

Metal Sulfide Nanoparticles Anchored N, S Co-doped Porous Carbon Nanofibers as Highly Efficient Bifunctional Electrocatalysts for Oxygen Reduction/Evolution Reactions

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doi: 10.20964/2020.06.28

Received: 5 February 2020 / Accepted: 29 March 2020 / Published: 10 May 2020

Developing multi-functional electrocatalysts is a key for new energy techniques, such as fuel cells, metal-air batteries, and water splitting. In this paper, a bifunctional (ORR/OER) electrocatalysts, metal sulfide nanoparticles anchored N, S co-doped porous carbon nanofibers were successfully synthesized by a simultaneous carbonization and sulfurization of ZIFs/PAN electrospun composite nanofibers. The as-prepared material Zn/Co-ZIFs/PAN-CS-800 catalyst exhibited an excellent electrocatalytic performance in both ORR and OER. Such excellent ORR and OER performance comes from the active metal sulfide species, N, S co-doping effect, porous structure, and good conductivity. Our method can be used to produce other metal sulfide nanoparticles combined with N, S co-doped porous carbon materials with potential applications in the field of energy storage and conversion.

Keywords: electrospinning, porous carbon nanofiber, metal sulfide, N, S co-doped, ORR/OER

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