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Effect of F incorporation on physical, electrical and optical properties of hydrothermally grown ZnO nanorods

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F-doped ZnO nanorod were synthesized via hydrothermal process with variation of processing temperature and Fluorine doping contents (0-10%) starting from zinc oxide thin film as a seeding layer for nanorod growth. The zinc oxide seeding thin film was prepared by sol-gel spin coating at 2000 rpm on glass substrate using zinc acetate precursor with annealing at 500 ℃ in air for 2 h. Ammonium fluoride (NH4F) was used as F doping precursor. The properties of F-doped ZnO nanorods were characterized by field emission electron microscope (FESEM), X-ray diffraction (XRD), energy-dispersive X-ray spectroscopy (EDX), Four-point probe technique and UV-Visible spectrophotometer. Corresponding results indicated that growth of ZnO:F nanorod with good crystallinity and grown in (002) plane. The influence of F dopant incorporated into ZnO nanorods has been extensively investigated and discussed.

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