

Full time PhD Scholarship under Royal Melbourne Institute of Technology (RMIT) - University of Peradeniya (UOP) Joint PhD Programme



Title: Experimental and Computational Modelling of Fat, Oil and Grease Deposition in Coated Sewer Systems for Predictive Maintenance

Brief Description:

The accumulation of fat, oil, and grease (FOG) in sewer systems is a common problem that compromises sewer performance, increases maintenance costs due to blockages, and poses environmental risks. While various solutions have been explored, hydrophobic coatings have emerged as an innovative and sustainable approach to address this issue. These coatings create water repellent surfaces that minimise the adherence of FOG to sewer walls, preventing buildup and ensuring smoother flow. We have been developing novel coating materials to minimise FOG deposition. Several epoxy based composite coatings with additives derived from locally available materials, including vein graphite, biomass-based fly ash, and locally derived biochar, have been successfully developed. Although coatings have demonstrated reduced deposition, studies have primarily focused on coating development and laboratory performance evaluation. Limited attention has been given to understanding how coating properties influence sewer hydraulics and FOG deposition. Furthermore, predictive tools that integrate coating performance with hydraulics to estimate FOG accumulation and optimize maintenance scheduling are currently lacking. Therefore, this study will focus on investigating the influence of anti-FOG coatings on the hydraulic performance and FOG deposition behavior. Further, the study will concentrate on developing a hybrid hydraulic-AI model for determining FOG accumulation and optimizing sewer maintenance.

Supervisors:

- UOP supervisors: Prof. Nadeeshani Nanayakkara
- RMIT Supervisor: Dr. Sachin Yadav, A/Prof. Biplob Pramanik

Commencement date: May 2027

Features of the PhD:

- Duration of the PhD is 3-3.5 years on a full-time basis and the candidate will spend maximum period of one year at RMIT, Australia and the remaining time in Sri Lanka.
- The tuition fee is fully waived, and the selected applicant will be considered for the standard scholarships for living stipend during the stay in Sri Lanka and Australia.
- There will be at least one principal supervisor each from RMIT and UOP.
- Degree will be awarded from both institutions acknowledging the joint supervision. You will get two separate degree certificates, one each from RMIT and UOP.

Successful candidates should have the following:

1. BSc Engineering (Specializing in Civil Engineering) with Second Class Upper division or higher
2. IELTS overall band of 6.5 with each band above 6.0

We are looking for a dynamic candidate who meets the above qualifications.

If you are interested in this PhD research, apply via the following link on or before 25th September 2026

<https://forms.gle/M9AmbViH9343jJMe6>

Note: Only the shortlisted candidates will be called for the interview.

If you have any queries, contact Dr. Panduka Neluwala [Email: pandukaneluwala@eng.pdn.ac.lk]