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Investigation of the physical properties of metal tungstates are of considerable 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 $150^\circ C$ to $650^\circ C$. A discontinuity in the $\log(\sigma T)$ vs $1/T$ plot is observed around $300^\circ C$. 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 $300^\circ C$ in agreement with the reported magnetic susceptibility studies. It is suggested that the electrical conduction below $300^\circ C$ occurs essentially by thermally activated hopping of small polarons whereas above this temperature normal band-like conduction by holes may dominate.

References

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