Short Communication

Hierarchically Constructed TiO₂ Spheres as Efficient Polysulfide Barrier for High-Performance Li-S Battery

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Lithium-Sulfur batteries are the most promising candidates for the next energy storage system. Many reports have been reported for improving the cycle performances of Li-S battery, such as designing cathode host material, employing functionalized interlayer between the cathode and separator and developing suitable electrolyte. In this work, novel hierarchically constructed TiO₂ spheres are prepared and used host materials for sulfur cathode. This novel structure of TiO₂ spheres serves as the host material, which could efficiently stabilize the polysulfide at the cathode side. As a result, the shuttle effect of polysulfide in the Li-S battery is greatly alleviated via the hierarchically constructed TiO₂ spheres. Finally, the TiO₂/S composites display excellent cycle stability and superior rate performance.

Keywords: Li-S batteries, Cathode Materials, Electric vehicle, Cycle Stability, TiO₂ Spheres

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