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Carbon felt in all-vanadium redox flow battery structure

Overview

We, for the first time, demonstrate a facile preparation of N, O dual-doped carbon felt (CF) as electrodes in all-vanadium redox flow batteries (VRFB). N2 and O2 plasma was employed to treat the CF.

Carbon felt in all-vanadium redox flow battery structure

Performance Enhancement of Vanadium Redox Flow Battery by ...

Brunauer-Emmett-Teller (BET) surface area of the modified carbon felt is, significantly, five times higher than that of the pristine felt.

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Performance Enhancement of Vanadium Redox Flow ...

Brunauer-Emmett-Teller (BET) surface area of the modified carbon felt is, significantly, five times higher than that of the pristine felt.

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Fabrication of an efficient vanadium redox flow battery

Li, B. et al. Bismuth nanoparticle decorating graphite felt as a high-performance electrode for an all-vanadium redox flow battery. Nano Lett. 13, 1330-1335 (2013).

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An advanced large-porosity porous channel structure electrode ...

Electrospinning technology has been extensively used to prepare electrodes for vanadium redox flow batteries (VRFBs). Nevertheless, electrospinning carbon nanofibers ...

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Performance Enhancement of Vanadium Redox Flow ...

A high-performance carbon felt electrode for all-vanadium redox flow battery (VRFB) systems is prepared via low-temperature atmospheric ...

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Analysis of the electrochemical performance of carbon felt ...

In the present research, the performance of three commercial graphite felts (a 6 mm thick Rayon-based Sigra-cell®, a 4.6 mm thick PAN-based Sigracell®, and a 6 mm thick PAN-based ...

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Direct Ink Writing of 3D-Structured All-Carbon ...

The study pioneers highly conductive and mechanically robust all-carbon electrodes using Direct Ink Writing and optimizes their chemical ...

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Enhancing Vanadium redox flow batteries performance through ...

High-activity and stability graphite felt supported by Fe, N, S co-doped carbon nanofibers derived from bimetal-organic framework for vanadium redox flow battery

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A novel approach for forming carbon nanorods on the surface of carbon

In this work a novel method is unfolded to modify carbon felts (CF) to substantially improve the performance of the electrodes for vanadium redox flow batteries (VRFBs). The ...

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A new strategy for integrating abundant oxygen functional groups ...

Herein, we propose a new strategy to accomplish this, based on a combination of corona discharge and hydrogen

peroxide (H 2 O 2) treatments (Figure 1). First, a corona ...

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Investigating the Influence of Treatments on Carbon ...

Several characterization techniques were used to deepen the understanding of the treatment of carbon felt to study the interplay of electrode ...

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Regulating the N/B ratio to construct B, N co-doped carbon ...

Abstract The heteroatom-doped carbon nanotubes hold great promise for improving the properties of carbon felt in vanadium redox flow batteries. However, the structure control ...

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Vanadium Redox Flow Batteries: Electrochemical ...

The vanadium redox flow battery (VRFB) is one promising candidate in large-scale stationary energy storage system, which stores electric energy ...

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Designed fabrication of highly stable anode material from

Due to the increasing energy crisis and environmental pollution, the transformation of energy structure towards green and low-carbon and the development of renewable clean ...

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Graphene-Nanowall-Decorated Carbon Felt with ...

Abstract 3D graphene-nanowall-decorated carbon felts (CF) are synthesized via an in situ microwave plasma enhanced chemical vapor ...

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Graphene-Nanowall-Decorated Carbon Felt with Excellent Electrochemical

Abstract 3D graphene-nanowall-decorated carbon felts (CF) are synthesized via an in situ microwave

plasma enhanced chemical vapor deposition method and used as ...

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An All-Vanadium Redox Flow Battery: A Comprehensive

In all-vanadium redox flow batteries (VRFBs), it is crucial to consider the effects of electroless chemical aging on porous carbon felt electrodes.

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Tuning the performance of vanadium redox flow batteries by ...

Polyacrylonitrile (PAN)-based carbon felt was subjected to N 2 -plasma treatment to increase the heteroatom defects and reactive edge sites as a method to increase the performance in ...

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Investigating the Influence of Treatments on Carbon Felts for Vanadium

Several characterization techniques were used to deepen the understanding of the treatment of carbon felt to study

the interplay of electrode structure, wettability, and ...

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A new strategy for integrating abundant oxygen ...

Herein, we propose a new strategy to accomplish this, based on a combination of corona discharge and hydrogen peroxide (H 2 O 2) treatments ...

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Analysis of the electrochemical performance of carbon felt ...

Electroless chemical aging of carbon felt electrodes for the all-vanadium redox flow battery (VRFB) investigated by electrochemical impedance and X-ray photoelectron spectroscopy

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Performance Enhancement of Vanadium Redox Flow Battery by ...

A high-performance carbon felt electrode for all-vanadium redox flow battery (VRFB) systems is prepared via low-temperature atmospheric pressure

plasma treatment in air to improve the ...

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Analysis of the electrochemical performance of carbon felt ...

The results of this study suggest that thermally activated carbon felts may experience changes in their electrochemical performance during cycling in redox flow batteries.

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High-performance composite electrode based on ...

This study presents an innovative and effective approach for synthesizing carbon networks using PANi/reduced graphene oxide (PANi-rGO-CF) composites to enhance the ...

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Multi-fractal Nanoporous Carbon Sphere-Decorated Graphite Felt

We report a novel electrode design based on sustainable fructose-derived porous carbon spheres (F-PCS) uniformly deposited on graphite felt (GF) through a

simple ...

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N, O Co-doped carbon felt for high-performance all-vanadium redox flow

We, for the first time, demonstrate a facile preparation of N, O dual-doped carbon felt (CF) as electrodes in all-vanadium redox flow batteries (VRFB).

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Membranes for all vanadium redox flow batteries

Abstract Battery storage systems become increasingly more important to fulfil large demands in peaks of energy consumption due to the increasing supply of intermittent ...

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