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Editorial

Sustainable Composites with Solid Waste Materials

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This Special Issue on "Sustainable Composites with Solid Waste Materials" is a collection of 15 original articles (including one review paper) dedicated to theoretical and experimental research works, providing new insights and practical findings in the field of waste-related topics. The use of waste materials such as fly ash, blast furnace slag, lightweight aggregates, and more can produce compounds to reduce the environmental impact of construction products during their life cycle.

This Special Issue focuses on presenting the results of research into the physical–mechanical, chemical, or microstructural properties of composites with solid waste materials, innovative experimental techniques, and the analytical methods, design, production, and practical applications of these materials. The use of special characterization methods for composite materials such as X-ray diffraction, SEM observation, and thermal analysis is advisable. This will help to protect the environment and improve the durability of composites, thanks to the advanced properties of these wastes.

In terms of more theoretical work, Ren et al. [1] evaluate the purification process, application areas, and the environmental impacts of phosphogypsum waste. Four articles focused on construction and demolition waste applications: Martín et al. [2] established a method to increase the effectiveness of the construction and demolition waste in more resistant mortars, by mixing it with zeolitized cinerite tuff (ZCT) at varying normalized proportions; López-Uceda et al. [3] conducted a statistical analysis of 35 samples and showed that the constituents had a statistically significant influence on the physical–mechanical properties studied; Albuquerque et al. [4] worked with the concrete cover design of recycled aggregate concrete elements exposed to chloride ingress, and they recommend a 5 mm increase in concrete cover as a simple option to ensure that the probability of depassivation due to chloride ingress in recycled aggregate concrete elements is equivalent to analogous natural aggregate concrete elements, and Paula Junior et al. [5] analyzed the influence of recycled concrete aggregates (RCAs) on the development of pervious concrete; its use as a floor covering represents an excellent device to mitigate the urban soil sealing phenomena.

Another group of articles focused on ash studies. Thus, Razzaq et al. [6] study the influence of FA content on the physical, mechanical, and thermal behavior of aluminum–fly ash composites. Gong et al. [7] showed that incorporating fly ash belite cement into Portland cement can shorten the setting time, accelerate hydration reaction speed, enhance the early hydration heat release rate of silicate minerals, and reduce total hydration heat. Moreover, Suarez Macías et al. [8] evaluated the use of biomass bottom ash for the formation of cold in-place recycling with bitumen emulsion. Studies where ash is replaced by cement, such as Ali et al. [9], where they used rice husk ash as a substitute for cement, triggering the strength and durability properties of concrete with 10% rice husk ash. Furthermore, Teixera et al. [10] evaluated biomass fly ash as a cement replacement material or as an alkalinity source in high-volume fly ash mortar and concrete.

Finally, the last group of papers deals with more varied topics, where the following are described:

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- Obtaining renewable energy from the electrochemical oxidation of methanol (Liaqat et al. [11])
- Geopolymer concrete optimized with the Taguchi method (Karthik and Mohan [12])
- Speciation of the heterogeneous oxidation of Cr(III) to Cr (VI) and the surface of the reacted δ-MnO2 (Chen et al. [13])
- Optimization of steel pavement structure and epoxy asphalt (Xu et al. [14])
- Study of the synergistic effect of surfactant and foaming process on the foaming characteristics and rheological properties of foamed bitumen (Lu et al. [15])

We hope that the collection of documents will be to the liking of readers who are looking for new techniques and advances in sustainable composites with solid waste materials, and serve to improve this field of study.

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