Special Issue

Energy-Efficient Building Materials: Innovations, Enhancements, Testing Methods, and Predictive Modelling

Message from the Guest Editor

The transition toward sustainable and energy-efficient construction requires building materials that not only deliver structural performance and durability but also actively contribute to reducing energy demand and environmental impact. Modern infrastructure increasingly relies on materials that combine traditional strength with enhanced thermal, mechanical, and functional properties. At the same time, the development of innovative low-carbon, waste-based, bio-based, and multifunctional energy-efficient composites offers new pathways for minimising the carbon footprint and advancing circular economy principles.

This Special Issue aims to gather recent advances in the field of future-oriented energy-efficient building materials, focusing both on the enhancement of the properties of existing materials and the development of new, sustainable solutions. The Special Issue welcomes contributions that explore interdisciplinary approaches combining material properties, experimental techniques, and modelling strategies. The main topics concern the performance, improvement, and predictive analysis of all energy-efficient building materials suitable for future construction challenges.

Guest Editor

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Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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