

Abstract

The aim of following study was to deal with industrial waste that is major cause for environmental pollution. For this purpose we synthesized ternary nanocomposite Platinum Cobalt Oxide / Chitosan (Pt-CoO/Cs) and degradation studies were performed by using Congo red dye. The binary nanocomposite Platinum/Chitosan (Pt/CS), Platinum-Cobalt Oxide (Pt-CoO) and Cobalt Oxide/Chitosan (CoO/CS) were also synthesized along with ternary nanocomposite Pt-CoO/Cs by chemical routine method. The nanocomposites prepared were characterized by using Raman spectroscopy, UV-visible spectroscopy and X-ray diffraction technique. The vibrational modes, symmetry and structural properties were analyzed by using Raman spectroscopy. The band gap studies were performed by UV-Visible spectroscopy. These studies showed that the synthesized nanocomposites were somehow fall within range of semiconductors. The X-Ray diffraction technique used to analyze size, and crystal structure. It provided information related to dimension and identify phase of material. The XRD studies confirmed the crystal cubic structure of CoO and face centered cubic platinum. The UV-Visible spectroscopy used for analyzing absorbance of composites for the sake of degradation studies. The dye used for degradation studies was Congo red which was degraded 83% by ternary nanocomposite. All of characterization techniques used for analysis confirmed the formation of binary and ternary –nanocomposite.