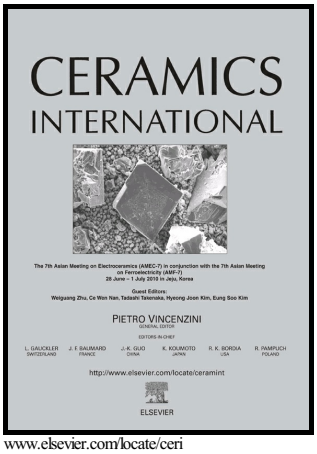

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Oxygen Vacancy Levels on Gadolinia-doped Ceria Interlayer Deposited by Atmospheric Pressure Plasma Jet for Solid Oxide Fuel Cells

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Abstract

The oxygen vacancy levels as a factor on different gadolinia-doped ceria interlayer (GDCi) films deposited on yttria stabilized zirconia (YSZ) electrolyte substrates by an atmospheric pressure plasma jet (APPJ) via precursor solution of nitrate salts are investigated. Focusing on the effect of carrier gases, scanning electron microscopy (SEM), Raman, and X-ray diffraction (XRD) are implemented for the materials characterization of the as-deposited GDCi films and sintered-GDCi films at various temperatures. The higher level of oxygen vacancies in GDCi films adhered on 8YSZ electrolyte are evidently analyzed using Ar as the carrier gas during the deposition, of which the interdiffusion resulted in the formation of