Smart Green Materials

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Editorial Article

Innovative Materials to Build a Better Infrastructure Development

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Summary

It is with great pleasure that we introduce the launch of the Smart and Green Materials journal for 2024. In this inaugural issue, we explore innovative materials for advancing infrastructure development. The issue also delves into various strategies aimed at enhancing materials to improve their properties. In our rapidly evolving world, researchers are increasingly seeking materials with versatile properties tailored for diverse demanding applications, such as insulation for construction buildings. The goal is to tackle environmental protection and energy-saving building issues more efficiently, and one of the key focuses of our journal is to disseminate knowledge in this field. In addition, most of the articles published in this issue fulfill this goal in particular. The research showcased in this inaugural issue underscores significant advancements in theory, experimentation, and methodology, providing solutions to pressing challenges.

In the latest edition of the Smart and Green Materials Journal, one of the five accepted articles delves into various aspects of substituting agricultural waste materials in road construction, while the remaining article focuses on building information modelling and subgrade improvement using eco-friendly materials. In light of the environmental concerns associated with traditional bitumen modifiers, which often rely on non-renewable resources and may contribute to environmental degradation, Mior Sani et al. [1] in their study on the utilization of sawdust and charcoal ash as sustainable bitumen modifiers, reported significant improvements in the performance of bitumen mixtures.

Conserving heritage buildings poses distinct challenges in building preservation, requiring a thorough comprehension of associated issues and strategic actions for long-term sustainability. In accordance with these considerations, Idris et al. [2] concluded that the findings of this study provide

strategic insights, fostering the cultivation of a post-project maintenance-oriented culture. This ultimately enhances the durability, efficiency, and cost-effectiveness of cultural structures in both public and private sectors.

Peat soil typically exhibits low bearing capacity, high compressibility, and low shear strength. Aligned with these characteristics, Mohd Anuar et al. [3] conducted a study on stabilizing peat soil using sawdust ash. In their research, they applied sawdust ash at concentrations of 12%, 15%, and 18%, respectively. Their study revealed that adding sawdust ash to peat soil decreased the maximum dry density value while increasing strength. They also found that adding 15% of sawdust ash to peat soil enhances its engineering qualities.

Excavation works on surfaces in tropically weathered sedimentary rock masses have been reported as challenging and frequently lead to disputes among engineers and clients in engineering projects. In line with these problems, Mohd Nasir et al. [4] conducted an investigation into subsurface evaluation (rock and soil) by correlating seismic refraction with 2-D resistivity values in a weathered sedimentary rock area. The case study was situated at a construction site within one of the public universities in Malaysia. Their investigation revealed that the resistivity and seismic refraction techniques are particularly effective in determining the hard layer or estimating the overburden thickness. In the resistivity results, certain layers exhibited low resistivity values, particularly in the middle of the resistivity profiles, indicating fractured rock expected to be filled with low resistivity materials such as clay or water.

Plastics wastes remain a significant human innovation, but their management and disposal pose substantial threats. Our final paper focuses on stabilizing peat soil with plastic waste. Abu Hassan et al. [5] conducted a study on natural peat soil without the addition of plastic (control group) and peat soil with an additional 0.4 to 0.6% (by mass of soil) of plastic waste. In general, they concluded that utilizing plastic waste for stabilizing weak soil not only enhances the soil's strength but also addresses the contemporary issue of waste disposal.

Our overarching goal for the comprehensive research presented in this first issue is to enrich the understanding and engagement of all researchers and practitioners dedicated to recent developments and advancements in innovative and infrastructure improvement.

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Conflicts of Interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Author Contributions

Ramadhansyah Putra Jaya: writing, reviewing and editing. **Reza Pahlevi Munirwan:** writing, reviewing and editing. **Bunyamin Bunyamin:** writing, reviewing and editing.

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