substance: CoO
property: hole mobility

hole drift mobilities

μ_p	0.4 $cm^2/V\ s$	T = 1620 K	activated; E_A = 0.3eV in the range 1000...1300°C, extrapolated to RT gives 10^{-5} $cm^2/V\ s$	66F
	$2.5 \cdot 10^{-4}$ $cm^2/V\ s$	T = 555 K	single crystal data, activated	80J
	$5.0 \cdot 10^{-7}$ $cm^2/V\ s$	T = 333 K	with energy 0.436 eV	
	0.31 $cm^2/V\ s$	T = 1470 K	activated with energy 0.089 eV	77D
	0.45 $cm^2/V\ s$	T = 1470 K	unactivated	72B
	0.4...0.5 $cm^2/V\ s$	T = 295...425 K	Li doped, unactivated	67A
	0.3(1) $cm^2/V\ s$	T = 800...1500 K	undoped and Li doped, unactivated, Li content 0.02...3.0 at%	67B
	0.25 $cm^2/V\ s$	T = 1200 K	Li doped, unactivated	69B
	0.3 $cm^2/V\ s$	T = 1500 K	unactivated	65S
	0.06 $cm^2/V\ s$	T = 1480...1550 K		72G

Seebeck coefficient varies with oxygen partial pressure [66F, 67B]. For mobility of Li doped material, see also Fig. 4.

hole Hall mobilities

μ_p	0.05...0.085 $cm^2/V\ s$	T = 295...425 K	Li doped single crystal, Hall mobility unactivated	67A
	0.05...0.1 $cm^2/V\ s$	RT....1500 K	mobility varies only slightly with temperature	67B
	0.04...0.07 $cm^2/V\ s$	T = 300 K	increases slightly with T	65Z
	0.06 $cm^2/V\ s$	T = 1480...1550 K	Hall mobility at low oxygen pressures: Fig. 2	72G

electron Hall mobilities

μ_n	0.3...0.6 $cm^2/V\ s$	T = 980...1140°C	unactivated; pure and Ti doped material	70G, 72G

See also Figs. 1, 3, 4 and 6 for dependence of mobility on stoichiometry dopant and temperature. For energy level scheme for Cr and Ti doped CoO obtained from transport data, see Fig. 5.

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Fig. 1.

CoO. Hall mobility for holes vs. (reciprocal) temperature for a non-stoichiometric and a Li doped sample [67N].

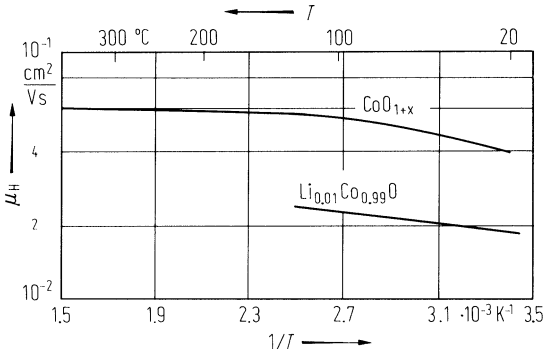

Fig. 2.

CoO. Hall mobility for holes vs. CO_2/CO pressure ratio of ambient atmosphere during measurement at various temperatures for a single crystal. Two curves are calculated using a point defect model with two different values for the parameters [72G].

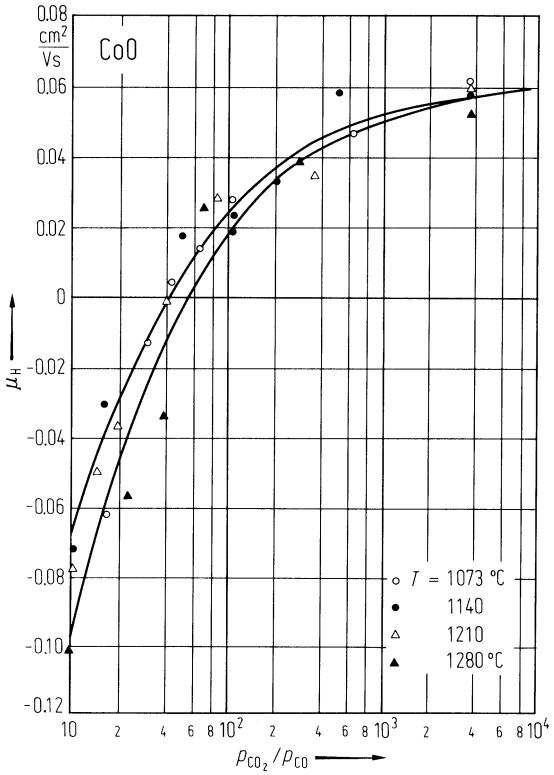

Fig. 3.

CoO:Li. Hall mobility, Hall coefficient and resistivity vs. (reciprocal) temperature for p-type Li doped ceramic samples measured in nitrogen (N_2) or oxygen (O_2) atmosphere [67D].

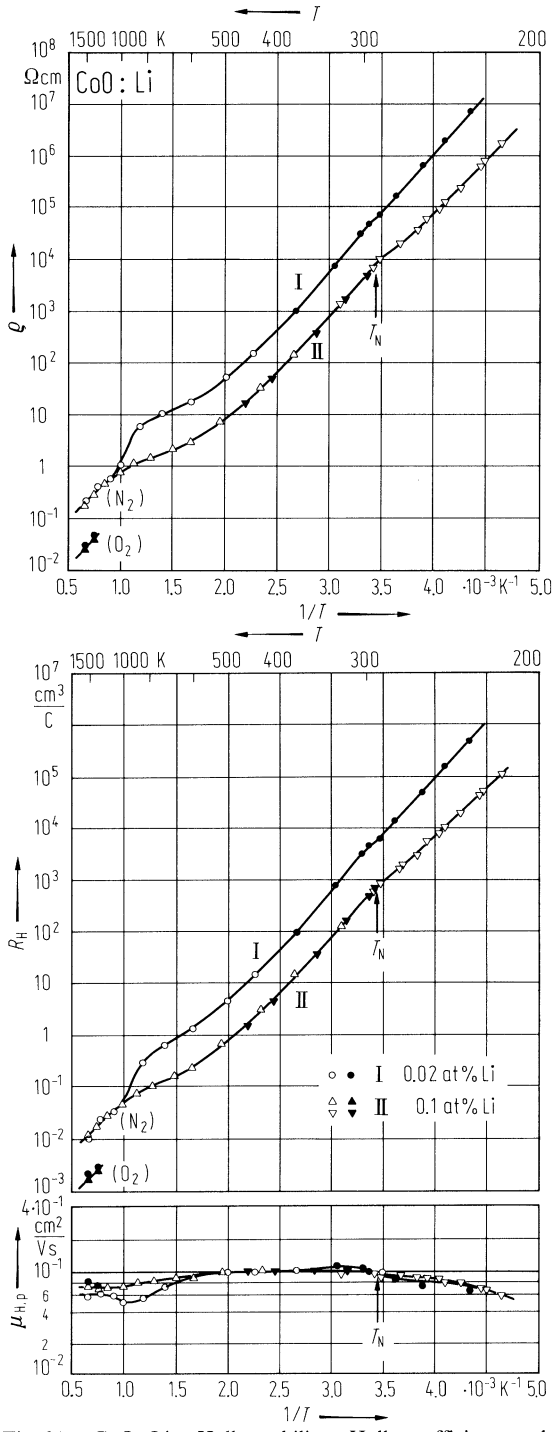

Fig. 4.

$Li_xCo_{1-x}O$. Drift and Hall mobilities vs. reciprocal temperature for 0.08 at% Li doped p-type CoO calculated from Seebeck data assuming: *1* n_v = constant, *2* $n_v \propto T^{3/2}$, where n_v is the energy density at the valence band edge [69B].

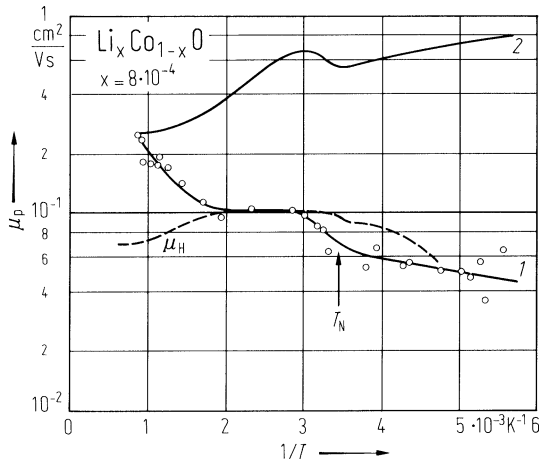

Fig. 5.

CoO, Cr and Ti doped. Energy level scheme from transport data [72G]. V'_M: metal vacancy, negatively charged.

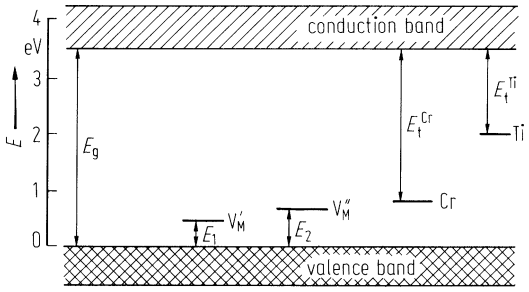

Fig. 6.

CoO, pure and Ti doped. Hall mobilities vs. ratio of CO_2 and CO partial pressures of ambient atmosphere during measurement (a) at 988ºC and 1073ºC, (b) at 1140ºC; two curves correspond to a theoretical point defect model using different values for the parameters [72G]. See also Fig. 2.