

## **TITLE: ARC Training Centre for Biofilm Research and Innovation PhD Scholarship: Biofilm control in potable water plumbing system**

*Updated 4 December 2024*

**Opening Date:** 18/11/2024

**Closing Date:** 18/12/2024

**Scholarship value:** \$38,982 per annum

**Scholarship duration:** for up to 3.5 years

**Level of Study:** Higher Degrees Research

### **DESCRIPTION**

***This project will be in collaboration with Enware and will focus on biofilm control in drinking water systems.***

#### **ARC Training Centre for Biofilm Research and Innovation – Delivering innovative biofilm solutions**

We are the leading Australian Research and Training Centre tackling biofilm-related challenges.

The **ARC Training Centre for Biofilm Research and Innovation**, led by Flinders University is a 5 year, \$7.8m research and training program, bringing together 5 universities, 10 industry partners and key industry and regulatory bodies to deliver innovative research and biofilm solutions to tackle one of the biggest issues for the maritime and water industries. The Centre is offering scholarship opportunities across 3 Australian universities (Flinders University, Swinburne University and the University of Tasmania) over the 5-year period.

Biofilms grow on all surfaces and environments, from catheters to drinking water pipes and ships. They are complex organisations of cells that grow on both living and inert surfaces and are both viscous and elastic in nature. They can be made up of a single species or comprise several species of different types of microorganisms, including those that pose a threat to either human health or our environment. Biofilm attachment and development cannot be prevented completely thus they cost billions each year to those attempting to eradicate them.

By working with industries to develop innovative solutions that meet their needs and alleviate their biofilm-related problems, the ARC Training Centre for Biofilm Research and Innovation aims to: transform biofouling management strategies for maritime platforms; train the next generation of interdisciplinary scientists and engineers; and to develop biofilm management strategies across the defence and water industries to address evolving regulatory stringency.

The **ARC Training Centre for Biofilm Research and Innovation PhD scholarship program** will support the development of a new generation of specialists and leaders in biofilm monitoring and control. Our students will have access to world-class training, professional development and mentoring and will have a unique opportunity to undertake collaborative research projects and training with our industry partners.

Working within a large research entity (including PhDs, post-doctoral researchers, university chief investigators and industry partner investigators), scholarship recipients will work closely with an industry partner organisation to undertake industry research. Scholarship recipients will have access to mentoring, training, professional and personal development through our unique Foundation Training Program and will undertake a 12-month industry placement.

#### **Project Background**

Healthcare-associated infections (HAIs) are one of the most common, significant and preventable complications affecting patients. A recent report from the USA, conservatively estimated that the tap water accounted for over 20% of all recorded HAIs. Development of technologies that reduce the ability of biofilm to form on plumbing outlets will reduce infectious outbreaks, improving patient outcomes and reducing associated healthcare costs. Through the development of a real time monitoring solution, and new antimicrobial materials/coatings, Enware seeks to revolutionise water quality management in high-risk settings. This will improve the risk management of these water systems, reduce infectious outbreaks and ultimately improve patient outcomes.

**Proposed approach:**

1. Literature review on commercially viable antimicrobial coatings, materials and fabrication processes suitable for use in potable water systems that will remain active for an extended period under dynamic water flow, temperature and chemistry conditions.
2. Development and characterisation of a prototype antimicrobial, coating/material/ fabricated product for use in potable water systems.
3. Assess and optimise the antimicrobial activity of developed coating/material/fabricated product using laboratory scale monostrain biofilm experiments.
4. Assess the antimicrobial activity of the developed coating/material/fabricated product using environmental biofilms within a model plumbing system.

The candidate will complete PhD candidature including a minimum 12 month placement and industry training at Enware during which time you will be embedded with the industry partner team. The industry placement will enable you to develop your network, gain insight into the everyday research practices of an industry-leading/service driven organisation.

## **BENEFITS**

This PhD Scholarship offers:

1. \$38,982 per annum tax free, for up to 3.5 years (full-time).
2. Access to academic and industry expertise through joint supervision.
3. A supportive environment to learn leading-edge research methods and become an expert in your area.
4. The opportunity to manage a complex research project and respond innovatively to challenges.
5. A collaborative research community where you can enhance your skills and build your network to progress your research career.
6. Support through the ARC Training Centre for Biofilm Research and Innovation Foundation Program including specialist training and development, and the opportunity to undertake a 12-month industry placement.

## **ELIGIBILITY**

To be eligible for a PhD Scholarship you will need:

- To be an Australian citizen, New Zealand citizen, an Australian permanent resident or have, or are eligible to apply for, a relevant international visa; and
- Meet Flinders University [PhD admission requirements](#) – an Australian Honours degree Class 1 or 2A, a Master Degree, or equivalent qualification (at least AQF Level 8), or evidence of equivalent research experience, such as refereed publications or significant experience as a lead researcher; and

- Scholarship recipients are expected to take up their studies as soon as practicable within a timeframe specified by the Office of Graduate Research in consultation with the industry partner, up to maximum of 3 months from the time of acceptance of the scholarship. In exceptional circumstances and with approval of the industry partner and the University, this time may be extended to 6 months; and
- Any other eligibility criteria relevant to the industry partner/research project (eg have or be able to apply for a National Police Criminal History Check).

It is desirable for applicants to also have:

- Honours/Masters degree with a focus on material science, nanotechnology, polymers or chemistry.
- Interest in working with an industry partner.
- Drivers licence.
- Demonstrate to have completed a research project that is related to biofilm control

### APPLICATION INFORMATION

How to apply:

- Complete the attached Higher Degree by Research Scholarship Application Form, send your application with supporting documentation to [ARC Training Centre for Biofilm Research and Innovation](mailto:biofilm@flinders.edu.au) via email at: [biofilm@flinders.edu.au](mailto:biofilm@flinders.edu.au).
- Applications close: 18/12/2024
- To find out more about this exciting scholarship opportunity, contact the [ARC Training Centre for Biofilm Research and Innovation](mailto:biofilm@flinders.edu.au) via email at: [biofilm@flinders.edu.au](mailto:biofilm@flinders.edu.au).
- Please note that successful scholarship applicants must also apply for, and be admitted to, a HDR candidature at Flinders University to receive the scholarship. For further information refer to: [Apply for a Higher Degree by Research](#)

The scholarship applications may close earlier than advertised if a successful awardee is selected. The start date of the project will be decided in consultation with the project lead, with expectation that the successful awardee will commence as soon as practicable.