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EDITORIAL **OPEN ACCESS**

Innovative Construction Materials to Build a Better Infrastructure

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To my pleasure, I welcome the readers to this thematic issue of *Innovative Construction Materials to Build a Better Infrastructure*. The research presented here highlights notable advancements in theory, experimentation, and methodology, offering solutions to critical challenges. The presented work underscores the extensive spectrum of research studies conducted within the key areas of interest.

In the latest edition of *The Open Construction & Building Technology Journal*, the accepted articles explore different facets of substituting virgin materials with waste materials in concrete, while the remaining articles concentrate on landslides, slope stability, and subgrade improvement using waste materials.

Geophysical tools are extensively utilized across diverse fields, including engineering, ecology, archaeology, hydrogeology, tectonics, mineral exploration, and hydrocarbon prospecting. Aligned with this, the study by Trepil *et al*. [1] has investigated geological lineaments and faults in northwest Libya using EIGEN-6C4 satellite gravity data and ALOS PALSAR radar imagery. The authors have concluded that integrating EIGEN-6C4 gravity data with ALOS PALSAR radar imagery can significantly reduce ambiguity in geological interpretations within the northern Ghadames Basin of northwest Libya.

Understanding the ground subsurface is essential for foundation design, excavation, and mitigating potential hazards during land development. In this context, Rosli *et al*. [2] have investigated the classification of ground rippability and weathering grades in a sedimentary rock geological setting using seismic refraction surveys. They have found the seismic refraction method to effectively utilize seismic velocity values to determine the rippability and weathering grades of interbedded sedimentary rock, even in the absence of borehole records.

Landslides commonly occur along roads traversing mountainous regions during the rainy season, posing a substantial threat to the continuity of land transportation routes. In this context, Chairullah *et al*. [3] have suggested that slope stability analysis can be effective in mitigating landslide occurrences.

Slope stability and soil erosion are critical issues in geotechnical engineering and land management. Duraisamy *et al*. [4] have examined the relationship between soil types and root systems in enhancing slope stability. This study has contributed valuable insights into choosing suitable plant species for erosion control in tropical soil and soil bioengineering practices for slope stability in various soil conditions.

In the event of a flood, the subgrade gets submerged in water, resulting in adverse impacts on its air entry value and residual water contents. As a result, the subgrade's performance is compromised. In line with these problems, Hafiz *et al*. [5] have investigated the hydraulic properties of unsaturated soil for subgrade improvement using marble dust waste. Their study has revealed that the incorporation of marble dust waste has a positive impact on the air entry value, thereby potentially enhancing the performance of the subgrade.

Permeable concretes are gaining popularity in the construction industry for the development of climate-resilient cities. These concretes, designed with permeable properties, enable their utilization in open-air spaces, facilitating improved percolation into the ground. The article by Ching and Choo [6] has concluded coffee waste to be a viable option for replacing cement. The mechanical strength of permeable concrete has been found to be improved with the inclusion of spent coffee waste while maintaining acceptable permeability properties.

The utilization of waste materials, notably palm oil clinker and spent garnets, as sustainable alternatives in concrete production is currently gaining popularity. The dwindling availability of natural aggregates, such as river sand, along with the environmental risks linked to waste disposal, highlights the urgent need for eco-friendly solutions in construction materials.

Our final paper has focused on evaluating the fire resistance of lightweight aggregate concrete incorporating spent garnet as a partial replacement for fine aggregate. Jaafar *et al*. [7] have determined incorporating 20% spent garnet into palm oil clinker-lightweight aggregate concrete to result in superior fire resistance performance compared to other compositions.

CONCLUSION

The overarching goal of the comprehensive research presented in this special issue is to enhance an understanding and engagement of researchers and practitioners dedicated to recent developments and advancements leading to better infrastructure.

AUTHORS' CONTRIBUTIONS

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

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CONFLICT OF INTEREST

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