ABSTRACT

In this study, Polyaniline (PANI) was synthesized with varying concentrations of 1% w/v, 2% w/v, and 3% w/v on ZnO-PVA nanocomposites using a spin coating deposition technique on a glass substrate. Characterization of morphology, crystal properties, optical properties, and electrical properties was carried out to determine the effect of adding Polyaniline (PANI) to ZnO-PVA nanocomposites. SEM-EDX showed that the surface of ZnO-PVA-PANI was rougher than ZnO-PVA due to agglomeration. Based on the EDX spectrum, there was an increase in the mass of the elements carbon (C), oxygen (O), and zinc (Zn) after the addition of PANI polymer. The XRD results showed that there were two additional peaks in the ZnO-PVA-PANI nanocomposite which showed the characteristics of PANI which had a semicrystalline phase. In the UV-Vis test, the energy gap produced on ZnO-PVA nanocomposites with wavelengths of 338 and 374 nm was 3,675 eV and 3,325 eV, respectively. Meanwhile, the energy gap in the ZnO-PVA-PANI nanocomposite with a wavelength of 338 nm is 3,675 eV. From the measurement of the electrical properties of the ZnO-PVA nanocomposite, the electrical conductivity was 12,346×10^{-6} S/m. Meanwhile, the electrical conductivity values of the ZnO-PVA-PANI 3% w/v nanocomposite was 12,997×10^{-6} S/m, respectively.

Keywords: *ZnO, PVA, PANI, synthesis, characterization.*