

ABSTRACT

This study was conducted to obtain the results of the synthesis of CuO-ZnO/ITO using the *sol-gel dip coating* method and its application to determine the level of efficiency against the degradation of *congo red* by the electrophotodegradation method. The synthesis process was carried out by heating the sample at a gradual temperature to ensure the formation of an optimal crystal structure. Electrode characterization was carried out through X-Ray Diffraction (XRD) analysis to determine the crystal phase, Scanning Electron Microscope-Energy Dispersive X-Ray (SEM-EDX) for morphology and composition analysis, and Ultraviolet-Visible Diffuse Reflectance Spectroscopy (UV-DRS) to measure the band gap energy value. The results showed that the CuO-ZnO/ITO electrode has a crystal structure with a hexagonal *wurtzite* phase and *nanoflex* morphology. The band gap value of this electrode decreased from 3.01 eV (ZnO/ITO) to 2.35 eV (CuO-ZnO/ITO). The efficiency of CuO-ZnO/ITO photoelectrodegradation on *congo red* degradation showed a maximum value of 83.81% in 100 minutes, higher than that of ZnO/ITO which only reached 70.54%. This study confirms that Cu doping on ZnO can improve electrode performance in the photoelectrodegradation process.

Keywords: Thin Film Electrode, CuO-ZnO/ITO, Sol-Gel Method, Photoelectrodegradation, *Congo Red* Degradation, Band Gap Value

