

Effect of Sintering Temperature on Behavior of Grain Shape and Grain Growth of $\text{Zn}_{0.97}\text{Cu}_{0.01}\text{V}_{0.02}\text{O}$ Ceramics

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In this study, the $\text{Zn}_{0.97}\text{Cu}_{0.01}\text{V}_{0.02}\text{O}$ ceramics were sintered with It was sintered at the temperature of 900°C , 950°C , 1000°C and 1050°C for 5 hours and prepared by using mixed oxide method. The microstructure evolution of the ceramics were studied and investigated. It was found that the grain size were almost constant in the range of study. Furthermore, the faceted rounded grains with straight metal solid interfaces were observed in this study. Moreover, the grain size increased as the amount of sintering temperature. The change in grain size and microstructures evolution could be explained by using the reaction and the diffusion controlled grain growth at low and high temperatures, respectively. Moreover, the x-ray structural analysis indicated that the ceramics formation were dual-phase hexagonal and tetragonal crystal structures with angles between them are called the lattice parameters: $\text{Alpha}=\text{Beta}=90, \text{Gamma}=120$ and $\text{Alpha}=\text{Beta}=\text{Gamma}=90$, respectively. The SEM result indicated that the particle size increased with the increasing of sintering temperatures. The x-ray structural analysis indicated that the ceramics formation were dual-phase hexagonal and tetragonal crystal structures. This result confirms that the grain shape and grain growth mechanism can be changed by altering the kinetic factor of temperature.

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