

Metals for electrochemical energy storage





Overview

Are metal-organic frameworks a suitable electrode material for electrochemical energy storage?

Electrochemical energy storage (EES) systems demand electrode materials with high power density, energy density, and long cycle life. Metal-organic frameworks (MOFs) are promising electrode materials, while new MOFs with high conductivity, high stability, and abundant redox-reactive sites are demanded to meet the growing needs of EES.

What are electrochemical energy storage devices?

Electrochemical energy storage (EES) devices are typically based on inorganic materials made at high temperatures and often of scarce or toxic elements. Organic-based materials represent attractive alternatives for sustainable, safe, and cost-effective EES.

What materials are used in energy storage devices?

Numerous MOFs materials based on iron, nickel, zinc, cobalt, and manganese among others have been reported for energy storage device applications [1-4]. Thus, the development of structurally stable MOFs is of great urgency.

What is electrochemical energy storage (EES)?

Electrochemical energy storage (EES) devices constitute storing of energy as electrical charges mediated via chemical reactions. Battery technology uses the stored chemical potential of a redox reaction occurring at its electrodes and converts it into electrical energy when needed.



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Metal-organic frameworks for fast electrochemical energy storage

Electrochemical energy storage (EES) devices are typically based on inorganic materials made at high temperatures and often of scarce or toxic elements. Organic-based ...

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Electrochemical energy storage devices, considered to be the future of energy storage, make use of chemical reactions to reversibly store energy as electric charge. Battery ...

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SUMMARY Metal-organic frameworks (MOFs) have the potential to rival or even surpass traditional energy storage materials. However, realizing the full potential of MOFs for ...



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Metal-organic frameworks and derivatives as next-generation materials for electrochemical energy storage Xuejie Wang a, Zhuang Du b, Haiwei Tang a, Weilai Yu * c and Tao Liu * a ...

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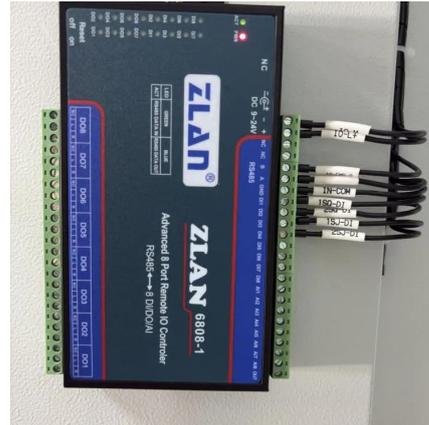




Metal/covalent-organic frameworks for electrochemical energy storage

Many renewable energy technologies, especially batteries and supercapacitors, require effective electrode materials for energy storage and conversion. For such applications, metal-organic ...

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Iron-based metal-organic frameworks and derivatives for electrochemical

They have displayed potential for energy storage applications, especially in electrochemical energy storage devices such as batteries and supercapacitors. These ...

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Abstract Energy storage devices (ESD) are emerging systems that could harness a high share of intermittent renewable energy resources, owing to their flexible solutions for ...

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