

ABSTRACT

CdS/ZnO anode composite synthesized on ITO glass substrate using chemical bath deposition (CBD) and successive ion layer adsorption and reaction (SILAR) methods has the potential to decolorize methylene orange dye. Structural and morphological characterization was performed using XRD, SEM-EDX, and UV-DRS. XRD diffractograms showed the formation of hexagonal wurzite crystals on ZnO and zinc blend cubes on CdS. SEM-EDX analysis showed the formation of ZnO nanorods and CdS on the surface of ZnO nanorods. UV-DRS showed a decrease in band gap energy along with an increase in CdS concentration. This study evaluates the effect of variation in composite concentration on the anode in the photoelectrocatalysis process to decolorize methylene orange. The best results were obtained on the CdS/ZnO anode (1:1) with a degradation efficiency of 83.14% at an initial methylene orange concentration of 30 mg/L for 90 minutes.

Keywords: : Photoelectrocatalytic, CdS, ZnO, Dekolorization, methylene orange