

# YSZ (8 %Mol Y<sub>2</sub>O<sub>3</sub>) Films by Slurry Coating of Nanometric Powders Synthesized by Low-Temperature Hydrothermal Treatment

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## Abstract

Nanocrystalline and stabilized zirconia (8 %mol Y<sub>2</sub>O<sub>3</sub>) powders (YSZ) were synthesized at 110C by traditional or microwave route. Zirconia xerogels mechanically mixed with crystalline Y<sub>2</sub>O<sub>3</sub> were treated in the presence of diluted solution (0.2M) or concentrated solution (2.0 M) of (KOH + K<sub>2</sub>CO<sub>3</sub>) mineralizer. The different freshly synthesized powders were treated under stirring with aqueous solution of poly(vinyl alcohol) (PVA 10 %wt) for 15 h at pH 6.8. To favour the formation of coating suspensions, the polymer absorbed powder and poly(ethylene glycol) (PEG) were added to ethanol/water solution and stirred under ultrasonic agitation. With the different stable suspensions, various films were deposited on microscope slide substrates through dip-coating. After drying at 110C and firing at 600C, the texture of the different films was examined. The effect of both the type of hydrothermal treatment, the concentration of mineralizer and the dip-coating withdrawal speed on the texture of the films are discussed.