Short Communication

High-wettability and Fire Resistant Separator Efficient Polysulfide Barrier for Increased Electrochemical Activity

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The common polypropylene separator could provide pathways for the transportation for the lithium-ions. However, it fails to inhibit the polysulfide migration during the electrochemical reactions. As a result, the functional separators must be developed for inhibiting the shuttle effect of the soluble polysulfide. In our work, nano fibrous separator is prepared and used as the efficient barrier for the polysulfide migration. The PSA separator is fabricated by electrospinning method, using polysulfonamide membrane as the functional separator in the lithium-sulfur batteries. The electrochemical result shows that the initial specific capacity of the PSA separator is as high as 1506 mAh g⁻¹ at the current density of 0.05 C. The PSA separator shows capacity of 1052 mAh g⁻¹ after 100 cycles at the current density of 0.2 C.

Keywords: Polysulfonamide, Shuttle Effect, Fire Retardant, Separator, Li-S Battery, Electrochemical Performance

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