Impurities Effect on the Charge Mobility of Yttria-Stabilized Zirconia

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The present study is concerned with the preparation of yttria-stabilized zirconia (YSZ) having high charge mobility. Herein, we studied the doping of zirconia with different concentrations of Y_2O_3 . The samples were prepared by a solid state reaction at 800, 1000, and 1200°C for 2 hours. The morphology of the pellets was characterized by scanning electron microscope (SEM). Crystallinity and phase change were studied by X-ray diffraction (XRD). The electrical conductivity of the sintered pellets was measured and demonstrated that the conductivity increase as yttria content increase. We have also found that the conductivity decreased with increasing the level of the impurities in the natural ore.

Keywords: Yttria-stabilized Zirconia; clusters; composite materials; solid state reactions; crystal structures.

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