

Effect of Synthesis Method on Structural, Morphological Properties of Zr_{0.8}Y_{0.2}-xLa_x Oxides (x=0, 0.1, 0.2)

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Abstract : In the present study, the solid solutions with a chemical composition of Zr_{0.8}Y_{0.2}-xLa_xO₂ (x=0, 0.1, 0.2) were synthesized via two routes, by hydrothermal method using NaOH as precipitating agent at 230°C for 15h and by the sol-gel process using citric acid as complexing agent. Compounds have been characterized by powder X-ray diffraction (XRD), Scanning Electron Microscopy (SEM), Thermo gravimetric Analysis (TGA) and Differential Thermal Analysis (DTA) techniques for appropriate characterization of the distinct thermal events occurring during synthesis. All the compounds crystallize in cubic fluorite structure, as indicated by X-ray diffraction studie. The microstructure of oxides synthesized by sol-gel showed porosity that increased with the lanthanum La³⁺ contents compared to hydrothermal method which gives a single crystal oxide.

Keywords : oxide, hydrothermal, rare earth, solubility, sol-gel, ternary mixture

Conference Title : ICMSE 2015 : International Conference on Materials Science and Engineering

Conference Location : Paris, France

Conference Dates : January 23-24, 2015