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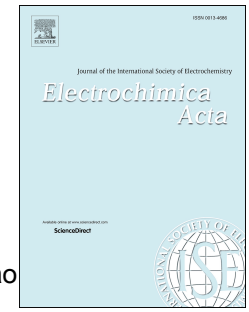

TiO_2 quantum dots decorated multi-walled carbon nanotubes as the multifunctional separator for highly stable lithium sulfur batteries

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TiO_2 quantum dots decorated multi-walled carbon nanotubes as the multifunctional separator for highly stable lithium sulfur batteries

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Abstract

Lithium sulfur battery is considered one of the most promising rechargeable energy storage devices due to its ultrahigh theoretical energy density and specific capacity. But it still cannot be applied because of some key problems. In particular, the shuttle effect of soluble polysulfide compounds leads to the rapid attenuation of battery capacity, short cycle life and serious self-discharge effect. TiO_2 quantum dots and polysulfide compounds have strong interactions and can capture soluble polysulfide compounds, thus inhibiting the shuttle effect. Herein, we introduce a battery separator based on TiO_2 quantum dots modified multi walled carbon nanotubes to solve the