

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  $\mu m$  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.