Special Issue

Development and Application of Concrete Materials and Related Building Materials

Message from the Guest Editor

This Special Issue aims to showcase the latest advances in the design, characterization, and application of cement-based composites that simultaneously meet high mechanical performance, long-term durability, and environmental sustainability requirements. We welcome contributions that explore the following topics:

- Innovative mix designs incorporating supplementary cementitious materials (SCMs) and industrial by-products;
- Experimental and numerical investigations of size-dependent behavior;
- Fiber reinforcement mechanisms for shrinkage and crack control;
- Multi-scale modeling of material–process–structure relationships;
- Long-term durability under aggressive environments;
- Life-cycle environmental assessments of green and low-carbon concrete systems.

By bringing together perspectives from materials science, structural engineering, durability science, and environmental sustainability, to accelerate the development of next-generation building materials and structural systems that address the challenges of modern construction. For further reading, please follow the link to the Special Issue Website at: https://www.mdpi.com/journal/buildings/special_issues/5QO1UU0G29

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About the Journal

Message from the Editor-in-Chief

Current urban environments are home to multi-modal transit systems, extensive energy grids, a building stock, and integrated services. Sprawling neighborhoods are composed of buildings that accommodate living and working quarters. However, it is expected that the cities and communities of the future will face complex and enormous challenges, including maintenance, interconnectivity, resilience, energy efficiency, and sustainability issues, to name but a few. A smart city uses advanced technologies and a digital infrastructure to improve the outcomes in every aspect of a city's operations. A smart building optimizes the experience of occupants, staff, and management by using a modern and connected environment. Innovations in technology that can bring dramatic improvements to design, planning, and policy are critical in developing the cities and buildings of the future.

Editor-in-Chief

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