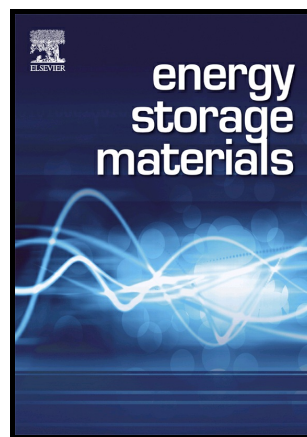


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# Cobalt Selenide Decorated Carbon Spheres for Excellent Cycling Performance of Sodium Ion Batteries

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## ABSTRACT

Development of electrode materials with high capacity, superior rate performance, long cycle life and low cost is critical to commercialize sodium ion batteries (SIBs). Herein, a unique composite consisted of cobalt selenide (Co<sub>0.89</sub>Se) nanoparticles (3-10 nm) embedded in carbon spheres (CoSe@CSs) is presented as anode for SIBs. The exclusive structure of CoSe@CSs enables the pseudocapacitive charge storage, improves the electronic properties and provides buffer for volumetric changes during the repeated charge-discharge processes. The composite with an average diameter of ~100 nm, denoted as CoSe@100CSs, presented the best electrochemical performance (with a reversible charge storage capacity of 554 mA h g<sup>-1</sup> after 50

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