عنوان مقاله:

Indium tin oxide modified by single-pulsed electrodeposited graphene oxide nanosheets

محل انتشار:

هشتمین کنفرانس و نمایشگاه بین‌المللی مهندسی مواد و متالورژی و سیزدهمین همایش ملی مشترک انجمن مهندسی متالورژی و مواد ایران و انجمن ریخته گری ایران (سال: 1398)

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خلاصه مقاله:

This paper reports a fast, undemanding, and friendly environmental approach regarding the electrochemical reduction of graphene oxide (GO) by a chronopotentiometry method over the indium tin oxide substrate (ITO). Initially, electrodeposited GO (EDGO) thin film was characterized; indeed, cathodic current densities of 0.3 to 50 mA/cm2 was directly applied between working and counter electrodes, in the phosphate buffer solution with a pH of 9.25, which includes dispersed GO nanosheets. Subsequently, the resistance alterations of the electrochemically reduced GO (ERGO) films were carefully characterized by scanning electron microscopy (SEM), X-ray diffraction (XRD), Raman spectroscopy, Fourier transform infrared (FTIR) spectroscopy, and sheet resistivity experiments. It was detected that an optimum cathodic current density of 20 mA/cm2 for 150 s can efficiently remove the oxidation functional groups toward GO; moreover, the electrical resistivity of the introduced proper thin film was measured about 43.4 ohm/square

کلمات کلیدی:

Electrochemical reduction, Graphene, Characterization