

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



Title: High-Performance Concrete in Marine Applications: Sustainability & Durability Aspect

Brief Description:

Chloride induced corrosion in Marine infrastructure is one of the major durability concerns, causing billions of dollars to be spent globally in repairs and maintenance. Concrete provides an alkaline pH that promotes the passivation of steel reinforcement. Seawater by itself is not a particularly harsh environment for plain concrete, but a marine environment can be very harmful to reinforced concrete due to the multiplicity of aggression that it can face. The ingress of chloride ions results in the depassivation of steel and, once the chloride ions reach a critical concentration at the rebar, the corrosion initiates. Use of high-performance concrete (HPC) is one potential option to increase the confidence level of concrete durability at such harsh exposures. HPC can be made with cement alone or blended with supplementary cementitious materials. Besides, ternary mixes are increasingly used to take advantage of the synergy of some mineral components to improve concrete properties in the fresh and hardened states, and to make high performance concrete more economical and ecological. To date, limited studies have been focused in examining the long-term durability and sustainability aspect of High-Performance Concrete exposed in marine environment quantitatively. In this context, this Ph.D research will be conducted particularly to fulfil this research gap. An improved HPC mix will be developed and tested for durability exposing to aggressive marine ecosystems. Environmental Impact Assessment & Whole Life Costing will also be conducted for this sustainable development.

Supervisors:

- UOP supervisors: Dr. Hiran Yapa, Dr. Samith Budhdhika
- RMIT Supervisor: Dr.David Law, Dr.Chamila Gunasekara

Commencement date: February 2022

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 18th December 2021.



<https://tinyurl.com/8xawk5c>

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

If you have any queries, contact Dr. M.C.M. Nasvi [Email: Nasvimcm@eng.pdn.ac.lk]