

Surfactant-less Sol-Gel Technique for the Synthesis of Mg-ZnO Nanoparticle

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Abstract. In this study, sol-gel technique has been used to prepare nanoparticle Mg doped ZnO with 2 wt. % at low pH without using any capping or surfactant agent. The Mg-ZnO nanostructure, surface area and porosity, surface morphology and element analysis was analyzed by X-Ray Diffraction (XRD), Fourier Transforms Infra-Red (FTIR), N₂ Physisorption and Field Emission Scanning Electron Microscopy with energy dispersive X-ray spectroscopy (FESEM-EDX). The characterizations confirmed that the surfactant is not necessary for sol-gel synthesis technique, whereby highly crystalline material with smaller crystallite size (30nm) and high surface area (21.7) was obtained. Besides, the synthesis approach is useful for accurately immobilized the required amount of Mg as doping element on ZnO material with the accuracy up to 99.5% confirmed through EDX analysis.