Short Communication

Incorporating Oxygen CoP Nanosheets: Facile Synthesis and Application for Supercapacitor Electrodes

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As an effective way, surface functionalization can modulate the electrochemical properties of nanomaterials for supercapacitors. The Co_3O_4 nanosheets as the precursor have been synthesized using a solvothermal reaction followed by a high-temperature calcination reaction. Oxygen-incorporating CoP nanosheets were obtained via a high-temperature phosphating reaction. The obtained samples have been characterized by X-ray diffraction and transmission electron microscopy. The electrochemical results displayed that the oxygen-incorporating CoP nanosheets are promising anode material for high-performance supercapacitor devices. The specific capacitance of the sample could be calculated to 416, 345 and 317 F g^{-1} at a current density of 2, 5 and 10 A g^{-1} , respectively. Even after 900 cycles, the capacitive retention of the oxygen-incorporating CoP nanosheets electrode was 97% and it remained unchanged, manifesting that such a supercapacitor displays a good electrochemical cycling stability. The high specific capacity, long cycle stabilities as well as great rate capability make the oxygen-incorporating CoP nanosheets a good candidate for high-performance supercapacitors.

Keywords: CoP nanosheets, Oxygen incorporation, Supercapacitors, Polymers, Electronic materials

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