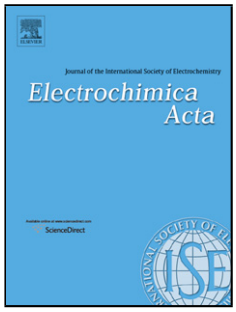

Title: The investigation of Cr deposition and poisoning effect on Sr-doped lanthanum manganite cathode induced by cathodic polarization for intermediate temperature solid oxide fuel cell

Authors: Jun Li, Dong Yan, Wenying zhang, Jian Pu, Bo Chi, Li Jian

PII: S0013-4686(17)31983-7
DOI: http://dx.doi.org/10.1016/j.electacta.2017.09.112
Reference: EA 30311

To appear in: *Electrochimica Acta*

Received date: 7-6-2017
Revised date: 9-9-2017
Accepted date: 18-9-2017

Please cite this article as: Jun Li, Dong Yan, Wenying zhang, Jian Pu, Bo Chi, Li Jian, The investigation of Cr deposition and poisoning effect on Sr-doped lanthanum manganite cathode induced by cathodic polarization for intermediate temperature solid oxide fuel cell, Electrochimica Actahttp://dx.doi.org/10.1016/j.electacta.2017.09.112

The investigation of Cr deposition and poisoning effect on Sr-doped lanthanum manganite cathode induced by cathodic polarization for intermediate temperature solid oxide fuel cell

Jun Li[1], Dong Yan[1], Wenying zhang[2], Jian Pu[1]*, Bo Chi[1], Li Jian[1]

1. Center for Fuel Cell Innovation, State Key Laboratory of Material Processing and Die and Mould Technology, School of Materials Science and Engineering, Huazhong University of Science and Technology, Wuhan, Hubei 430074, PR China

2. School of Mechanical Engineering and Electronic Information, China University of Geosciences, Wuhan 430074, China

*Corresponding author: Tel & Fax: +8627 87558142, email: pujian@hust.edu.cn. (Jian Pu)

Abstract

The impact of current density on Cr-poisoning of Sr-doped lanthanum manganite cathode is studied at 750 °C. The presences of SUS430 interconnect alloys cause rapid degradation in LSM cathode performance. The Cr deposits can be found not only on the LSM surface close to the electrode/electrolyte interface, but also on the YSZ surface. The deposition area is reach to 4.1 μm from the electrode/electrolyte interface after cathodic polarization with a current density of 400 mA cm^{-2} for 1200 min. TEM results clearly demonstrate that the particles on LSM surface are $MnCr_2O_4$