

Study of zinc oxide films on SiO₂/Si substrate by sol-gel spin coating method for pH measurement

Abstract

In this work, zinc oxide film was deposited onto the SiO₂/Si substrate with low-cost sol-gel spin coating method. Zinc oxide thin film was deposited on the silver interdigit electrodes for the pH measurement. The surface morphology and microstructures of the deposited zinc oxide films were analyzed by field emission scanning electron microscope (FESEM) and atomic force microscope (AFM). Whereas the crystallinity and structure of the zinc oxide films were determined by X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR). The measurement at various pH values, which were ± 1 above and below of the neutral pH had been conducted with a real time dielectric analyzer measurement. It was observed that the increase in pH would decrease the capacitance of the device.

Keywords

IDE; PH; Sol-gel; Zinc oxide