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Design and Application of Cement-Based Materials in Sustainable and Efficient Construction

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Message from the Guest Editors

This ***Special Issue*** aims to compile recent scientific advances in the use of secondary raw materials in new cementitious matrices and eco-efficient concretes. The topic will cover experimental studies on the design of new cement-based materials and their applications in the intelligent construction of buildings and infrastructures to reduce their carbon footprint. This section may also cover research on pre-treatments that improve the by-products, synergies between new cementitious materials, and properties at the nano, micro, and macro levels that arise in concrete due to changes in cement components and aggregate types.

This special issue welcomes innovative studies on applying 3D printing and Artificial Intelligence in construction, especially regarding concretes incorporating new materials.

We hope that this Special Issue will become a source of new ideas on the various advances in this field of research.

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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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