

Abstract

We report the synthesis of polyol stabilized Ag/Co alloyed bimetallic nanocomposites using the seed growth method involving the successive reduction of metal ions in glycerol (GLY), ethylene glycol (EG) and diethylene glycol (DEG) solutions. The optical measurements revealed the existence of a distinct band edge with surface plasmon resonance (SPR) in the region of 409–442 nm and excitonic emission with a maximum peak at 379 nm which were typical of alloy or surface enriched bimetallic Ag/Co sols. The combined absorbance and emission spectra of the Ag/Co nanocomposites stabilised in PVP/EG confirmed the occurrence of a Stoke's shifted emission maximum. The morphological characterization by transmission electron microscope, high resolution transmission electron microscope and X-ray diffraction analyses, complimented by surface scan and in-depth profiling using X-ray photoelectron spectrometry strongly supported the formation of fractal alloyed modified face-centered cubic Ag/Co nanocomposites