Influence of Ni-Doping in ZnO Thin Films Coated on Porous Silicon Substrates and ZnO|PS Based Hetero-Junction Diodes

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Abstract

Ni^{2+}-doped ZnO thin films were prepared for various Ni concentration on the porous silicon substrates. The residual stress in the ZnO thin film is relaxed with increase in the concentration of Ni. FESEM images show the growth of pillar-like nanostructures over the entire porous silicon substrates. The variation of resistivity due to UV illumination was observed for the Ni-doped ZnO thin films. Ideality factor value is less for the ZnO:Ni|PS hetero-junction diode than ZnO|PS hetero-junction, Ni doping in ZnO improves the rectifying behavior.