

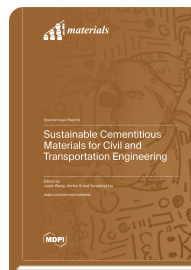
Special Issue Reprint

Sustainable Cementitious Materials for Civil and Transportation Engineering

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Since its invention, concrete has become the most widely used construction material. Growing concerns over the greenhouse emissions profile of the Portland cement and concrete industry have led to a very high level of recent interest in the development of low-carbon construction materials. The requirements of raw materials for cement and concrete, such as natural minerals, stones, and river sand, have been increasing, especially in developing countries where massive amounts of infrastructure are being built. This trend promotes the requirements of sustainable cementitious materials with low carbon emissions for civil and transportation engineering. The development of low-carbon construction materials has been recognized as a means of reducing the carbon footprint of the Portland cement and concrete industry in response to growing global concerns over natural-material shortages and CO₂ emissions from the construction sector. The concrete and cement industry has been under pressure to shift towards sustainability by developing alternative low-carbon cement and concrete materials. However, many fundamental mechanisms in this field require further elucidation. In addition, industrial applications are still scarce due to the gap existing between the fundamental research and industrial use in this area.

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