

Bionic energy storage

Why is bionic optimization more efficient than traditional optimization methods?

In the biosphere, organisms have evolved various macro and micro tissues through millions of years, which can be beneficial for the transfer of nutrients and energy. Learning from nature has given rise to the bionic method, illustrating more flexible and efficient than most traditional optimization methods.

Does a leaf vein Bionic fin improve the performance of TES storage systems?

Conclusions In this study, a novel leaf vein bionic fin was introduced into the triplex-tube TES storage system, and the performance enhancement of PCMs in this system was numerically investigated.

Do Bionic topology fins improve thermal storage performance?

This proposed LHS system equipped with bionic topology fins comprehensively shows enhanced various thermal storage performances, encompassing shorter melting time, higher specific power density, and higher efficiency, while the improved fin structure does not affect the thermal storage density of PCM.

What are rational energy storage techniques?

Consequently, rational energy storage techniques are key to addressing the issues mentioned above. Generally, thermochemical heat storage (THS), sensible heat storage (SHS), and latent heat storage (LHS) are the three main strategies of thermal energy storage.

Why do biomimetic CNFs have superior energy storage performance?

Combined in situ/ex situ spectroscopic characterizations, kinetic analyses, and theoretical calculations revealed that the superior energy storage performance arises from the advantageous microstructure of the biomimetic CNFs and the reversible physical/chemical adsorption process.

Can Bionic bifurcated fins accelerate the melting rate?

For the T-FIN, not only is the smallest but also the appearance of the peak is delayed, which demonstrates that bionic bifurcated fins can efficiently transfer more heat to PCM by heat conduction and thus accelerate the melting rate.

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Bionic Hollow Porous Carbon Nanofibers for Energy-Dense and Rapid Zinc Ion Storage Guangjie Yang, Qian Zhang, Chenweijia He, Zhe Gong, Zhenlu Liu, Jian Song, ...

???? (LHS) ??????????????????, ??? LHS ??????????, ??????????????????, ??????????, ??? ...

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using composite phase ...

The latent heat storage (LHS) technique has been widely applied in various thermal energy conversion and management fields. However, LHS device suffers from very slow heat ...

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In this paper, the thermal management design of large energy storage battery module in static application scenario is carried out, which provides a reference for the design of ...

Latent heat storage is employed to address the intermittent supply of renewable energy, and enhancing heat transfer in phase change materials (PCMs) is pivotal for achieving ...

Based on the excellent soil excavation capability of the hare, the bionic energy storage-profiling device (BSPD) was innovatively designed by drawing the unique mechanism of its fore-upper ...

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