Spectrophotometric Study of Nd$^{2+}$ Ions in LiCl-KCl Eutectic Melt

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Z. Naturforsch. 59a, 705 – 710 (2004); received May 18, 2004

A UV and visible spectrophotometric study was made in order to prove the existence of Nd$^{2+}$ and clarify the equilibrium among Nd metal, Nd$^{2+}$, and Nd$^{3+}$ in LiCl-KCl eutectic melt. Spectra assigned to Nd$^{2+}$ were observed for NdCl$_2$ in (LiCl-KCl)$_{eut}$ and Nd-NdCl$_3$ in (LiCl-KCl)$_{eut}$ melts. Black corrosion products were observed on the surface of the glass cells used for the measurements, where the spectra assigned to Nd$^{2+}$ were observed. X-ray diffraction measurements and electron-probe micro-analyses of the corroded glass cells revealed that the corrosion products contained NdOCl.

Key words: Disproportionation; Neodymium Dichloride; Neodymium Trichloride; Molten Salts; Spectrophotometry.