Preparation and Modification of MIL-101(Cr) Metal Organic Framework and Its Application in Lithium-Sulfur Batteries

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Lithium sulfur batteries have high theoretical specific capacity and good application prospects. In this paper, large surface area mesoporous chromium MIL-101 (Cr) metal organic framework has been prepared by hydrothermal method and composite with carbon nanotubes (CNTs) as the host of sulfur. The composite electrode material of MIL-101@CNT/S shows the excellent electrochemical performance. Especially the MIL-101@5%CNT/S composite electrode material, when the current density at 0.1C, it has a high initial discharge capacity of 1236.7 mA h g⁻¹, and its specific capacity retention rate reaches 53.4% after 200 cycles. What's more, thanks to the addition of CNTs, the results have better high multiplier performance than MIL-101 (Cr)/S, and the capacity contributed by the second platform has been improved.

Keywords: MIL-101(Cr); Lithium-sulfur battery; CNTs; Shuttle effect.

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