of Melbourne, University of Michigan, RMIT University, and Australian Defence Science and Technology (DST) Group. The research fellow will have a unique opportunity to be part of an international team and contribute to two collaborative projects. Computational work will be performed at the University of Melbourne and will involve possible use of the LAMMPS and HOOMD-blue software packages and development of an in-house software (preferably in Python) to perform multiscale simulations from molecular to particle-based or mean-field mesoscopic simulations to theoretical continuum modelling of polymer melts and polymer-bridged colloids. Experience in C++ programming, Python, the LAMMPS package, or the ability to become quickly proficient in HOOMD-blue or either of these would be an advantage. The position will be primarily located at the Department of Mechanical Engineering, Melbourne Connect Building of the University of Melbourne. A period of 1 month will also be possibly spent at Prof. Ronald Larson's Research Group at the University of Michigan, Ann Arbor, MI, USA. In addition, there is an allowance for conference attendance/professional development.

1. Selection Criteria

1.1 ESSENTIAL

- ▶ A PhD in Applied Physics, Applied Mathematics, Mechanical Engineering, Chemical Engineering or relevant discipline.
- ▶ Demonstrated knowledge of Statistical Mechanics of Soft Matter
- ▶ Demonstrated experience in implementing numerical algorithms and developing in-house codes
- ▶ Demonstrated experience in using LAMMPS, HOOMD-blue or other related simulation software packages
- ▶ A strong track record of published research work in high impact journals in the field of soft matter
- ▶ Demonstrated strong verbal and written communication skills

1.2 DESIRABLE

- ▶ Demonstrated research experience in computational simulation of polymer fluids or colloids
- ▶ Demonstrated experience of conducting collaborative research
- ▶ Demonstrated experience on successful delivery of project(s) for local/international governments or industry according to scheduled deliverables

2. Key Responsibilities

2.1 CONTRIBUTION TO TEACHING AND LEARNING

- ▶ Contribute to co-supervising Capstone students and/or PhD students

2.2 RESEARCH AND ADVANCEMENT OF DISCIPLINE

- ▶ Contribute to research activities with the research groups
- ▶ Contribute to collaborative research projects

2.3 ENGAGEMENT

- ▶ Actively Initiate & Contribute towards writing grant proposals to multiple agencies

2.4 OTHER JOB RELATED INFORMATION

- ▶ This position requires the incumbent to hold a current and valid Working with Children Check.
- ▶ Occasional work out of ordinary hours, travel, etc.

3. Equal Opportunity, Diversity and Inclusion

The University is committed to all aspects of equal opportunity, diversity and inclusion in the workplace and to providing all staff, students, contractors, honorary appointees, volunteers and visitors with a safe, respectful and rewarding environment free from all forms of unlawful discrimination, harassment, vilification and victimisation. This commitment is set out in the University's People Strategy and policies that address diversity and inclusion, equal employment opportunity, discrimination, sexual harassment, bullying and appropriate workplace behaviour. All staff are required to comply with all University policies.

Employees are required to behave in a manner that creates; supports and encourages an inclusive and safe work environment for all.

<https://eng.unimelb.edu.au/diversity>

4. Occupational Health and Safety (OHS)

All staff are required to take reasonable care for their own health and safety and that of other personnel who may be affected by their conduct.

OHS responsibilities applicable to positions are published at:

<https://safety.unimelb.edu.au/people/community/responsibilities-of-personnel>

These include general staff responsibilities and those additional responsibilities that apply for Managers and Supervisors and other Personnel.

5. Other Information

5.1 SCHOOL OF ELECTRICAL, MECHANICAL AND INFRASTRUCTURE ENGINEERING

<https://eng.unimelb.edu.au/about/departments/school-of-electrical-mechanical-and-infrastructure-engineering>

The School of Electrical, Mechanical and Infrastructure Engineering (EMI) undertakes teaching and research across a range of disciplines that are internationally recognised for their contribution to fundamental research. EMI has several well-established industry linkages and international partnership and is building a vibrant profile of interdisciplinary research, working with industry with an aim to contribute to society. EMI offers a comprehensive range of accredited Master of Engineering and Master of Information Technology programs taught through the Electrical, Mechanical and Infrastructure departments as well as professional Masters programs. The School has a substantial cohort of research higher degree students.

A major focus of the School is to attract and retain outstanding and internationally recognised academic staff. EMI is committed to increasing the number of female engineers and scientists on its staff.

5.2 DEPARTMENT OF MECHANICAL ENGINEERING

<http://www.mech.unimelb.edu.au>

The Department of Mechanical Engineering is one of the largest in Australia. The School provides teaching into subjects in the three-year undergraduate degrees of Science and Commerce, which can be followed by a two-year professional Master of Engineering. The Department aims to attract and retain the highest quality staff available in order to maintain a vigorous research effort. We address the most urgent contemporary problems of our rapidly developing industrial society, with investigations into biomechanical engineering, fluid mechanics and thermal sciences.

5.3 FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY

The Faculty of Engineering and Information Technology (FEIT) has been the leading Australian provider of engineering and IT education and research for over 150 years. We are a multidisciplinary School organised into three key areas; Computing and Information Systems (CIS), Chemical and Biomedical Engineering (CBE) and Electrical, Mechanical and Infrastructure Engineering (EMI). FEIT continues to attract top staff and students with a global reputation and has a commitment to knowledge for the betterment of society.

FEIT has never been better positioned as a global leader, anchored in the dynamic Asia Pacific region, creating and curating knowledge to address some of the world's biggest challenges. Through our students and our relationships with communities, we can not

only respond to society's needs but anticipate and create engineering and IT solutions for the future.

<https://eng.unimelb.edu.au/>

<https://eng.unimelb.edu.au/about/join-mse>

Our ten-year strategy, FEIT 2025, is our commitment to bring to life the University-wide strategy *Advancing Melbourne* and reinforce the University of Melbourne's position as one of the best in the world.

To achieve our ambitions, we will continue to build new infrastructure to enable our teaching, research and engagement; we continue to recruit outstanding people from around the world; and we continue to attract high-quality students from across the globe who are at the heart of our enterprise.

<https://eng.unimelb.edu.au/about/mse-2025>

5.4 THE UNIVERSITY OF MELBOURNE

Established in 1853, the University of Melbourne is a public-spirited institution that makes distinctive contributions to society in research, learning and teaching and engagement. It's consistently ranked among the leading universities in the world, with international rankings of world universities placing it as number 1 in Australia and number 32 in the world (Times Higher Education World University Rankings 2017-2018).

The University's 10-year strategy, *Advancing Melbourne* will enable the University to contribute to advancing the state and national interest and make vital contributions to Australia's standing on the world stage. We seek to be a leading force in advancing Australia as an ambitious, forward-thinking country while increasing its reputation and influence globally. <https://about.unimelb.edu.au/strategy/advancing-melbourne>

Further information about working at The University of Melbourne is available at <http://about.unimelb.edu.au/careers>