

The optical property of GZO and ZnO thin films deposited by RF magnetron sputtering

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Zinc Oxide (ZnO) is an important material for optoelectronic devices such as gas sensor, UV lase, LED, and TFT. Recently, impurity doped ZnO has been widely studied owing to improve their conductivity. We investigate structural and optical properties of ZnO and GZO films. Zinc oxide (ZnO) and Ga doped zinc oxide (GZO) with different thickness in range of 10nm to 50nm are prepared on glass substrate by RF magnetron sputtering. The structural properties of ZnO and GZO are investigated by Tunneling Electron Microscopy (TEM) measurement and atomic force microscopy (AFM). It is found that grains of GZO films are more severely elongated than those of ZnO films. Optical properties are also investigated by UV-VIS-NIR spectrophotometer (200~1400nm). The transmittance of GZO is higher than that of ZnO through all of the ranges of wavelengths. The properties of ZnO are better than GZO under 100nm.