Thermodynamic Properties of EuCl₂ and the NaCl-EuCl₂ System

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The temperature and enthalpy of the phase transition and fusion of EuCl₂ were determined and found to be 1014 K, 11.5 kJ mol⁻¹ and 1125 K, 18.7 kJ mol⁻¹, respectively. Additionally, the heat capacity of solid EuCl₂ was measured by Differential Scanning Calorimetry in the temperature range 306 - 1085 K. The results were fitted to the linear equation $C_p^0(m) = (68.27 + 0.0255 T/K)$ J mol⁻¹ K⁻¹ in the temperature range 306 - 900 K. Due to discrepancies in the literature on the temperature of fusion of EuCl₂, the determination of the NaCl-EuCl₂ phase diagram was repeated. It consists of a simple eutectic equilibrium at $T_{cut} = 847$ K with $x(EuCl₂) = 0.49$.

Key words: Europium Dichloride; Sodium Chloride; Phase Diagram; Enthalpy of Transition; Heat Capacity.