Short Communication

Porous Honeycomb-like Carbon Prepared by a Facile Sugar-Blowing Method for High-Performance Lithium-Sulfur Batteries

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Lithium-sulfur batteries have a high theoretical energy density and are low-cost and environmentally friendly. However, the use of low-activity materials and the poor cycle stability of lithium-sulfur batteries severely restrict their application. Here, we prepared a highly porous honeycomb-like carbon (PHC) in two very simple steps, including the mixing of ammonium chloride and sucrose and a straightforward carbonization process. With PHC as the sulfur host, the PHC/S cathode exhibited excellent cycle stability, a high initial discharge capacity of 1200 mAh g⁻¹ at 0.1 C and a retentive capacity of 81% after 200 cycles at 0.2 C. These excellent properties can be attributed to the abundant interconnected mesopores, which prevented the shuttling of polysulfides and provided spacious channels for the transportation of electrons and lithium- ions.

Keywords: Lithium-sulfur battery; cathode; sugar blowing; porous honeycomb-like carbon

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