

Calorimetric Investigation of MCl-EuCl₂ Melts (M = Na, K, Rb)

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Z. Naturforsch. **56 a**, 653–657 (2001); received August 1, 2001

The molar enthalpies of mixing ($\Delta_{\text{mix}}H_{\text{m}}$) of MCl-EuCl₂ (M = Na, K, Rb) liquid binary systems were measured at 1138 K over the whole composition range by direct calorimetry. A Calvet type calorimeter was used, and mixing of the two liquid components was achieved by the ampoule break-off technique under argon at atmospheric pressure. The enthalpy of mixing of these systems is negative over the whole composition range with a minimum of approximately –0.5, –3.5 and –4.5 kJ mol^{–1} for M = Na, K, Rb, respectively. The least-squares coefficients A , B , C in the equation λ (kJ mol^{–1}) = $A + Bx + Cx^2$, where λ is an interaction parameter, are reported. From the trend observed in these MCl-EuCl₂ systems it was possible to estimate the mixing enthalpy of the CsCl-EuCl₂ system.

Key words: Mixing Enthalpy; Europium Dichloride; Alkali Chlorides; Calvet Calorimeter.