Supplementary Material for the paper:

Combustion synthesis of $Ln_{1-x}M_xCr_{0.9}Ni_{0.1}O_3$ (Ln = La and/or Nd; M = Sr and/or Ca; x≤0.25) perovskites as anode materials for SOFCs.

Luis Ortega-San-Martín[a], A. Morán-Ruiz[a], A. Wain[a], K. Vidal[a], A. Larrañaga[a], M.A. Laguna-Bercero[c] and M.I. Arriortua[a]

[a]Departamento de Ciencias, Sección Química, Pontificia Universidad Católica del Perú (PUCP), Av. Universitaria 1801, Lima 32, Perú.

[b]Facultad de Ciencia y Tecnología,Universidad del País Vasco/Euskal Herriko Unibertsitatea (UPV/EHU), Sarriena s/n, 48940 Leioa, Spain.

[c]CSIC-Universidad de Zaragoza, Instituto de Ciencia de Materiales de Aragón (ICMA), Pedro Cerbuna 12, 50009 Zaragoza, Spain.

Index of Figures and Tables

Tables

Table S1. Lattice parameters, bond lengths, bond angles, density, atomic positions and R factor obtained by Rietveld Refinement to the XRD Patterns of the compounds obtained using glycine as fuel.

x Symmetry	0.10 orthorhombic	0.15 orthorhombic	0.20 orthorhombic	0.25 orthorhombic
Space group	*Pnma*	*Pnma*	*Pnma*	*Pnma*
a(Å)	5.4721(4)	5.4693(4)	5.4545(1)	5.4542(1)
b(Å)	7.7513(5)	7.7501(7)	7.7196(2)	7.7184(2)
c(Å)	5.5101(3)	5.4997(5)	5.4902(1)	5.4897(1)
V ($Å^3$)	233.72(4)	233.12(5)	231.17(1)	231.10(1)
$\rho_{the.}$(g/cm^3)*	6.674	6.547	6.452	6.312
A x	0.0169(2)	0.0183(2)	0.0144(2)	0.0139(2)
A z	-0.0029(5)	-0.0050(6)	-0.0025(5)	-0.0030(5)
$Uiso_{(A)}$	1.99(4)	2.34(4)	2.81(4)	1.72(4)
$Uiso_{(B)}$	1.68(5)	2.33(6)	2.30(5)	1.66(6)
O1 x	0.498(2)	0.497(2)	0.497(2)	0.500(2)
O1 z	0.057(2)	0.067(4)	0.060(2)	0.059(2)
O2 x	0.273(2)	0.278(3)	0.271(2)	0.273(2)
O2 y	0.034(1)	0.026(2)	0.029(1)	0.032(1)
O2 z	0.728(2)	0.722(2)	0.729(2)	0.727(2)
$Uiso_{(O)}$	2.8(9)	3.6(2)	3.7(2)(5)	2.7(1)
<A-O> /Å	2.75(24)	2.75(25)	2.75(25)	2.75(25)
B-O1 /Å	1.963(2)	1.973(4)	1.958(2)	1.957(2)
<B-O2> /Å	1.97(2)	1.96(2)	1.95(2)	1.96(1)
<B-O_1-B> /º	162(1)	158(1)	161(1)	161(1)
<B-O_2-B>/º	161(1)	163(1)	163.7(5)	162.3(5)
R_{wp} (%)	8.7	9.4	8.4	9.5
R_p (%)	5.9	6.4	5.8	6.4
χ^2	2. 1	2.8	2.3	2.5
R_F^2 (%)	2.7	3.5	4.1	3.3

* Calculated assuming no oxygen deficiency

Table S2. Lattice parameters, bond lengths, bond angles, density, atomic positions and R factor obtained by Rietveld Refinement to the XRD Patterns of the compounds obtained using urea as fuel.

x Symmetry	0.10 orthorhombic	0.15 orthorhombic	0.20 orthorhombic	0.25 orthorhombic
Space group	*Pnma*	*Pnma*	*Pnma*	*Pnma*
a(Å)	5.4706(2)	5.4645(4)	5.4585(3)	5.4519(2)
b(Å)	7.7500(3)	7.7434(7)	7.7305(5)	7.7140(4)
c(Å)	5.5078(2)	5.4941(4)	5.4939(3)	5.4861(2)
V ($Å^3$)	233.52(1)	232.48(2)	231.88(2)	230.72(2)
$\rho_{the.}$(g/cm^3)*	6.676	6.565	6.432	6.316
A x	0.0175(2)	0.0172(2)	0.0140(2)	0.0145(2)
A z	-0.0032(5)	-0.0045(8)	-0.0031(7)	-0.0023(6)
$Uiso_{(A)}$	1.92(3)	1.48(4)	1.22	0.79(4)
$Uiso_{(B)}$	1.66(5)	1.17(5)	1.00(5)	0.51(5)
O1 x	0.495(2)	0.494(2)	0.497(2)	0.497(2)
O1 z	0.058(2)	0.065(4)	0.056(3)	0.062(3)
O2 x	0.279(2)	0.273(3)	0.272(2)	0.272(2)
O2 y	0.034(1)	0.028(2)	0.032(1)	0.030(1)
O2 z	0.727(2)	0.723(3)	0.727(2)	0.727(2)
$Uiso_{(O)}$	2.4(2)	2.2(2)	1.8(2)	1.19(5)
<A-O> /Å	2.75(25)	2.75(25)	2.75(25)	2.75(25)
B-O1 /Å	1.967(1)	1.969(4)	1.957(2)	1.959(2)
<B-O2> /Å	1.97(1)	1.96(2)	1.96(2)	1.96(2)
<B-O_1-B> /º	160.2(7)	159(1)	162(1)	160(1)
<B-O_2-B>/º	160.6(5)	163(1)	162.1(6)	163.0(6)
R_{wp} (%)	8.1	8.8	8.4	5.8
R_p (%)	5.5	6.2	6.8	4.6
χ^2	2.2	2.4	2.2	2.4
R_F^2 (%)	3.3	2.9	3.5	4.2

* Calculated assuming no oxygen deficiency

Table S3. Lattice parameters, bond lengths, bond angles, density, atomic positions and R factor obtained by Rietveld Refinement to the XRD Patterns of the compounds obtained using sucrose as fuel.

x Symmetry	0.10 orthorhombic	0.15 orthorhombic	0.20 orthorhombic	0.25 orthorhombic
Space group	*Pnma*	*Pnma*	*Pnma*	*Pnma*
a(Å)	5.4696(5)	5.4652(4)	5.4597(6)	5.4553(7)
b(Å)	7.7483(7)	7.7392(6)	7.735(9)	7.7257(12)
c(Å)	5.5087(5)	5.5019(4)	5.4965(6)	5.4920(8)
V ($Å^3$)	233.46(6)	232.71(5)	232.15(3)	231.34(6)
$\rho_{the.}$(g/cm^3)*	6.675	6.542	6.423	6.305
A x	0.0162(2)	0.0162(2)	0.0138(3)	0.0138(3)
A z	-0.0019(7)	-0.0024(6)	~0	~0
$Uiso_{(A)}$	1.01(5)	1.42(4)	1.21(5)	1.19(5)
$Uiso_{(B)}$	0.64(7)	1.10(6)	1.01(7)	0.98(7)
O1 x	0.502(2)	0.501(2)	0.497(3)	0.500(2)
O1 z	0.061(4)	0.056(3)	0.060(5)	0.073(4)
O2 x	0.271(3)	0.268(3)	0.273(4)	0.271(4)
O2 y	0.033(2)	0.036(2)	0.035(2)	0.023(2)
O2 z	0.729(3)	0.728(3)	0.732(4)	0.729(5)
$Uiso_{(O)}$	1.6(2)	1.7(2)	1.2(2)	1.8(2)
<A-O> /Å	2.75(25)	2.75(24)	2.75(24)	2.74(22)
B-O1 /Å	1.966(3)	1.959(3)	1.963(4)	1.971(5)
<B-O2> /Å	1.96(3)	1.96(2)	1.96(3)	1.95(3)
<B-O_1-B> /º	160(1)	162(1)	161(1)	157(1)
<B-O_2-B>/º	162(1)	161.2(6)	162(1)	166(1)
R_{wp} (%)	11.2	10.8	11.2	11.1
R_p (%)	7.7	7.3	8.0	8.2
χ^2	2.2	2.4	2.2	2.3
R_F^2 (%)	9.5	4.3	4.2	3.6

* Calculated assuming no oxygen deficiency

Figure S1

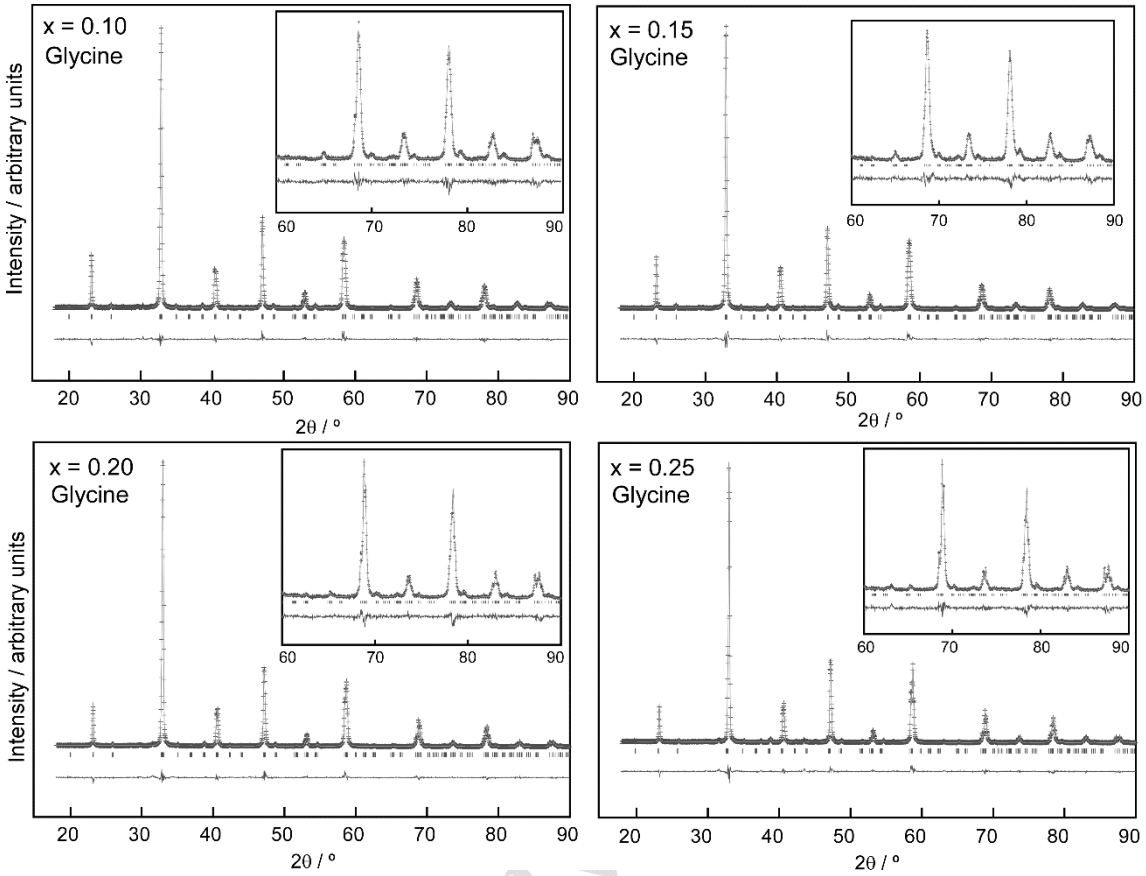

Figure S2

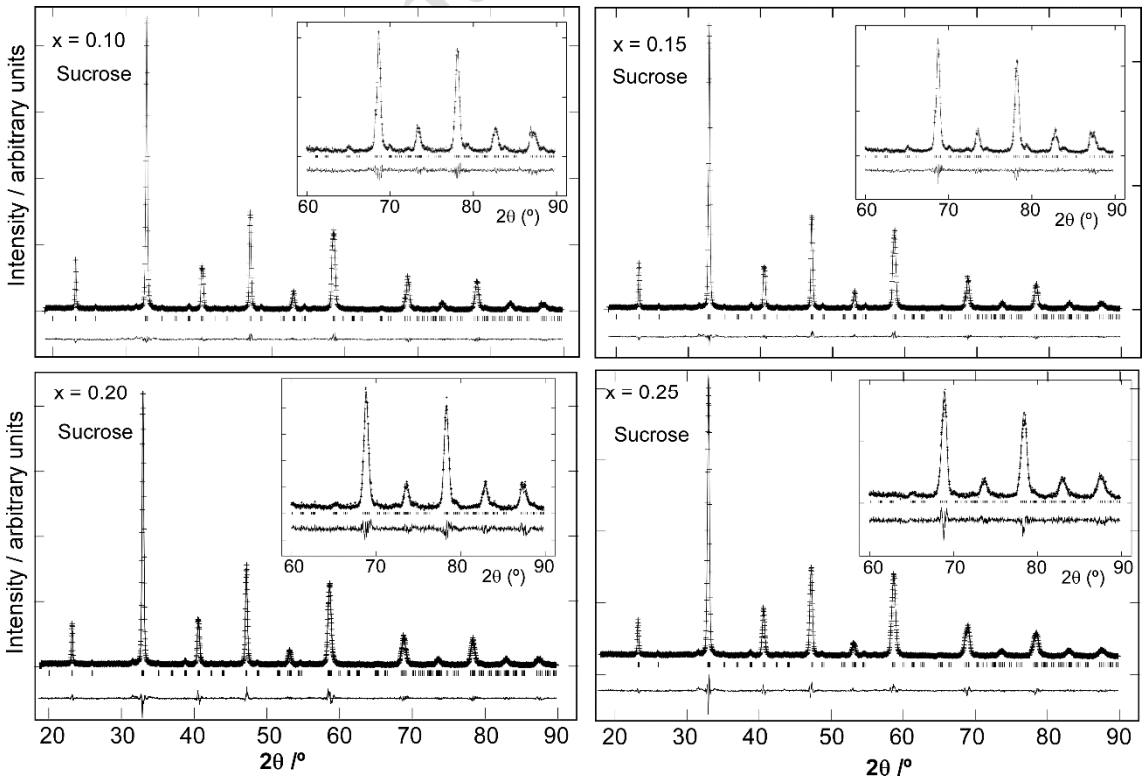

Figure S3