



A.C. CONDUCTIVITY OF MnWO_4

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Abstract—The a.c. electrical conductivity of MnWO_4 from 10 Hz to 10 MHz has been measured in the 425–900 K temperature range using pressed pellets. The a.c. conductivity shows a frequency dependence at lower temperatures whereas at higher temperatures it is almost frequency independent up to about 1 MHz. At lower temperatures σ_{ac} varies as ω^s where $s \leq 1.2$. A plot of $\log \sigma$ vs $1/T$ using the a.c. conductivity values at 10 Hz, shows a discontinuity around 575 K. The activation energies below and above this temperature have been estimated to be 0.65 and 0.58 eV respectively. Differential thermal analysis (DTA) performed on powder samples shows the absence of any structural phase transitions at this temperature. These observations suggest that the electrical conduction below 575 K occurs essentially by thermally activated hopping of polarons whereas above this temperature, normal band-like conduction may dominate the conduction processes.

Keywords: A.C. Conductivity, manganese tungstate.