

Electrical Conductivity of Melts Containing Rare-Earth Halides.

I. MCl-NdCl₃ (M = Li, Na, K, Rb, Cs)

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The electrical conductivity of molten MCl-NdCl₃ (M = Li, Na, Rb and Cs) has been measured from the liquidus temperature up to ~ 1180 K. The measurements were performed in usual U-shaped capillary quartz cells with platinum electrodes. The molar conductivity (Λ) has been computed by using literature data on the densities of the binary systems. In all cases, when the temperature range exceeds about 100 K, the plot $\ln \Lambda$ vs. $1/T$ is not a straight line. The activation energy of the conductivity does not remain constant but reduces with increasing temperature. In the specific and molar conductivity isotherms strong deviations from additivity are noted. The results are discussed in terms of octahedral local coordination of Nd³⁺ over the entire concentration range.

Key words: Rare Earth; Electrical Conductivity; Neodymium; Alkali Chloride.