Special Issue

Advanced Materials for Modern Methods of Construction: Innovations, Challenges, and Sustainable Building Applications

Message from the Guest Editors

This Special Issue seeks to bring together cutting-edge research focused on the design, optimization, and implementation of advanced materials for MMC. Emphasis will be placed on innovations that support sustainability, structural health monitoring, and smart design approaches, including the use of machine learning, digital fabrication techniques like 3D-printed concrete (3DPC), and computational modeling. Topics of interest include, but are not limited to, the following:

- Advanced material development (UHPC, ECC, and low-carbon binders);
- Mechanical and durability performances;
- Fracture and failure mechanics;
- Machine learning and AI-driven material optimization;
- Structural health-monitoring systems;
- Sustainable applications and environmental impacts;
- Digital construction and 3D printing in MMC;
- Case studies and field implementations.

Original research papers, review articles, and case studies are invited to highlight the potential of advanced materials in revolutionizing sustainable construction. For more information, please visit the special issue link: https://www.mdpi.com/journal/buildings/special_issues/5X284276CV

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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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