

THE EFFECT OF DIFFERENT MOLAR RATIO CITRIC ACID AND ETHYLENE GLYCOL TO METAL CATION ON THE CERAMICS POWDER OF Y³⁺ DOPED BAZRO₃

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ABSTRACT

Sample of BaZr_{0.85}Zn_{0.05}Y_{0.1}O_{2.95} (BZY10) compound were prepared by the Pechini method with different molar ratios of citric acid and ethylene glycol to metal ions using metal nitrate-salts. Metal organic complexes were obtained from the polymerization process between metal nitrate, citric acid and ethylene glycol. After heated at 120 °C, a clear viscous solution or polymer resin containing metal in solid solution was formed. The resin was annealed at 3 different temperatures to remove the organic materials and produce the desired oxide powder. The powder was characterized by a Fourier Transform Infrared (FTIR), X-ray Diffractometer (XRD) and Field Emission Scanning Electron Microscope (FESEM). FTIR and XRD results showed that BaCO₃ still exist even after calcined at T= 1100 °C for 30h. The loose particles size for BZY10 powders obtained from FESEM and particle size analyzer was in the range 20–100 nm.

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