Department of Chemical Engineering
Melbourne School of Engineering

Research Fellow in Mineral Aggregation and Flotation

POSITION NO 0050942

CLASSIFICATION Research Fellow, Level A

SALARY $73,669 – $99,964

SUPERANNUATION Employer contribution of 9.5%

WORKING HOURS Full Time (1.0 FTE)

BASIS OF EMPLOYMENT Fixed-Term for 12 months

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 Professor George Franks
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Please do not send your application to this contact

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

In this position you will play a key role in research projects in the field of mineral processing working under the supervision of Professor George V. Franks. The research relates primarily to understanding aggregation processes and how the aggregate properties influence mineral processing unit operations including flotation and dewatering. The aggregates will be produced using novel polymers and oil media developed with our collaborators. Initially, you will procure and commission apparatus for conducting grinding and froth flotation experiments in the lab as well as familiarising yourself with our existing techniques for aggregate formation and characterisation. In collaboration with PhD students, you will investigate topics including: 1) flotation of fine valuable minerals through formation of small hydrophobic flocs, 2) the size and structure of aggregates formed through reversible switching of hydrophilic to hydrophobic polymers under different shear regimes and 3) improving flotation recovery by application of oils to enhance collection of coarse particles with low surface liberation.

The position is within the ARC Centre of Excellence for Enabling Eco-Efficient Beneficiation of Minerals. The role will involve co-supervision of 3 or 4 PhD Students. You will be responsible for up to 4 projects in the Centre of Excellence including regular reporting of the activity. In this role you will publish your outcomes in peer reviewed journals. You will lead the day-to-day operation of a small research lab, including maintaining stocks of routine supplies, chemical safety documentation and inductions and co-supervising undergraduate and PhD research students. When required you may also undertake teaching and research supervision directly related to your area of research.

You will be an active member of the ARC Centre of Excellence and the chemical engineering department collaborating with other researchers. You will contribute to the Centre aims of reducing energy and water consumed in mineral processing as well as reducing waste generated and improving recovery of valuable minerals; all of which improve the sustainability of mineral processing. You will have strong interpersonal skills that will be imperative in assisting you to form productive working relationships with key stakeholders internally, at other Universities and with our Industry partners. Some travel is required to meet with our colleagues in the Centre at other Australian Universities.

1. **Key Responsibilities**

   - Investigating the influence of various parameters on aggregation behaviour, froth flotation and gravity separations.
   - Developing reagent formulations for mineral aggregation, solid-liquid separations and valuable mineral recovery.
   - In collaboration with colleagues, developing polymer reagents to produce hydrophobic aggregates selectively.
   - Specifying, procuring, commissioning, operating and maintaining mineral processing apparatus such as flotation cells, aggregation vessels and mills.
Responsible for the safe day-to-day operation and management of the laboratory including ordering and storing chemicals.

Maintaining safety documentation in the lab including, MSDS sheets, chemical handling and storage, routine inspections, inductions and risk assessments.

Co-supervision of PhD students.

Contribution to the preparation, or where appropriate individual preparation, of research publications, presentations, Centre or industry reports, and proposals to external funding bodies.

Maintain confidentiality regarding results that are of commercial interest.

Involvement in professional activities including, subject to availability of funds, attendance at conferences, seminars and Centre meetings.

Administrative functions primarily connected with his/her area of research.

The position description should be read alongside Academic Career Benchmarks and Indicators

1.1 RESEARCH AND RESEARCH TRAINING

- Participate in research independently and as a member of a research team.
- Develop experimental methods and standard operating procedures.
- Conduct experiments in a safe and careful manner, paying attention to experimental error.
- Produce publications arising from research in peer reviewed journals.
- Supervision or co-supervision of Masters and PhD student research projects within the research area.

1.2 LEADERSHIP AND SERVICE

- Active participation in the communication and dissemination of research.
- Identification of sources of funding to support individual or collaborative projects.
- Active participation within the research group and Departmental committees as required.

1.3 ENGAGEMENT

- Active participation in outreach activities relating to the Centre research, including promotion of the research through media channels and advocacy groups where approved by your supervisor.
- Collaboration with Centre partners including colleagues at other universities and industry.
- Effective liaison with external networks to foster collaborative partnerships.
- Involvement in professional activities, including consultations and referrals.

2. Selection Criteria
2.1 ESSENTIAL

- PhD in Mineral Processing, Chemical Engineering, or other related field; with a track record in research, and sound publication record.
- Experience in mineral processing, colloidal particles and polymers.
- Excellent problem-solving skills with experience in combining information from many different analytical tools in pursuit of the solution to important problems in minerals engineering.
- Experience in working with minimal supervision, and ability to prioritise tasks to achieve project objectives within timelines.
- Outstanding communication skills, both oral and written.
- Highly developed interpersonal skills including demonstrated ability to work cooperatively in a multi-disciplinary team environment and liaise with associates from diverse backgrounds.
- Desire to work in mineral processing field.

2.2 DESIRABLE

- Experience in laboratory scale processing, mineral particle characterization and equipment design, procurement and commissioning.
- Demonstrated understanding of the general principles of colloid and surface chemistry and particle technology.
- Experience in the particle aggregation and froth flotation.
- Familiarity with the role of polymer and surfactant reagents in mineral processing.
- High level of computer literacy.
- Refereed publications in international journals arising from their research
- Ability to relocate to Melbourne in a timely fashion

2.3 OTHER JOB RELATED INFORMATION

- This position requires the incumbent to hold a current and valid Working with Children Check.

3. Equal Opportunity, Diversity and Inclusion

The University is an equal opportunity employer and is committed to providing a workplace free from all forms of unlawful discrimination, harassment, bullying, vilification and victimisation. The University makes decisions on employment, promotion and reward on the basis of merit.

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 2015-2020 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.
The University values diversity because we recognise that the differences in our people's age, race, ethnicity, culture, gender, nationality, sexual orientation, physical ability and background bring richness to our work environment. Consequently, the People Strategy sets out the strategic aim to drive diversity and inclusion across the University to create an environment where the compounding benefits of a diverse workforce are recognised as vital in our continuous desire to strive for excellence and reach the targets of Growing Esteem.

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 CHEMICAL AND BIOMEDICAL ENGINEERING**

https://eng.unimelb.edu.au/about/departments/school-of-chemical-and-biomedical-engineering

The CBE School integrates the expertise and capabilities of the Chemical and the Biomedical Engineering Departments. The resulting mix of skills creates new horizons for engineering and enables the realisation of transformative new ideas into practical innovations. This ranges from the development of bionic prosthetic implants to remediation of Antarctic landscapes. The sweep of technological applications is vast, and we are focused on end-use inspired research. We encompass mining, energy, material science, the environment, medical devices, medical imaging, drug delivery and food production. Our goal is to facilitate knowledge acquisition, research excellence, and its translation into technological, societal, industrial and medical innovation.

5.2 **MELBOURNE SCHOOL OF ENGINEERING**


Melbourne School of Engineering (MSE) 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). MSE continues to attract top staff and students with a global reputation and has a commitment to knowledge for the betterment of society.

Our ten-year strategy, MSE 2025, is our School’s commitment to bring to life the University-wide strategy *Growing Esteem* and reinforce the University of Melbourne’s position as one of the best in the world. Investment in new infrastructure, strengthening industry engagement and growing the size and diversity of our staff and student base to drive innovation and develop the transformative technologies of the future are all fundamental principles underpinning MSE 2025.

### 5.3 THE UNIVERSITY OF MELBOURNE

Established in 1853, the University of Melbourne is a leading international university with a tradition of excellence in teaching and research. The main campus in Parkville is recognised as the hub of Australia’s premier knowledge precinct comprising eight hospitals, many leading research institutes and a wide-range of knowledge-based industries. With outstanding performance in international rankings, the University is at the forefront of higher education in the Asia-Pacific region and the world.

The University employs people of outstanding calibre and offers a unique environment where staff are valued and rewarded.

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

### 5.4 ADVANCING MELBOURNE

The University’s strategic direction is grounded in its purpose. While its expression may change, our purpose is enduring: to benefit society through the transformative impact of education and research. Together, the vision and purpose inform the focus and scale of our aspirations for the coming decade.

Advancing Melbourne reflects the University’s commitment to its people, its place, and its partners. Our aspiration for 2030 is to be known as a world-leading and globally connected Australian university, with our students at the heart of everything we do.

We will offer students a distinctive and outstanding education and experience, preparing them for success as leaders, change agents and global citizens.

We will be recognised locally and globally for our leadership on matters of national and global importance, through outstanding research and scholarship and a commitment to collaboration.

We will be empowered by our sense of place and connections with communities. We will take opportunities to advance both the University and the City of Melbourne in close collaboration and synergy.

We will deliver this through building a brilliant, diverse and vibrant University community, with strong connections to those we serve.

The means for achieving these goals include the development of the University of Melbourne’s academic and professional staff and the capabilities needed to support a modern, world-class university. Those means require a commitment to ongoing financial sustainability and an ambitious infrastructure program which will reshape the campus and
our contribution to the communities we engage with. This strategy, and the priorities proposed, is centred around five intersecting themes; place, community, education, discovery and global.

5.5 GOVERNANCE

The Vice Chancellor is the Chief Executive Officer of the University and responsible to Council for the good management of the University.

Comprehensive information about the University of Melbourne and its governance structure is available at https://about.unimelb.edu.au/strategy/governance