Short Communication

Carbon Encapsulated WS$_2$ Nanocomposites Derived from ZIF-67@WS$_2$ Core-Shell Nanoparticles and their electrocatalytic applications

Qijian Niu$^{1,3}$, Oluwafunmilola Ola$^1$, Nannan Wang$^{2,3,*}$, Binling Chen$^3,*$, Yanqiu Zhu$^3$, Yongde Xia$^3$

$^1$School of Agricultural Engineering, Jiangsu University, Zhenjiang, Jiangsu, 212013, China
$^2$Guangxi institute for Fullerene Technology, Key Laboratory of New Processing Technology for Nonferrous Metals and Materials, School of Resources Environment and Materials, University of Guangxi, Nanning, Guangxi, 530000, China
$^3$College of Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, EX4 4QF, UK
$^*E$-mail: wangnannan@gxu.edu.cn ; B.Chen@exeter.ac.uk


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In this work, Co$_9$S$_8$ and N,S co-doped carbon encapsulated WS$_2$ nanocomposites (Co$_9$S$_8$-N,S-C@WS$_2$) has been successfully prepared through a high-temperature carbonization of the precursor ZIF-67@WS$_2$ nanoparticles. The obtained Co$_9$S$_8$-N,S-C@WS$_2$ nanoparticles were confirmed to have a core-shell structure and uniform element distribution by TEM and element mapping. Its crystal structure was characterized by XRD, and the high specific surface areas with porous structure was characterized by BET tests. The as-prepared Co$_9$S$_8$-N,S-C@WS$_2$ nanoparticles exhibited a better ORR/OER/HER performance than single component. In this work, a novel idea for the preparation of functional nanocomposite materials could be provided.

Keywords: WS$_2$, ZIF-67, core-shell nanoparticles, electrocatalysts

FULL TEXT

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