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Abstract

Fe_2O_3/ordered mesoporous carbons (OMCs) have been synthesized by a facile one-pot hydrothermal method via self-assembly process. The combination of OMCs and anchored Fe_2O_3 nanoparticles shows a synergistic effect which results in a kind of anode materials with enhanced electrochemical performance for lithium ion batteries. OMCs with highly porous mesostructure and good conductivity not only alleviate the problem of volume variation and agglomeration of Fe_2O_3, but shorten the diffusion pathway of Li^+ ions, which efficiently overcomes the problem of rapid capacity loss of iron oxide. Moreover, appropriate loading amount of Fe_2O_3 nanoparticles is believed to be a key factor to enhance the capacity of anode materials. The materials deliver an excellent reversible capacity of 789 mAh g^{-1} at a current density of 100 mA g^{-1} after 120 cycles.

Keywords