

Are functional materials effective for energy-harvesting/conversion & storage applications?

In conclusion, this chapter summarizes recent developments of numerous functional materials/devices efficaciously employed for abundant mechanical energy-harvesting/conversions and storage applications. These wide varieties of functional materials can be synthesized by following different cost-effective green protocols.

What are architected and functionalized materials?

To meet the needs of design Engineers for efficient energy storage devices, architected and functionalized materials have become a key focus of current research. Functionalization and modification of the internal structure of materials are key design strategies to develop an efficient material with desired properties.

Which energy storage technology is most efficient?

Among these various energy storage technologies, EES and HES are considered the most efficient and popular due to several key advantages including high energy density, efficiency, scalability, rapid response, and flexible applications.

What materials can be used to develop efficient energy storage (ESS)?

Hence, design engineers are looking for new materials for efficient ESS, and materials scientists have been studying advanced energy materials, employing transition metals and carbonaceous 2D materials, that may be used to develop ESS.

What are hybrid and advanced multifunctional composite materials?

Hybrid and advanced multifunctional composite materials have been extensively investigated and used in various applications over the last few years. To meet the needs of design Engineers for efficient energy storage devices, architected and functionalized materials have become a key focus of current research.

What are electrochemical energy storage devices?

Such electrochemical energy storage devices are apparently convenient in respect to several features, like fast charging, higher power density, longer cycle life, less toxicity, and lower temperature generation during charging as compared to conventional batteries.

MXene materials have emerged as promising candidates for solving sustainable energy storage solutions due to their unique properties and versatility. MXene materials can ...

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Maria has a strong background in energy catalysis, a topic that, as mentioned before, plays a prominent role in our journal, and she comes with a lot of editorial experience from Advanced Materials, Advanced Functional ...

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Abstract With the continuous growth of energy demand, efficient energy storage technologies have become a global focus. High-entropy materials possess high structural and ...

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