

Dear Readers,

We bring you this edition with great pleasure with research papers covering the development of constitute models for various construction materials and the characterization of fresh concrete properties. This edition has been guest-edited by Prof. Oinam Romanbabu Meetei.

Prof. Oinam Romanbabu Meetei is an Assistant Professor at the Civil & Environmental Engineering Department, Indian Institute of Technology (IIT) Tirupati. He is an active researcher in the area of seismic rehabilitation and retrofitting. Prof. Oinam has significant contribution in developing the resilient Civil infrastructure of this Nation. As part of his research, he developed low-cost, high efficient Energy Dissipation Devices applicable to both concrete and steel structures. He is well-known in both academia and industry.

We hope you enjoy reading these papers, and we look forward to your valuable feedback on this edition.

Production Editor
Indian Concrete Journal



Dear Readers,

This edition covers sustainable construction techniques, shear design issues, and challenges of the fresh concrete test! Here is what the chosen Six papers have to say.

Glass Fibre Reinforced Gypsum (GFRG) is prepared from industrial and agricultural wastes adding glass fibers. Therefore, it's considered a sustainable construction material in the present construction era. Usually, it is used in fast-track mass construction due to its rapid construction property. While designing the GFRG structure, its typical behavior under lateral load needs to be understood. In this regard, the authors did an extensive study to develop a simplified analytical model to estimate lateral load-displacement behavior of GFRG walls with RC infill.

The member aspect ratio greatly influences shear failure in the reinforced concrete structure. The member that has an aspect ratio less than 2.0 has the typical nature of shear failure. Most of the design codes use the empirical equation to predict the shear strength, ignoring the failure mode. Considering these limitations, the authors developed the strut-and-tie model for designing complex structures, which seems to be more appropriate for the design of beams with an aspect ratio less than 2.0.

Limestone calcined clay cement (LC³) is one of the sustainable cementitious materials with a promising future. The authors investigated to assess the fresh state properties of LC³ concrete

and compared it with fly ash-based concretes of similar strength ranges (30 to 50 MPa). Fresh concrete properties such as density, slump, slump retention, rheology, and setting time were evaluated. The claims that the rheology of LC³ based concrete have comparable rheological values for specified applications.

Slag and fly ash has been used as partial replacement of cement in the mix to investigate the effect of different supplementary cementitious materials (SCMs) on shrinkage and creep. The authors have been carried out various mixed designs varying the water-cement ratio in the range of 0.50 to 0.65. Based on the experimental results, the authors claim that the addition of fly ash and slag does not significantly influence the drying shrinkage strain evolution compared to conventional concrete.

In the following article, the authors calibrated the model parameters of the RILEM B4 and B4s models by comparing with the newly collected laboratory data for blended cement concrete systems. Based on the collected data a regression analysis for the RILEM B4s (say, B4sR) model has been carried out to capture the better shrinkage response at later ages. The proposed model seems to yield an improved prediction in comparison with the dataset collected.

In the last article, the author extensively studied the rheology of high-performance concrete (HPC) and highlighted limitation of single-point and two-point workability tests. Also, expressed challenges to measuring the rheological parameters of normal concrete and high-performance concrete as the ingredients of concrete have a large range of particle sizes, contain different kinds of mineral and chemical admixtures and fibers. Authors claim that torque, rotation speed of bob, yield stress, and plastic viscosity are taken an essential role in defining the rheology parameter of HPC.

Hope this edition gives width range of information on design and sustainable material and construction practice.

Best Regards,

Dr Romanbabu Oinam



THE INDIAN CONCRETE JOURNAL

CALL FOR PAPERS

January 2022 Themed Issue of ICJ

Construction and Demolition Waste in Construction

Concrete is the favoured material of choice in the construction industry worldwide for applications in various forms, often under demanding conditions and increasingly specified with several durability performance parameters. The ingredients to make concrete are in huge demand and especially aggregates with essential characteristics fit for use are in short supply. This entails not only increase in cost of construction as more and more countries must import them but also depletes the finite good quality natural resources available on this planet. Nevertheless, these are inherent challenges that need to be addressed by a holistic approach both via research and practice, leading to responsible informed choices for construction to become even more sustainable. In this thematic issue, we invite papers relating to recycling and reuse of construction and demolition waste in concrete with focus both on research and application. Case studies are particularly welcome as we intend to make this issue a ready reference for researchers and practitioners alike. All the manuscripts will be subjected to double blind peer review process and the areas of contribution are indicated as follows:

- Use of recycled concrete aggregates for precast structural concrete;
- Application of recycled concrete aggregates in HPC/FRC/UHPC;
- Recycled construction and demolition waste for geopolymer binders and concrete;
- Recycled concrete aggregates for self-compacting concrete;
- 3D printing of concrete using recycled concrete aggregate;
- Use of recycled concrete aggregates for marine concretes;
- Processing technologies for manufacturing high quality recycled aggregates;
- CO₂ treatment of coarse and fine recycled concrete aggregates;
- Exemplar projects constructed using recycled aggregates;
- Architectural perspectives on recycled aggregates in the built environment;
- Guidelines for valorisation of recycled aggregates in concrete;
- Effective characterisation of recycled aggregates towards use in concrete;
- Recycled construction and demolition waste for sustainable pavement materials;
- Policy enablers for wider use of recycled aggregates.

Guest Editor : Dr Sivakumar Kandasami
Deputy General Manager, L&T Construction, Chennai, India.

Co-Guest Editor : Prof. Dr-Ing. Jiabin Li
Research Group RecyCon, Materials and Constructions, Bruges Campus, KU Leuven, Belgium.

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Submission guidelines : <https://icjonline.com/downloads/contributors-guidelines-2019.pdf>

Review Process : Double-blind peer review

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