substance: MnSe
property: crystal structure, physical properties

α-MnSe

(S: structure (space group), CG: crystal growth (the numbers in parentheses correspond to T_1 and T_2, the temperatures (in ^oC) of the hot and cold end of the crystal growth tube, respectively)).

(The references in the last column refer to all data of this document)

lattice parameter, resistivity, Seebeck coefficient

a	5.464 Å		S: cubic, B1, O_h^5 – Fm3m;	68C,
ρ	10^4 Ω cm	p-type,	B8 above p = 90 kbar, anti-	70R,
S	60 μV K^{-1}	synthetic	ferromagnetic, $T_N(\uparrow)$ = 248 K,	71D,
		single	$T_N(\downarrow)$ = 197 K, p_{eff} = 5.88 μ_B,	71L,
		crystal	Θ_p = – 373 K. Ferromagnetic	72C,
			(111) sheets coupled anti-	78I
			parallel; spins in (111) planes.	
			β-form (a = 5.82 Å, space	
			group T_d^2 – F $\bar{4}$ 3m) and γ-form	
			(a = 4.12 Å, c = 6.72 Å,	
			space group C_{6v}^4 – $P6_3mc$)	
			are unstable	
			CG: chemical transport	
			(1000/600)	

energy gap

E_g	2.5 eV		optical gap
$E_{g,th}$	0.48 eV	283 ≤ T ≤ 197 K	
		(cooling)	

Figures to this document:

resistivity: Fig. 1

magnetic susceptibility: Fig. 2

References:

68C Carpay, F. M. A.: Philips Res. Rep., Suppl. 10 (1968)1.
70R Rustamov, A. G., Kerimov, I. G., Valiev, L. M., Babaev, S. Kh.: Inorg. Mater. 6 (1970) 1176.
71D Decker, D. L., Wild, R. L.: Phys. Rev. B4 (1971) 3425.
71L Landolt-Börnstein (New Series), ed.: K. H. Hellwege, Vol. III/6, Springer Verlag: Berlin, Heidelberg, New York 1971.
72C Cemic, L., Neuhaus, A.: High Temp.- High Pressures 4 (1972) 97.
78I Ito, T., Ito, K., Oka, M.: Jpn. J. Appl. Phys. 17 (1978) 371.

Fig. 1.

α-MnSe. Electrical resistivity vs. temperature, open circles: cooling curve, full circles: warming curve [78I].

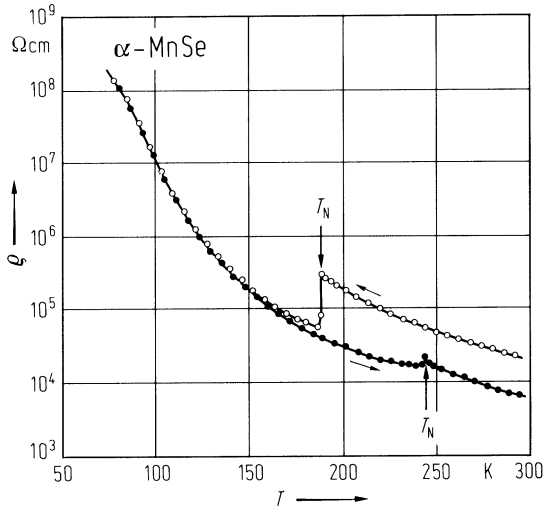

Fig. 2.

α-MnSe. Magnetic susceptibility vs. temperature, open circles: cooling curve, full circles: warming curve [78I].