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Editorial: Advanced composite materials for energy and environmental sustainability

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Editorial on the Research Topic

Advanced composite materials for energy and environmental sustainability

Energy contains any energy source that can make human activity successful. However, environmental sustainability is a difficult topic of energy use. Hence, sustainable energy and environmental protection are important topics in the recent age. As global leaders and representatives start to focus on sustainability, ideas on issues including climate change, energy security, carbon-free policies, and technologies have been exchanged. There are many advantages to sustainability, both short term and long term. We need to maintain our Earth's ecosystems, and more sustainable choices must be made in terms of the way we function. The first purpose of energy saving is to decrease energy usage. For example, the traditional structural material used in livelihood applications are steel materials or other metal alloys. Advanced composite materials are developed to decrease the energy used. For example, lightweight polymeric materials have been widely applied in structural design. Other advances in materials can give clean energy resources and sustainable development that can play a significant role in providing new methods for collecting energy from different resources with less costs. As scientists or engineers of the global community, we have the responsibility to investigate the sustainable nature of research in the area of nanocomposites and polymer composites. Furthermore, the advanced composite materials on structure for sustainability. Construction materials for building structures that lead to sustainable development and offer life comfort are needed today. [S. Swedika et al.](#) and [H. Niroumand et al.](#) offered their opinion on sustainable building materials. The core value of sustainability is emphasized through the development of innovative materials, techniques, and applications in nanocomposites and polymer composites. [Shi et al.](#) and [CT Chou et al.](#) reported the polymer matrix composite and sustainable material for structural applications.

[S. Swedika et al.](#) presented an advanced materials contribution towards sustainable development and its construction for green buildings. Furthermore, they provided an opinion on not just decreasing carbon dioxide emissions from buildings or minimizing product costs but also offering employment for the skilled community. The research found a relationship between existing pieces of research and their results, methods, and questions.

[Shi et al.](#) presented the synergic Effect of Erythrosine and Gold Nanoparticles in Photodynamic Inactivation. They conducted reactive oxygen species tests by adding different scavengers, in doing so offering environmental sustainability.

[CT Chou et al.](#) presented Nanocellulose-reinforced, multilayered poly (vinyl alcohol)-based hydrophobic composites as an alternative sealing film. The mechanical properties of

the as-prepared PVA film were compared with those of a commercially available ES-PAPER sealing film, PVA + CNC/CNF composites. This can also offer energy sustainability.

H. Niroumand et al. presented Building Evaluation based on Sustainable Development using Questionnaire System.

In summary, these complementary contributions offer major knowledge in the field of “*Advanced Composite Materials for Energy and Environmental Sustainability*”.

Author contributions

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T-HC: Writing–original draft, Writing–review and editing.

Conflict of interest

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

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