Special Issue

Theory and Innovative Applications of Ultra-High Performance Concrete (UHPC)

Message from the Guest Editors

This Special Issue focuses on cutting-edge developments in ultra-high performance concrete (UHPC), with particular emphasis on its theoretical foundations and innovative applications. We aim to provide a comprehensive platform for researchers, engineers, and practitioners to share their latest findings and insights in this rapidly evolving field. We welcome original research papers, review articles, and case studies covering, but not limited to, the following topics:

- Advanced cementitious materials and supplementary materials;
- Novel admixtures and their effects on UHPC performance;
- Sustainable UHPC incorporating recycled materials;
- Mechanical properties and constitutive modeling;
- Fatigue and dynamic response;
- Durability and long-term performance;
- Advanced image recognition techniques for detecting cracks and assessing damage in UHPC structures;
- Integration of artificial intelligence (AI) with sensor data for predictive maintenance and anomaly detection;
- UHPC towers for wind turbines;
- Prefabricated UHPC elements;
- Repair and strengthening solutions.

Guest Editors

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About the Journal

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.

Editor-in-Chief

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