Porous Carbon Electrode Derived from Waste Wine Industry for Supercapacitors

Diancheng Duan^{1#}, WeiSu^{1#}, Xiyu Tan², Fang Hu¹, Yangyang, Wang¹, Weiyou Huang¹, Hongliang Peng^{1,*}, Fen Xu¹, Yongjin Zou¹, Lixian Sun^{1,*}

¹ Guangxi Key Laboratory of Information Material, Guangxi Collaborative Innovation Center of Structure and Property for New Energy and Materials, School of Material Science and Engineering, Guilin University of Electronic Technology, Guilin, 541004, P. R. China

² Supervisory Office of the Joint Logistics Department of Guangzhou Military Region

[#]They contributed equally to this work

*E-mail: hlpeng2005@126.com (Hongliang Peng), sunlx@guet.edu.cn (Lixian Sun)

doi: 10.20964/2019.11.26

Received: 4 July 2019 / Accepted: 28 August 2019 / Published: 7 October 2019

Using porous carbon derived from waste biomass as electrode material for supercapacitors is a hot topic. It reuses waste at low cost. In this work, JZn-850 is prepared from waste wine industry by treatment with ZnCl₂. JZn-850 BET surface area is up to 1103 m² g⁻¹. And it exhibits specific capacitance is 187 F g⁻¹ at the current density of 0.5 A g⁻¹. This is better than other commercial carbon materials such as carbon nanotubes (36 F) and graphene oxide (162 F). JZn-850 also has superior rate capability, from 0.5A g⁻¹ to 20 A g⁻¹; its specific volume retention rate is 83.8%. As a new type of electrode material, it has potential applications in supercapacitors and other energy storage materials.

Keywords: Supercapacitors; Carbon materials; Biomass; Waste wine industry.

[FULL TEXT](#)

© 2019 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).