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Editorial

Editorial on the 14th Volume

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Editorial

Paving the Way for a Sustainable Future: Innovations in Materials Science

In the face of escalating environmental challenges such as climate change and resource depletion, the need for sustainable solutions has never been more urgent. In the 14th volume of e-Journal Soft Materials (e-JSM), the opinions highlight groundbreaking advancements in materials science that aim to address these pressing global issues and pave the way for a sustainable future.

One of the most compelling innovations discussed is the development of sulfur-based polymer materials (Y. Kobayashi et al.). Sulfur, a byproduct of petroleum refining, is produced in vast quantities, much of which remains unused. The opinion explores how surplus sulfur can be transformed into recyclable and reusable polymer materials, contributing to waste reduction and resource circularity. By employing environmentally harmonized synthetic methods, these sulfur-based polymers promise to reduce energy consumption while offering high-performance materials for various applications.

Another noteworthy focus is on vitrimers (M. Hayashi), a new class of cross-linked polymers that are recyclable and repairable. The vitrimers provide a sustainable alternative to traditional non-recyclable polymers, which are widely used but pose significant environmental challenges. The paper delves into the fundamental research required to enhance the recycling efficiency of the vitrimers and discusses the practical challenges of scaling their use in industrial applications.

The opinions also emphasize the importance of predictive modeling in advancing sustainable drying technologies (A. Kumar) and improving the performance of polymers and composites in the hydrogen economy (L. Figiel). These technologies have the potential to significantly reduce energy consumption and environmental impact, making them critical components of a sustainable future.

The e-JSM serves as a reminder of the transformative potential of materials science in addressing global sustainability challenges. It underscores the importance of bridging academic research with industrial applications to ensure the successful implementation of these innovations. To realize a sustainable future, it is essential to support these advancements through targeted policies, infrastructure development, and collaborative efforts between researchers, industries, and governments. Materials science is poised to play a pivotal role in shaping a greener, more sustainable world.

Conflict of interest

The author declares no conflict of interest.

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