Special Issue

Waste-Derived Materials for Building Applications: Material Properties, Processing and Durability

Message from the Guest Editors

The rapid growth of waste generation, expansion of disposal sites, and increasing demand for circular economy solutions highlight the urgent need for effective waste reuse strategies. As cement-based and other construction materials are among the most widely used worldwide, developing waste-derived construction materials offers a promising approach to reducing waste volumes while maintaining or enhancing material performance. This Special Issue focuses on the valorisation of waste and industrial by-products as secondary raw materials for construction applications. It aims to present recent advances in material development, processing techniques, and performance evaluation. Topics include the chemical and mineralogical composition, phase characteristics, microstructure, and resulting physical and mechanical properties of waste-derived materials. Research on binders, aggregates, ceramics, composites, and insulation materials is welcome. Particular emphasis is placed on processing methods—such as mixing, granulation, thermal treatment, and consolidation—and their influence on material properties and long-term durability.

Guest Editors

Dr. Jelena Škamat

Laboratory of Composite Materials, Department of Mechanical and Material Engineering, Vilnius Gediminas Technical, LT-10223 Vilnius, Lithuania

Dr. Jurgita Malaiškienė

Laboratory of Composite Materials, Faculty of Civil Engineering, Vilnius Gediminas Technical University, LT-10223 Vilnius, Lithuania

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Buildings
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
buildings@mdpi.com

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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

Prof. Dr. David Arditi
Construction Engineering and Management Program, Department of Civil, Architectural, and Environmental Engineering, Illinois Institute of Technology, 3201 South Dearborn Street, Chicago, IL 60616, USA

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