Deposition via dip coating technique of dense yttrium stabilized zirconia layers

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A deposition of yttrium stabilized zirconia layer for its use as an electrolyte in solid oxide fuel cell was performed using dip coating technique. Two commercially available surfactant systems were evaluated; nonionic surfactant which stabilizes only by steric repulsion and anionic surfactant which provides both steric and electrostatic repulsion. Dip coating process was optimized to two step deposition process. Uniform 10-15 μm thick yttria stabilized zirconia (YSZ) electrolyte layer is obtained after the final sintering step at 1400°C. Impedance spectroscopy measurements showed that selected phosphate ester based surfactant has negligible effect on the performance of the YSZ material as electrolyte. © 2012 The American Ceramic Society.

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