



3D Printing and Low-Carbon Technologies in Cementitious Composites

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Message from the Guest Editors

Dear Colleagues,

The construction of our civil infrastructure is heavily dependent on cementitious materials, and their continuous development has revolutionized structural design and optimization. The high strength, toughness, and durability of concrete are desirable to develop sustainable and resilient buildings, bridges, and tunnels. Any component changes in cementitious composites may result in changes in the mechanical properties and performance of concrete structures. As such, developing environmentally friendly concrete materials is feasible and necessary to reduce energy consumption and current global CO₂ emissions, as well as to slow down climate change. In the meantime, the development of digital construction technology provides new opportunities to reduce the time of labor-intensive construction work as well as to enhance construction quality and update construction philosophy. In this Special Issue, we welcome papers on the recent development of 3D printing and low-carbon concrete technologies from a material to structural level.





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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.

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