

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

Hirokazu Hayashi, Mitsuo Akabori, Toru Ogawa, and Kazuo Minato

Department of Materials Science, Japan Atomic Energy Research Institute, Tokai-mura, Naka-gun, Ibaraki-ken, 319-1195, Japan

Reprint requests to Dr. H. H.; Fax: +81- 29-282-5922, E-mail: hhayashi@popsvr.tokai.jaeri.go.jp

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

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