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Kinetics of the Yttrium Fluoride electroreduction in Chloride melts

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Abstract

To establish the effect of the nature of supporting electrolytes KCl; K, Na/Cl; K, Na, Cs/Cl; and K, Na, Ba/Cl on the electrochemical deposition of yttrium from melts, the electroreduction of yttrium fluoride in the said melts is studied by a linear voltammetry method. The discharge of ions Y^{3+} in all the melts occurs via one stage. The diffusion coefficients, activation energy, product of transfer coefficients and the number of electrons αn_{α}, diffusion layer thickness, diffusion constant, and rate constant of charge transfer are determined.

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REFERENCES

1. Gasviani, N.A., Dzhaparidze, Dzh.I., Kipiani, G.N., and Gasviani, S.G., *Elektrokhimiya*, 2003, vol. 39, p. 876.

2. Skurupafis, K.A., *Cand. Sci. (Chem.) Dissertation*, Moscow, 1972.

3. Delimarskii, Yu.K., Tumanova, N.Kh., Shilina, G.V., and Barchuk, L.P., *Polyarografiya ionnykh rasplavov* (Polarography of Ionic Melts), Kiev: Naukova Dumka, 1978.

4. Baraboshkin, A.N., *Elektrokristallizatsiya metallov iz rasplavlennykh solei* (Electrocrystallization of Metals from Molten Salts), Moscow: Nauka, 1976.

5. Vasin, B.D. and Ivanov, V.A., Abstracts of Papers, *IV Ural. konf. po vysokotemperaturnoi fizicheskoi khimii i elektrokhimii, Sverdlovsk* (IV Ural Conf. on High-Temperature Physical Chemistry and Electrochemistry, Sverdlovsk), Perm, 1985, part 2, p. 33.

6. Sevcik, A., *Collect. Czech. Chem. Commun.*, 1948, vol. 13, p. 249.

7. Randles, I.B., *Trans. Faraday Soc.*, 1948, vol. 44, p. 327.

8. Delimarskii, Yu.K. and Gorodyskii, A.V., *Dokl. Akad. Nauk SSSR*, 1959, vol. 129, p. 610.

9. Delimarskii, Yu.K. and Gorodyskii, A.V., *Zh. Fiz. Khim.*, 1961, vol. 35, p. 687.

10. Matsuda, H. and Ayabe, Y., *Z. Elektrochem.*, 1956, vol. 59, p. 404.

11. Golovin, V.A. and Dobren'kov, G.A., *Tr. Kazan. Khim.-Tekhnol. Inst.*, 1965, vol. 34, p. 202.

12. Nicholson, R.S. and Shain, I., *Anal. Chem.*, 1964, vol. 36, p. 706.

13. Delahay, P., *New Instrumental Methods in Electrochemistry*, New York: Interscience,

1954.

14. Delimarskii, Yu.K., Tumanova, N.Kh., Shilina, G.V., and Barchuk, L.P., *Polyarografiya ionnykh rasplavov* (Polarography of Ionic Melts), Kiev: Naukova Dumka, 1978.

15. Galus, Z., *Teoretyczne podstawy electroanalizy chemicznej*, Warszawa: Panstwowe Wydawnictwo Naukowe, 1971.

16. Gokhshtein, A.Ya. and Gokhshtein, Ya.P., *Dokl. Akad. Nauk SSSR*, 1960, vol. 131, p. 601.

17. Kuznetsov, S.V., Kuznetsov, S.A., and Stangrit, P.T., *Elektrokhimiya*, 1990, vol. 26, p. 102.

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Additional information

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