

Dr. Jayachandran K., M.E., Ph.D.

Assistant Professor, Department of Civil Engineering,
National Institute of Technology Calicut (NIT Calicut),
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EDUCATION

- **Ph.D. in Civil Engineering (2010 – 2017)**
Indian Institute of Technology Madras, Chennai
Dissertation title: “Study of chloride threshold determination for systems with corrosion inhibiting admixtures and corrosion rates of various steels in cement mortar”
Guide: Dr. Radhakrishna G. Pillai
- **M.E. in Construction Engineering and Management (2008 – 2010)**
College of Engineering Guindy (CEG Campus), Anna University Chennai
- **B.E. in Civil Engineering (2005 – 2008)**
K. S. Rangasamy College of Technology, Tiruchengode, Anna University Chennai
- **Diploma in Civil Engineering (2003 – 2005)**
Kongu Polytechnic College, Perundurai
- **Higher Secondary School [XII Level] (2003)**
Vidhya Vikas Higher Secondary School, Tiruchengode
- **Secondary School [X Level] (2000)**
Vidhya Vikas Higher Secondary School, Tiruchengode

PROFILE SUMMARY

A rounded profile with teaching, research and service components

- **Teaching**
 - Working at National Institute of Technology Calicut (NIT Calicut), Kerala, India since February 2020.
 - 1.8 years of teaching experience at National Institute of Technology Tiruchirappalli (NIT Trichy), Tamil Nadu, India.
- **Research**
 - 1.7 years of research experience at Central R&D Unit, UltraTech cement Ltd, Mumbai to support internal business requirements of Aditya Birla Group to develop new products and quality assurance on concrete durability for RMC plants of UltraTech Concrete.
 - 7 years of doctoral research experience at IIT Madras
 - 3 provisional patents
 - 4 refereed journal papers
 - 12 refereed international conference papers
- **Services**
 - Delivered technical and motivational lectures in many engineering colleges
 - Academic research and career guidance for budding engineering graduates
 - Assisted in organizing short courses, FDPs and workshops at IIT Madras
 - Member of ICI and RILEM

RESEARCH INTERESTS

- Corrosion and other deterioration mechanisms in building materials and systems
- Service life estimation of reinforced concrete structures
- Durability of concrete structures (Assessment; Test methods; Modelling; Performance specifications)
- Cathodic protection systems for corrosion mitigation
- Non-destructive Techniques for assessment of structures
- Performance evaluation of mineral and chemical admixtures
- Development of new alternative construction materials

WORK EXPERIENCE

- **Assistant Professor, Dept. Civil Engineering, NIT Calicut** (Feb 2020 – Till date)
- **Research Associate, UltraTech R&D Unit, Mumbai** (Jun 2018 – Feb 2020)
- **Faculty (ad hoc), Civil Engineering, NIT Trichy** (Aug 2016 – May 2018)
- Project Officer, IIT Madras (Aug 2015 – Dec 2015)
- Graduate Teaching Assistant, IIT Madras. (Jan 2010 – Aug 2014)
- Teaching Assistant, College of Engineering Guindy, Chennai (Aug 2008 – June 2010)

EXPERIENCE AT CENTRAL R&D UNIT, ULTRATECH CEMENT LTD., MUMBAI

- Developing new cement and concrete products to support the internal business requirements of UltraTech Cement Ltd., and other business units of Aditya Birla Group.
- Technical support for special requirements of the clients and quality audits for the ready-mix concrete (RMC) plants of UltraTech Concrete spread across India.
- As per the non-disclosure policy (NDA agreement) of the company, details of the projects cannot be disclosed, unless for official requirements.

COURSES HANDLED AS A FACULTY AT NIT TRICHY

- **Undergraduate courses taught, engineering stream and course in semester**
 - Concrete Technology B. Arch. Sem – IV
 - Construction Techniques and Equipment B. Tech. (Civil) Sem – IV
 - Estimation, Costing, and Valuation B. Tech. (Civil) Sem – VII
 - Engineering Graphics B. Tech. (Civil, ICE) Sem – I
 - Basics of Civil Engineering B. Tech. (ECE, EEE, PE) Sem – I
- **Post graduate courses taught, engineering stream and course semester**
 - Construction Contracts and Specifications M. Tech. (CT&M – L&T UoP) Sem – I
 - Construction Quality and Safety Management M. Tech. (CT&M – L&T UoP) Sem – II

PATENTS

1. **A composition for heat resistant concrete**, provisional patent no: 201921009649 filed in 2019
2. **A composition for heat resistant cement**, provisional patent no: 201921009650 filed in 2019
3. **Concrete mixing assembly and method for retaining slump value for concrete mix**, provisional patent no: 2019211012998 filed in 2019

REFEREED JOURNALS

1. **Jayachandran Karuppanasamy** and Radhakrishna G. Pillai, “Probabilistic corrosion rates of Cold-Twisted Deformed (CTD) and Thermo-Mechanically Treated or Quenched and Self-Tempered (TMT/QST) Steels in chloride-contaminated mortar”, *Indian Concrete Journal* (ISSN: 0019-4565, IF-2016: 0.402), Vol. 90, No. 11, 45–55, 2016.
2. **Jayachandran Karuppanasamy** and Radhakrishna G. Pillai, “Statistical distributions for corrosion rates of conventional and prestressing steel reinforcement embedded in chloride contaminated mortar”, *NACE Corrosion Journal* (ISSN: 0010-9312, IF-2016: 1.661), Vol. 73, No. 9, 1119–1131, 2017.
3. **Jayachandran Karuppanasamy** and Radhakrishna G. Pillai, “A short-term test method to determine the chloride threshold of steel-cementitious systems with corrosion inhibiting admixtures”, *Journal of Materials and Structures (RILEM)* (ISSN: 0947-5117, IF-2016: 1.26), Vol. 50, Issue 4, 205–217, 2017.
4. Mahima S., Bahurudeen A., Manu Santhanam, and **Jayachandran Karuppanasamy**, “Service life prediction of bagasse ash blended concrete in marine splash zone”, *ELSEVIER Journal: Materials Today: Proceedings* (ISSN: 2214-7853), Volume 4, Issue 9, 9664 – 9672, 2017.

INTERNATIONAL CONFERENCE PAPERS (Descending Order: Time)

1. Sharmila P., Rajesh Kannan P., **Jayachandran Karuppanasamy**, and Muthupandi V.,” Effect of corrosion inhibitor on corrosion rate of Quenched and Self-Tempered (QST) steel embedded in mortar exposed to chlorides”, 5th International Corrosion Prevention Symposium for Research Scholars (CORSYM 2018), IIT Madras, India.
2. Dyana Joseline, **Jayachandran Karuppanasamy**, Padma Priya, and Radhakrishna G. Pillai, “Corrosion behaviour of prestressing steel in some practical scenarios”, International Conference and Expo on Corrosion (CORCON 2017), Mumbai, India, September 17–20, 2017.
3. Athira G., Mahima S., Bahurudeen A., **Jayachandran K.**, Moorthy P., “Service life prediction for bridge structures exposed to aggressive marine environment”, International Conference on Transportation Planning and Implementation Methodologies for Developing Countries, IIT Bombay, India, December 19–21, 2016.
4. **Jayachandran Karuppanasamy** and Radhakrishna G. Pillai, “Service life estimation of concrete structures with different steel types exposed to chloride environment”, NACE Concrete Service Life Extension Conference, Orlando, Florida, USA, May 23–25, 2016.
5. Mahima S., Bahurudeen A., Manu Santhanam, and **Jayachandran Karuppanasamy**, “Service life prediction of bagasse ash blended concrete in marine splash zone”, International conference on recent trends in Engineering and material sciences (ICEMS 2016), Jaipur, India, March 17–19, 2016.
6. Dyana Joseline, **Jayachandran Karuppanasamy**, Dhanya B. S. and Radhakrishna G. Pillai, “Effect of corrosion inhibitor on critical chloride threshold of prestressing steel”, International Conference and Expo on Corrosion (CORCON 2016), New Delhi, India, September 18–21, 2016.
7. **Jayachandran Karuppanasamy** and Radhakrishna G. Pillai, "A test method to determine the effect of corrosion inhibitors on chloride threshold of steel-cementitious systems", International Conference and Expo on Corrosion (CORCON 2015), Chennai, India, November 19–21, 2015.
8. Radhakrishna G. Pillai, **Jayachandran Karuppanasamy**, Dhanya B. S., Sooraj A.O. Nair, Manu Santhanam, and Ravindra Gettu, "Enhancing the corrosion resistance of reinforced concrete

structures - Indian Scenario and challenges ahead", Invited Lecture, International Conference and Expo on Corrosion (CORCON 2015), Chennai, India, November 19–21, 2015.

9. **Jayachandran Karuppanasamy** and Radhakrishna G. Pillai, "Issues with the application of potential gradient in evaluating the performance of corrosion inhibitors in steel-cementitious systems", International Conference on Ecstasy in Concrete (ACECON 2015), Kolkata, India, October 08–10, 2015.
10. **Jayachandran Karuppanasamy**, and Radhakrishna G. Pillai, "Probabilistic Estimation of Corrosion Propagation Period for Prestressed Concrete Structures Exposed to Chlorides", 4th International Conference on Durability of Concrete Structures (ICDCS 2014), Purdue University, West Lafayette, Indiana, USA, 24–26 July 2014.
11. Vibha Venkataramu, **Jayachandran Karuppanasamy**, Arun Kishore, and Radhakrishna G. Pillai, "Effect of corrosion inhibitors on the chloride threshold of TMT steel", 3rd International Conference on Sustainable Construction Materials & Technologies (SCMT3) at Kyoto, Japan, August 18–21, 2013.
12. Vibha Venkataramu, **Jayachandran Karuppanasamy**, and Radhakrishna G. Pillai, "Effect of calcium nitrite corrosion inhibitor on the chloride threshold of TMT steel", International Conference on Innovations in Concrete Constructions (ISBN: 9789382880066) at NIT Jalandhar, India, March 5–8, 2013.

REVIEWER FOR THE JOURNAL'S

- Journal of Advances in Cement Research, ICE, UK (ISSN: 1751-7605)
- Journal of The International Federation for Structural Concrete (fib) (ISSN: 1751-7648)
- International Journal of Sugar Crops and Related Industries (ISSN: 0974-0740)
- Journal of the Institution of Engineers (India): Series A (ISSN: 2250-2157)
- Current Science – Online (ISSN: 0011-3891)

SCHOLASTIC ACHIEVEMENTS

- Won first prize for the national competition on corrosion awareness video organized by CII Corrosion Management Committee, CII–Faraday Council of Corrosion, and National Institute of Ocean Technology in 2013.
- Scored 87 percentile in Graduate Aptitude Test in Engineering (GATE) 2007.

POSITIONS OF RESPONSIBILITY

- Expert Member in Board of Studies (BoS) committee in K. S. Rangasamy College of Technology.
- Coordinator, Rural Civil Engineering Students Technical Association, Civil Gateway, TN. (2014–15).
- President, IIT Madras Student chapter – Indian Concrete Institute (ICI), 2010–13.
- Team Leader, Construction Materials Research Scholars Group in BTCM Division, Department of Civil Engineering, IIT Madras from January 2011 to March 2013.
- Placement coordinator, Civil Engineering Association, K S R College of Technology 2007–08.
- Organizing committee member in 2 international conferences and 5 workshops held at IIT Madras.

CONTRIBUTION TO THE SOCIETY

Delivered talks on the following topics in workshops as keynote, or invited speaker in many reputed academic institutions,

- Corrosion mechanism, control, and monitoring in concrete structures
- Service life estimation of concrete structures
- How to enhance the durability / service life of concrete structures?
- Literature review, writing, documentation made easy
- Career guidance for budding engineering graduates
- Workshop on reference manager and graphing tools
- Effective utilization of Google search engine
- Hardware troubleshooting and common issues in Windows operating systems

PROFESSIONAL MEMBERSHIP

- Life member of Indian Concrete Institute (ICI)
- Member of the International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM, from the name in French)

REFERRALS

Dr. Radhakrishna G. Pillai

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