Short Communication

Facile Fabrication of ZnO-Au Nanocomposite Electrodes for Improved Supercapacitor Properties and Interface Engineering

Xin Zheng^{1,*}, Yihui Sun², Sijia Jin¹, Kang Zhang¹, Yang Li¹, Jiaolong Yan¹, Haiying Qin¹, Hualiang Ni¹

¹ College of Materials & Environmental Engineering, Hangzhou Dianzi University, Hangzhou 310018, PR China

² Zhejiang Hikstor Technology Co. Ltd, Hangzhou 311300, PR China

*E-mail: yencen@hdu.edu.cn

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Interface engineering is an effective approach to modulate device properties. Here, Au nanoparticles were introduced on ZnO nanorod surface to tune the electrode/electrolyte interfacial character. As expected, a capacitance of 281 F/g could be obtained at a current density of 1 mA/cm², which was 53.6% higher than that without Au nanoparticles. Such enhanced capacitance was due to the Schottky junction at the Au and ZnO interface. Specifically, the Schottky heterointerfaces would induce an internal electric field to trap electrons during the charging process so that the additional electrons would be released in the discharge process. In addition, electron transport could be facilitated, and the reaction potential could be lowered because of the Au nanoparticles. The results show the superiority of interface engineering in supercapacitor devices.

Keywords: ZnO@Au Nanorod Arrays; Supercapacitor; Interface Engineering; Schottky Barrier

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