Dear Readers,

In continuation of our Centenary Year milestone, we are delighted to present an edition that reflects both academic depth and industry relevance. We are pleased to bring to you the second edition of our Centenary Year. This edition has been thoughtfully curated by a member of our Editorial Board, Prof. S. Suriya Prakash. It features a collection of research articles that explore advancements in performance-based, sustainable and durable concrete systems-an area of growing importance for both academia and industry.

The edition is guest-edited by Prof. Suriya Prakash, a distinguished faculty member at the Indian Institute of Technology (IIT) Hyderabad. He holds an MS degree from IIT Madras and a PhD from the University of Missouri-Rolla. His academic and professional contributions span across reinforced and prestressed concrete systems, fibre-reinforced concrete technologies, structural rehabilitation and the resilience of infrastructure under extreme loading conditions. His work has been recognised with several prestigious honours, including the Ramanujan Fellowship awarded by the Government of India.

Prof. Prakash is an active and long-standing member of global professional bodies such as the American Society of Civil Engineers (ASCE), the American Concrete Institute (ACI), the Earthquake Engineering Research Institute (EERI) and the Institution of Engineers (India). He additionally holds membership in Chi Epsilon, the National Civil Engineering Honor Society in the United States.

We hope this edition offers valuable insights and enriches your understanding of emerging developments in concrete science. We look forward to your feedback and valuable contributions to the ICJ.

Production Editor
Indian Concrete Journal

Dear Readers,

Greetings from the Indian Concrete Journal.

I am pleased to present the current edition, which highlights Advancements in Performance-Based, Sustainable, and Durable Concrete Systems. This journal features research articles that focus on innovative concrete technologies, the behaviour of fiber-reinforced structures, and the design of durable materials that incorporate sustainable and recycled components. These studies collectively contribute to enhancing the performance, serviceability, and long-term resilience of concrete structures, providing valuable insights for both researchers and practitioners.

The first article examines the 90-minute discharge limit for ready-mix concrete, detailing its origins and impact on modern construction. It addresses concrete transport, mixer technology, and the role of chemical additives in extending workability. Additionally, it discusses recent updates to international standards and includes field experiments on concrete behaviour during discharge delays.

The second article investigated the structural behaviour of steel fiber-reinforced concrete deep beams, focusing on strength and serviceability. It examines load transfer mechanisms, cracking patterns, deflection responses, and stiffness as load levels increase. The study highlights the impact of steel fibers on shear resistance, crack control, and post-cracking behaviour, offering insights into failure modes and deformation characteristics.

The third article evaluates the service life of standard and high-strength self-compacting concrete with sustainable and recycled materials. It highlights how material selection and strength affect long-term performance and emphasizes the importance of durability assessments in using alternative materials. The study discusses balancing workability, strength, and sustainability for durable construction applications.

The fourth article presents a fracture mechanics approach to the structural design of fiber- and textile-reinforced concrete. It argues that traditional strength-based criteria are insufficient for materials with non-linear cracking and

tension softening. The study focuses on crack initiation, propagation, and energy dissipation, building on established concepts in the fracture characterization of cementitious composites.

The fifth article explores the durability and microstructural features of concrete made with pumice as a lightweight aggregate. It highlights how pumice's properties affect concrete density, pore structure, and material diversity. The study emphasizes the role of microstructural observations in understanding long-term durability, linking aggregate characteristics to performance. This insight aids in utilizing natural lightweight aggregates for efficient and durable concrete applications.

The sixth article examines the long-term durability performance of fly ash-based geopolymer concrete when subjected to harsh chemical environments, including acidic and sulfate conditions.

On behalf of the ICJ, I sincerely thank the contributing authors for publishing their research with us and the reviewers for their timely, constructive feedback. We are pleased to publish this edition of the ICJ, hoping it will benefit researchers and engineers involved in concrete materials and structures.

**Prof. S. Suriya Prakash**
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REFERENCES

[1] N. Subramanian. (2026). "Revolutionizing ready-mix concrete: the end of the 90 minute rule", *The Indian Concrete Journal*, Vol. 100, No. 2, pp. 7-11.

[2] Balakrishnan, B., Geevar, I., Aziz, A., and Majeed, A. Z. (2026). "Strength and serviceability evaluation of steel fibre reinforced deep beams: A review", *The Indian Concrete Journal*, Vol. 100, No. 2, pp. 12-24.

[3] Kumar, B. N., Reddy, A. M. (2026). "An experimental evaluation of service life for standard and high-strength self-compacting concrete incorporating sustainable and recycled construction materials", *The Indian Concrete Journal*, Vol. 100, No. 2, pp. 25-41

[4] Gettu, R. (2026). "Fracture mechanics as the basis for structural design of fibre and textile reinforced concrete", *The Indian Concrete Journal*, Vol. 100, No. 2, pp. 42-54.

[5] Guledagudd, C. B., Kannam, P. (2026). "Strength characteristics and acid resistance of pumice lightweight aggregate concrete: A microstructural perspective", *The Indian Concrete Journal*, Vol. 100, No. 2, pp. 55-67.

[6] Shinde, B. H., Nawale, B. S., Kadam, K., and Somani, S. B. (2026). "Long-term durability of ambient cured fly ash based geopolymer concrete by acid attack and sulphate attack", *The Indian Concrete Journal*, Vol. 100, No. 2, pp. 68-77.