

عنوان مقاله:

The effect of Ag on physical and electrical properties of Mn-CO spinel for SOFC application

محل انتشار:

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خلاصه مقاله:

Mn-Co spinel as a coating for solid oxide fuel cells (SOFCs) interconnects shows a suitable thermal expansion match, good electrical conductivity, and fine structural stability. In this paper, to improve the performance of this coating, the addition of different amounts of Ag as a dopant on the physical and electrical properties of the Mn-Co spinel is investigated. The powders ($\text{Mn}_{1.5-x}\text{Co}_{1.5-x}\text{Ag}_2\text{O}_4$, $x=0, 0.075, 0.15$) were successfully synthesized using the Pechini sol-gel method. The synthesized powders have been characterized using X-ray diffraction (XRD) and scanning electron microscopy (SEM). The results confirmed that Ag was not doped completely into the spinel structure, and it was an additive in it, whereas the size of the powders was not affected by Ag doping. Afterward, the powders were pressed and sintered at different temperatures (950 and 1050°C) to evaluate the effect of dopant on the sintering and electrical behavior of the samples. Finally, the electrical conductivity of the samples was evaluated using a 2-probe direct current technique. The results showed that the room temperature electrical conductivity increased upon doping about three orders. Although, the addition of 0.15 Ag has higher conductivity, which might be due to the formation of Ag₂O in higher amounts.

کلمات کلیدی:

Mn-Co spinel, solid oxide fuel cell, interconnect coating, sol-gel, characterization

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