

Supplementary material

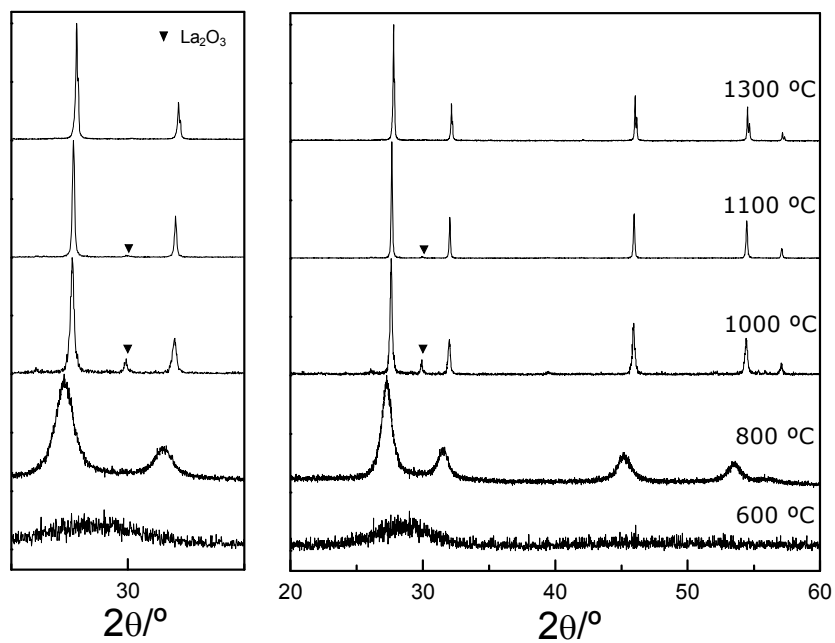


Figure S1. Evolution of the XRD patterns between 600 and 1300 $^\circ\text{C}$ for LWM0.2 .

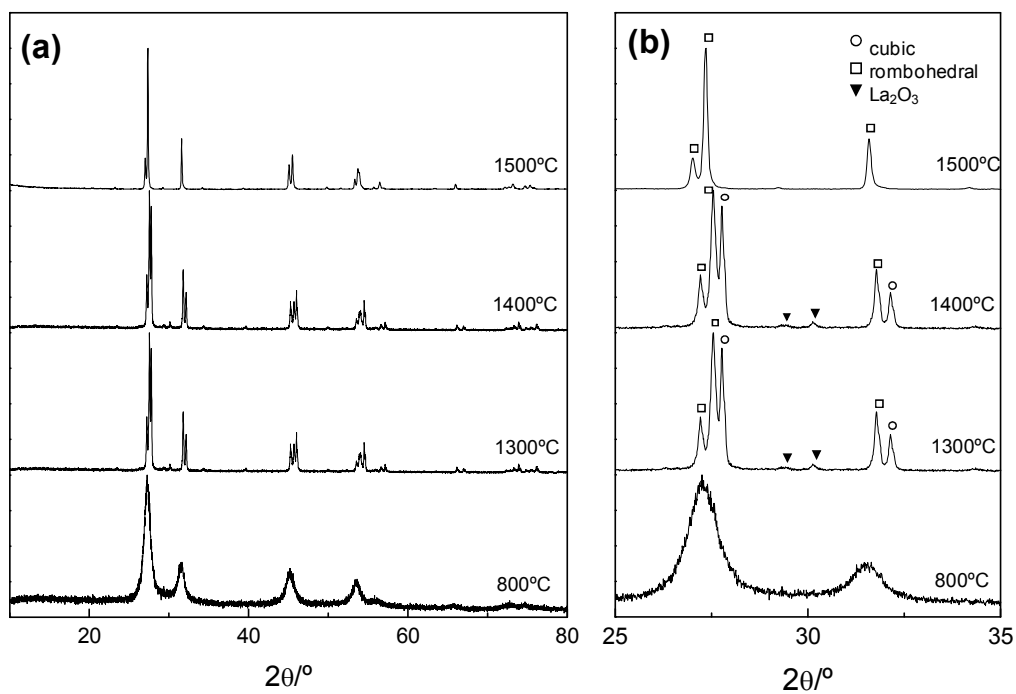


Figure S2. Evolution of the XRD patterns between 800 and 1500 $^\circ\text{C}$ for LWM0.6.

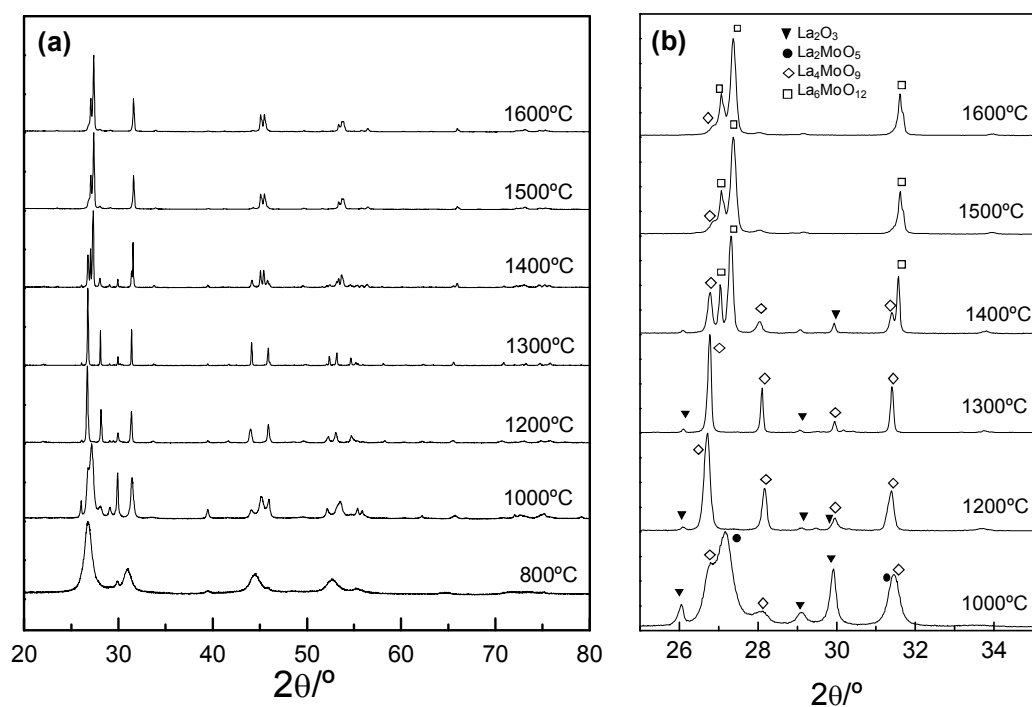


Figure S3. Evolution of the XRD patterns from 800 and 1600 °C for LM. La_2MoO_5 (ICDD #50-0852), La_4MoO_9 (ICDD #23-1144), and $\text{La}_6\text{MoO}_{12}$ (ICDD #34-1220).

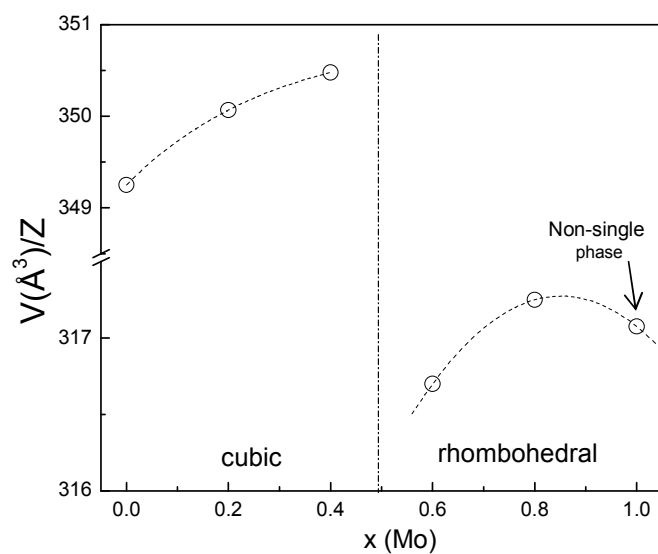


Figure S4. Variation of the unit cell volume with molybdenum content.

Table S1. Structural parameters for LWM0.2 and LWM0.4 obtained by the Rietveld refinement method, space group $F\bar{4}3m$. LW parameters obtained by neutron diffraction [7] are also listed for comparison.

	LW^{NPD}(*)	LWM0.2	LWM0.4
a(Å)	11.187	11.1876(2)	11.1910(2)
La1 (4a)			
x,y,z	0.0	0.0	0.0
B (Å ²)	1.1(1)	0.757(8)	0.650
Oc.	0.042	0.042	0.042
La2 (24g)			
x	-0.004(6)	-0.0061(2)	-0.0050(2)
B (Å ²)	2.3(2)	1.397(4)	1.406(8)
Oc.	0.232	0.232	0.232
W/Mo (4d)			
x	0.5	0.5	0.5
B (Å ²)	1.3(1)	1.904(12)	2.006(10)
Oc.	0.042	0.042	0.042
O1a(16e)			
x	0.1376(8)	0.153(1)	0.151(1)
B (Å ²)	2.6(3)	1.000	1.000
Oc.	0.167	0.167	0.167
O1b(16e)			
x,y,z	0.8677(8)	0.881(1)	0.877(1)
B (Å ²)	1.0(1)	1.000	1.000
Oc.	0.167	0.167	0.167
O2a(16e)			
x,y,z	0.4005(6)	0.399(2)	0.401(2)
B (Å ²)	4.2(3)	1.000	1.000
Oc.	0.65(3)	0.65	0.65
O2b(16e)			
x,y,z	0.5995(6)	0.605(2)	0.604(2)
B (Å ²)	4.2(3)	1.000	1.000
Oc.	0.65(3)	0.65	0.65
R _{wp} (%)	12.6	13.8	17.5
R _{exp} (%)	7.45	11.01	14.9
R _B (%)	5.80	6.11	7.06
χ ²	2.75	1.56	1.38
(*) Structural data obtained by neutron powder diffraction [7].			

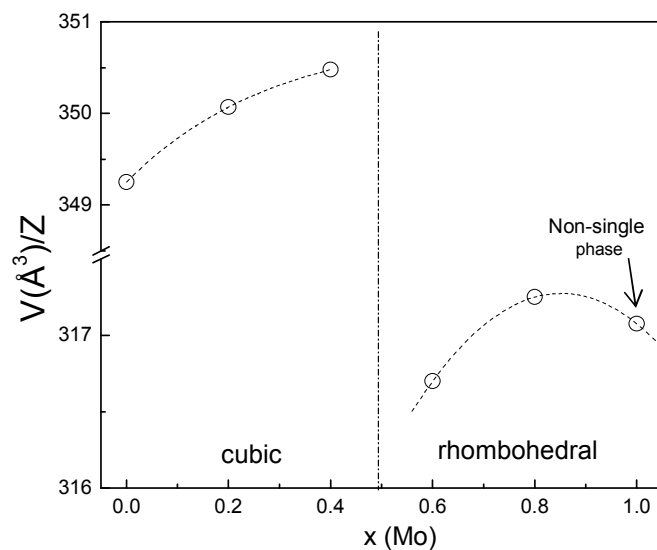


Figure S4. Variation of the unit cell volume with molybdenum content.

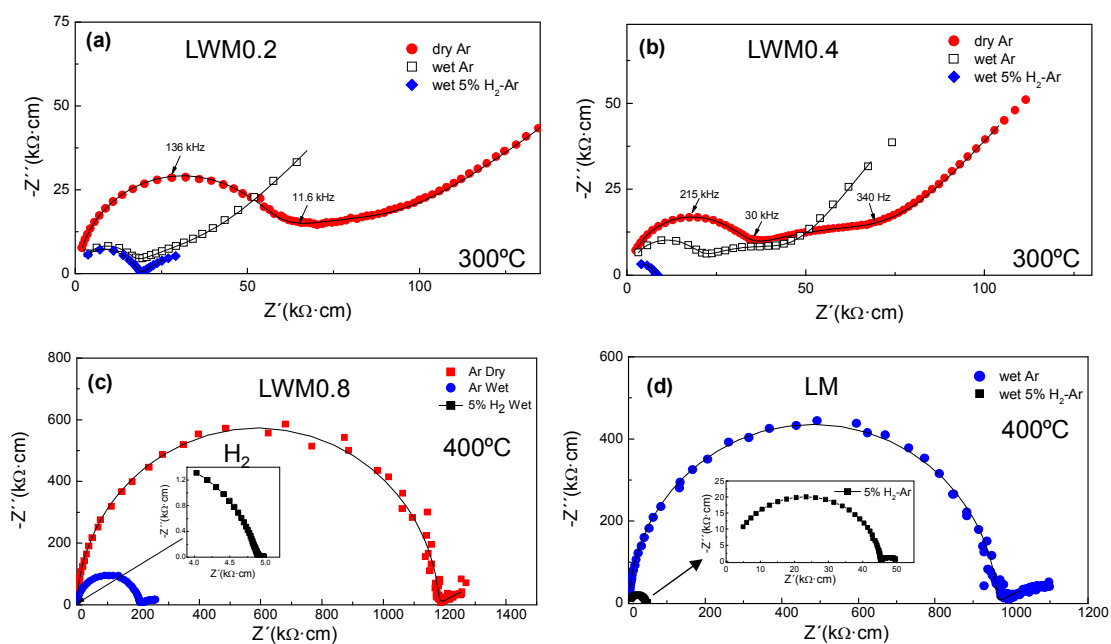


Figure S5. Representative Nyquist plots for different compositions and atmospheric conditions, at 300-400 °C.

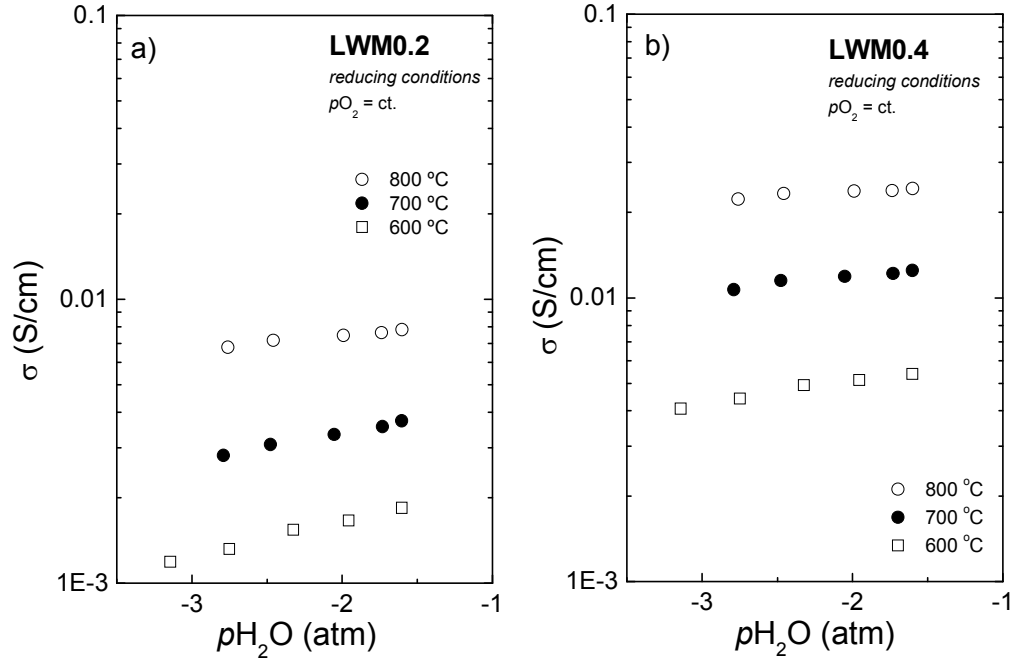


Figure S6. Dependency of the total (=grain interior) conductivity with water vapour partial pressure for LWM0.2 and LWM0.4 between 600 and 800 °C under reducing conditions.

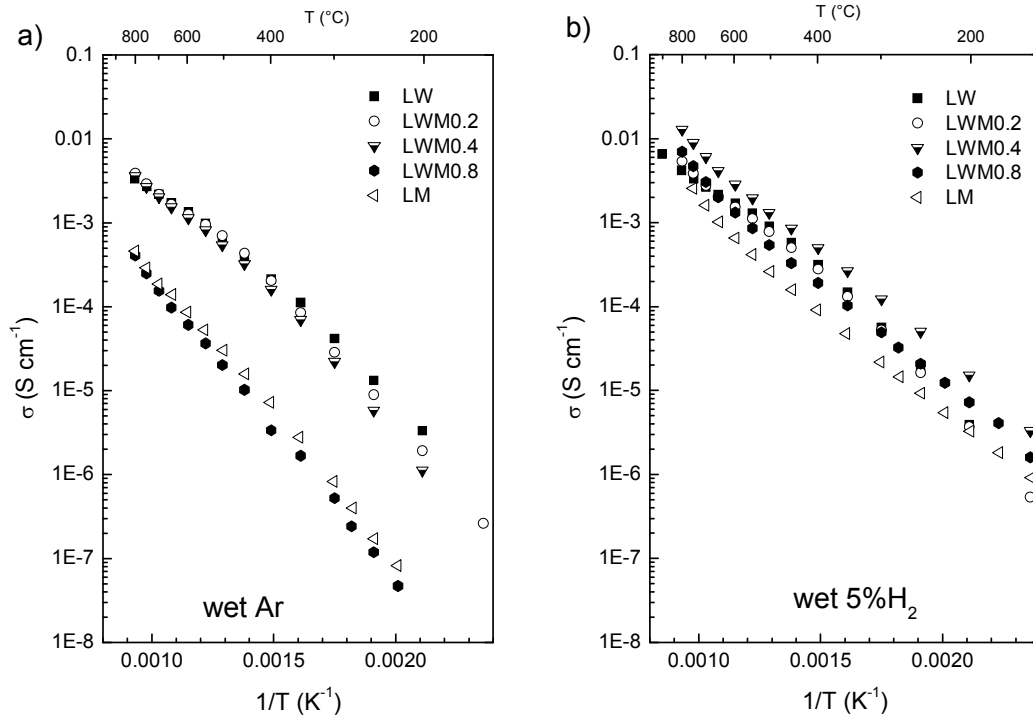


Figure S7. Grain interior conductivity in (a) wet Ar and (b) wet 5% H $_2$ /Ar for all measured compositions. By comparing the p_{O_2} dependencies of the compositions with less Mo, one may say that the conductivity in wet Ar reflects mainly the ionic conductivity (protonic + oxide ion) and the conductivity in reducing conditions reflects the contribution of both ionic + electronic (n-type) conductivity.

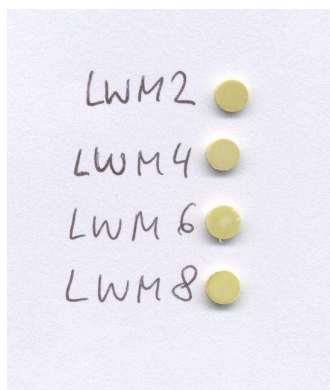


Figure S8. Scanned sintered pellets of the different compositions.