THE EFFECT OF DIFFERENT MOLAR RATIO CITRIC ACID AND ETHYLENE GLYCOL TO METAL CATION ON THE CERAMICS POWDER OF Y$^{3+}$ DOPED BAZRO$_3$

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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$^o$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 BaCO$_3$ still exist even after calcined at T= 1100 ºC for 30h. The loose particles size for BZY10 powders obtained from FESEM and particle size analyzer was in the range 20–100 nm.

REFERENCES

[10] N. Osman, Tesis PhD, Universiti Kebangsaan Malaysia (2009). *Pencirian bahan elektrolit pepejal berasaskan Ba(Ce,Zr)O₃ yang didopkan dengan Yb³⁺ sebagai konduktor proton pada suhu pertengahan, (400 ≤ T °C ≤ 750).*


