

In this short review, we briefly discussed the advantages and disadvantages of bottom-up and top-down of CQD synthesis methods. The arc-discharge technique, laser ...

The emergence of carbon dots (CDs) has opened up an exciting new field in the science and technology of carbon nanomaterials and has attracted increasing interest in recent years. Due to their diverse ...

Carbon nanomaterials such as carbon quantum Dots (CQDs) and graphene quantum dots (GQDs) have been attracting a great deal of attention recently due to their ...

Carbon quantum dots (CQDs) are fluorescent nanomaterials with small size, broad excitation spectrum, stable fluorescence, and adjustable emission wavelengths. They are ...

Graphene quantum dot based materials for sensing, bio-imaging and energy storage applications: a review. Y. Ravi Kumar a, Kalim Deshmukh b, Kishor Kumar Sadasivuni c and S. K. Khadheer Pasha * a a Department of Physics, ...

Eyes have recently been pointed on the use of the family of quasi-0D carbon-based materials, known as carbon dots (C-dots). Owing to their non-toxic nature, abundance and low ...

Carbon quantum dots and their applications. Chem. Soc. Rev., 44 (2015), pp. 362-381. View in Scopus Google Scholar [20] ... Design and fabrication of carbon dots for energy ...

Electrocatalytic applications of carbon quantum dots. The remarkable features of carbon-based materials, including high conductivity, active surface area, and chemical ...

Our review presents recent advances in the fabrication of CQD/GQD based composites for electrochemical systems, their mechanism of action, applications in energy ...

Carbon quantum dots (CQDs) are a class of carbon nanomaterials that have recently gained recognition as current entrants to traditional semiconductor quantum dots. CQDs have the desirable advantages of low ...

On the other hand, carbon quantum dots -also called carbon dots (C-dots)- are quasi-spherical carbon nanoparticles consisting of graphite and turbostratic carbon mixture in ...

composites materials in those energy storage applications. Moreover, we rationally analyze the shortcomings of quantum dots in energy storage and conversion, and ...

SCs/MSCs made of carbon quantum dots doped with elements such as N and S are typical pseudocapacitors. ... GQDs have important applications in the field of energy storage and ...

Carbon dots are a new class of carbon materials with ultrasmall size and unique physicochemical property. They have been widely studied since their discovery and have been ...

“carbon quantum dots” until 2006 by Sun et al. (2006). Since then, studies on carbon quantum dots have gradually begun to emerge. Early studies focused on the properties ...

Wu et al. [38] prepared a 3D porous hierarchical CuCo_2O_4 @carbon quantum dots (CQDs) ... large-scale preparation approaches and systematic regulation mechanisms of ...

generation using CQDs for energy applications. Keywords: carbon quantum dots, synthetic process, bio-medical applications, energy storage application, biosensors 1 ...

Batteries and supercapacitors dominate the energy storage sector. Carbon quantum dots (CQDs) are a class of materials explored extensively due to their enriched surface and ...

Carbon dots are zero-dimensional carbon nanomaterials with quantum confinement effects and edge effects, which have aroused great interests in many disciplines such as energy, chemistry, materials, and ...

In 2015, Fernando et al. reviewed carbon quantum dots for photo-catalytic energy conversion [45]. In 2015, Baptista summarized recent developments in carbon nanosensors, ...

Here, we outline the latest achievements of quantum dots and their composites materials in those energy storage applications. Moreover, we rationally analyze the ...

Three strategies for structural engineering of CDs are presented and analyzed, in terms of the tuning of size and crystallinity, and the methodologies for surface modification and heteroatom doping, with a focus ...

Batteries and supercapacitors are the next-generation alternative energy resources that can fulfil the requirement of energy demand worldwide. In regard to the development of efficient energy storage devices, various ...

The 0D carbon quantum dot doping efficiently avoids agglomeration of NiCo_2O_4 nanoparticles while improving electric conductivity. The use of 2D carbon nanosheets as an intermediate ...

The discovery of fluorescent CDs in 2004 stimulated tremendous research interest in 0D carbon-based materials, with CDs being among the most widely studied luminescent ...

Carbon quantum dots (CQDs) have gained substantial attention as multifunctional nanomaterials with distinctive characteristics, positioning them as highly promising candidates ...

CQDs have the desirable advantages of low toxicity, environmental friendliness, low cost, photostability, favorable charge transfer with enhanced electronic conductivity, and comparable easy-synthesis protocols.

Electrochemical energy storage devices (EESDs), mainly batteries and supercapacitors (SCs), have found increasing importance in recent decades as one of the ...

Carbon materials, such as graphene, carbon nanotubes, and quantum-dot-doped metal oxides, are highly attractive for energy storage and environmental applications. This is due to their large surface area and efficient optical and ...

Graphene Quantum Dots (GQDs), zero-dimensional nanoparticles which are derived from carbon-based sources owned the new pavement for the energy storage ...

11 - Polymers with carbon-based quantum dots for energy storage. Author links open overlay panel Rinki Malik a b, Devender Singh c, Neeti Malik d, Suman Lata a, Rajender ...

Ding et al. 171 used a low-cost one-pot hydrothermal method to synthesize a catalyst of NH₂-functionalized carbon quantum dots (NCQDs) and Co²⁺ supported on carbon black. In the synthesis, CA and urea were used as the ...

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