High Performance Lithium-Sulfur Batteries Obtained by Employing Spiked Carbon Nanofibers as Host Materials

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Carbon materials have been considered as the most promising host materials for the sulfur in the past decades. Various carbon materials, including graphene, carbon sphere, carbon nanotube, prepared via different methods have been reported in the references, to improve the electrochemical performance of the lithium-sulfur batteries. In this paper, carbon nanofibers are first synthesized by electrospinning method. The as-prepared carbon nanofibers appear spiked carbon structure, which surface consists of branches. Due to the unique spiked club shape structure, the as-prepared carbon nanofiber sulfur composites display superior electrochemical activity with high specific capacity and long cycle performance. The initial specific capacity of the carbon nanofiber sulfur composites is as high as 1208 mAh/g. The capacity retention of the carbon nanofiber sulfur composites is 92% at 1C after 200 cycles.

Keywords: New Energy, Energy Storage System, Li-S Battery, Electric Vehicle, Cycle Stability

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