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Advances in Concrete Technology for Sustainable Architecture

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Message from the Guest Editors

Few materials have had as immense an impact on the built environment as reinforced concrete. Concrete is, by volume, the most common industrial material in the world; it appears in buildings, infrastructure, and landscapes across the globe. Yet, despite its popularity, concrete construction is rightfully criticized for the immense toll it has on the environment, human health, and equitable labour practices. This special edition of *Buildings* is focused on the material system that built the modern world.

The aim of this Special Issue is to present a nuanced understanding of concrete's behaviour and design possibilities in response to the most pressing challenges as well as opportunities in present and future concrete construction. Topics may include, but are not limited to:

- quantification and optimization of environmental impact of RC structural systems;
- novel construction techniques;
- studies of mix design and material innovation;
- alternative reinforcement strategies;
- integration of concrete structural systems with other building performance goals;
- strategies for low-cost construction.

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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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