Short Communication

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

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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 ($\tau_0$) analysis.

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

FULL TEXT

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