

Abstract

In this report, the synthesis and characterization of poly (2-hydroxyethyl methacrylate)-polyaniline-polyaniline (p-HEMA-PANi) hydrogels were investigated. The hydrogels were synthesized using: 2-Hydroxyethyl methacrylate (HEMA), N-Tris (hydroxymethyl) methyl] acrylamide, 3-Sulfopropyl methacrylate potassium salt, Tetraethylene glycol diacrylate, Poly-(2-hydroxyethyl methacrylate), 2,2-Dimethoxy-2-phenylacetophenone and aniline by UV irradiation. Two sets of the hydrogels were prepared using water/1, 3, 3, 3-(tetramethyl butyl phenyl polyethylene glycol [Triton X-100] and water/ethylene glycol as the solvent. Scanning electron microscopy (SEM) revealed a more uniform pore size when Triton X-100 (TX-100 HG) was used as compared to ethylene glycol (EG-HG). Thermogravimetric analysis (TGA) showed that both hydrogels were stable upto 270 °C. Fourier transform-Infra red (FT-IR) spectrum confirmed the incorporation of polyaniline (PANi) and HEMA in the composite. Electrochemical properties of the hydrogels evaluated using Cyclic Voltammetry and Electrochemical Impedance Spectroscopy (EIS) demonstrated the electroactivity and conductivity of the hydrogels.