Electrochemical energy storage of tin sulfide

Is tin sulfide a good electrode material for supercapacitors?
Unlike other TMDCs such as molybdenum disulfide (MoS 2) and tungsten disulfide (WS 2),tin sulfide (SnS x) has not been widely exploredas an electrode material for supercapacitors because of its structural instability,poor conductivity issues,and low redox reactions that lead to short cycle life and lower specific capacitance.

How is tin sulfide synthesis performed?
This study focuses on the synthesis of tin sulfide (SnSx) films via the eco-friendly successive ionic layer adsorption and reaction(SILAR) method,employing varying quantities of L-ascorbic acid (0.8 and 1.0 g) as a reducing agent.

Is tin present in mixed sulfide phases?
XRD analysis revealed the formation of mixed sulfide phases,indicating the presence of tinin both the +2 and +4 oxidation states. Raman and XPS analyses confirmed that SnS was predominantly formed at annealing temperatures of 250 °C and below.

Does annealing temperature affect tin sulfide films?
This study investigated the impact of annealing temperature on the structural, optical, and electrochemical properties of tin sulfide films. XRD analysis revealed the formation of mixed sulfide phases, indicating the presence of tin in both the +2 and +4 oxidation states.

Based on the energy storage mechanism, the supercapacitor can be classified as an electrostatic double-layer capacitor (EDLC), where the energy is stored by means of accumulating ...

New generation of electrochemical energy storage devices (EESD) such as supercapattery is being intensively studied as it merges the ideal energy density of batteries and ...

Owing to its abundance in nature, nontoxicity, and cheapness, tin (IV) sulfide is regarded as a promising material for constructing efficient electrodes. The faradic behavior of this material also ...

Herein, we summarize recent advances in nanostructured metal sulfides, such as iron sulfides, copper sulfides,

cobalt sulfides, nickel sulfides, manganese sulfides, molybdenum sulfides, tin sulfides, with ...

Herein, the physicochemical properties of transition and post-transition metal sulfides, their typical synthesis, structural characterization, and electrochemical energy storage applications are reviewed.

Facile fabrication of novel heterostructured tin disulfide (SnS2)/tin sulfide (SnS)/N-CNO composite with improved energy storage capacity for high-performance supercapacitors

The gathered data were then used to evaluate the potential of tin sulfide films as electrode materials in supercapacitors, highlighting their suitability for sustainable energy storage applications.

GO and tin sulfide (SnS) nanoparticles are synthesized by a facile and fast microwave-assisted approach. Furthermore, SnS nanoparticles are deposited electrochemically on fabricated ...

After fifty cycles of charge-discharge, the CMC binder electrode shows a superior electrochemical charge storage property of 591 mA h g -1 compared with 385 mA h g -1 for the PVDF binder ...

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