Spray pyrolysis of doped-ceria barrier layers for solid oxide fuel cells

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Gadolinium doped ceria (Ce$_{0.8}$Gd$_{0.2}$O$_{2-x}$-CGO) layer fabricated by spray pyrolysis is investigated as the diffusion barrier for solid oxide fuel cell. It is deposited between the La$_{0.6}$Sr$_{0.4}$FeO$_{3-δ}$ cathode and the yttria stabilized zirconia electrolyte to mitigate harmful interdiffusion of elements. The parameters of the fabrication process are linked to the measured area specific resistances of the symmetrical cells and the efficiency of the fuel cells. Results show, that application of 800 Å thick barrier effectively hinder negative reactions, while 400 nm thick layer is sufficient to prevent degradation of the Ohmic resistance.

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