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A. Gutiérrez-Pardo , J. Ramírez-Rico , R. Cabezas-Rodríguez , J. Martínez-Fernández

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A. Gutiérrez-Pardo, J. Ramírez-Rico*, R. Cabezas-Rodríguez, J. Martínez-Fernández

Departamento Física de la Materia Condensada - ICMS (Universidad de Sevilla-CSIC), Avda. Reina Mercedes S/N, 41012 Seville, Spain.

Abstract

Porous graphitic carbons were successfully obtained from wood precursors through pyrolysis using a transition metal as catalyst. Once the catalyst is removed, the resulting material mimics the microstructure of the wood and presents high surface area, open and interconnected porosity and large pore volume, high crystallinity and good electrical conductivity, making these carbons interesting for electrochemical devices. Carbons obtained were studied as electrodes for supercapacitors in half cell experiments, obtaining high capacitance values in a basic media (up to 133 $F \cdot g^{-1}$ at current densities of 20 $mA \cdot g^{-1}$ and 35 $F \cdot g^{-1}$ at current densities of 1 $A \cdot g^{-1}$). Long-cycling experiments showed excellent stability of the electrodes with no reduction of the initial capacitance values after 1000 cycles in voltammetry.

Keywords: supercapacitors; carbon materials; pyrolysis; graphite; electrochemistry

1 Introduction

Electric double-layer capacitors (EDLCs) have received considerable attention as energy storage/conversion devices because they exhibit high power density, long cycling life, a high charge/discharge capability and are environmentally friendly [1-5]. Supercapacitors are similar in design and manufacture to batteries, but in contrast to them, where the cycle life is limited because of the repeated contraction and expansion of the electrode upon

* corresponding author: [jrr@us.es, Tel. +34 954 550963]