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ACCEPTED MANUSCRIPT

A multifunctional separator modified with cobalt and nitrogen co-doped porous carbon nanofibers for Li–S batteries

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Abstract

Lithium–sulfur (Li–S) battery is considered as one of the most promising advanced energy storage devices. However, several critical issues remain which restrict their practical applications, especially the shuttle effect of soluble lithium polysulfides. Herein, we designed a lightweight multifunctional layer comprising reduced graphene oxide (rGO) and cobalt/nitrogen co-doped carbon nanofibers (Co-N-C) to modified the polypropylene (PP) separator to facilitate the electrochemical performance of Li–S batteries. The Co-N-C/rGO layer with abundant mesopores possesses strong immobilization ability of polysulfides and high electronic conductivity, which could work as an intrinsic physical/chemical frame work barrier and an upper current collector to trap and reutilize the polysulfides. Consequently, the

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