

Impact of A-Site Cation Deficiency on Charge Transport in $\text{La}_{0.5-x}\text{Sr}_{0.5}\text{FeO}_{3-\delta}$

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Supplementary Materials

Table S1. Parameters of electrical conductivity in $\text{La}_{0.5-x}\text{Sr}_{0.5}\text{FeO}_{3-\delta}$, obtained by approximation of Equation (1) to experimental data in vicinity of minima.

x	$T/^{\circ}\text{C}$	$\sigma_i^0/\text{S cm}^{-1}$	$\sigma_n^0/\text{S cm}^{-1}$	$\sigma_p^0/\text{S cm}^{-1}$
0*	950	0.320±0.001	$(9.66\pm0.03)\cdot10^{-5}$	100.2±0.4
	900	0.253±0.001	$(3.73\pm0.01)\cdot10^{-5}$	128.6±0.6
	850	0.201±0.001	$(1.295\pm0.005)\cdot10^{-5}$	162.9±0.8
	800	0.154±0.001	$(4.22\pm0.04)\cdot10^{-6}$	213±2
	750	0.108±0.001	$(1.35\pm0.02)\cdot10^{-6}$	293±3
0.005*	950	0.343±0.002	$(1.22\pm0.01)\cdot10^{-4}$	114.7±0.7
	900	0.272±0.001	$(4.48\pm0.03)\cdot10^{-5}$	141.1±0.9
	850	0.210±0.001	$(1.60\pm0.01)\cdot10^{-5}$	176±1
	800	0.154±0.001	$(5.21\pm0.03)\cdot10^{-6}$	237±2
	750	0.1088±0.0009	$(1.52\pm0.02)\cdot10^{-6}$	319±5
0.010*	950	0.482±0.003	$(1.55\pm0.01)\cdot10^{-4}$	153.3±0.9
	900	0.379±0.001	$(5.95\pm0.02)\cdot10^{-5}$	193.3±0.6
	850	0.289±0.001	$(2.08\pm0.01)\cdot10^{-5}$	247±1
	800	0.216±0.001	$(6.72\pm0.04)\cdot10^{-6}$	320±2
	750	0.154±0.001	$(1.90\pm0.02)\cdot10^{-6}$	425±4
0.015*	950	0.388±0.001	$(1.26\pm0.01)\cdot10^{-4}$	128.9±0.5
	900	0.305±0.001	$(4.85\pm0.02)\cdot10^{-5}$	159.1±0.9
	850	0.234±0.001	$(1.70\pm0.01)\cdot10^{-5}$	200±1
	800	0.176±0.001	$(5.38\pm0.04)\cdot10^{-6}$	253±2
	750	0.126±0.001	$(1.62\pm0.02)\cdot10^{-6}$	334±4
0.020*	950	0.341±0.002	$(1.02\pm0.01)\cdot10^{-4}$	108.2±0.9
	900	0.268±0.001	$(3.87\pm0.02)\cdot10^{-5}$	135±1
	850	0.209±0.002	$(1.35\pm0.02)\cdot10^{-5}$	176±2
	800	0.150±0.001	$(5.14\pm0.04)\cdot10^{-6}$	228±1
	750	0.110±0.001	$(1.64\pm0.01)\cdot10^{-6}$	303±2

* Data were obtained on the ceramic samples sintered at 1500 °C for $x = 0$, 1400 °C for $x = 0.005$, and 1300 °C for the rest compositions.

Table S2. Model parameters, obtained by approximation to electrical conductivity of $\text{La}_{0.5-x}\text{Sr}_{0.5}\text{FeO}_{3-\delta}$.

x	$T, ^\circ\text{C}$	$\mu_i^0 \cdot 10^5$	$\mu_n^0 \cdot 10^3$	$\mu_p^0 \cdot 10^2$	μ_p^1	μ_p^2
0	950	7.7±0.2	5.6±0.1	4.33±0.06	9.1±0.5	16±1
	900	6.48±0.07	4.06±0.05	4.35±0.05	7.5±0.3	24.8±0.7
	850	5.16±0.05	2.84±0.03	4.32±0.06	8.1±0.3	22.2±0.6
	800	4.04±0.07	2.06±0.07	4.2±0.1	8.2±0.6	23±1
	750	2.82±0.05	1.59±0.07	4.2±0.1	5.1±0.4	31.6±0.8
0.01	950	11.5±0.1	7.35±0.09	6.41±0.06	9.7±0.3	16.5±0.8
	900	9.24±0.06	5.62±0.05	6.36±0.05	9.0±0.2	20.2±0.4
	850	7.08±0.04	4.22±0.03	6.26±0.05	9.1±0.2	21.0±0.4
	800	5.38±0.04	3.10±0.04	5.91±0.06	9.8±0.2	22.2±0.5
	750	3.79±0.03	2.23±0.04	5.89±0.07	9.1±0.4	25±1

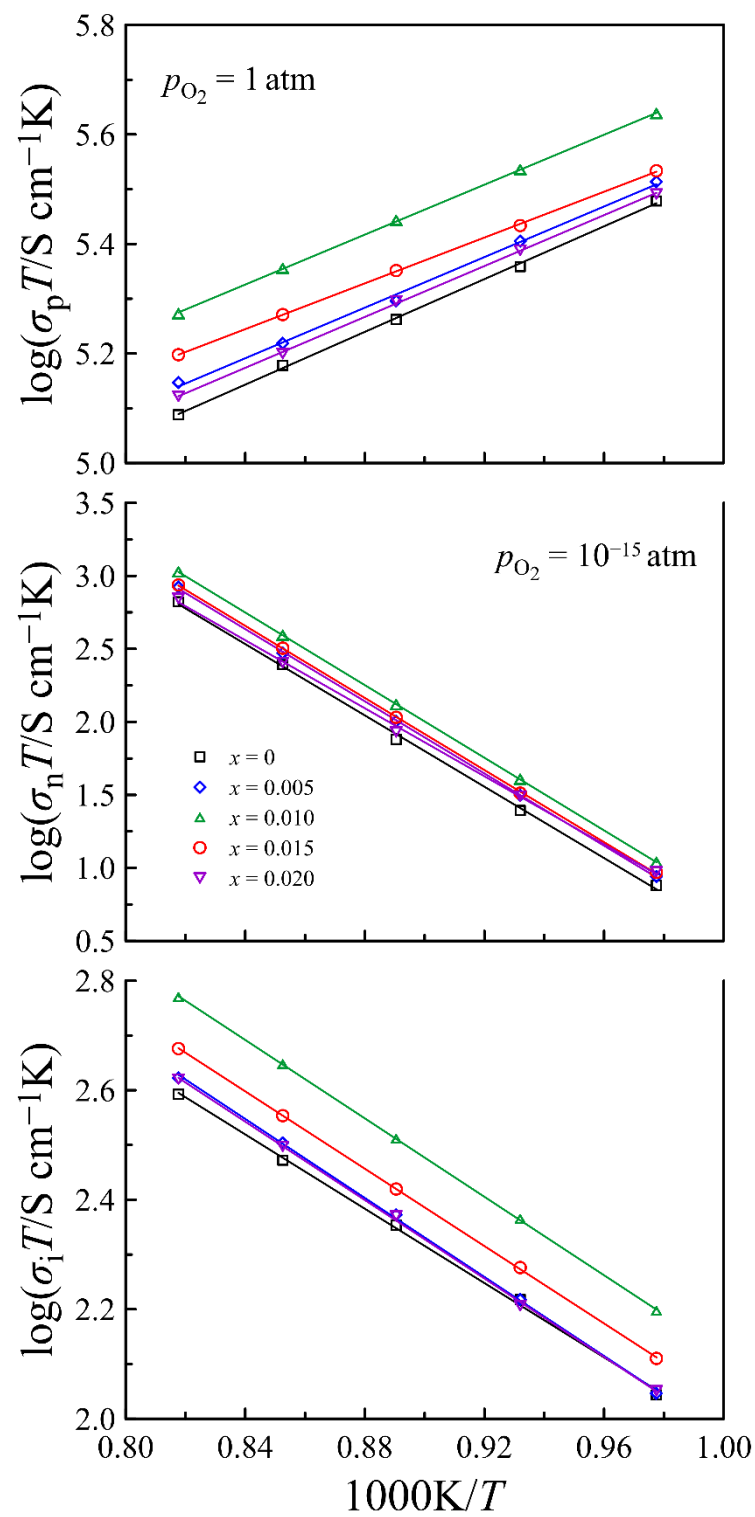


Figure S1. Arrhenius plots for partial contributions to the conductivity of $\text{La}_{0.5-x}\text{Sr}_{0.5}\text{FeO}_{3-\delta}$, obtained by the approximation of an Equation (1) to experimental data.

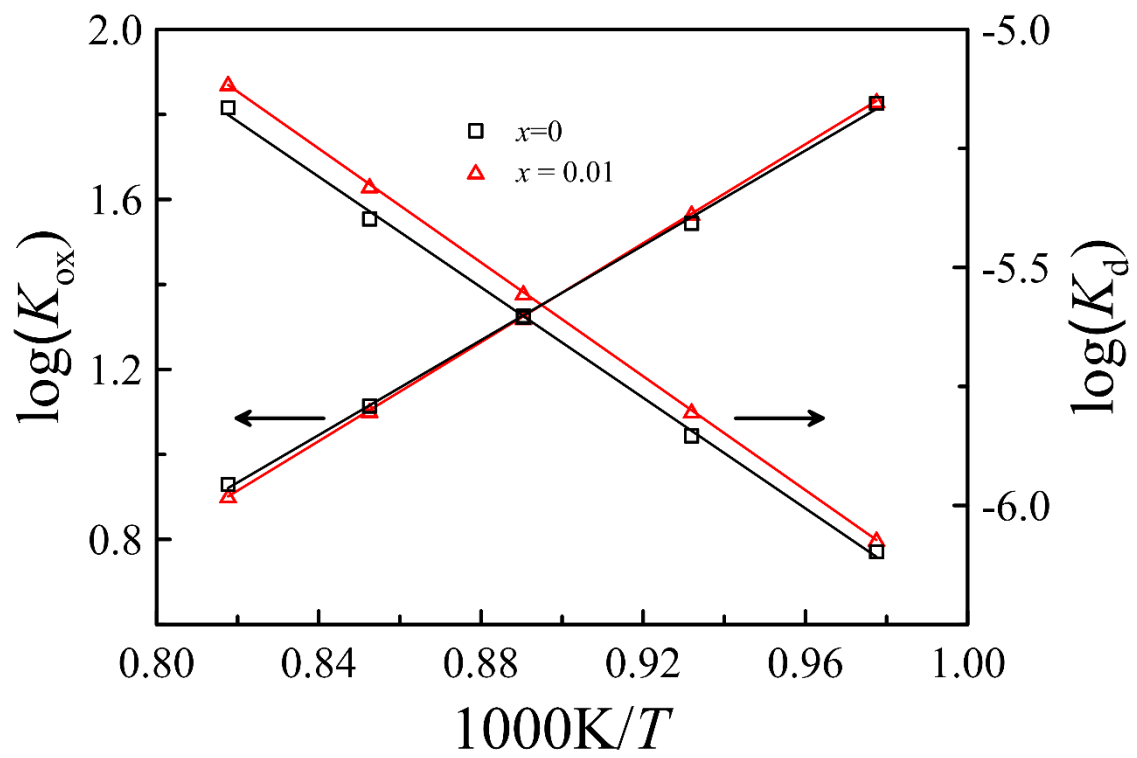


Figure S2. Van't Hoff's plots of K_{ox} and K_d . The solid lines represent linear approximations.