

CURRICULUM VITAE

KEERTHI V. THALAKKAL

Doctoral Research Scholar

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EDUCATION

- **Ph. D. in Civil Engineering (Building Materials)** **April 2021-Present**
Indian Institute of Technology Madras, Chennai, Tamil Nadu India
Topic: “Electrical/electrochemical modelling for non-destructive and random testing of cathodic protection systems in reinforced concrete structures.”
- **M. Tech. in Structural Engineering** **August 2020**
National Institute of Technology Karnataka, Surathkal, Karnataka, India
Project title: “Strengthening of Reinforced Concrete Rectangular beam by using Glass Fiber Reinforced Polymer sheets.”
First Class with Distinction, CGPA: 9.49/10
- **B. Tech. in Civil Engineering** **July 2017**
Government College of Engineering Kannur, Kannur University, Kerala
Project title: “Evaluation of durability and strength properties of soil using Biopolymers.”
First Class with 75.48% marks.

RESEARCH INTERESTS

- Corrosion assessment techniques in reinforced concrete structures
- Repair and rehabilitation of concrete structures
- Electrochemical modelling of cathodic protection systems

CONFERENCE PAPERS AND PRESENTATIONS

- **Keerthi V. Thalakkal**, Naveen Krishnan, and Radhakrishna G. Pillai “Performance assessment of galvanic anode cathodic protection systems in reinforced concrete structures”, Proceedings of the International Conference on Concrete Repair, Rehabilitation, and Retrofitting (ICRRR), Cape Town, South Africa, October 3-5, 2022.
- **Keerthi V. Thalakkal**. and Radhakrishna G. Pillai “Performance assessment of galvanic anode cathodic protection systems in reinforced concrete structures”, Poster presentation at CORCON 2022, NACE/AMPP, Udaipur, Sept. 19 – 22, 2022. (**Best Poster Award**).

RESEARCH EXPERIENCE

Project Associate

November 2020 – April 2021

Indian Institute of Technology Madras, Chennai

Project 1: Performance evaluation of commercially available different corrosion inhibiting admixtures in arresting corrosion

The project aims to evaluate the effectiveness and functionality of different corrosion inhibitors for inhibiting the corrosion of TMT steel embedded in OPC and PPC concretes. I have done, short-term experiments (screening tests) such as ASTM G180, and ASTM G31 to check the performance of corrosion-inhibiting admixtures. It was found that some of the inhibitors were effective in enhancing the service life of concrete structures.

Project 2: Performance evaluation of Galvanized and Plasma coated steel reinforcement bars

The project aimed to evaluate the corrosion and mechanical characteristics of bare (B), galvanized (G), and plasma-coated (P) steel rebars. I have done the following experiments for this project, such as i) The quality of uncoated steel rebars was assessed using TM (Tempered martensite) ring test, ii) the accelerated chloride threshold test is employed to assess the corrosion initiation in the three different steel rebars embedded in the mortar, iii) Pull out specimens were cast to evaluate the effect of corrosion on bond strength behaviour of B, G and P bars, iv) Salt spray test were done on all the rebars, localized corrosion was observed on the ribs of coated rebars where scratches were visible, and v) the microstructural characterization were done to determine the coating thickness and intermetallic phases in G and P rebar. It was found to have a discontinuous TM ring in larger diameter bars and the chloride threshold of G rebar was more compared to B and P rebars. Also, intermetallic corrosion observed in G rebar.

Project 3: Electrochemical repair of the corroded sunshade of 105-year-old Rashtrapati Bhavan building in Delhi

The project aims to arrest the corrosion in the heavily corroding sunshades of the rashtrapati bhavan (The President's house) in Delhi, India. I have monitored the installation of sacrificial hybrid-galvanic anodes and the casting of the chajja using fiber and steel-reinforced lightweight concrete. The installed CP system is planning to assess using monitoring box in an interval and the amount of depolarisation shift induced in the concrete will be recorded for evaluating the performance of the galvanic anodes.

Project 4: Service life of tunnel with rock bolt for the structure with national importance

This project aims to predict the service life and suggesting the type of steel and concrete to achieve 200 + years. To simulate rock like surrounding to the rock bolt, a frame of concrete was prepared using micro concrete and rock bolt assembly placed inside it.

Other projects

- Condition assessment of the Industrial Development Bank of India (IDBI), Chennai, was done. Actively involved in condition assessment of the building and prepared recommendations for corrosion protection and strengthening of the building.
- Condition assessment of NBCC Green View Project located at Sector 37D, Gurugram was done. Repair using cathodic protection systems was recommended.
- Condition assessment of Jetty in L&T's Kattupalli Port, Tamil Nadu was done. Actively involved in visual inspection and preparation of recommendations.
- Condition assessment of Rohini Court, Delhi. Actively involved in visual inspection and preparation of recommendations

- Condition assessment of Supreme Chambers, Andheri West, Mumbai was done. Repair using cathodic protection systems was recommended. Actively involved in the installation of galvanic anodes and monitoring box.

WORK EXPERIENCE

- Graduate Teaching Assistant
 - HTRA assistance in course material, assignment questions, short quizzes for MRCF (Maintenance and Rehabilitation of Constructed Facilities’) July-Nov 2022
 - CE3060 – Basic Reinforced Concrete Design July-Nov 2022
 - CE2330 – Civil Engineering Materials and Construction April-May 2021
- Project Associate at IIT Madras, Chennai (September 2020 to March 2021)
 - Estimation of chloride threshold for prestressing steels, QST bars embedded in OPC, Fly ash and LC3.
 - Corrosion monitoring of ASTM G109 and lollipop specimens using accelerated corrosion test
 - Screening tests for corrosion-inhibiting admixtures

SEMINAR/WORKSHOP/CONFERENCE

- Attended 2-Day International Workshop on ‘Technologies for Low-carbon & Lean Construction’ on January 30 - February 3, 2023.
- Attended ICCRRR (International Conference on Concrete Repair, Rehabilitation, and Retrofitting), Cape Town, South Africa, October 3-5, 2022.
- Attended CORCON 2022 (28th International Conference & Expo on Corrosion), Udaipur, Rajasthan, September 19-22, 2022
- Attended 2-Day International Workshop on ‘Advances in Technologies for Low Carbon & Lean Construction’ on December 10-11, 2021.
- Attended a one-day seminar organized by NACE International Gateway India Section - South Zone (NIGIS-SZ) and ICI - Chennai Centre-"5th 1-day Seminar on Corrosion Control in Concrete Structures (C3S)"on December 4, 2021
- RILEM Course on Steel corrosion, theory, prevention, and repair

Internships/Workshops attended

Summer Internship Programme

June 2019

At STUP Consultants Pvt. Ltd.,

- Topic: Analysis, Design and detailing of Hostel building”

Industrial Training

April 2016

Uralungal Labour Contract Co-operative (ULCC) Society Ltd., Kozhikode

- Topic: Performed structural analysis of the M.DIT Polytechnic College, GHSS Karaparamba and cross-sectional design of pavement at Puthiyangadi.

Industrial Visits

- Cheruthoni & Idukki Arch Dam
- Kannur International Airport
- Malabar cements in Kanjikode

Course from Global Initiative for Academic Networks

- Course Title: “Corrosion Prevention and Control: Importance in the Era of sustainable development” at Indian Institute of Technology Madras. during April 17 – 21, 2022.
- About corrosion theory and engineering fundamentals, corrosion protection and prevention, and corrosion testing and monitoring. Hands-on lab work to demonstrate corrosion prevention and protection strategies, discussions on sustainability relationships and circular economy

CO-CURRICULAR

- Volunteer for CORCON 2022, 28th International Conference & Expo on corrosion held in Udaipur during Sept. 19 – 22, 2022.
- Volunteer for one week Faculty Development Program on Fiber Reinforced Concrete and its Applications organized by the Department of Civil Engineering, NITK.
- Student member of the Indian Concrete Institute (ICI) for the year 2014-2017 under ICI GCEK students chapter
- Created working model of ‘PANAMA CANAL’ in ‘YUKTI- 2016’ Tech fest
- Secured A Grade in Atlas making competition in state social science fair
- Certificate of Merit cum Merit Scholarship
- Passed Graduate Aptitude Test with a score of 677 out of 1000 in 2018

EXTRACURRICULAR ACTIVITIES

- Volunteer for National Service Scheme (NSS) from 2013 - 2016
- Student volunteer for Junior Red Cross from 2008 - 2010
- Participated in 'YUKTI-2016' in the event group dance.
- Secured First prize in Wildlife week celebration-2011 drawing competition