

## عنوان مقاله:

Improving performance of nanostructured (La,Sr)(Cr,Mn)O<sub>3</sub>/YSZ cathode for high temperature steam electrolysis

## محل انتشار:

ششمین کنفرانس و نمایشگاه بین المللی مهندسی متالورژی و مواد (سال: 1396)

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## خلاصه مقاله:

This paper presents electrochemical performance of nanostructured (La<sub>0.75</sub>Sr<sub>0.25</sub>)<sub>0.95</sub>Cr<sub>0.5</sub>Mn<sub>0.5</sub>O<sub>3</sub>-(LSCM)/Y<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub> (YSZ) composite fuel electrode for steam electrolysis in solid oxide electrolyzer cells (SOEC) at 850. Solid oxide cells have attracted increasing attention in recent years as a result of their dual application as electricity generators (in fuel cell mode) and hydrogen producer (in electrolyzer mode). In this work, the effects of operating potential and water content of the inlet gas on the electrochemical performance of LSCM/YSZ electrode were investigated. Electrochemical impedance spectrum of LSCM/YSZ electrode was mainly composed of two arcs, one small high frequency arc and a relatively larger low frequency arc. Magnitudes of the low frequency arc, which are dependent on the adsorption/diffusion resistances, were measured as being equal to 9.17 Ω.cm<sup>2</sup> and 5.95Ω.cm<sup>2</sup> for the steam concentrations of 3% and 20%, respectively. Also, the impacts of infiltration of LFC (LaFe<sub>0.6</sub>Co<sub>0.4</sub>O<sub>3</sub>) on the LSCM/YSZ electrode were further investigated in this work. Our obtained results imply that in presence of LFC nanoparticles, the polarization resistances of the composite electrode reduce substantially (1.99 Ω.cm<sup>2</sup> and 1.8 Ω.cm<sup>2</sup> for the steam concentrations of 3% and 20%, respectively). Results of the conducted polarization experiments .also revealed the existence of a linear IV curve

## کلمات کلیدی:

SOEC, steam electrolysis, LSCM/YSZ, impedance spectroscopy, infiltration, LFC

## لینک ثابت مقاله در پایگاه سیویلیکا:

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