Short Communication

The Overoxidation of poly(3-hexylthiophene) (P3HT) Thin Film: CV and EIS measurements

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doi: 10.20964/2017.03.44

Received: 13 December 2016 / Accepted: 17 January 2017 / Published: 12 February 2017

In this study the electrochemical degradation of electropolymerized poly (3-hexylthiophene) (P3HT) thin film electrode was carried out by mild overoxidation conditions. Cyclic voltammetry (CV) showed the material electrochemical response lost by change in the intensity and position of the oxidation/reduction peak. Electrochemical impedance spectroscopy (EIS) showed an increase in the charge-transfer resistance (R_{ct}) and a decrease of the low-frequency capacitance related to the load of the intercalated charge in the polymeric film. Such behavior was assigned to a hindering in the ionic intercalation/deintercalation process across the polymer/electrolyte interface, which was also corroborated by the dielectric relaxation time (τ_0) analysis.

Keywords: poly (3-hexylthiophene); degradation process; electrochemical impedance spectroscopy

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