

Can a hollow mesoporous carbon anode store sodium ion?

To demonstrate the potential of the hollow mesoporous carbon (hollow meso-carbon) anode, its electrochemical sodium-ion storage was incorporated using previous methods (44,45) in comparison to solid mesoporous carbon spheres (meso-carbon) and commercial hard carbon.

Why are hollow mesoporous carbon nanospheres suitable for sodium ion storage?

Because of the unique features in permeability, diffusion, and surface access, the hollow mesoporous carbon nanospheres exhibit excellent high rate and cycling performances for sodium-ion storage.

How can a hollow mesoporous carbon nanosphere be fabricated?

Nitrogen sorption isotherms (f) and correlated pore size distribution curve (g) for the hollow mesoporous carbon after calcination. The ordered hollow mesoporous carbon nanospheres could be simply fabricated through the solution-processed assembly method (Figure S1).

Can hollow spheres be used as electrode material for next generation lithium ion batteries?

A high specific capacity of 137 mAh g⁻¹ can be achieved up to 1000 cycles at a current density of 1 A g⁻¹ (5 C). We believe that the mesoporous H-TiO₂/GC hollow spheres are expected to be applied as a high-performance electrode material for next generation lithium ion batteries. Copyright © 2015 American Chemical Society

Can hollow mesoporous carbon structures be molded?

Currently, various approaches (18,24,25) have been at the forefront of efforts in molding hollow mesoporous carbon structures due to the advantageous combination of mesopores and hollow architectures.

What is a mesoporous carbon nanosphere?

In consequence, a kind of ordered mesoporous carbon nanospheres with a high surface area of 263 m² g⁻¹, an open and uniform pore size of 5.3 nm, and a hollow void of ~80 nm diameter can be synthesized through such a facile solution-processed method.

Upon the high-rate lithiation reactivation, hierarchically mesoporous spheres ...

These mesoporous manganese sulfide sub-microspheres with an average ...

These mesoporous manganese sulfide sub-microspheres with an average diameter of 700 nm were anchored homogeneously onto graphene nanosheets. Such a ...

Upon the high-rate lithiation reactivation, hierarchically mesoporous spheres display unique features for lithium-ion storage including a self-reconstructed open ...

A practical, low-cost synthesis of hollow mesoporous organic polymer (HMOP) spheres is reported. The electrochemical properties of Li⁺/Na⁺-electrolyte membranes with ...

However, its practical application suffers from low electric conductivity, poor electrochemical stability, and sluggish kinetics. To tackle these challenges, novel nitrogen-doped carbon ...

As a result, the H-TiO₂/GC hollow spheres achieve excellent electrochemical reactivity and stability as an anode material for lithium ion batteries. A high specific capacity of ...

As the F127/F108/polydopamine composite micelles can interact with large ...

Mesoporous carbon (MC) spheres with hierarchical pores, controlled pore volume and high specific surface areas have been prepared by a mass-producible spray drying ...

Herein, we successfully synthesized nitrogen-doped hollow mesoporous carbon spheres encapsulated with molybdenum disulfide (MoS₂) nanosheets as the cathode catalyst ...

Diagrams of the Synthetic Process of Mesoporous TiO₂ Spheres (a) and Full Li-Ion Batteries with Mesoporous TiO₂ Spheres as Anodes and LiMn₂O₄ Nanorods as Cathodes (b) ACS ...

However, its practical application suffers from low electric conductivity, poor electrochemical ...

The mesoporous shell of M-hSiO₂ spheres can immobilize TFSI - via ...

The sulfur-impregnated mesoporous carbon spheres were then used as cathode materials for Li-S batteries. Electrochemical measurements demonstrated that the S-MC ...

Solid electrolytes have shown great application potential in high safety and energy-density Li metal batteries. Poly (ethylene oxide) (PEO), as one of the most well-known ...

Abstract. Mesoporous SiO₂/C hollow spheres have been successfully synthesized via a one-step template process and carbonization of a mesoporous SiO₂/poly(ethylene ...

The employed silica spheres with a solid core and mesoporous shell (SCMS silica) were synthesized in two steps by modified literature methods. Solid silica spheres were synthesized by the Stober method the second step a ...

A practical, low-cost synthesis of hollow mesoporous organic polymer (HMOP) spheres is reported. The electrochemical properties of Li⁺/Na⁺-electrolyte membranes with these spheres substituting for ...

As the F127/F108/polydopamine composite micelles can interact with large TMB droplets due to the strong affinity of the hydrophobic PPO segment, such a solution-processed ...

Mesoporous carbon hollow nanospheres (MCHS), synthesized via a block copolymer-mediated supramolecular self-assembly process, serve as both anode materials for ...

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