

Structural and Morphological Study of Europium Doped ZnO

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Abstract : Europium doped zinc oxide nanocolumns (ZnO:Eu) were deposited on indium tin oxide (ITO) substrate from an aqueous solution of 10^{-3}M $\text{Zn}(\text{NO}_3)_2$ and 0.5M KNO_3 with different concentration of europium ions. The deposition was performed in a classical three-electrode electrochemical cell. The structural, morphology and optical properties have been characterized by x-ray diffraction (XRD), scanning electron microscopy (SEM), atomic force microscopy (AFM). The XRD results show high quality of crystallite with preferential orientation along c-axis. SEM images speculate ZnO: Eu has nanocolumnar form with hexagonal shape. The diameter of nanocolumns is around 230 nm. Furthermore, it was found that tail of crystallite, roughness, and band gap energy is highly influenced with increasing Eu ions concentration. The average grain size is about 102 nm to 125 nm.

Keywords : deterioration lattice, doping, nanostructures, Eu:ZnO

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