E 30 ELECTRICAL CONDUCTIVITY OF MANGANESE TUNGSTATE

M A K L Dissanayake
Dept. of Physics, University of Peradeniya
and
O A Ileperuma and P A G D Dharmasena
Dept. of Chemistry, University, of Peradeniya

Investigation of the physical properties of metal tungstates are of consider able interest both from the fundamental as well as the technological point of view. As a part of a continuing study of transition metal tungstates the a.c. and d.c. electrical conductivities of $MnWO_4$ have been measured using pressed pellets in the temperature range 150°C to 650°C. A discontinuity in the log (σT) vs 1/T plot is observed around 300°C. The activation energies below and above this temperature have been estimated to be 0.58 eV and 0.63 eV respectively. Differential thermal analysis (DTA) has been performed on powder samples which show the absence of any structural transitions at 300°C in agreement with the reported magnetic susceptibility studies. It is suggested that the electrical conduction below 300°C occurs essentially by thermally activated hopping of small polarons whereas above this temperature normal band-like conduction by holes may dominate.

References

1. Yadav, R.B. (1983) Journal Physics and Chemistry of Solids 44 697.
2. Bharati. R., Sinha, R.A. and Wanklyn, B.M. Journal of Material Science 16 (1981) 511; 15 (1980) 1293; Journal Physics and Chemistry of Solids 43 (1982) 641.