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Research on Mechanical Properties of Cement and Concrete

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Message from the Guest Editors

Research on the mechanical properties of cement and concrete is essential for understanding and improving their strength, durability, and performance in various conditions. The use and improvement of cement and concrete can be complex as their properties depend on curing condition, formulation, age, and application requirements. Therefore, the need for advanced methods to analyze and enhance these materials is critical. This has led to focused research on various aspects of their mechanical properties. The primary aim of this Special Issue is to explore recent the challenges and advancements associated with the study of the mechanical properties of cement and concrete. Topics of interest include, but are not limited to, the following:

- The microstructural analysis of cementitious materials;
- The impact of additives and admixtures;
- The behavior of cement and concrete under different pressures and temperatures;
- Non-destructive testing methods;
- Environmental factors affecting curing and performance;
- Sustainable practices in concrete production;
- Enhancing the resilience and longevity of concrete structures;
- Cement and concrete monitoring technology.

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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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