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Synthesis of reusable multifunctional electrode for high performance supercapacitors and efficient bisphenol A degradation

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Abstract

In this research, we report a reusable multifunctional electrode, which can not only be used for supercapacitors, but can also act as the anode material for the degradation of bisphenol A (BPA) by the advanced electrochemical oxidization technology. This multifunctional electrode was prepared by growing MnO₂ nanoflakes directly on a Ni foam substrate using a facile hydrothermal method. When substituted for the electrode in a supercapacitors, the specific capacitance was 846.1 F/g at 5 mV/s. Furthermore, when used as anode material for degradation BPA in the advanced electrochemical oxidization process. The BPA removal rate is 99.7 %, and this rate can be maintained at about 85.6% after 5 cycles. It is hoped that this electrode will provide new opportunities for the cooperation of energy and the environment in the future.

Keywords: MnO₂ nanoflakes; Structural; Electrical properties; Bisphenol A; Degradation;

1. Introduction

Due to the over exploitation and utilization of fossil fuels, humans now face a host of anthropogenically produced problems, such as the energy crisis and environmental pollution [1]. In order to overcome these issues, it

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