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Rice-panicle-like γ-Fe_2O_3@C nanofibers as high-rate anodes for superior lithium-ion batteries

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Abstract

We synthesized nanoarchitectures comprising γ-Fe_2O_3@C nanofibers with one-dimensional rice-panicle-like morphologies via a facile electrospinning and annealing process for use as anodes in lithium-ion batteries (LIBs). A thin carbon layer grown on the surface of γ-Fe_2O_3 provides a synergistic effect to relieve the stress and alleviate the volume expansion occurring during the lithium-ion insertion/extraction process. The unique structure not only offers good electron transport routes, but also enhances the lithium-ion conductive channels, resulting in excellent electrochemical activity and electrical conductivity of the LIB anode material. A high reversible specific capacity of