

Extraction-photometric determination of indium with azo-substituted ethoxyacridine

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Abstract

The associates of chloro-indate with azo-substituted ethoxyacridine have been studied by spectrophotometric method. It has been found that the associates are well extracted with a mixture of dichloroethane-acetone (4:1). The optimum volume of aqueous and organic phase is equal to 5 ml. The molar ratio of the components in the extractable compounds was studied by the methods of isomolar series, equilibrium shift and a straight line. It was found that chloro-indate is associated with ethoxyacridines in a 1:1 ratio.

It was studied formation and extraction of associates of chloro-indate with AEADBA (9-amino-4-ethoxyacridine-6-azo-*N,N'*-dibutylaniline) and AEAN (9-amino-4-ethoxyacridine-6-azo-*N,N'*- β -naphthol). The maxima of light absorption of chloro-indate with AEADBA are observed at 520 nm, and the AEAN at 530 nm. The light absorption of the extracts of associates coincides with the absorption maxima of azoethoxyacridines, which indicates the electrostatic character of the interaction and the formation of complexes.

It was determined the physico-chemical and analytical characteristics of the azo-substituted ethoxyacridines and their ionic associates with chloride acidocomplexes of indium (λ_{\max} , ϵ , β_{KD} , D, R%). It has been shown that the chloro-indate compounds with azo-substituted ethoxyacridines are ionic associates, the molar ratio of the components in which are: $[\text{In}^{\text{III}}] : [\text{Cl}^-] : \text{R}^+ = 1:4:1$

References

- [1] N.S. Poluektov, L.I. Kononeko, R.S. Lauer. *J. Analit. Chem.* **1958**. Vol.13. No.4. P.396-402. (russian)
- [2] I.K. Guseinov, K.Zh. Rashidov. *Azerb. Chem. J.* **1978**. P.108-111. (russian)
- [3] I.S. Levin, T.G. Azarenko. *J. Factory Lab.* **1962**. Vol.28. No.11. P.1313. (russian)
- [4] N.I. Ismailov, N.Kh. Rustamov. *Azerb. Chem. Jour.* **2001**. No.4. P.38-41. (russian)
- [5] N.I. Ismailov, A.M. Pashajanov, G.R. Muradova. Azo-Substitute of EthoxyAcridine – A New Reagent for Extraction-Photometric Determination of Tellurium (IV). *J. of Adv.s in Chem.* **2016**. Vol.12. No.11. P.4476-4479.
- [6] N.I. Ismailov, A.Kh. Osmanova, N.V. Yusifova, M.V. Mammadova, and S.N. Osmanova. Associates of chlorotellurite with azo-substituted ethoxyacridine in extraction-photometric analysis. *Butlerov Communications.* **2017**. Vol.50. No.6. P.137-140. ROI: jbc-02/17-50-6-137
- [7] A.I. Busev. Analytical chemistry of indium. *Moscow: AN SSSR.* **1958**. 243p. (russian)
- [8] M.I. Bulatov, I.P. Kalinkin. Practical guidance on photolorimetric and spectrophotometric methods of analysis. *Leningrad: Chemistry.* **1976**. 376p. (russian)