Synthesis of Porous Fiber-like CoMn_2O_4 Derived from Cotton Template as Lithium Ion Battery Anodes

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Porous fiber-like CoMn_2O_4 has been prepared by a cotton template route. The fiber-like CoMn_2O_4 with hausmannite-type structure is composed of numerous nanoparticles with an average size of ~100 nm. A Brunauer-Emmett-Teller (BET) surface area of $12.28 \text{ m}^2 \text{ g}^{-1}$ and mesoporous structure can be calculated from N_2 adsorption-desorption isotherms for porous fiber-like CoMn_2O_4 . As anode of lithium ion battery, the CoMn_2O_4 obtained from 600°C shows a reversible discharge capacity of 867.0 mAh g^{-1} and a capacity retention ratio of 86.8% after 60 cycles at a current rate of 200 mA g^{-1} . Even at a high rate of 1 A g^{-1} , the sample still delivers a stable discharge capacity of 546.0 mAh g^{-1} . These promising electrochemical performances could be attributed to the unique porous fiber structure of CoMn_2O_4 .

Keywords: Cotton template, porous fiber-like CoMn_2O_4 , lithium ion battery, anode materials.

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