EFFECT OF LSGM MICROSTRUCTURE ON ITS CHEMICAL REACTIVITY WITH LSCFO

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$La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-d}$ (LSCFO) and (La,Sr)(Ga,Mg)O_{3-d} (LSGM) perovskite oxides are promising materials for being used as cathode and electrolyte, respectively, for intermediate temperature-solid oxide fuel cells (IT-SOFCs). Nevertheless, there is still some controversy in the literature regarding the chemical compatibility between LSCFO and LSGM. While some authors claim that LSCFO and LSGM reacts and forms solid solutions after thermal treatment at 1100ºC **[1]**, other authors state that no reaction occurs after treatment at the same temperature **[2]**, **[3]**. In order to contribute elucidating this controversy, this paper aims at studying the chemical reactivity between LSCFO and LSGM powders after thermal treatment at 1100 ºC. $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-d}$ powders were prepared by solid state reaction method and mixed in a 50:50 weight ratio with commercial LSGM powders with and without prior sintering at 1450ºC (i.e. the temperature generally used for sintering LSGM electrolytes). The phase stability of the LSCFO/LSGM powders mixtures were evaluated by X-ray diffraction (XRD) and by data refining with the Rietveld method. In addition, the cation diffusivity across LSCFO/LSGM couples was analyzed by Energy Dispersive Spectroscopy-Scanning Electron Microscopy (EDS-SEM). The results indicate the formation of the $LaSrGaO_4$ and $LaSrGa_3O_7$ phases in the mixture made with the LSGM powders without the 1450ºC thermal treatment while no reaction was observed in the mixtures made with the LSGM powders previously treated at 1450ºC, which is in agreement with our previous results obtained for LSGM/$Ba_{0,5}La_{0,5}M_{0,5}Ti_{0,5}O_{3-\delta}$ (M= Mn, Fe, Co) powder mixtures **[4]**.

Palabras clave: Perovskitas; DRX; Rietveld.

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