Effect of temperature, precursor type and dripping time on the crystallite size of nano zno obtained by one-pot synthesis: 2 k full factorial design analysis

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Abstract

The aim of this work was to determine the effect of temperature, precursor and dripping time on the crystallite size of ZnO nanoparticles synthesized by controlled precipitation according a 2k full factorial design. ZnCl2, Zn(NO3)2 and NaOH were used as precursors. After synthesis, the nano crystalline powder was characterized by XRD (Cu Kα), UV-Vis, and HR-TEM. The nano ZnO particles presented a crystallite size between 210 and 260 Å (HR-TEM and XRD). The results show that the crystallite size depends on the type of precursor and temperature of synthesis, but not on the dripping time.

Keywords: nano zno, one-pot synthesis, factorial design analysis