

Thermodynamic Functions of TlFeX_2 ($\text{X}=\text{S}, \text{Se}, \text{Te}$) and TlCrS_2

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TlFeS_2 , TlFeSe_2 , TlFeTe_2 and TlCrS_2 compounds belong to the class of low-dimensional magnetic semiconductors. Investigations of heat capacity in wide temperature interval 50-300 K allow us to calculate the main thermodynamic parameters of these compounds. The heat capacity was measured by an adiabatic method. By numerical integration of the temperature dependence of the heat capacity of the compounds studied, we evaluate the changes in entropy, enthalpy and reduced free Gibbs energy. The comparison of magnetic components of entropy and enthalpy for the magnetic semiconductor TlFeS_2 with values of these parameters at standard temperature shows that $\Delta S_{\text{magn.}}$ and $\Delta H_{\text{magn.}}$ make up 9.1 and 2.0 % of $\Delta S(298.15)$ and $\Delta H(298.15)$ respectively. For TlFeSe_2 and TlFeTe_2 these values are 12.5 and 4.3 % and 2.1 and 2.8 %, respectively. The changes in entropy and enthalpy of TlCrS_2 at various temperatures are calculated as well.