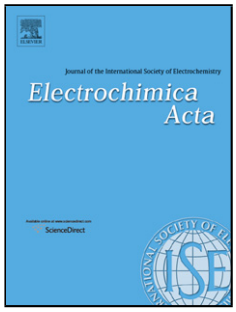

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Author: Haiyan Zhang Jian Ye Yipeng Ye Yiming Chen Chunhua He Yuting Chen

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The effect of acid treatment on thermally exfoliated graphite oxide as electrode for supercapacitors

Haiyan Zhang*, Jian Ye, Yipeng Ye, Yiming Chen*, Chunhua He, Yuting Chen

School of Materials and Energy, Guangdong University of Technology, Guangzhou 510006, China

Abstract: Supercapacitor is an effective energy storage device that store energy using porous conducting materials. With its great performance, graphene has potential applications in supercapacitors. However, graphene prepared by thermal expansion of graphite oxide always has very limited storage capacity, so we treat the thermal exfoliated graphite oxide (TEGO) in mixed acid to enhance the hydrophily of TEGO and achieve higher capacitance. The electrochemical properties of supercapacitor electrodes are studied by cyclic voltammetry and galvanostatic charge/discharge methods. Supercapacitor prepared with acid treated graphene has good electrochemical performance, with a maximum specific capacitance of 196 F g^{-1} at the charge/discharge current density of 100 mA g^{-1} using 2 M KOH electrolyte, yielding an improvement of ~40% compared with that of the pristine TEGO.

Keywords: supercapacitors; chemical modification; thermal exfoliated graphite oxide; graphene; electrochemical properties

* Corresponding author: Tel:+86 20 39323232; Fax: +86 20 39322570
E-mail address: hyzhang@gdut.edu.cn (HY Zhang), chenym@gdut.edu.cn(YM Chen).