

DISPERSION CURVES OF $\text{Nd}^{\{3+\}}$ AND $\text{Sm}^{\{3+\}}$ RELATIVE TO $\text{La}^{\{3+\}}$ IN AQUEOUS CHLORIDE SOLUTIONS

PHYSICS

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Fig. 1. Dispersion curves of lanthanides relative to the dispersion curve of lanthanum. 1 and 2 –neodymium; 3 and 4 –samarium; 1 and 4 – concentration 1/10 mol/l; 2 and 3 –1/20 mol/l.

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Abstract

Full Text

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PHYSICS

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DISPERSION CURVES OF Nd^{3+} AND Sm^{3+} RELATIVE TO La^{3+} IN AQUEOUS CHLORIDE SOLUTIONS

(Presented by Academician I. V. Obreimov, 20 XII 1967)

In ⁽¹⁾, the dispersion curves of trivalent ions of rare-earth elements (REE)–Ce, Pr, Nd, Eu, Dy, Ho, Er, Tu, Yb–were measured relative to the lanthanum ion in aqueous sulfate solutions in the wavelength interval from 2500 to 6500 Å. The measurements were carried out by the Puccianti interferometric method using an ISP-22 spectrograph and a Jamin-type interferometer with fused-quartz plates. In the present work, measurements of the dispersion of REE relative to La have been continued; neodymium and samarium chlorides were chosen as the objects of study. The preparation of the solutions and the method for measuring dispersion were the same as in ⁽¹⁾, but the temperature difference of the solutions in both arms of the interferometer was monitored by a differential thermocouple with an accuracy of up to 0.01°.

Figure 1 shows the dispersion curves of the Nd^{3+} and Sm^{3+} ions relative to the La^{3+} ion at solution concentrations of 1/10 and 1/20 mol/l. Two dispersion curves of Sm^{3+} (3) were obtained in measurements of one and the same solution.

Fig. 1. Dispersion curves of lanthanides relative to the dispersion curve of lanthanum.

1 and 2 –neodymium; 3 and 4 –samarium; 1 and 4 –concentration 1/10 mol/l; 2 and 3 –1/20 mol/l.

It turned out that in chloride solutions the course of the Nd^{3+} dispersion curve is the same as in sulfate solutions. The Sm^{3+} dispersion curve runs parallel

to the La^{3+} dispersion curve. It should be noted that in sulfate solutions the dispersion curves of the Eu^{3+} and Dy^{3+} ions, which follow Sm^{3+} , are also almost parallel to the dispersion curve of the La^{3+} ion; therefore, it should be expected that the course of the dispersion curves of REE ions relative to the La^{3+} ion in chloride solutions is the same as in sulfate solutions.

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CITED LITERATURE

¹ R. M. Shukurova, E. F. Yampikov, *Dispersion curves of REE relative to lanthanum in aqueous sulfate solutions*. Deposited at VINITI, VI 1968.

Note: Figure translations are in progress. See original paper for figures.

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