Electrode materials for graphene batteries

Recent progress in the study of graphene has triggered a gold rush for exploiting its possible applications in various areas. Graphene-containing carbonaceous materials have long been selected as electrodes in rechargeable lithium ...

A continuous 3D conductive network formed by graphene can effectively improve the electron and ion transportation of the electrode materials, so the addition of graphene can greatly enhance lithium ion battery"s properties and provide better chemical stability, higher electrical conductivity and higher capacity. In this review, some recent ...

Both binary and ternary nanocomposites were investigated as electrode materials in lithium-ion batteries (LIBs) and battery-type supercapacitor applications. Notably, ...

In the present era, different allotropes of carbon have been discovered, and graphene is the one among them that has contributed to many breakthroughs in research. It has been considered a promising candidate in the research and academic fields, as well as in industries, over the last decade. It has many properties to be explored, such as an enhanced specific surface area and ...

In recent years, graphene has been considered as a potential "miracle material" that will revolutionize the Li-ion battery (LIB) field and bring a huge improvement in the performance of LIBs. However, despite the large ...

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Graphene is a Carbon-based material that is extensively investigated as anode material for rechargeable secondary Lithium-ion batteries (LIBs) because of its amazing superlative properties...

Due to the advantages of good safety, long cycle life, and large specific capacity, LiFePO4 is considered to be one of the most competitive materials in lithium-ion batteries. But its development is limited by the shortcomings of low electronic conductivity and low ion diffusion efficiency. As an additive that can effectively improve battery performance, ...

In recent years, graphene has been considered as a potential "miracle material" that will revolutionize the Li-ion battery (LIB) field and bring a huge improvement in the performance of LIBs. However, despite the large number of publications every year, practical prototypes of graphene-based batteries are st Recent Review Articles

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Both binary and ternary nanocomposites were investigated as electrode materials in lithium-ion batteries (LIBs) and battery-type supercapacitor applications. Notably, the ternary nanocomposite delivers a lower discharge capacity of 995 mA h g -1 compared to binary nanocomposite (1120 mA h g -1).

Organic electrode materials (OEMs) possess low discharge potentials and charge-discharge rates, making them suitable for use as affordable and eco-friendly rechargeable energy storage systems ...

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Luo and co-workers reported a microporous COF (poly(imide-benzoquinone)-graphene [PIBN-G]) used as cathode materials for LIBs via in situ polymerization on graphene. Such a structure efficiently facilitated the charge transfer in PIBN-G and the complete access of electrons and ions to the rich redox-active carbonyl groups. Thus, the PIBN-G afforded high capacities of 271.0 ...

Individually, MXene and graphene based frameworks have been recognized as promising 2D electrode materials for metal ion batteries. Herein, we have engineered a heterostructure of V 3 C 2 MXene and graphene using computational design. A comprehensive investigation of designed heterostructure has been reported in this work.

Recent research on LiBs is mainly concentrated on (i) using developed electrode materials and electrolyte solutions to increase specific energy; (ii) using nanostructured materials and graphite in LiBs to provide considerably longer cycle lives, faster charge/discharge capabilities and greater rate performance .

Graphene-based materials have been extensively analyzed as cathode materials in LIBs due to their distinctive structure and exceptional electrochemical ...

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