Special Issue

Advanced Characterization and Evaluation of Construction Materials

Message from the Guest Editors

For the "Advanced Characterization and Evaluation of Construction Materials" Special Issue in *Buildings*, we invite original and cutting-edge research that advances our ability to probe, model, and optimize the performances of both traditional and emerging building materials. We welcome studies that bridge scales-from atomic and nano-scale investigations through mesoscale structure-property relationships to full-component behavior-using techniques such as high-resolution imaging, spectroscopy, nano-/micro-mechanical testing, rheometry, and in situ monitoring under realistic service conditions. Contributions integrating data-driven methods, machine learning, and digital-twin approaches for predictive durability, life-cycle analysis, and sustainable material design are particularly encouraged. Thus, we invite researchers to submit original and innovative studies that propel materials science and engineering practice toward smarter, more resilient, and eco-efficient construction solutions. We look forward to receiving your contributions, which will enrich this Special Issue and help to drive the development of advanced, durable, and sustainable construction materials

Guest Editors

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Deadline for manuscript submissions

31 March 2026

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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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