

## Synthesis and Characterization of Antimony-doped Zinc Oxide Nanoparticles by Simple Solution Process

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Recently, doped ZnO nanoparticles(NPs) have been extensively studied due to its wide applications in optical, electrical, and sensing devices. In this regard, first we report here an easy and successful synthesis and detailed characterization of ZnO NPs by simple solution process at 80 °C by using zinc acetate in ethanol without using any additives.. Antimony-doping in ZnO NPs were performed through impregnation method using various weight percentage of antimony, i.e. Zn<sub>1-x</sub>Sb<sub>x</sub>O where X=, 0.02 (sample a), 0.04 (sample b), and 0.06 (sample c) at 500 °C. Antimony-doped ZnO NPs prepared with this techniques were characterized by FESEM, FETEM, and EDS spectra. X-ray diffraction (XRD) results indicated that introduction of antimony with atomic ration of samples (a, b and c) showed no influence on the crystal structure of ZnO, but combined antimony peak with ZnO NPs and shifted peak of Sb-doped ZnO NPs was observed by X-ray photoelectron spectroscopy(XPS), Moreover, UV-Vis spectroscopy showed significant enhancement in the optical absorption compared with the un-doped ZnO NPs.