

Structural, electrical and optical properties of boron doped ZnO thin films using LSMCD method at room temperature

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ITO has been widely used as electrode in solar cells, flat panel display. However, a stable supply of ITO may be difficult to satisfy the recently expanding market for optoelectronic devices due to the cost and scarcity of indium. ZnO is of particular interest because of its excellent performance in optics, electronics, and photonics devices. However, ZnO becomes unstable and its resistivity increases in ambient condition. Recently, several groups have carried out research on the partially substituted compounds of ZnO by using various methods for improving the electrical performance. Although recent work has demonstrated the doping of these group IIIA elements onto ZnO, the formation of boron doped ZnO is still difficult because of time-consuming fabrication techniques. We have designed a novel method of liquid source misted chemical deposition (LSMCD). In this study, we focused on the fabrication of $Zn_{1-x}B_xO$ films on glass substrate using LSMCD technique. The structural, optical, and electrical properties were investigated by X-ray diffraction, scanning electron microscopy, atomic force microscopy, UV-visible spectrometer, Hall effect system, and micro Raman system.