ABSTRACT

Incorporation of graphene (GR) and graphene oxide (GO) into a polymer matrix can enhance the properties of a composites in a dramatic way. Herein we have reported preparation of polythiophene (PTh)/graphene oxide(GO) and polythiophene (PTh)/graphene (GR) composites by a interfacial polymerization at a dynamic interface between two immiscible solvents namely nitromethane and n-hexane using $FeCl_3$ as an oxidant. The resulting composite were thoroughly characterized using fourier transform infrared spectroscopy (FTIR), thermogravimetric analysis (TGA), X-ray diffraction (XRD) and scanning electron microscopy (SEM). The electrical conductivity of the samples were measured via standard four-point-probe method. The TGA results showed better thermal stability of the composites than pure polythiophene, which indicates homogeneous dispersion of GO sheets and graphene in the composite. The conductivity measurement revealed that incorporation of GR and GO into polythiophene matrix resulted in a significant increment in the electrical conductivity.