

Magnetic Susceptibility of the Cluster Compounds Mo_6Se_8 and Mo_6Te_8

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The magnetic susceptibility of the cluster compounds Mo_6Se_8 and Mo_6Te_8 has been measured at temperatures between 82 and 330 K, using a Faraday balance. The paramagnetic and diamagnetic components of the susceptibility have been analyzed. The Pauli component was evaluated using the density of states at the Fermi level obtained by band structure calculations, while the core component was evaluated using the calculated atomic core diamagnetism. The paramagnetic susceptibility of Mo_6Se_8 is due mainly to the Pauli contribution, while the Van Vleck contribution is small, in agreement with the metallic feature of the compound. The paramagnetic susceptibility of Mo_6Te_8 is due mainly to the Van Vleck term, while the Pauli contribution of the conduction electrons is very small. The result points out that the Mo_6 clusters in the telluride retain their molecular character, with small intercluster interactions.

Key words: Chalcogenides; Molybdenum; Magnetic Susceptibility; X-ray Diffraction;
Chevrel Phases.