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**Nitrogen-doped holey carbon nanotubes: dual polysulfides
trapping effect towards enhanced lithium-sulfur battery
performance**

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Abstract: Advanced sulfur hosts decorated with unique structure, optimized composition and excellent conductivity play a vital role in improving lithium-sulfur battery performance. Herein, we first prepare oxidized holey carbon nanotubes (O-H-CNTs) through a controlled air etching strategy, then exploit them as the carbon precursor to produce nitrogen-doped holey carbon nanotubes (N-H-CNTs). The influence of air etching degree on the morphology, structure, composition, conductivity and post-doping effect of O-H-CNTs is discussed in detail. The optimized O-H-CNTs-2 (2 refers to etching time) display unique holey structure and

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