

## Special Issue

# Alkali-Activated Geopolymers and Advanced Cementitious Materials for Sustainable Construction—from Fundamentals to Applications

### Message from the Guest Editors

The construction sector faces growing pressure to reduce its environmental impact while meeting increasing demands for infrastructure, durability, and performance. Conventional ordinary Portland cement (OPC) materials contribute significantly to global CO<sub>2</sub> emissions and resource consumption, prompting the development of low-carbon alternatives such as alkali-activated geopolymers and advanced cementitious materials. In addition to environmental benefits, these materials can offer strong mechanical performance, chemical resistance, and long-term durability. Recent studies also explore the use of nanomaterials to introduce smart functionalities, including photocatalytic, self-cleaning, and air-purifying properties, which may improve urban air quality and extend material service life. This Special Issue welcomes contributions on reaction mechanisms, microstructure evolution, durability, performance optimization, life-cycle assessment, multifunctional additives, and practical applications, promoting the transition of sustainable and smart construction technologies from laboratory research to real-world use.

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### Guest Editors

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### Deadline for manuscript submissions

24 November 2026



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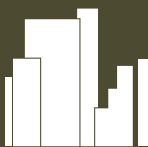


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## About the Journal

### 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.

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### Editor-in-Chief

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