

# Thermodynamics of $\text{SmCl}_3$ and $\text{TmCl}_3$ : Experimental Enthalpy of Fusion and Heat Capacity. Estimation of Thermodynamic Functions up to 1300 K

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Heat capacities of solid  $\text{SmCl}_3$  and  $\text{TmCl}_3$  were measured by differential scanning calorimetry in the temperature range from 300 K up to the respective melting temperatures. The heat capacity of liquid  $\text{SmCl}_3$  was also investigated. These results were compared with literature data and fitted by a polynomial temperature dependence. The temperature coefficients were given. Additionally, the enthalpy of fusion of  $\text{SmCl}_3$  was measured. Furthermore, by combination of these results with the literature data on the entropy at 298.15 K,  $S_m^0(\text{LnCl}_3, \text{s}, 298.15 \text{ K})$  and the standard molar enthalpy of formation of  $\Delta_{\text{form}}^0 H_m^0(\text{LnCl}_3, \text{s}, 298.15 \text{ K})$ , the thermodynamic functions were calculated up to  $T = 1300 \text{ K}$ .

*Key words:* Samarium Chloride; Thulium Chloride; Heat Capacity; Enthalpy; Entropy; Formation; Fusion; Differential Scanning Calorimetry.