

Physical properties study of the CeOsGa₄ compound

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A polycrystalline sample of CeOsGa₄ was prepared by arc-melting stoichiometric quantities of high purity elements. The subsequent Rietveld refinement performed on the powder X-ray diffraction data confirmed that the compound crystallizes in the hexagonal $P6_3/mmc$ structure. The magnetic susceptibility $\chi(T)$ data showed a distinct anomaly at $T_N = 3.9$ K, while the high-T data obeys Curie-Weiss law. The calculated effective moment of $2.52 \mu_B$ was obtained, agreeing with the theoretical moment for a Ce³⁺ ion of $2.54 \mu_B$. Magnetization data at $T = 2$ K depicts that CeOsGa₄ does not saturate up to applied magnetic field of 7 T, while the data measured at 9 K indicates that the compound is purely paramagnetic at that temperature. The low-T specific heat data is characterized by an anomaly at $T_N = 3.8$ K confirming the $\chi(T)$ data. Electrical resistivity shows a metallic behaviour at high temperatures with a deviation at low temperatures. In this work we present the study of the effect of the applied magnetic field on the antiferromagnetic ordering temperature in CeOsGa₄.

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