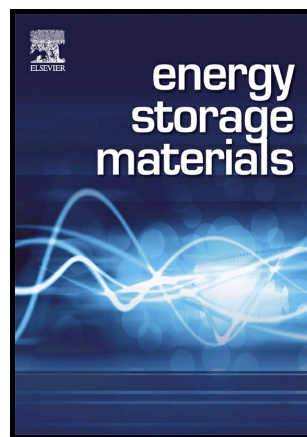


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ABSTRACT:

Carbon fiber cloth/sulfur (CFC/S) composites were prepared by loading sulfur in the carbon fiber cloth (CFC) that was obtained by carbonizing the renewable cotton cloth. The CFC/S composites are the excellent cathodes of room-temperature sodium-sulfur (RT Na-S) batteries due to their three-dimensional (3D) interconnected network and high electrolyte uptake of 1156%. The CFC/S composite with area sulfur loading of 2 mg cm^{-2} displays an initial discharge capacity of 390 mAh g^{-1} at 0.1 C ($1\text{C}=1675 \text{ mA g}^{-1}$) and a capacity of 120 mAh g^{-1} after 300 cycles with tetra ethylene glycol dimethyl ether liquid electrolyte. Furthermore, since the freestanding CFC/S composites exhibit good flexibility and conductivity, they can serve as the cathodes of

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