

Curriculum Vitae

Sripriya RENGARAJU

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Building Technology & Construction Management (BTCM) Division
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EDUCATION

- **Doctor of Philosophy (proposal defended)** 2014 - present
Indian Institute of Technology (IIT) Madras, Chennai, India
Dissertation: “*A study on the electrochemical response and chloride threshold estimation of steel-cementitious systems with high electrical resistivity*”
Guide: Dr. Radhakrishna G. Pillai
Committee members: Profs. Ravindra Gettu, Manu Santhanam, Lakshman Neelakantan
CGPA: 9/10
- **Master of Engineering (Construction Engineering and Management)** 2013
College of Engineering, Guindy Campus, Anna University
Chennai, Tamil Nadu, India
Thesis: “*Implementation of Last Planner System in Urban Rail Transport Infrastructure*”
Guide: Dr. R. Vidjaepriya
CGPA: 9.63 / 10 (3rd rank in class of 25 students)
- **Bachelor of Engineering (Civil Engineering)** 2005
Visvesvaraya National Institute of Technology (Deemed University)
Nagpur, Maharashtra, India
First Class (with distinction) – 75% marks

AWARDS

- RILEM Best Student Poster Award, International conference on Advances in Construction Materials and Systems 2017, Chennai, India 2017
- Best Paper Award in the “Young Scientist Forum” Category, CORCON 2015, Chennai, India 2015
- Prof. Sivalingam Endowment award for securing the top score in the course “Advanced Construction Techniques” at Anna University, Chennai 2013
- Secured 1st Rank in the 12th Grade Examination in my home district (Pudukottai, Tamil Nadu) 2001

RESEARCH INTERESTS

- **Electrochemistry and microstructure of advanced steel-cementitious systems**
- **Corrosion prevention/protection systems and their mechanisms**
- **Generating models for input parameters for service life estimation**

WORK EXPERIENCE

- **Graduate Teaching Assistant** 2014 - Present
Indian Institute of Technology Madras, Chennai, India
 - CE 2330 – Civil Engineering Materials and Construction
 - Prepared and graded question papers
 - CE 3410 / 5090 – Construction Materials Laboratory
 - Prepared experimental setups
 - Demonstrated and guided in conducting laboratory experiments
 - Prepared and graded question papers
 - CE5120 – Maintenance and Rehabilitation of Constructed Facilities
 - Guided and graded course projects for various groups in class
 - Prepared and graded question papers
 - Delivered a guest lecture on Cathodic Protection Systems

- **Graduate Research Assistant** 2014 – Present
Indian Institute of Technology Madras, Chennai, India
 - Assisted in writing the successful grant proposal on “Assessment, prevention, and mitigation of corrosion in Reinforced Concrete (RC) systems” funded by Department of Science and Technology (DST), Government of India.
 - Part of this project contributes to my doctoral research work.
 - Lead student in the corrosion related work in the project on “Limestone Calcined Clay Cement (LC3)” funded by Swiss Agency for Development and Cooperation; 2015 - Present
 - Supervised project staff and assisted in data analysis and documentation of reports for the following projects:
 - “Performance evaluation of corrosion inhibitors for reinforced concrete systems” funded by Institute for Construction Materials and Technologies Pvt. Ltd. (ICOMAT), Chennai, Tamil Nadu
 - “Assessment of corrosion inhibiting admixtures in cementitious systems” funded by Sika, India
 - Guided graduate and undergraduate students on corrosion experiments
 - Reviewed papers and theses of fellow students

- **Senior – Test Engineer** August 2008 - October 2010
Computer Sciences Corporation, Chennai, India
 - White box testing
(Functional Testing through Junit code in developers build environment)
 - Web service API testing
 - E-commerce domain knowledge

- **Software Development Engineer** July 2005 - August 2008
Cognizant Technology Solutions
Offices in Chennai/Pune, India and Hartford, CT, USA
 - Analysis and design of programs written in Microsoft .Net
 - Assessment of database using MS SQL
 - Exposed to Docucorp tool for documentation for insurance sector
 - Insurance domain knowledge

CURRENT RESEARCH IN DETAIL

In recent times, concretes with special cements and supplementary cementitious materials (fly ash, slag, silica fume, calcined clay etc.), and coated rebars are used in reinforced concrete structures to enhance their service life. Existing test methods have several limitations in assessing the electrochemical data of such steel-cementitious (S-C) systems due to its high electric/ionic resistance. Hence, there is a need to develop more suitable methods which address this shortcoming. In addition, there is a lack of guidelines for the interpretation of electrochemical data obtained from such systems. This is important to estimate the chloride threshold, which is a critical service life parameter. This research involves an in-depth study of how electrochemical data is affected by (i) the various binders used, (ii) microclimate at the S-C interface (e.g. temperature, moisture), and (iii) the electrode configuration (annular, planar). The outcome is a set of guidelines, which includes a combination of techniques, such as electrochemical impedance spectroscopy (EIS), and linear polarisation resistance (LPR) is proposed for estimating the chloride threshold of such systems.

JOURNAL PUBLICATIONS

1. Macrocell corrosion mechanisms of prestressing strands in various concretes, *Submitted to Magazine of Concrete Research, ICE.*
2. Service life and life cycle assessment of reinforced concrete systems with fly ash and limestone calcined clay cement (LC³), *Submitted to Cement and Concrete Research (CCR), Elsevier*

IN PREPARATION

1. Corrosion propagation in Limestone Calcined Clay Cement (LC³)
2. Effect of corrosion cell design and electrode configuration on the electrochemical response from steel embedded in highly resistive cementitious systems
3. Development of a corrosion detection criteria and chloride threshold test method for steel embedded in highly resistive cementitious systems
4. Sensitivity analysis of input parameters used for service life estimation of structures against chloride induced corrosion

INTERNATIONAL CONFERENCE PAPERS

1. Ravindra Gettu, Radhakrishna G. Pillai, Manu Santhanam, Sundar Rathnarajan, Anusha Basavaraja, Sripriya Rengaraju, and Yuvaraj Dhandapani “Service Life and Life-Cycle Assessment of Reinforced Concrete with Fly ash and Limestone Calcined Clay Cement”, International Conference on the Durability of Concrete Structures (ICDCS) 2018, UK
2. Dyana Joseline, Deepak Kamde, Sripriya Rengaraju, and Radhakrishna G. Pillai “Residual Service Life Estimation and its Importance for Pretensioned Concrete (PTC) Bridges in Coastal Cities”, International Conference on the Durability of Concrete Structures (ICDCS) 2018, UK
3. Sripriya Rengaraju, Radhakrishna G. Pillai and Lakshman Neelakantan “Acquisition and interpretation of electrochemical response from highly resistive(HR), steel-binder (S-B) systems”, Electrochemical Methods in Corrosion Research (EMCR) 2018, UK
4. Sripriya Rengaraju, Radhakrishna G. Pillai and Lakshman Neelakantan “Acquisition and interpretation of electrochemical response from highly resistive(HR), steel-binder (S-B) systems”, CORROSION 2018, USA

5. Sripriya Rengaraju, Kokubo Wataru, Radhakrishna G. Pillai and Lakshman Neelakantan “Effect of cell geometry on electrochemical measurements of steel-cementitious systems”, CORSYM 2018, India
6. Sripriya Rengaraju and Radhakrishna G. Pillai “Challenges in Determining the Chloride Threshold of Steel Embedded in Cementitious Systems”, International conference on Advances in Construction Materials and Systems 2017, India
(RILEM Best Student Poster award)
7. Sripriya Rengaraju and Radhakrishna G. Pillai “Electrochemical testing in highly resistive steel-cementitious systems”, CORCON 2017, India
8. Radhakrishna G. Pillai, Manu Santhanam, Ravindra Gettu, Yuvaraj Dhandapani., Sripriya Rengaraju, Sundar Rathnarajan, and Anusha Basavaraja “Service life estimation and life cycle assessment for portland cement, fly ash, and LC3 systems”, Service-life prediction of concrete: The Corvallis Workshops, 2017, USA
9. Sripriya Rengaraju, Sundar Rathnarajan, Anupama Velayudhan, Oviya Pugal and Radhakrishna G. Pillai “Effect of Corrosion Inhibitors on Durability Parameters of Cement Mortar”, CORCON 2015, India **(Best Student Paper Award in the “Young Scientist Forum” Category)**
10. Sripriya Rengaraju and Radhakrishna G. Pillai “Chloride-Induced Corrosion Rates of Steel Embedded in Mortar with Ordinary Portland and Limestone Calcined Clay Cements (OPC and LC3)”, 1st International Conference on Calcined Clays for Sustainable Concrete 2015, Switzerland.

PROFESSIONAL MEMBERSHIPS

- **Member, RILEM (Membership No: 33257)**
 - Student volunteer of RILEM week & ICACMS 2017, Chennai
 - Edited various manuscripts for the proceedings
 - Was a member of the Local Organizing Committee
 - Student Organiser of RILEM-ICI workshop on Advanced Concrete Technology 2016
- **Indian Concrete Institute (ICI) lifetime member (Membership No:10947)**
 - Student Organiser of Concrete-canoe competition held at IIT Madras
 - Student Organiser of ICI-IIT Madras workshop on Advanced Concrete Technology, 2015
- **Student member, NACE student member (Membership No:729531)**
 - Student volunteer of CORROSION 2018, Phoenix, Arizona, USA
 - Student volunteer of CORSYM 2018, Chennai
 - Student volunteer of CORCON 2017, Mumbai
 - Student volunteer of CORCON 2015, Chennai
 - Student volunteer of 1st Corrosion Control in Concrete Structures (C3S) workshop, IIT Madras
 - Student volunteer of 2nd Corrosion Control in Concrete Structures (C3S) workshop, IIT Madras

WORKSHOPS ATTENDED

- **Pedagogy**
 - Teaching Assistant Training Program, Indian Institute of Technology Madras, 1st April 2016, India

- Panelist in “Missing Aspects of Teaching Learning in Current Situation and Ways To Improve” discussion, Teaching Learning Center, Indian Institute of Technology Madras, 26th April 2016, India
- **Research**
 - Carmen Andrade workshop on Corrosion Control in Concrete Structures (2nd C3S), Indian Institute of Technology Madras, Chennai, India, 8th September 2017
 - Workshop on Limestone calcined clay cement (LC3), Indian Institute of Technology Madras, Chennai, India, 4th September 2017
 - Workshop on Corrosion Control in Concrete Structures (C3S), Indian Institute of Technology Madras, Chennai, India, 5th and 6th August 2016
 - Doctoral School on Limestone Calcined Clay Cement: Characterisation methods, École polytechnique fédérale de Lausanne, Lausanne, Switzerland, 26th June - 2nd July 2015
 - “Advanced Characterization of Cement and Concrete using Calorimetry” Calorimetry workshop for characterization, Indian Institute of Technology Delhi, New Delhi, India, 2nd December 2014