Hollow Fe₃O₄ Spheres as Efficient Sulfur Host for Advanced Electrochemical Energy Storage

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Among various electrochemical energy storage systems, Li-S batteries are one of the most promising candidates. However, the application of Li-S batteries is mainly hindered by the shuttle effect of soluble polysulfide. To inhibit this shuttle effect, hollow Fe₃O₄ spheres (HFS) are prepared and used as host materials for sublimed sulfur. Due to the strong absorption between Fe₃O₄ spheres and polysulfide, the as-prepared S@HFS composites exhibit excellent cycle stability. As a result, the S@HFS composites show a high initial specific capacity of 1310 mAh g⁻¹ at 0.1 C.

Keywords: S@HFS; cathode material, host, absorption, electrochemical performance

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