

Effect of precursor concentraion, pH, and mixing time on the morphologies of ZnO

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Morphology control of zinc oxide (ZnO) is important for applications in many area like photocatalysis, gas sensors, and solar cells. In this work, ZnO have been synthesized by precipitation route and their morphologies varied with precursor concentration, pH, and mixing time. For low precursor and NaOH concentrations, rod-like ZnO is formed, showing average 2 μ m length and 0.8 μ m width. On the other hand, for high concentration, flower-like ZnO is obtained. pH and mixing time also affects on the shape of ZnO. X-ray diffraction(XRD), field emission scanning electron microscopy(FESEM), and UV-vis spectroscopy were used to characterize as-prepared ZnO. XRD files show that synthesized ZnO have hexagonal wurtzite structure. Band gaps and absorption spectrum also changed with morphologies.