Synthesis of Nitrogen and Sulfur Co-Doped Sisal Fiber Carbon and Its Electrochemical Performance in Lithium-Ion Battery

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Heteroatoms substitution doping carbon materials were proved to be a useful strategy to tailor their physicochemical properties when it comes to energy application, here we present the fabrication of nitrogen and sulfur dual- doped sisal fiber carbon via a facile hydrothermal process followed by pyrolysing with sulphamic acid as the nitrogen and sulfur source. As an electrode material for lithium-ion battery (LIB), the nitrogen and sulfur co-doped sisal fiber carbon delivers a specific capacity of 525 mAh/g at 0.05 A/g and 220 mAh/g at 1 A/g after 50 circles, revealing a high specific capacity and good cycle stability. The electrochemical performance of carbon material doped with N and S at different amount of dopant is better than the un-doped one and it would be a potential green and low-cost anode candidate for LIB.

Keywords: sisal fiber carbon; nitrogen and sulfur co-doping; hydrothermal synthesis; lithium-ion battery

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