

substance: MnTe

property: crystal structure, physical properties

(S: structure (space group), CG: crystal growth (the numbers in parentheses correspond to T_1 and T_2 , the temperatures (in °C) 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 parameters

a	4.144 Å	B8 modifi- cation	S: B8, $D_{6h}^4 - P6_3/mmc$, above 1040°C B1 mod. ($O_h^5 - Fm3m$), antiferromagnetic, $T_N = 310$ K, $\Theta_p = -584$ K, $p_{eff} = 5.91 \mu_B$	54P,
c	6.703 Å			56U,
a	6.03 Å	B1 modifi- cation	CG: Bridgman-Stockbarger from Te-rich melt	61B, 61J, 64W1, 64W2,

resistivity

ρ	$10^{-3} \Omega \text{ cm}$	$T = 200$ K, p-type, poly- crystalline sample	electron-spin scattering $\tau_{em}(T_N) = 10^{-5}$ s; relaxation of magnon system $\tau_m(T_N) = 4 \cdot 10^{-12}$ s; large magnon drag for $T > 200$ K; $T_N = 310$ K	72M, 77A
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Seebeck coefficient

S	$50 \mu\text{V K}^{-1}$	$T = 200$ K
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hole concentration

p	$5 \cdot 10^{19} \text{ cm}^{-3}$	$T < T_N$
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carrier mobility

μ_H	$50 \text{ cm}^2/\text{V s}$	mobility excluding magnetic contributions ($m_p = 0.5 m_0$)
μ_{dr}	$6 \text{ cm}^2/\text{V s}$	
μ_{opt}	$115 \text{ cm}^2/\text{V s}$	optical mobility

energy gap

E_g	1.3 eV	optical gap
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Figures to this document:

Seebeck coefficient, resistivity: Fig. 1

References:

- 54P Palmer, W.: J. Appl. Phys. 25 (1954) 12 S.
- 56U Uchida, E., Kondoh, H., Fukuoka, N.: J. Phys. Soc. Jpn. 11 (1956) 27.
- 61B Banewicz, J. J., Heidelberg, R. F., Luxem, A. H.: J. Phys. Chem. 65 (1961) 615.
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- 64W1 Wasscher, J. D., Seuter, A. M. J. H., Haas, C.: Proc. Int. Conf. Phys. Semiconductors (1964) 1269.
- 64W2 Wasscher, J. D., Haas, C.: Phys. Lett. 8 (1964) 302.
- 72M Mateika, D.: J. Cryst. Growth 13/14 (1972) 698.
- 77A Allen, J. W., Lucovsky, G., Mikkelsen Jr., J. C.: Solid State Commun. 24 (1977) 367.

Fig. 1.

MnTe. Thermoelectric power (a) and resistivity perpendicular to the c axis (b) vs. temperature for a degenerate p-type sample [64W2].

