CURRICULUM VITAE

Shefali Aggarwal

Doctoral research scholar

Building Technology, Construction Materials and Management (BTCM) Division, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai – 600 036, India

E-mail: shefaliaggarwal1512@gmail.com, ce22d005@smail.iitm.ac.in

EDUCATION

Ph.D. in Civil Engineering (Building Materials) *Aug 2022-present*

Indian Institute of Technology Madras, Chennai, India.

Project title: Enhancing steel passivation and service life of steel cementitious systems using corrosion inhibiting admixtures

CGPA: 9.00

M.E. in Structural Engineering *Aug 2022*

Thapar Institute of Engineering & Technology, Patiala, Punjab, India.

Project title: Corrosion Inhibition Efficiency of Generic Compounds on Corroded Reinforcing Bars under different environments in Simulated Concrete Pore Solution

CGPA: 9.44

B. Tech. in Civil Engineering *Jul 2019*

Khalsa College of Engineering & Technology, Amritsar, Punjab, India.

Project: Improvement of Bitumen Performance using Crumb Rubber in Bituminous Concrete

CGPA: 9.06

RESEARCH INTERESTS

- Corrosion and other deterioration mechanisms in building materials and systems
- Repair and rehabilitation of concrete structures
- Performance evaluation of chemical admixtures
- Atomistic modeling of construction materials

RESEARCH EXPERIENCE

- **Performance evaluation of commercially available corrosion inhibiting admixtures in arresting corrosion** *(April 2023-Present)*

  The project aims to evaluate the effectiveness and functionality of corrosion inhibitors on concrete properties and also to determine the chloride threshold of steel in biochar-based cementitious systems using an in-house developed test method adopting EIS technique.

- **Corrosion Inhibition Efficiency of Generic Compounds on Corroded Reinforcing Bars under different environments in Simulated Concrete Pore Solution** *(Aug 2021-Jul 2022)*

  The project focuses on evaluating the performance of generic compounds for inhibiting the corrosion of TMT steel embedded in concrete. The performance of inhibitors was evaluated using electrochemical techniques and their effect on steel rebars was estimated by characterizing the TMT rebars immersed in simulated pore solutions.

Condition Assessment

- Condition assessment of the residential building in Kolkata, India was done. Actively involved in condition assessment of the building and in preparing recommendations for corrosion protection and strengthening of the building.

Other projects

- Improvement of Bitumen Performance using Crumb Rubber in Bituminous Concrete *(Jan-Jun 2019)*
- Effect of partial replacement of cement by waste glass powder on concrete strength *(Jan-Jun 2021)*

PUBLICATIONS & CONFERENCES PRESENTATIONS

- S. Parathi, **S. Aggarwal**, and Pillai R.G. "Service life design and selection of materials for concrete structures in coastal environments" for ICJ Special edition May 2026 *(Submitted)*
- **S. Aggarwal**, Pillai, R.G., and Kunhi Mohamed A., "Service life estimation of steel-cementitious system using powder based corrosion inhibiting admixture" International Conference on Condition Assessment, Rehabilitation & Retrofitting of Structures (CARRS 2025), Roorkee, India
- **S. Aggarwal**, Pillai, R.G., and Kunhi Mohamed A., "Mechanistic Study of Corrosion Inhibiting Admixtures for Steel Passivation in Concrete**"** for the AMPP Annual Conference + Expo 2026, Houston, Texas, United States of America, March 15-19, 2026 *(Abstract accepted)*
- **S. Aggarwal,** Pillai, R.G., and Kunhi Mohamed A., "Enhancing steel passivation and service life of steel-cementitious systems using corrosion inhibiting admixtures" for the 79th RILEM Annual Week & ICONS 2025 : International conference on advances in engineering and technology for sustainable development, Hanoi Vietnam, Aug 24 - 29, 2025
- **S. Aggarwal,** Kunhi Mohamed A., and Pillai, R.G., "Influence of Low carbon Concrete Pore Solution on Passive Film Formation: A Computational Study" poster presentation at Shaping the fate of low-carbon cement science, Ascona, Switzerland, 29th June to 4th July, 2025
- **S. Aggarwal,** Pillai, R.G., "Service life of reinforced concrete (RC) systems with corrosion inhibiting admixtures" for the 78th RILEM Annual Week & RILEM Conference on Sustainable Materials & Structures: Meeting the major challenges of the 21st century - SMS 2024, Toulouse, France.
- **S. Aggarwal** and R. G. Pillai, "Compatibility of superplasticizers with corrosion inhibitors" *International Conference on Condition Assessment, Rehabilitation & Retrofitting of Structures (CARRS 2023)*, Hyderabad, India
- **Aggarwal S**., Tiwari A and Goyal S., "Corrosion inhibition efficiency of generic compounds on corroded reinforcing bars under different environments in simulated concrete pore solution" poster presentation at Proceedings of the International Conference and Expo on Corrosion (CORCON 2022), Udaipur, India, September 19-22, 2022.

WORKSHOPS AND INTERNSHIPS

- **Course from Global Initiative for Academic Networks** *April 2023*
  - Course Title: "Corrosion Prevention and Control: Importance in the era of sustainable development" at Indian Institute of Technology Madras. Period: 17.04.2023 to 21.04.2023
  - About fundamentals of corrosion theory and engineering, corrosion protection and prevention, and corrosion testing and monitoring. Hands-on lab work to demonstrate corrosion prevention and protection strategies, discussions on sustainability relationship and circular economy

- **Workshop on Electrochemical Corrosion Techniques** *March 2023*
  - Course Title: Workshop on Electrochemical Corrosion Techniques - Theory and Hands on Training organised by BSA Crescent Institute of Science and Technology, Chennai, AMPP India Section, NACE International Gateway India Section (NIGIS) South Zone India. Period: 17.03.2023 to 18.03.2023
  - About latest advancement in electrochemical corrosion and its control techniques in fields of science and technology, Techniques for proper interpretation of data for use in corrosion prediction, prevention, and monitoring

- **A week on Technologies for Low Carbon and Lean Construction** *January 2023*
  - Courses Title:
    - 6th 1-day Seminar on Corrosion Control in Concrete Structures (C3S)
    - Advances on Technologies for Low Carbon and Lean Construction
    - Workshop on Textile Reinforced Concrete and its applications
  - Seminar on Mechanisms, Testing, Monitoring and Mitigation of corrosion in concrete structures. Technologies For developing and implementing technologies. To minimize and utilize waste materials from construction, demolition, power, steel, and agricultural industries and using lean principles and digital/3D printing tools

- **4 months industrial training at Mattewal Constructions, Amritsar** *Feb-May 2019*
  - Project Undertaken: Construction of a Hospital Building
  - Analyzed the design of Hospital Building, observed the construction practices and Cost Estimation of the Project**.**

ACADEMIC ACHIEVEMENTS

- AMPP Chennai Student Chapter's Vice Chair since October 2025.
- Prime Minister Research Fellowship (PMRF): Recipient since July 2023 for pursuing PhD at IIT Madras, Chennai
- Qualified GATE Examination 2020 with Score-402, Marks-37.66 and Rank-12854.
- 2nd position at university level during graduation
- Gold Medal awardee in Civil engineering branch during graduation.
- Best Student Awardee by Indian Society of Technical Education (ISTE) in 2018 held at Guru Nanak Dev Engineering College, Ludhiana.

ORGANISING PROFESSIONAL EVENTS

- Student organizer for AMPP Chennai student chapter "Research Scholar meeting", October 2025
- Student volunteer for Institute Open House, IIT Madras, January 2025
- Student volunteer for CONSEC 2024, IIT Madras, Chennai, India
- Student organizer for AMPP Chennai chapter online webinars, October 2024 - Present
- Student organizer for Young Researchers' Symposium for TLC2 week, IIT Madras, January 2024 - 25
- Student volunteer for TLC2 Week, IIT Madras, January 2023 - Present
- Student volunteer for CORCON 2022, AMPP India Chapter, Udaipur, India

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TEACHING ASSISSTANCE EXPERIENCE

- Graduate Teaching Assistant, Indian Institute of Technology Madras, Chennai, India
  1. CV2020 – Construction Engineering — Jan - May 2026
  2. CE5120 – Maintenance & Repair of Construction Facilities — Jul - Nov 2025
  3. CE4902 – Undergraduate research — Jan - May 2024
  4. CE5010 – Modern Construction Materials — Jul - Nov 2024
  5. CE5090 – Construction Materials Lab — Jan - May 2023
  6. CE3410 – Construction Materials Lab — Jul - Nov 2023

- NPTEL
  1. Basic Construction materials — Jan - May 2025
  2. Advanced Concrete Technology — Jul - Nov 2025
  3. Maintenance and Rehabilitation of Constructed Facilities — Jan - May 2024
  4. Design of steel structures — Jul - Nov 2024

PROFESSIONAL MEMBERSHIP

- Student Member, International Union of Laboratories and Experts in Construction Materials, Systems, and Structures (RILEM); since April 2023
- Student Member, AMPP India chapter; since December 2021
- Student Member, Bureau of India standards (BIS) student chapter

TECHNICAL SKILLS

- Software skills: AutoCAD, 3Ds MAX, STAAD Pro, MATLAB, JMP, LAMMPS, CP2K, VESTA

REFERENCES

Dr. Radhakrishna G Pillai
Professor
Dept. of Civil Engineering
IIT Madras,
Chennai, India- 600 036
E-mail ID: pillai@civil.iitm.ac.in

Dr. Aslam Kunhi Mohamed
Assistant Professor
Dept. of Civil Engineering
IIT Madras
Chennai, India- 600 036
E-mail ID: akm@civil.iitm.ac.in

Dr. Shweta Goyal
Professor
Civil Engineering Department,
Thapar Institute of Engineering and Technology, Patiala, Punjab, India
E-mail ID: shweta@thapar.edu