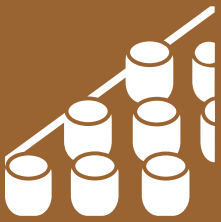

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Special Issue Reprint

Functional Cement-Based Composites for Civil Engineering (Volume II)

Edited by: Jonathan Oti

This Reprint explores innovative strategies for developing functional cement-based composites that address sustainability, durability, and performance challenges in civil engineering. Cement production accounts for ~8% of global CO_2 emissions, driving research toward low-carbon alternatives. Contributions include geopolymer concrete with recycled plastic aggregates, low-emission multi-component cements, and supplementary materials such as glass powder, granite powder, and zeolite-rich tuff. Advances in nanotechnology, optimized mix designs, and ecological solutions like foamed vegetation concrete demonstrate pathways to reduce environmental impact while maintaining structural integrity. Studies also examine heavy metal stabilization, carbonation resistance, and durability under cyclic conditions. Collectively, these works highlight interdisciplinary approaches for achieving net-zero construction through resource efficiency, performance-based design, and innovative material integration.

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