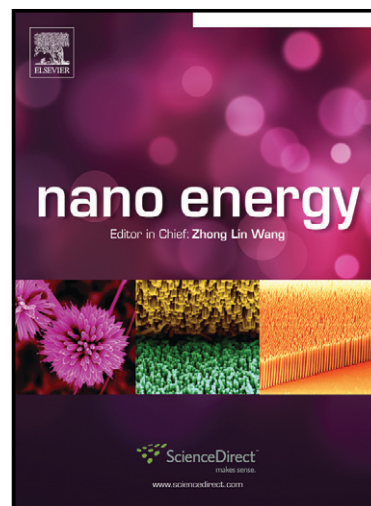


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# Sulfur cathode based on layered carbon matrix for high-performance Li-S batteries

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## Abstract

A novel carbon/sulfur composite has been fabricated by means of thermal and hydro-thermal treatments to serve as the cathode in Li-S batteries. The carbon matrix consists of graphene nanosheet (GS) and multiwalled carbon nanotube (MWCNT). The “GS/MWCNT@S” composite allows for infiltration of electrolyte into the cathode, assists in entrapment of polysulfide intermediates, and accommodates some of the stress and volume expansion that occurs during charge-discharge processes. In addition, the uniform distribution of sulfur in the conductive carbon matrix promotes utilization of the active materials. A Li-S cell containing the GS/MWCNT@S cathode delivered a capacity of 1290.8 mAh/g and exhibited stable specific capacities up to 612.1 mAh/g after 200 cycles at 0.1C. These results demonstrate that this

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