

Accepted Manuscript

Effect of the synthesis conditions on the properties of $\text{La}_{0.15}\text{Sm}_{0.35}\text{Sr}_{0.08}\text{Ba}_{0.42}\text{FeO}_{3-\delta}$ cathode material for SOFCs

K. Vidal, A. Larrañaga, A. Morán-Ruiz, M.A. Laguna-Bercero, R.T. Baker, M.I. Arriortua

PII: S0032-5910(17)30742-8
DOI: doi:[10.1016/j.powtec.2017.09.020](https://doi.org/10.1016/j.powtec.2017.09.020)
Reference: PTEC 12825

To appear in: *Powder Technology*

Received date: 16 May 2017
Revised date: 30 August 2017
Accepted date: 6 September 2017



Please cite this article as: K. Vidal, A. Larrañaga, A. Morán-Ruiz, M.A. Laguna-Bercero, R.T. Baker, M.I. Arriortua, Effect of the synthesis conditions on the properties of $\text{La}_{0.15}\text{Sm}_{0.35}\text{Sr}_{0.08}\text{Ba}_{0.42}\text{FeO}_{3-\delta}$ cathode material for SOFCs, *Powder Technology* (2017), doi:[10.1016/j.powtec.2017.09.020](https://doi.org/10.1016/j.powtec.2017.09.020)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**Effect of the synthesis conditions on the properties of
 $\text{La}_{0.15}\text{Sm}_{0.35}\text{Sr}_{0.08}\text{Ba}_{0.42}\text{FeO}_{3-\delta}$ cathode material for SOFCs**

**K. Vidal^{a,*}, A. Larrañaga^a, A. Morán-Ruiz^a, M.A. Laguna-Bercero^b, R.T. Baker^c
and M.I. Arriortua^{a,*}**

^aUniversidad del País Vasco (UPV/EHU), Facultad de Ciencia y Tecnología, Barrio Sarriena S/N, 48940 Leioa, Vizcaya, Spain.

^bCSIC-Universidad de Zaragoza, Instituto de Ciencia de Materiales de Aragón (ICMA), Pedro Cerbuna 12, 50009 Zaragoza, Spain.

^cEaStChem, School of Chemistry, University of St Andrews, St Andrews, Fife KY16 9ST, Scotland, United Kingdom.

Abstract:

The perovskite $\text{La}_{0.15}\text{Sm}_{0.35}\text{Sr}_{0.08}\text{Ba}_{0.42}\text{FeO}_{3-\delta}$ has been prepared by the glycine nitrate (GNC) route, varying the fuel/oxidizer ratio (glycine/nitrate, G/N= 1 and 2) and cooling rate (slow cooling and air-quenched), in order to study the influence of sample preparation on the materials' properties, in the context of their application as a cathode material for SOFCs. For this, the performance of the prepared mixed ion and electron conducting perovskite oxides is dictated by their structure, oxygen stoichiometry ($3-\delta$), chemical composition and thermal expansion properties. High-resolution Synchrotron X-ray powder diffraction patterns were collected at room temperature and at 700 and 800°C. It was found that the materials had a cubic crystal structure at these temperatures. As expected, $3-\delta$ decreased as temperature increased, and was slightly smaller for the quenched sample. Higher electrical conductivity values were obtained for the sample with G/N = 1 (air-quenched) in the cooling rate. At 700 and 800°C the cathode synthesized with G/N = 1 and air-quenched showed the smallest polarization

Download English Version:

<https://daneshyari.com/en/article/4914859>

Download Persian Version:

<https://daneshyari.com/article/4914859>

[Daneshyari.com](https://daneshyari.com)