Special Issue

High-Performance and Low-Carbon Cement-Based Composites for Buildings

Message from the Guest Editors

The construction sector is transitioning toward sustainability, driving demand for cement-based materials that achieve high performance while reducing environmental impacts. Although cement composites are essential for modern infrastructure, conventional production contributes significantly to carbon emissions. The Special Issue explores recent advances in high-performance and low-carbon cement-based composites for building applications. Topics of interest include, but are not limited to, innovative binder systems, as well as advanced cement-based composites such as ultra-high-performance concrete, high-performance concrete, and engineered cementitious composites. Research on performance enhancement through nanomaterials, fibers, and multi-scale design approaches is highly encouraged. Studies focusing on durability, long-term behaviour and resilience under extreme environments are welcome. Contributions on repair, strengthening and renovation techniques using sustainable cement-based materials are also of interest. Submissions addressing life-cycle assessment, carbon reduction strategies, digital design and fabrication, and practical engineering applications are particularly valued.

Guest Editors

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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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