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论文

α-$Co(OH)_2$的制备及其超级电容特性

谢莉婧, 金小青, 付国瑞, 解玉龙, 王耀先, 胡中爱

西北师范大学化学化工学院, 生态环境相关高分子材料教育部重点实验室, 甘肃省高分子材料重点实验室, 兰州 730070

摘要:

以氯化钴为原料, 聚乙烯吡咯烷酮(PVP)为分散剂, 采用化学沉淀的方法制备出由纳米粒子组成的片状α-$Co(OH)_2$. 用红外光谱对所制样品的组分进行分析, 用X射线衍射和场发射扫描电子显微镜表征产物的结构和形貌, 用循环伏安和恒电流充放电等测试方法对其电化学性能进行研究. 研究结果表明, 由纳米粒子组成的片状α-$Co(OH)_2$表现出优良的电化学性能, 单电极比电容高达1220 F/g.

关键词: α-Co(OH)2; 聚乙烯吡咯烷酮; 化学沉淀

Preparation and Electrochemical Capacitance of α-$Co(OH)_2$ for Supercapacitors

XIE Li-Jing, JIN Xiao-Qing, FU Guo-Rui, XIE Yu-Long, WANG Yao-Xian, HU Zhong-Ai*

Key Laboratory of Eco-Environment-Related Polymer Materials, Ministry of Education, Key Laboratory of Polymer Materials of Gansu Province, College of Chemistry and Chemical Engineering, Northwest Normal University, Lanzhou 730070, China

Abstract:

The sheet-like α-$Co(OH)_2$ composed of the uniform nanoparticles was successfully prepared using cobalt chloride as the raw material and polyvinyl pyrrolidone as the dispersant by chemical precipitation method. The components of products were analyzed by FTIR and the structure and morphology were characterized by X-ray diffraction(XRD) and field emission scanning electron microscopy(FESEM), respectively. The electrochemical performances were investigated by cyclic voltammetry and constant current charge/discharge techniques. The test results show that an extraordinary high specific capacitance value of 1220 F/g is achieved, and the α-$Co(OH)_2$ is a promising electrode material for supercapacitor.

Keywords: α-Co(OH)2; Polyvinyl pyrrolidone; Chemical precipitation

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通讯作者: 胡中爱, 男, 博士, 教授, 博士生导师, 主要从事新能源材料研究. E-mail: zhongai@nwnu.edu.cn

作者简介:

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