

ICMEN 2019

International Conference on Materials Engineering and Nanotechnology

*Innovative Approach and Recent
Developments in Materials Engineering
& Nanotechnology*

BOOK OF ABSTRACTS

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Synthesis and Characterization of Single Phase ZnO Nanostructures Via Solvothermal Method: Influence of Alkaline Source

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Abstract

Single phase ZnO nanostructures were synthesized by a simple and low temperature solvothermal process from two different alkaline sources; Potassium hydroxide (KOH) and Sodium hydroxide (NaOH) with zinc acetate dihydrate ($Zn(CH_3COO)_2 \cdot 2H_2O$) as precursor. This facile and rapid synthesis technique achieve high purity of Zinc oxide (ZnO) nanostructures in large scale negating the use of complex and high temperature routes. The synthesized particles were characterized by X-Ray Diffraction (XRD), Field Emission Scanning Electron Microscopy (FE-SEM), Transmission Electron Microscopy (TEM), Energy-dispersive X-ray spectroscopy (EDX), Fourier Transform Infrared (FT-IR) Spectroscopy, and Ultraviolet Visible (UV-Vis) spectroscopy. ZnO synthesized using KOH and NaOH exhibit wurtzite hexagonal and flake-like nanostructures with average crystallite size of 11.0 nm and 14.9 nm respectively. The optical absorption spectra of the two samples showed absorption bands of 367.70 and 365.30 nm. The results showed the effect of alkaline sources on the surface morphology, structural and optical properties of ZnO.

Keywords: Nanostructures, Solvothermal synthesis, Alkaline source, Precursor, Microscopy, Spectroscopies