substance: V_nO_{2n+1}: n ≥ 3
property: physical properties

V_6O_{13}

Magnetic susceptibility: Figs. 1, 2. $T_N \approx 55$ K. The transition at 150 K has been reported as semiconductor-semiconductor [73S] and semiconductor-metal [74K]. Considerable anisotropy of conductivity has been reported (Fig. 3). The Seebeck coefficient shows the material is p-type below 150 K (Fig. 4) [74K]. IR bands at 895 and 865 cm^{-1} shift to 890 and 862 cm^{-1} on 22.76 at% ^{18}O doping; T_{tr} increases by + 1.0 K on same doping [80R].

V_3O_7

Magnetic susceptibility: Fig. 5. For high temperatures $\chi_m \propto C_m/(T-\Theta_p)$ with $C_m = 0.40$ cm^3 K mol^{-1} and Θ_p = 10(5) K according to [74B], $C_m = 0.446$ cm^3 K mol^{-1} and $\Theta_p = 4$ K, $p_{eff} = 1.89$ μ_B according to [79N]. At low temperatures the material orders antiferromagnetically; $T_N \approx 18$ K [74B], < 5 K [79N]. It appears to be insulating but no detailed data are available.

References:

73S Saeki, M., Kimizuka, N., Ishii, M., Kawada, I., Ichinose, A., Nakahira, M.: J. Cryst. Growth 18 (1973) 101.

74B Bayard, M., Grenier, J. C., Pouchard, M., Hagenmuller, P.: Mater. Res. Bull. 9 (1974) 1137.

74G Gossard, A. C., DiSalvo, F. J., Erich, L. C., Remeika, J. P., Yasuoka, H. Kosuge, K., Kachi, S.: Phys. Rev. B10 (1974) 4178.

74K Kawashima, K., Ueda, Y., Kosuge, K., Kachi, S.: J. Cryst. Growth 26 (1974) 321.

76U Ueda, Y., Kosuge, K., Kachi, S.: Mater. Res. Bull. 11 (1976) 293.

79N Nagata, S., Griffing, B. F., Khattak, G. D., Keesom, P. H.: J. Appl. Phys. 50 (1979) 7575.

80R Reichelt, W., Oppermann, H., Wagner, H., Terukov, E. I., Wolf, E.: Z. Anorg. Allg. Chem. 463 (1980) 193.

Fig. 1.

V_6O_{13}. Magnetic susceptibility and relative NMR intensity vs. temperature for polycrystals. The decrease in NMR intensity between 50 and 60 K is associated with the onset of magnetic order and $T_N \approx 55$ K [74G]. χ_g in CGS-emu.

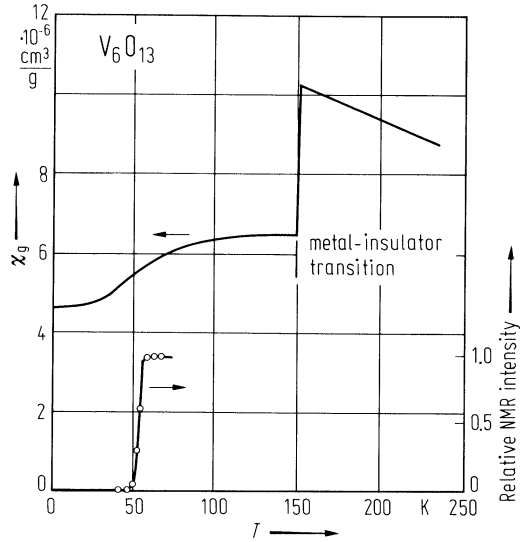

Fig. 2.

V_6O_{13}. Magnetic susceptibility vs. temperature of a single crystal (*1*) along the *a*-axis, (*2*) along the *b*- axis, (*3*) along the *c*-axis. The inset illustrates the magnetic susceptibility in the temperature range from 77 K to 300 K [76U]. χ_g in CGS-emu.

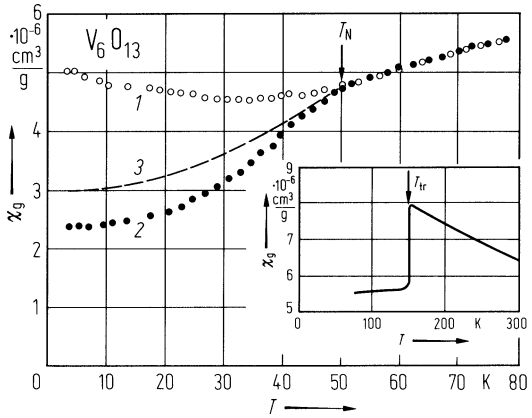

Fig. 3.

V_6O_{13}. Electrical resistivity vs. (reciprocal) temperature along different crystallographic axes [74K]. Different symbols for different samples.

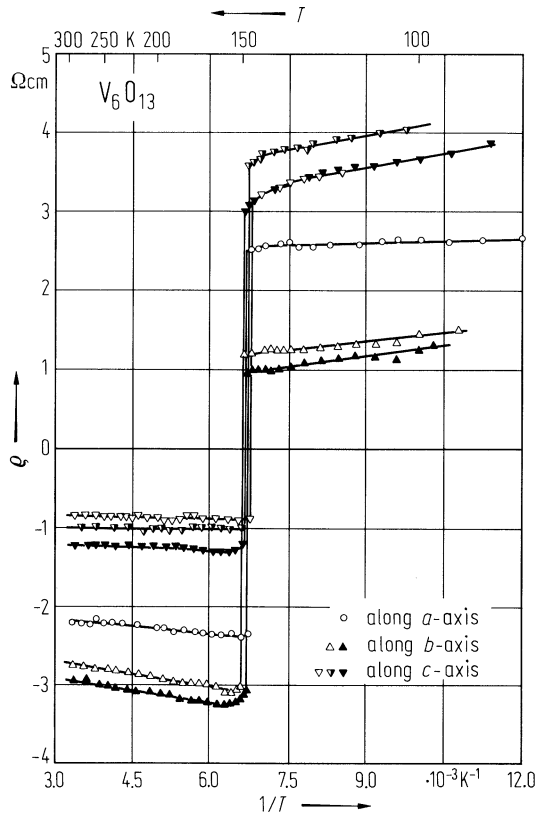

Fig. 4.

V_6O_{13}. Thermoelectric power along *b* axis vs. (reciprocal) temperature [74K].

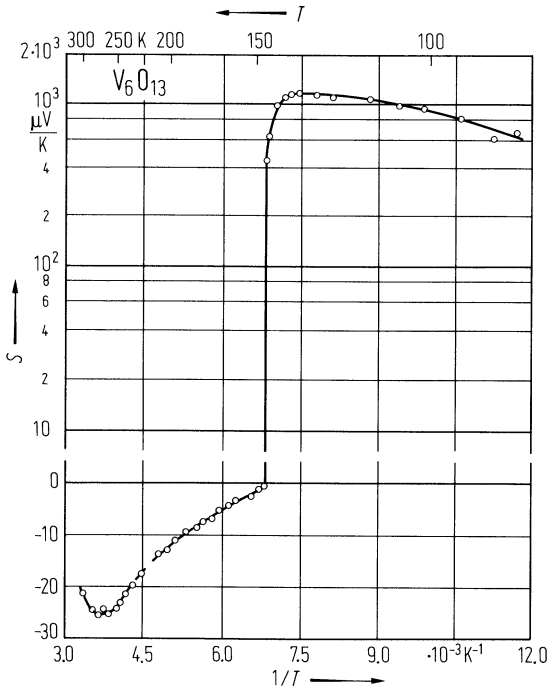

Fig. 5.

V_3O_7. Molar magnetic susceptibility vs. temperature [74B]. Orientation not specified. χ_m in CGS-emu.