rGO@S Aerogel Cathode for High Performance Lithium-Sulfur Batteries

Ye Chen, Junbo Qin, Junjie You*, Xinyi Chi, Chuanqing Du and Siqing Cheng

Innovation Centre for Nanomaterials in Energy and Environment (ICNEE), School of Chemical and Environmental Engineering, Wuhan Polytechnic University, Hubei 430023, P. R. China

*E-mail: icnee@whpu.edu.cn

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A novel approach for the fabrications of rGO@S aerogels wherein the sublimed sulfur was impregnated was proposed based on the reduction of the mixed sol of graphene oxide and sulfur followed by the freeze-dry. The as-obtained rGO@S aerogels as cathode for lithium sulfur battery were investigated electrochemically. The results show that the rGO@S cathode delivers a high discharge specific capacity of more than 1200 mA h g⁻¹ at a current rate of 0.5 C at room temperature and exhibits good cycling stability and excellent rate capability, indicating the faster kinetics and good reversible thermodynamics for the reaction of sulfur in rGO@S aerogels with lithium in lithium sulfur batteries. This might be attributed to the unique porous structure of rGO@S aerogels in which sulfur could be utilized fully.

Keywords: rGO@S aerogel; Cathode; Electrochemical performance; Lithium sulfur battery.

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