Short Communication

Composites of Electrochemically Reduced Graphene Oxide and Polythiophene and Their Application in Supercapacitors

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Composite films consisting of polythiophene (PTh) and graphene oxide (GO) were synthesized by electrochemical polymerization. Consequently, the GO was reduced via cyclic voltammetry to form a reduced composite (PTh/rGO), which presented higher conductivity than PTh. Specific capacitance values were calculated from galvanostatic charge-discharge profiles. At a current density of $0.5 \text{ A} \cdot \text{g}^{-1}$, the specific capacitance of PTh/rGO presented a good value ($318 \text{ A} \cdot \text{g}^{-1}$). However, its behavior was distant from a typical supercapacitor, indicative of a low reversibility during the charge-discharge processes and poor capability as supercapacitor material. Moreover, its stability diminished considerably after repetitive cycling. Experimental conditions of synthesis of PTh/rGO require to be optimized for the application of the composite as electrode material in supercapacitors.

Keywords: polythiophene, graphene oxide, supercapacitors

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