Self-assembled MnO₂/Reduced Graphene Oxide Hybrid Fibers as Electrode Materials for Supercapacitors

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Hybrid fibers of reduced graphene oxide nanosheets with MnO₂ were fabricated by a facile chemical reduction and self-assembly strategy. FESEM images have shown that MnO₂ rods with diameters of approximately 50-80 nm anchor on the reduced graphene oxide nanosheets as spacers in hybrid fibers, and a certain degree of reduced graphene oxide nanosheets oriented along the main axis of the obtained hybrid fibers has been observed. The electrochemical performance of MnO₂/reduced graphene oxide hybrid fibers (MGFs) as binder-free electrodes is evaluated by using a three-electrode system. The hybrid fibers exhibit a high specific capacitance of 363.2 Fg⁻¹ at a constant current density of 200 mA g⁻¹. The improved electrochemical performance can be attributed to the synergistic effect between the MnO₂ and reduced graphene oxide nanosheets in the hybrid fibers and suggests that MGFs with good performance will be a promising electrode material for supercapacitors.

Keywords: MnO₂ rods, Reduced graphene oxide, Hybrid fibers, Flexibility, Supercapacitor.

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