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Photoluminescence Study of Eu^{+3} doped ZnO Nanocolumns Prepared by Electrodeposition Method.

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Abstract:

Europium doped ZnO (ZnO:Eu) nanocolumns were grown on indium tin oxide substrates (ITO) by electrodeposition method in zinc nitrate aqueous solution with different concentration of Eu. According to XRD results electrodeposited ZnO:Eu films exhibit thig crystalline quality with a preferential orientation parallel to c-axis. Moreover, the (002) peak position shifts toward to lower angles confirming the incorporation of Eu^{+3} ions into the ZnO lattice. The crystallite size of a pure ZnO decreases when increasing the Eu doping. SEM images reveal a well dense nanocolumns arrays perpendicular to the surface. Furthermore, doping with Eu^{+3} ions leads to a change in the top of nanocolumns from hexagonal to conic-hexagonal shape. The average diameters of nanocolumns are found to be around 200 nm and 180 nm for undoped ZnO

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