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Low-Carbon Material Engineering in Construction

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Message from the Guest Editors

The extensive use of cement in building construction activities consumes a large amount of natural resources, and the resulting high carbon footprint has always been a concern. Due to continuous advancements in construction technology, the requirements for construction materials have gradually increased, and concrete materials need to meet not only basic mechanical properties but also higher requirements in terms of durability and time-varying properties. Considering the higher mechanical properties required for concrete materials and the importance of future sustainability in the construction industry, in this Special Issue, we aim to gather innovative research on new green and low-carbon concrete and provide guidance for sustainable development in society.

The topics covered in this Special Issue include (but are not limited to) the following: new green building materials; the carbon footprints of materials; the mechanical properties of concrete materials; the exploration of microscopic mechanisms; engineering applications for green building materials; the failure characteristics of building materials.

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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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