



**Dear Readers,**

Greetings.

In this edition of the Indian Concrete Journal (ICJ) we have included five papers related to cement, concrete, and their composite materials. These days, efforts are being made to make concrete greener and sustainable material. Therefore, these papers have appropriately addressed issues related to sustainability, e.g., by reducing clinker content from concrete, providing supplementary cementitious materials, use of admixtures, etc.

Alexander and Holmes have presented their research work on powder packing optimization for clinker reduction in concrete. They have reported optimization of packing density through the integration of the compaction interaction packing model (CIPM) and modified Andreasen and Andersen curve (MAAC) model. The CIPM was applied for powder packing and the MAAC was applied for fine and coarse aggregate packing.

Review of geopolymer concrete has been presented by Gupta and Rao to discuss its performance by considering the influence of type and amount of alkaline activator, the concentration of alkaline activator method, type and

temperature of curing, and the type of superplasticizers. The authors have reported from the literature that the microstructure of geopolymer concrete influences durability against sulphate and acid attacks.

Fourier transform infrared spectroscopy (FTIR) method was used by Mapa and Hemalatha for chemical characterization of cement composites. They have studied hydration of cement composites with supplementary cementitious materials such as fly ash and ground granulated blast furnace slag (GGBS) using the FTIR analysis. It has been concluded that the change in the intensity of peaks in the FTIR corresponds to the polymerization of Si-O tetrahedrons in the C3S and C2S that can be interpreted for the extent of reaction in blended cements.

Cement composite material with expanded polystyrene (EPS) has been investigated by Liu et al. to show that the EPS cement-based composites provide thermal insulation properties and improved mechanical properties. The authors have conducted number of tests on the EPS cement-based composites and showed improved performance by making the requisite modifications.

With an objective of evaluating the effect of boric acid as a set retarder on the properties of geopolymer binder, Rahman et al. have reported that the setting times decreases with the increased proportion of the GGBS in the binder. Hence, boric acid was found effective as a set retarder for geopolymer pastes/ mortars.

These papers have contributed towards the development of concrete materials for sustainable construction.

**Vasant Matsagar**  
Editor-in-Chief, ICJ.

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