

Special Issue

Analysis of Performance in Green Concrete Structures

Message from the Guest Editors

This Special Issue explores the latest advances in sustainable concrete technologies aimed at reducing environmental impact while enhancing structural performance. Key topics include low-carbon concrete solutions such as geopolymers, cement replacements, recycled aggregates, and crushed brick materials to reduce reliance on traditional Portland cement. Besides, this Special Issue examines the role of nano additives in improving mechanical strength, durability, and self-healing properties. Beyond material innovations, this Special Issue also investigates life cycle assessment, recyclability, and eco-friendly construction methods for sustainable concrete structures. Retrofitting and strengthening aging infrastructures are highlighted, with a focus on fiber-reinforced polymers and the use of post-installed fastenings (e.g., haunch retrofitting) for structural repair and strengthening. This Special Issue welcomes experimental studies, numerical simulations, analytical models, and case studies that assess the performance, durability, and environmental impact of these emerging concrete technologies, bridging the gap between research and real-world applications.

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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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