

Academic Curriculum Vitae

Assistant Professor | Department of Civil Engineering
Malnad College of Engineering, Hassan, Karnataka, India

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Professional Profile

Civil engineering academic specialising in structural engineering, fracture mechanics and advanced green composites. Doctoral work focused on the mechanical behaviour of arecanut husk fibre composite panels under static and dynamic loading. Published research extends to natural-fibre treatment, epoxy composites, finite element analysis, sustainable concrete, soil improvement and seismic performance. Academic responsibilities combine undergraduate teaching, research coordination, research capacity building and oversight of the Seismic Laboratory.

Academic Appointment

Assistant Professor, Department of Civil Engineering

Malnad College of Engineering, Hassan | October 2022–present

Additional Responsibilities

- Research Capacity Building Coordinator, R & D Cell, Malnad College of Engineering, Hassan.
- Research Coordinator, Department of Civil Engineering.
- Faculty In-Charge, Seismic Laboratory, Department of Civil Engineering.
- Coordinator, Weekend GATE Coaching, Department of Civil Engineering.

Education

Doctor of Philosophy

National Institute of Technology Karnataka, Surathkal

Thesis: Mechanical Characterization of Arecanut Husk Fibre Composites Panels Under Static and Dynamic Loading Condition.

Research guide: Dr. Vadivuchezhian Kaliveeran.

Master of Technology in Structural Engineering

Siddaganga Institute of Technology, Tumakuru | Visvesvaraya Technological University

First Class with Distinction

Research guide: Dr. Muttana S. Balreddy.

Bachelor of Engineering in Civil Engineering

Siddaganga Institute of Technology, Tumakuru | Visvesvaraya Technological University

First Class

Research and Academic Activities

Natural Fibre Composites

Research on extraction, treatment and utilisation of arecanut husk fibres; preparation of epoxy composite panels; and mechanical response under static and dynamic loading. Related publications address areca fine-fibre fabrics, coconut inflorescence stem fibres, and alkali-treated pineapple leaf and sugarcane bagasse fibres.

Fracture Mechanics and Numerical Analysis

Investigate tensile, compressive and flexural behaviour of composite panels, mode I fracture, stress-intensity factors and crack initiation using finite element analysis. Structural work includes comparison of flat and corrugated plate-girder webs and seismic response of elevation-irregular buildings.

Sustainable Construction Materials

Research themes include self-compacting concrete, alternative fine aggregates, copper slag and quartz utilisation, lime-stabilised mud blocks reinforced with jute fibres, and ground-granulated slag for expansive-soil improvement. These studies connect material characterisation with construction applications and resource efficiency.

Advanced Bio Based Materials

Recent co-authored work examines wear-regime transitions in bio-based epoxy composites reinforced with multi-walled carbon nanotubes and nanoclay, combining multiscale modelling with explainable machine learning.

Research Methods Represented in Published Work

- Natural-fibre extraction, alkali treatment and composite specimen preparation.
- Mechanical and dynamic mechanical characterisation, including tensile, compressive and flexural behaviour.
- Physical and morphological assessment of fibres and interpretation of fibre–matrix behaviour.
- Finite element modelling of composite panels and structural response.
- Evaluation of concrete fresh and hardened properties and alternative construction materials.

Innovation and Proposal Themes

Research proposal theme: bio-based epoxy and natural-fibre hybrid lightweight armour for defence applications.

Teaching and Academic Engagement

Teaching and preparation of learning materials in engineering surveying, research methodology and intellectual property rights. Academic activities include student research-oriented learning.

Workshop Coordinator: Research and Innovation and Career Excellence, MCE, 25 August 2026.

Conference presentation: “Mechanical properties of arecanut husk fibre composite panels,” 7th International Engineering Symposium, Kumamoto University, Japan, 7–9 March 2018.

Journal Publications

1. Kaur, M., Hiremath, P., Chiniwar, D. S., Rao, B., Ambiger, K. D., Arunkumar, H. S., Rao, P. K., & **Nagarajaiah, M.** (2026). Unified multiscale and explainable machine learning framework for wear-regime transitions in MWCNT and nanoclay-reinforced sustainable bio-based epoxy composites. *Journal of Composites Science*, 10(4), 186. <https://doi.org/10.3390/jcs10040186>
2. Amoghavarsha, Jayashankar Babu B. S., Lakshmi P. S., **Muralidhar N.**, Suresha B., & Hiremath, P. (2026). Influence of alkali treatment on mechanical and morphological properties of Ananas comosus and Saccharum officinarum fibers. *Materials Research Express*, 13(3), 035301. <https://doi.org/10.1088/2053-1591/ae3c61>
3. Raghavendra, H. N., Likhitha, H., **Muralidhar, N.**, Sanjeev, T. P., & Yadav, A. (2025). Geotechnical enhancement and carbon sequestration in expansive soils using ground granulated blast slag. *Journal of Mines, Metals & Fuels*, 73(10). <https://doi.org/10.18311/jmmf/2025/49905>
4. Manjunath, K. S., **Muralidhar, N.**, Kalappa, M. S., & Yadav, A. (2025). Sustainable development of self-compacting concrete using locally available sandy soil as a fine-aggregate substitute. *International Journal of Applied Mathematics*, 38(9s), 1446–1462. <https://doi.org/10.12732/ijam.v38i9s.868>
5. Sreenath, K., Kamath, B. R., & **Muralidhar, N.** (2022). Effect of metallic particles on breakdown voltage in SF6/N2 gas mixtures. *International Journal of Engineering Research & Technology*, 11(5), 33–37. <https://www.ijert.org/research/effect-of-metallic-particles-on-breakdown-voltage-in-sf6-n2-gas-mixtures-IJERTV11IS050023.pdf>
6. A comparative study of durability of concrete under saline condition. (2022). *Grenze International Journal of Engineering and Technology*, 8. <https://orcid.org/0000-0003-2412-9194>
7. **Muralidhar, N.**, Vadivuchezhian, K., Arumugam, V., & Reddy, I. S. (2020). Dynamic mechanical characterization of epoxy composite reinforced with areca nut husk fiber. *Archive of Mechanical Engineering*, 67(1), 57–72. <https://doi.org/10.24425/ame.2020.131683>
8. **Muralidhar, N.**, Kaliveeran, V., Arumugam, V., & Reddy, I. S. (2019). A study on areca nut husk fibre extraction, composite panel preparation and mechanical characteristics of the composites. *Journal of The Institution of Engineers (India): Series D*, 100(2), 135–145. <https://doi.org/10.1007/s40033-019-00186-1>
9. Sachin, K. G., Sowjanya, G. V., & **Muralidhar, N.** (2014). Behaviour of plate girder with flat web and corrugated web. *International Journal of Civil and Structural Engineering Research*, 2(1), 130–136.
10. **Muralidhar, N.**, Balreddy, M. S., Bagade, S., & Dinesh, S. V. (2012). A comparison of the fracture properties of self compacting concrete (SCC) and conventional vibrated cement concrete (VCC). *Global Journal of Engineering & Applied Sciences*, 2(1), 116–121.

Conference Proceedings and Book Chapters

1. Niranjan Nayaka R. K., **Muralidhar N.**, Prasad S. K., & Shaik Kabeer Ahmed. (2025). Effect of overcrowding on seismic performance of elevation irregular medium height structures. In International Conference on Innovative Discoveries and Emerging Advancements in Applied Sciences (pp. 80–89). River Publishers. <https://doi.org/10.13052/rp-9788743807001.09>
2. Nidhish, Y., **Muralidhar, N.**, Nandan Patel, K., Harish, D. C., & Supreeth, S. (2025). Manufacturing of stabilised mud blocks reinforced with jute fiber for sustainable construction. In International Conference on Innovative Discoveries and Emerging Advancements in Applied Sciences (pp. 52–60). River Publishers. <https://doi.org/10.13052/rp-9788743807001.06>
3. **Nagarajaiah, M.**, & Balreddy, M. S. (2024). Experimental study on physical and morphological properties of KOH treated and untreated arecanut husk fiber. In Proceedings of the Canadian Society for Civil Engineering Annual Conference 2023, Volume 7 (pp. 97–110). Lecture Notes in Civil Engineering, 501. Springer. https://doi.org/10.1007/978-3-031-61511-5_9
4. **Nagarajaiah, M.**, Mahadevaiah, R. R., Parshuram, K. R. B., & Hiremath, P. (2024). A numerical study on coconut inflorescence stem-fiber-reinforced panels subjected to tensile load, compressive load, and flexural load. Engineering Proceedings, 59(1), 233. <https://doi.org/10.3390/engproc2023059233>
5. **Nagarajaiah, M.**, Yadav, A., Prasannakumar, S., Mahadevaiah, R. R., & Hiremath, P. (2024). Finite element study on coconut inflorescence stem fiber composite panels subjected to static loading. Engineering Proceedings, 59(1), 215. <https://doi.org/10.3390/engproc2023059215>
6. Yadav, A., Jayappa, S. M., Mahadevaiah, R. R., Gowda, S., Jitesh, N., Pasmanabh, J., Anand, V., & **Nagarajaiah, M.** (2024). Exploring the potential of copper slag and quartz as fine aggregate replacements in concrete: A comprehensive study. Engineering Proceedings, 59(1), 224. <https://doi.org/10.3390/engproc2023059224>
7. Poornima, H. L., **Muralidhar, N.**, & Praveen, J. V. (2022). Mechanical characterization of areca fine fiber fabric (AFFF) reinforced epoxy composites. Materials Today: Proceedings, 66, 501–504. <https://doi.org/10.1016/j.matpr.2022.05.589>
8. Aishwarya, K. P., **Muralidhar, N.**, & Praveen, J. V. (2022). Study on areca nut husk fine fiber fabric reinforced composites panels under dynamic loading conditions. Materials Today: Proceedings, 66, 633–641. <https://doi.org/10.1016/j.matpr.2022.07.120>
9. Mathapati, V. C., **Muralidhar, N.**, Tulasiram, B. R., & Balreddy, M. S. (2022). Experimental study on dynamic mechanical properties of arecanut husk fiber composite. Materials Today: Proceedings, 66, 858–865. <https://doi.org/10.1016/j.matpr.2022.04.494>
10. **Muralidhar, N.**, Vadivuchezhian, K., Arumugam, V., & Reddy, I. S. (2020). Flexural modulus of epoxy composite reinforced with Arecanut husk fibre (AHF): A mechanics approach. Materials Today: Proceedings, 27, 2265–2268. <https://doi.org/10.1016/j.matpr.2019.09.109>

Earlier Employment and Research Service

Sri Siddhartha Institute of Technology Tumakuru

Department of Civil Engineering

1. Joined as Lecturer on 21 November 2011; relieved on 28 December 2013 to join the PhD programme at National Institute of Technology Karnataka, Surathkal.
2. Rejoined as Assistant Professor on 30 July 2020; resigned and was relieved on 3 October 2022.

Doctoral Co Guidance and Advisory Service

Co-Guide and Doctoral Advisory Committee member for Mr. Rakesh B. J., Manipal Institute of Technology, Bengaluru, a constituent unit of MAHE, Manipal.

Research topic: “Performance Dynamics, Long-Term Durability, and Life Cycle Assessment of Sustainable Concrete Incorporating Areca Nut-Derived Biochar.”

Research Collaboration

Prof. Dr. Sabu Thomas, Mahatma Gandhi University, Kottayam, collaborate on the proposed project “Development of 4D Printed Smart Materials for Adaptive Civil Engineering Applications”. The proposed collaboration covers material selection, design strategies and validation methodologies for smart-material applications, including self-healing concrete and climate-responsive structures.

Journal Peer Review

1. Scientific Reports, Springer Nature: recognised for reviewing two manuscripts in 2026; latest certificate dated 7 October 2026.
2. Journal of Bio- and Tribo-Corrosion, Springer Nature: recognised for reviewing one manuscript in 2026; certificate dated 5 July 2026.

External Academic Invitation

Invited to serve as Judge for the Technical Paper Presentation event at SHELTER 2026, a national-level student technical fest at Siddaganga Institute of Technology, Tumakuru, scheduled for 28 March 2026. Invitation dated 25 March 2026.

Conference Paper and Technical Poster Contributions

1. “Design and Development of Vitrified Clay Bricks,” presented by Rohith L. at the Seventh International Conference on Civil Engineering Trends and Challenges for Sustainability (CTCS 2026), NMAM Institute of Technology, Nitte, 5–7 February 2026.
2. Dalmia Cement Tech Expert Conclave poster “Sustainable Development of Self-Compacting Concrete Using Locally Available Sandy Soil as a Fine-Aggregate Substitute,” with Pooja N. P. and K. S. Manjunath.

Invited Talks and Professional Development

Invited Talks and Session Chairing

1. Session Chair and technical speaker, World Conference on Hybrid Materials: Micro and Nano Length Scales (WCHM 2026), Mahatma Gandhi University, Kottayam, 13–15 March 2026. Talk: “Design and Development of Army Suit Using Biomimic of Porcupine Quills.”
2. Invited Lecturer, International Conference on Advanced Materials, Semiconductor Technology and Startup Ecosystem (ICAMS 2026), organised by Trivandrum Engineering Science and Technology (TrEST) Research Park, Thiruvananthapuram, 9–11 January 2026.
3. Invited Speaker, International Conference on Nano Structured Materials and Nanocomposites (ICN 2025), Mahatma Gandhi University, Kottayam, 12–14 September 2025; delivered an offline invited talk.

Faculty Development and Continuing Education

1. Advanced Intellectual Property Rights: five-day workshop, Karnataka Science and Technology Academy, Department of Science and Technology, Government of Karnataka, Bengaluru, 16–20 June 2026.
2. Quantum Pitch Fest 2026: participant, IISc Bengaluru, 22–23 May 2026; organised by Wadhvani–IISc Innovation Center for Quantum Technologies, Quantum Research Park (QuRP) and Foundation for QC Innovation (FQCI).
3. Performance-based Design of RC Buildings: lecture-series participant, Centre for Climate Resilience and Disaster Management, National Institute of Technology Calicut, 11 March 2026.
4. Component and System Level Seismic Strengthening of Masonry Buildings: lecture-series participant, Centre for Climate Resilience and Disaster Management, National Institute of Technology Calicut, 11 March 2026.
5. Recent Advances and Emerging Trends in Civil Engineering: five-day online Faculty Development Programme, Department of Civil Engineering, Swarnandhra College of Engineering & Technology, 2–6 March 2026.

Software Training Certification

Revit Architecture — Essential course, 40 hours, CADD Centre Training Services, Hassan. Training completed during 17 April–4 May 2023.

Award Winning Paper Guided

1. Guide for “Evaluation of Compressive Strength and Elastic Behaviour in Brick Masonry Prism,” presented by Sunita Ramakrishna Arer, Malnad College of Engineering, Hassan. The paper received the Best Paper Award at the International Conference on Next Generation Technologies for a Sustainable Future (ICNGTS 2026), Karpaga Vinayaga College of Engineering and Technology, Tamil Nadu, 13–14 March 2026.

Mentoring and Academic Contributions

Innovation Evaluation and Mentoring

1. Evaluator and Mentor, AROGYA MANTHAN 2k26, a 24-hour state-level healthcare innovation hackathon, 27–28 July 2026. Organised by the Technology Business Incubator at Malnad College of Engineering (TBI-MCE), managed by ME-RIISE Foundation, Hassan.

Academic Event Coordination

1. Coordinator, Engineers' Day 2026 expert talk on "Performance Based Analysis of Structures," Department of Civil Engineering, Malnad College of Engineering, Hassan, 15 September 2026. The event was organised as part of research activity in the Seismic Laboratory, with Dr. Shaik Kabeer Ahmed of NMAM Institute of Technology, Nitte, as the resource person.

Student Team Awards and Mentoring

1. Guided a student team that secured the Best Project Award in the Technical Project Category at CIVISTA 2025, a state-level project exhibition organised by the Department of Civil Engineering, Sri Siddhartha Institute of Technology, Tumakuru, on 15 May 2025.
2. Mentored MCE Civil Engineering students at a national-level technical fest at Siddaganga Institute of Technology, Tumakuru. First-place technical paper presentation, CAD drafting and surveying events.

Additional Journal Peer Review

1. Chemical Papers, Springer Nature
2. Silicon, Springer Nature
3. Scientific Reports
4. Journal of Bio- and Tribo-Corrosion