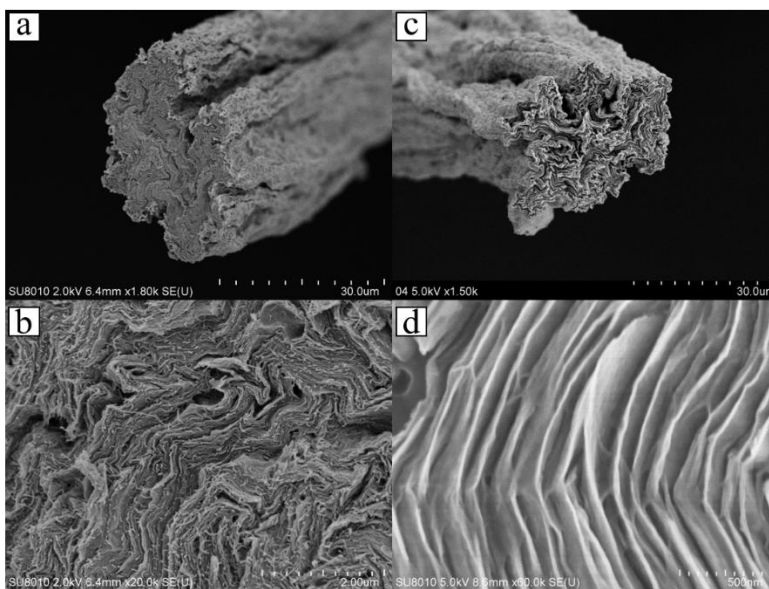


Graphene composite fibers for flexible lithium-ion batteries

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In the era of flexible and wearable electronics from the advent of Google Glass in 2012, flexible energy storage devices, one of their inevitable modules, have gained much attention from both industrial and academic fields. Lithium-ion batteries (LIBs), characterized by high energy density, are one type of mainstream energy storage devices. Therefore, much effort has been devoted to flexible LIBs. Here, some works on flexible LIBs constructed by graphene composite fibers in our lab are introduced. Firstly, some graphene composite fibers were fabricated, including graphene/carbon nanotube fiber (Fig. a and b), graphene/Fe₂O₃ fiber, graphene/SnO₂ fiber (Fig. c and d) and graphene/LiFePO₄ fiber. The fabrication methods were pre-treatment or post-treatment wet-spinning. Secondly, the electrochemical properties of composite fibers were tested and studied. And optimal morphologies for composite fibers were engineered. Thirdly, fiber LIBs were assembled by twisting anode fiber and cathode fiber, which were sandwiched by separator and immersed into electrolyte. In a word, graphene composite fibers are promising candidates for flexible LIBs, which are specifically in fiber shape and thereafter in fabric shape.



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