Composites of ZnOxMgO1-x Thin Films

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ABSTRACT

Composites of (ZnO)x–(MgO)1-x formed on substrate using electron beam physical vaporation. Different MgO compositions, from zero to ninety percent doped, are expressed as atomic percentage in doping MgO, as determined by XRD. It has been shown via research that the construction of a mesoporous structure is intimately connected with tuning of the band gap (3.16 eV to 3.55 eV) and the subsequent shifting of the transmission band edge by around 36 meV in the direction of higher energy. By analyzing UV-Vis Spectra, the Band Gap could be determined. Surface flaws have been shown to increase with MgO content, as confirmed by the investigation. The FTIR analysis showed that the typical absorption peaks for ZnO stretching mode were located at *442 cm-1 and moved into the red area when the Mg level increased. One extra band about 523 cm-1 was detected, most likely due to the Mg related vibrational mode in ZnO, in addition of the host phonons. Using experimental transmittance data, the thickness of thin films and their

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Recommendations

Comments