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Fabrication of PANI-coated $ZnFe_2O_4$ nanofibers with enhanced electrochemical performance for energy storage

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Graphical abstract

We successfully combined electrospinning with in situ polymerization methods to synthesize the PANI-coated $ZnFe_2O_4$ nanofibers which possessed the abundant pore structure. The lithium storage properties of PANI-coated $ZnFe_2O_4$ nanofibers as anode materials for lithium-ion batteries have been discussed for the first time. Electrochemical property demonstrated that 15% PANI incorporated $ZnFe_2O_4$ composite nanofibers (ZP-15) possessed much higher reversible capacity and cycling stability than that of pure $ZnFe_2O_4$ nanofibers, 10% PANI incorporated $ZnFe_2O_4$ composite nanofibers (ZP-10) and 20% PANI incorporated $ZnFe_2O_4$ composite nanofibers (ZP-20). Moreover, the 15% PANI incorporated $ZnFe_2O_4$ composite nanofibers (ZP-15) electrode also exhibited high capacity at higher charge/discharge rate.