substance: MnO
property: transport data, high temperatures

At higher temperatures, activation energy for conduction in MnO increases substantially.

activation energy for conductivity

E_A	1.41 eV	T = 1000...1300°C		67H
	1.33 eV			71B
	1.39 eV		results from a variety of Cr-doped and pure samples	70O
	1.8 eV			71K

hole mobility

μ_p	0.15 $cm^2/V\ s$	T = 1200°C	$\mu_n/\mu_p \geq 10$; see also Fig. 1c	67H
	0.17 $cm^2/V\ s$	T = 1000°C		71B
	$6.6 \cdot 10^{-3}$ $cm^2/V\ s$	T = 1000°C	μ_n/μ_p = 1500. Actually the mobility	70O
	$9.3 \cdot 10^{-3}$ $cm^2/V\ s$	T = 1100°C	= 1070 ratio has been	
	$1.2 \cdot 10^{-2}$ $cm^2/V\ s$	T = 1200°C	= 820 measured and μ_p calculated assuming μ_n = 10 cm^2/V s.	
	$5 \cdot 10^{-3}$ $cm^2/V\ s$	T = 730...1230°C		71K
	0.1 $cm^2/V\ s$	T = 943...1210°C	from Hall measurement	74A

activation energies for hole mobility

E_A	0.42(5) eV	T < 1375°C	activation energy for hopping	67H
	0.32(7) eV	T > 1375°C		
	0.57 eV		corrected for assumed $T^{-3/2}$ pre-exponential factor	
	0.35 eV	T = 943...1210°C	Hall measurement	74A

electron mobility

μ_n	11.3 $cm^2/V\ s$	T = 1000°C	Hall mobility	67W
	9.3 $cm^2/V\ s$	T = 1200°C		
	10.0 $cm^2/V\ s$	T = 943°C	Hall mobility	68G

In addition to these data, photoconductivity experiments at and below RT give electron mobilities of 10...20 $cm^2/V\ s$ [77U]; see also Fig. 2.

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Fig. 1.

MnO. (a) Resistivity vs. reciprocal temperature; *a* [81P], *b* [80J], *c* [76K], *d* [71K]. (b) Thermoelectric power vs. reciprocal temperature; *a*...*d* as for Fig. (a). (c) Hole mobility (log scale) vs. temperature; dashed line: calculated directly from conductivity and thermogravimetric data, solid line: averaged [67H].

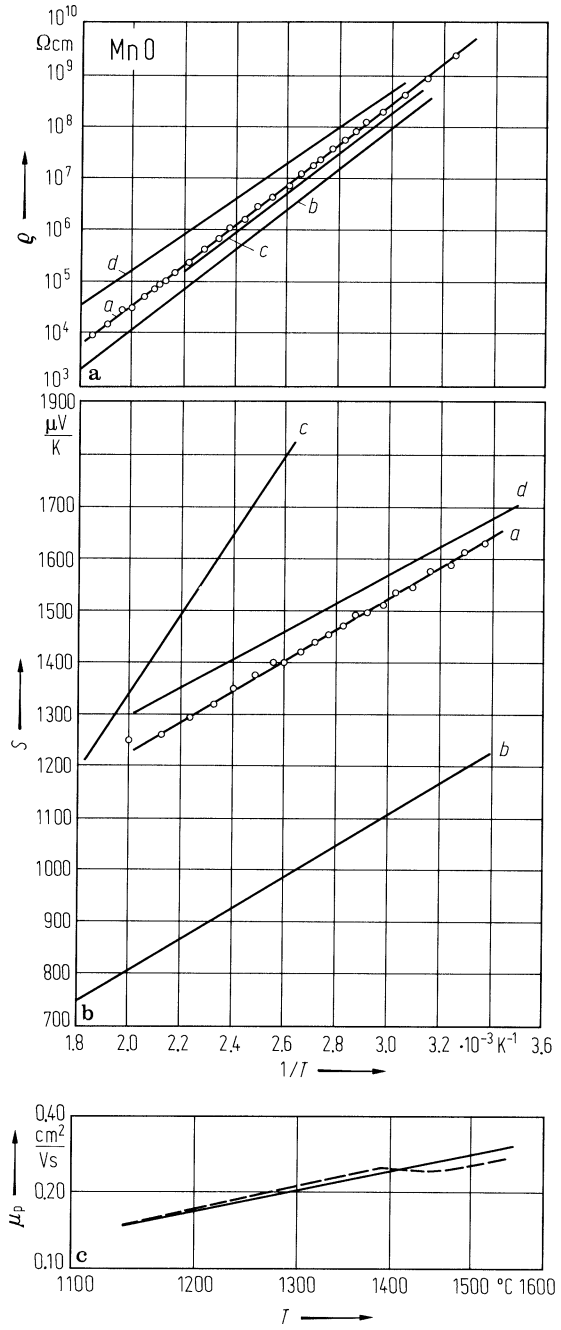

Fig. 2.

MnO. Hall mobility of photoelectrons vs. temperature for various crystals *1* as grown, *2* annealed in p_{CO_2}/p_{H_2} = 0.1, *3* annealed in p_{CO_2}/p_{H_2} = 1.0 [77U].