# **EDITORIAL**

### Dear Readers,

We are pleased to share with you papers covering research on traditional and blended concrete, assessment technique and some systematic comparisons of code provisions for concrete characteristic. This edition is guest edited by Dr Sandip Kumar Saha. Dr Sandip Kumar Saha is an Associate Professor in the School of Civil and Environmental Engineering at the Indian Institute of Technology Mandi (IIT Mandi). His research interests include multi-hazard vulnerability assessment of reinforced concrete structures, resilient infrastructure in the hilly region, performance-based earthquake engineering and seismic vibration control. Dr Saha has published more than 60 research articles and edited two book volumes. He is member of several professional bodies, namely, Indian Society of Earthquake Technology (ISET), Indian Association of Computational Mechanics, The Institution of Engineers (India), Earthquake Engineering Research Institute (EERI) and American Society of Civil Engineers (ASCE). Dr Saha is currently serving as an associate editor for the Practice Periodical on Structural Design and Construction, ASCE and an editorial board member of the ISET Journal of Earthquake Technology. We hope you enjoy reading this edition and look forward to your feedback!

#### Indian Concrete Journal



#### Dear Readers,

Greetings! I am glad to present to you the June 2025 issue of the Indian Concrete Journal (ICJ). To achieve enhanced durability, sustainability, and cost-effectiveness of modern infrastructure, construction technology is witnessing significant momentum toward research on the use of innovative materials and sophisticated modeling techniques.

In this direction, the article by Singh *et al.*<sup>[1]</sup> provides a comprehensive review of the properties of geopolymer concrete that directly or indirectly affect its durability performance. They highlighted the influence of the type and proportion of binders, mineral admixtures, and alkali activators used in geopolymer concrete leading to its unique microstructure, which is capable of providing better durability.

The next article by Arya and Dhanya<sup>[2]</sup> proposes a new onedimensional numerical model to simulate the zinc metal corrosion and its transport through the encapsulating mortar in a galvanic anode. This study enhances our understanding of the galvanic anode cathodic protection approach and provides a significant insight toward the development of complex finite element models for durability assessment of reinforced concrete structures. While the first two articles look into the durability aspects of concrete, the next article by Mishra *et al.*<sup>[3]</sup> focuses on the use of alternative materials for sustainability in concrete construction. They presented an experimental study on the behavior of concrete, made up of lightweight aggregates derived from fly ash and clay, when subjected to elevated temperature. They investigated the effect of replacing naturally occurring coarse aggregate with sintered fly ash aggregate, new fly ash brick aggregate, recycled fly ash brick aggregate, new clay brick aggregate and recycled clay brick aggregate on the workability and mechanical characteristics of the concrete at elevated temperature. While earlier research encouraged the use of waste materials/industrial by-products for sustainable concrete production, the present research has reported that the use of the considered waste materials/industrial by-products, as a replacement for the coarse aggregate, may adversely affect workability as well as the compressive strength of the concrete. Therefore, rigorous studies are required to establish meaningful use of such materials as concrete ingredients to achieve expected sustainability goals.

The last article of this issue by Barodawala and Mishra<sup>[4]</sup> presents an investigation into the use of multi-walled carbon nanotubes (CNT) and nano aluminum trioxide (NAT) in self-

compacting concrete (SCC) with a focus on strength and durability properties. Use of SCC in large-scale construction projects has gained enormous popularity over the last decade or so due to its multi-dimensional benefits— ease of working to superior mechanical and durability characteristics. However, the high costs associated with producing SCC often deter its use. The present study reveals that the use of NAT in SCC could be an attractive cost-effective alternative despite marginally lower performance as compared to the use of CNT.

The selected articles highlight the key advancements towards the durability of geopolymer concrete, a new modeling approach for zinc metal corrosion, the effects of using some commonly advocated alternative materials as replacement for the coarse aggregate in concrete on its workability and mechanical properties at elevated temperatures and the use of nanomaterials in SCC. I am sure that the readers will enjoy reading the new developments in this field and will take it forward in their research and practice. On behalf of the editorial team, I thank the authors for selecting the ICJ for publication of their research outcomes. The valuable time spent by and commitment of the reviewers to maintain the review rigor and standard of the published articles are sincerely acknowledged.

With best regards,

Sandip Kumar Saha Indian Institute of Technology Mand.

## REFERENCES

- [1] Singh, N., Nassar, Roz-Ud-Din, Sharma, B., Rathee, M., and Sharma, R. S. (2025). "Durability performance of geopolymer concrete: a comprehensive review", *The Indian Concrete Journal*, Vol. 99, No. 6, pp. 7-28.
- [2] Arya, E. K., and Dhanya, B. S. (2025). "Computational analysis of zinc corrosion product migration through encapsulating mortar of a galvanic anode", *The Indian Concrete Journal*, Vol. 99, No. 6, pp. 29-40.
- [3] Mishra, A., Dandapat, R., Priyadarshan, P., and Bari, M. (2025). "An experimental study on the behavior of concrete using lightweight aggregates derived from fly ash and clay subjected to elevated temperature", *The Indian Concrete Journal*, Vol. 99, No. 4, pp. 41-50.
- [4] Barodawala, Q. I., and Mishra, S. S. (2025). "Exploring the impact of carbon nanotubes and nano aluminium trioxide on the durability and strength parameters of self-compacting concrete: A comparative analysis", The Indian Concrete Journal, Vol. 99, No. 6, pp. 51-61.