

YSZ thin films prepared by spin coating method

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The objective of this work is the deposition of ZrO_2 8% Y_2O_3 doped thin films onto both quartz and Pt thin film on quartz substrate, via spin coating technique with 20 μm thickness from the commercial powders dissolved in ethanol under mechanical stirring with $M=0.1$ and 0.2 ; keeping all other parameters constant such as the sintering temperature and spinning rate. The substrate with YSZ layer was baked at a temperature of 150 °C for 2 minutes until all the solvent evaporates. The sample was finally sintered at 900 °C for 12 hours in the furnace. The morphology of the films were investigated with scanning electron microscope and the structural was investigated by the X-ray diffraction, XRD spectrum exhibited a cubic fluorite structure independent of the concentration of YSZ in the suspension. The chemical composition in the film was determined by X-ray Photoelectron Spectroscopy (XPS). The electrical properties were characterized by ac impedance spectroscopy in a temperature range from 25 °C to 600 °C. Impedance results demonstrated that the conductivity of prepared layer is comparable with the YSZ bulk reference conductivity.