"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

Physicochemical analysis of systems having ternary colored complexes in solution. A. K. Babko and M. M. Tananaiko. *Ukrain. Khim. Zhur.* ~~19, 529-43~~ (1953); *Referat. Zhur., Khim.* 1954, No. 30313.—The study concerned complex formation in aq. solns. of Cu^{++}-glycine-salicylate and Cu^{++}-quinoline-salicylate. These systems were subjected to physicochem. analysis in which the optical d. properties were used as characteristics. The investigation was confined to the tetrahedral section corresponding to 0.1*M* soln. For these systems isochrome diagrams were constructed and deviations from additivity of the optical d. values were detd. A method was developed for calcg. deviations from additivity in ternary systems contg. 2 or 3 colored components. To det. the compn. of ternary compds. in soln., a series of solns. corresponding to sections of the triangular compn. diagram was studied. In the system Cu^{++}-glycine-salicylate, no ternary compd. was formed. In this system glycine displaced salicylic acid ions from Cu salicylate and formed a more stable Cu glycine salt. In the system, Cu^{++}-quinoline-salicylate, an intensely colored ternary complex, was formed. In this compd. the ratio of Cu^{++}: quinoline:salicylate was 1:2:2. This compd. was extractable with nonaq. solvents. The compn. of this compd. in a nonaq. phase corresponds to its compn. in an aq. soln.

M. Hosch

was

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

Ternary complexes in the system: metal ion-pyridine-salicylate. A. K. Babko and M. M. Tananaiko. *Ukrain. Khim. Zhur.* 19, 666-71(1953); cf. *C.A.* 48, 3837*i*.—Ternary complexes, some brightly colored and all $CHCl_3$-sol., are formed by Cu^{++} (blue), Co^{++} (rose), Ni^{++} (light blue), Ag^{++}, Zn^{++}, Cd^{++}, and Hg^{++} (colorless). No such complexes are formed by Al^{+++}, Sn^{++}, Pb^{++}, Sb^{+++} and Bi^{+++}; whereas Mn^{++}, Fe^{++}, and Fe^{+++} form complexes that are not $CHCl_3$-sol. Complexes were prepd. thus: to 2 ml. of 0.1*M* soln. of the metal salt were added 2 ml. of *M* pyridine and 2 ml. of *M* Na salicylate (all aq.). The mixt. was extd. with $CHCl_3$, to sep. the complex quantitatively. For analysis, the $CHCl_3$ soln. was shaken with dil. HNO_3 to bring the metal ion into the aq. phase. The complexes were sol. also in other org. solvents, but $CHCl_3$ was used because it does not also ext. binary salicylate complexes. The optimum pH for complex formation is 4–7. The relative extractibilities of ion complexes in decreasing order are $Hg^{++} > Cu^{++} > Zn^{++}$, $Ni^{++} > Cd^{++} > Co^{++}$. The extinction coeff. and soly. in various org. solvents of the Cu^{++} complex were detd. This reaction should be useful for *analytical sepns.* (as Bi and Cu). Malcolm Anderson

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

Bykko, A.K.

Phosphomolybdate and silicomolybdate complexes in solution. A. K. Babko and S. S. Shanovskaya. *Zhur. Obshchei Khim.* 23, 380-92 (1953).—The phosphomolybdate and silicomolybdate complexes were prepd. by adding ammoniacal MoO_3, 0.1 mol./l., to Na_3PO_4 (Na_2SiO_3), 0.1 mol./l., and acidifying with 0.2*N* HNO_3. For the P complex the order of addn. or the interval between addns. and the time of standing after the prepn. did not affect the optical density (detd. with a photometer and against Na_2CrO_4 borax color standards). This indicated complete reversibility of the reaction. For the Si complex partial irreversibility was noted (ascribed to the formation of colloidal H_2SiO_3); the best procedure in prepg. it was to add the ammoniacal MoO_3 to the Na_2SiO_3 and immediately acidify with HNO_3. For pH 0.7-2.0, the optical density was expressed as a function of the Mo/P (Si) ratio for Mo + P = const., Mo const., and P const.; all curves passed through a max. corresponding to Mo/P = 12 and 24 (at 60° only 12) and Mo/Si = 12. The addn. of H_3PO_4 did not appreciably decrease the color intensity of the Si complex; it decolorized the P complex. The color intensity decreased with increased Mo concns., at first, and then became const.; at pH 1.7-2.6 an excess of Mo weakened the color intensity. The dissocn. const. $[PO_4^{3-}][(MoO_3)_3]^4/[P(Mo_3O_{10})_4^{3-}] = 5.6 \times 10^{-10}$. J. B.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

Phosphomolybdate and silicomolybdate complexes in solution. A. K. Babko and S. S. Shanovskaya. *J. Gen. Chem. U.S.S.R.* 23, 889-97(1953)(Engl. translation).—See *C.A.* 49, 14654. H. L. H.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

Copper complexes with dimethylglyoxime. A. K. Babko and M. V. Korotun (State Univ., Kiev). Zhur. Obshchei Khim. 23, 1372-13(1953); cf. following abstr.—Complex formation between Cu and dimethylglyoxime was studied for solns. of varying pH. In solns. of low pH or in an excess of Cu^{++} ions, $CuHDm^{+}$ (where HDm^{-} is the univalent anion of dimethylglyoxime) is formed along with the known $Cu(HDm)_2$. The dissocn. const., $K = [Cu^{++}][HDm^{-}]/[CuHDm^{+}]$, of the $CuHDm^{+}$ complex was det. by the soly. of $Ni(HDm)_2$ in Cu salts ($K = 1.5 \times 10^{-10}$) and by the optical method ($K = 0.8 \times 10^{-10}$). The soln. of $Cu(HDm)_2$ in alkalies is assocd. with the formation of new, intensely colored compds., probably CuDm and $Cu(Dm)_2^{--}$.

J. Rovtar Leach

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A. K.; SHANOVSKAYA, S. S.

Molybdates

Investigation of complex salts of phosphomolybdates and silicomolybdates in solution. Zhur. ob. khim. 23, No. 3, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

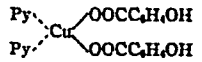
"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A. K.

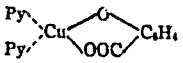
Chemical Abst.
Vol. 48
Apr. 10, 1954
Inorganic Chemistry

2 4

Ternary complexes in the system ionic copper-pyridine-salicylate. II. Effect of pH of the solution on the composition of the complexes. A. K. Babko and M. M. Tananaiko. *Zhur. Obshchei Khim.* 23, 1459-64(1953).—The standard mixt. of solns. used in the exptl. program consisted of 2 ml. of 0.05*M* soln. of $CuNO_3$, 4 ml. of 0.05*M* soln. of pyridine and 4 ml. of 0.05*M* soln. of Na salicylate. Solns. of 0.01*N* NaOH and HNO_3 were used in controlling pH. Color densities of the individual solns. were measured with a photometer. There were formed (1) in the range of pH 4.0 to 4.5 a blue complex having the structure;



(2) in the range of pH 5.0 to 5.5 a green complex with the structure



M. O. Holowaty

Inst. Gen. + Inorg. Chem., AS, Ukr. SSR

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

USSR

Colored thiocyanate complexes. A. K. Babko. *Rabotye Khim. Rastvorov i Kompleks. Soedinenii, Akad. Nauk Ukr. S.S.R.* 1954, 50-60.—Review with 10 references to Babko's work (1948-51) on the nature of the thiocyanate complexes of metals, particularly: Fe, Co, Mo, and W. G. M. K.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

Solubility product of nickel dimethylglyoxime. A. K. Babko and P. R. Mikhelson. *Trudy Komisii Anal. Khim., Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 5(8), 61–7 (1954).—The soly. product of Ni dimethylglyoxime (I) was detd. in 3 buffer mixts. at pH 3 and pH 3.5. Av. value was 2×10^{-25}. Soly. of I was unchanged after 6 hrs. Pure dimethylglyoxime (II) in buffer soln. was not decompd. in 6 hrs. I was shaken 3–6 hrs. with buffer soln. and the pH detd. potentiometrically. The soln. was filtered and to 100 ml. of filtrate was added an excess of alc. soln. of II, and NH_4OH. The ppt was filtered through a glass crucible and dried. The buffer solns. were AcOH + NH_4OH, $CH_3ClCOOH$ + NaOH, and K H phthalate + HCl. At pH 3 the soly. of I did not depend on compn. of buffer mixt. but at pH 3.5 different results were observed in detg. Ni. These differences were not caused by different solubilities of I but by the effect of the anions of the buffer mixts. on the detn. of small amts. of Ni. Air oxidation of I was apparently faster for AcOH-NH_4OH buffer soln. at pH 3.5, and this data was excluded when the av. value for soly. product was calcd. At pH 4.5 the calcd. and found solubilities agreed satisfactorily. Excess Ni or II affected the soly. of I, as would be predicted from the equation for the soly. product.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

2321. Use of coloured reagents in colorimetry. A. K. Babko and T. N. Nazarchuk (*J. Anal. Chem., U.S.S.R.*, 1954, 9 [2], 98–100).—The sensitivity of the alizarin reaction for Al can be greatly increased by ether-extraction of the excess of reagent. The Al complex is unaffected and the Al can be determined colorimetrically in the aq. phase. To determine Al in Zn metal, 0·1 to 0·2 g is dissolved in 5 ml of dil. H_2SO_4 (1 + 10), the $Fe^{\cdot\cdot}$ is oxidised with $KMnO_4$, the solution in a separating funnel is treated with 5 ml of 4 *M* NH_4CNS or KCNS, the $Fe^{\cdot\cdot\cdot}$ is extracted by three 10-ml portions of butanol-ether (5 + 2), and the aq. phase is run into a 100-ml calibrated flask and diluted to the mark. Ten ml of the soln. are mixed with 0·5 ml of alizarin soln. (0·03 g of alizarin in 100 ml of ethanol) and 2 ml of 1 per cent. gelatin soln., and then treated with 0·5 *N* NaOH to give a pinkish blue colour and 0·1 *N* acetic acid to give a yellow colour. A buffer soln. of pH 5 (a mixture of 3 vol. of 0·1 *N* acetic acid and 1 vol. of 0·1 *N* aq. NH_3) is added, the soln. is immersed in boiling water for 5 min., cooled and made up to 25 ml with the buffer solution. The excess of alizarin is extracted with ether and the colour intensity of the aq. solution is compared with that of standards prepared similarly. G. S. SMITH

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

USSR.

Use of colored reagents in colorimetry. A. K. Babko and T. N. Nazarchuk. *J. Anal. Chem. U.S.S.R.* 9, 101-11 (1954)(Engl. translation).—See *C.A.* 48, 6001*d*. H. L. H.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

The colored peroxide complex of cerium. A. K. Babko and A. I. Volkova. *Ukrain. Chim. Zhur.* 20, [illegible] (in Russian); cf. C.A. 48, 112[illegible]. The reaction between cerium salts and H_2O_2 [illegible] the [illegible] of a citrate (alk. medium) occurs in two [illegible] by the H_2O_2 to Ce(IV), followed by complex formation between 1 [illegible] of Ce(IV) [illegible] the complex is characterized by [illegible] function coeff. of λ = 650 at [illegible] F. Holowaty

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

БАБКО, А.К.

USSR/Analytical Chemistry - General Questions, G-1

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61809

Author: Babko, A. K.

Institution: None

Title: Development of Colorimetric Analysis

Original Periodical: Zavod. laboratoriya, 1954, 20, No 5, 518-531

Abstract: A review. Bibliography, 108 titles.

Card 1/1

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

USSR.

Volumetric method for determination of aluminum with alizarin as indicator. A. K. Babko and T. N. Nazarchuk. *Ukrain. Khim. Zhur.* 20, 373-82(1954)(in Russian).—To the soln. to be analyzed, add 0.5 ml. of satd. alc. alizarin soln. and 25 ml. of 0.0*M* NaF soln. If the soln. is acid, neutralize with 0.5*N* NaOH to violet-blue color. Add dropwise 0.1*N* AcOH until the soln. turns yellow. Add 25 ml. of buffer soln. (0.1*M* AcOH and 0.1*M* NH_4OH taken in a 3:2 ratio), heat to 80-90°, and add NaCl to satn. Titrate excess F^- with $KAl(SO_4)_2$ of known Al content to transition of yellow color into pink. The accuracy of this method is estd. at ±1%. Fe, Ca, and Mg interfere. Fe was successfully removed with $K_4Fe(CN)_6$ in the presence of Zn or Mn. This method for removing Fe was unsuccessful when considerable Fe was present. M. Hoseh

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A. K.

USSR/Chemistry

Card 1/1

Authors : Babko, A. K., and Korotun, M. V.

Title : Reaction of complex formation between bivalent cobalt and dimethylglyoxime

Periodical : Zhur. Obshchei Khim. 24, Ed. 4, 597 - 605, April 1954

Abstract : The authors investigated properties of a cobalt-dimethylglyoxime compound separated from an acetone solution. It is shown that this compound is erroneously considered to be a compound of bivalent cobalt. Actually, it is a compound of trivalent cobalt. Its structure is $H[Co(HD_m)_2Cl_2]$. This compound reacts in aqueous solution with the solvent forming a complex non-electrolyte $[Co(HD_m)_2Cl \cdot H_2O]$. Twelve references; 7 USSR since 1906; 5 German since 1923. Tables, graph.

Institution : The Kiev and Chernovitsy State Universities, Ukr-SSR

Submitted : November 17, 1953

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

USSR.

Complex formation between bivalent cobalt and dimethylglyoxime. A. K. Babko and M. V. Korobun. *J. Gen. Chem. U.S.S.R.* 24, 000-14(1954)(Engl. translation).—See *C.A.* 49, 2928e.
H. L. H.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A. K.

USSR/Chemistry

Card 1/2

Authors : Babko, A. K.; and Dubovenko, L. I.

Title : Complexes of bivalent iron with dimethylglyoxime

Periodical : Zhur. Ob. Khim., 24, Ed. 5, 751 - 759, May 1954

Abstract : The investigation of a colored dioxime complex of bivalent iron was carried out with the aid of a physico-chemical method of analyzing solutions. The optical density was the main measured property of the system. It was found, in accordance with the method of isomolar series and in accordance with other sections of the Fe^{++} - H_2O - H_2Dm system, that the composition of the complex at pH$\approx$6.5 - 8 corresponds to the ratio of Fe^{++} and H_2Dm equal to 1:2. The dependence of the reaction equilibrium upon the H^+-ion concentration was also investigated and on the bases of the data obtained the instability constant of the complex was computed by the author. The formation of another complex group, most likely $FeHDm^+$, in a higher acid medium and during the presence of a Fe^{++} surplus was definitely confirmed.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

Zhur. Ob. Khim, 24, Ed. 5, 751 - 759, May 1954 (additional card)

Card 2/2

Abstract : A more stable complex, in which the iron displaces two hydrogen atoms of dimethylglyoxime, is formed in a more alkaline medium and in the presence of an excess of dimethylglyoxime anions. Ten references; 9 USSR since 1905. Table, graphs.

Institution : The T. G. Shevchenko State University, Kiev, Ukr-SSR

Submitted : December 18, 1953

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, Anatoliy Kirillovich; KLEYNER, K.Ye., redaktor; TUTKOV, B.S., redaktor; KRYLOVSKAYA, N.S., tekhnicheskiy redaktor.

[Physical and chemical analysis of complex compounds in solutions; optical method] Fiziko-khimicheskii analiz kompleksnykh soedinenii v rastvorakh; opticheskii method. Kiev, Izd-vo Akademii nauk USSR, 1955. 325 p. (MLRA 9:5)

1.Chlen-korrespondent AN USSR (for Babko)
(Compounds, Complex) (Chemistry, Analytical) (Solution (Chemistry))

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A. K. Prof. Cor. Mbr. AS UkrSSR

"The Development of Colorimetric Analysis," paper presented at the 4th Conference of Workers in Plant and Industrial Laboratories in Kazakh SSR and Central Asia, Alma-Ata, 1955

SO: TI 170982

SO: Kazakhstanskaya Pravda, No. 252, 23 Oct. 55, Uncl.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

B+BKD

USSR

8753* Volumetric Determination of Cobalt by Dimethylglyoxime. Ob'emnyi metod opredeleniia kobal'ta dimetilglioksimom. (Russian.) A. K. Babko and M. V. Korotun. *Zhurnal Analiticheskoi Khimii*, v. 10, no. 2, Mar.-Apr. 1955, p. 100-108. Includes tables. 10 ref.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A. K.

3271. Accuracy and reproducibility of chemical analysis. A. K. Babko (*Zavod. Lab.*, 1955, 21 [3], 269–277).—Many examples are quoted to show that applications of statistics to the results of chemical analysis are made without proper consideration of inherent chemical errors of methods. The mean of the results obtained by a number of laboratories has no special claim to be the true result. It is recommended, to avoid needlessly complicated calculations in statistical analysis, that the average error be calculated and transformed to a figure representing approximately the standard deviation by multiplying it by 1·25. The average error is the arithmetical mean of the absolute values of the individual deviations from the mean of the results.

G. S. SMITH

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

USSR/Chemistry - Analytical chemistry

Card 1/1 Pub. 116 - 22/30

Authors : Babko, A. K., and Mikhel'son, P. B.

Title : Solubility of nickel dimethylglyoxime and dimethylglyoximate in alcohol-water mixtures

Periodical : Ukr. khim. zhur. 21/3, 388-393, June 1955

Abstract : Experiments were conducted to determine the solubility of Ni-dimethylglyoximate and dimethylglyoxime in alcohol-water mixtures and to explain the conditions at which the alcohol does not effect the quantitative Ni-deposition by the dimethylglyoxime. The investigation conducted at 20 - 22° showed that the solubility of dimethylglyoxime in organic solvents immiscible with water varies somewhat depending upon the H_2O content of these solvents. It was found that temperature produced no effect on the solubility of the glyoxime. Nine references: 7 USSR and 2 German (1907-1954). Tables; graphs.

Institution : The T. G. Shevchenko State Univ., Kiev

Submitted : October 16, 1954

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

Spectrophotometry of complex-compound solutions. Ukr.khim.zhur. 21 no.4:533-540 '55. (MLRA 9:2)
(Spectrophotometry) (Compounds, Complex)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

L.M.Kul'berg, 1912-1955; obituary. Ukr.khim.zhur.21 no.4:544-546 '55. (MLRA 9:2)

(Kul'berg, Leonid Markovich, 1912-1955)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

5000

032. **Electrolytic method of obtaining analytical concentrates for the determination of impurities in copper.** A. K. Babko, P. V. Marchenko and T. N. Nazarchuk (Inst. Gen. Inorg. Chem., Acad. Sci., Ukraine SSR). *Zavod. Lab.*, 1955, 21 (6), 652-664.—The method is based on the simultaneous anodic dissolution of the sample and the cathodic deposition of Cu in Hg. Mercury (100 g) is placed in a 200-ml beaker with 50 ml of water, 1 ml of H_2SO_4 and 1 ml of HNO_3. A connection to the Hg is made through a platinum wire in a glass tube. The sample of copper, 10 g of plate or rod, is suspended in the solution. A current of 2 to 5 amp. is passed for 4 hr.; about 3 to 4 g of the sample dissolves. The sample is washed and weighed, the difference being taken as the sample weight. A platinum anode is inserted and the electrolysis is continued for 30 min. to remove Cu from the solution. The amalgam is shaken for 30 min. with a dil. copper salt solution. Tin, Pb and Bi are completely extracted from the amalgam and can be determined colorimetrically. With Pb, the latter part of the electrolysis can be omitted since Pb does not enter the amalgam while copper salts are present. Nickel, Sb and Fe cannot be completely extracted from the amalgam. A platinum cathode is used instead of Hg and the electrolyte contains 2 ml of HNO_3 and 1 ml of H_2SO_4 in 50 ml of water. The sample is dissolved completely, a platinum anode is inserted and the electrolysis is continued until the solution is colourless. Traces of Cu are removed with H_2S prepared from Na_2S, and Fe and Ni are determined in the filtrate. G. S. SMITH

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A. K.

Coprecipitation in quantitative analysis. III. Study of the coprecipitation of antimony with manganese dioxide in the presence of radioactive indicators. A. K. Babko and M. I. Shtokalo. *Zavodskaya Lab.* 21, 767-73(1955); cf. *ibid.* 19, No. 4(1953).—Sb sulfate and nitrate solns. are in a metastable condition, and Sb ppts. quantitatively if given sufficient time (2-6 months from a 2*N* soln.). Filter-paper pulp carries down but little of the Sb which shows that MnO_2 acts as a copptn. agent, and does not simply entrain the Sb. In the tests, a dil. soln. of Sb^{124} was added to the Sb in soln., and the pptn. was studied by the radioactivity of the soln. Comparison was made with several other copptg. agents, such as $Fe(OH)_3$ pptd. with NH_4OH and pptd. with Na_2CO_3; with NaOAc. and with MnO_2; 4, 0.7, 2, and 0%, resp., of the Sb were found with these co-precipitants in the absence of Cu, and 3.0, 0.2, 6, and 2% in the presence of as much Cu in soln. as is usually found during the pptn. Of the other ions in soln., F inhibited copptn. and a pH 2-9 favored it. MnO_2 pptd. Sb equally well whether freshly formed in the soln. or added to the soln. even in the form of pyrolusite. By use of tagged Zn^{65} atoms, the formation of a definite Zn-Cr compound (as hydroxides) was established during their copptn. but no compd. formation was discovered between Sb and MnO_2.

W. M. Sternberg

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, Anatoliy Kirillovich; PYATNITSKIY, Igor' Vladimirovich; ALIMARIN, I.P., redaktor; DYMOV, A.M., professor, redaktor; LUR'YE, Yu.Yu., professor, redaktor; FILIPPOVA, N.A., redaktor; LUR'YE, M.S., tekhnicheskiy redaktor

[Quantitative analysis] Kolichestvennyi analiz. Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1956. 736 p. (MLRA 9:11)

1. Chlen-korrespondent AN SSSR (for Alimarin)
(Chemistry, Analytical--Quantitative)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K

China/Analytical Chemistry - Analysis of Inorganic Substances, G-2

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61845

Author: Babko, A. K.

Institution: None

Title: Volumetric Method of Determining Cobalt with Dimethylglyoxime

Original Periodical: Khuasyue shitsze, 1956, No 1, 43-45; Chinese

Abstract: A translation. See Referat Zhur - Khimiya, 1955, 31898

Card 1/1

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

Character of the soluble complex formed by the interaction of nickel, dimethylglyoxime, and an oxidant. Zhur.neorg.khim. 1 no.3:485-488 Mr '56. (MLRA 9:10)

(Nickel organic compounds) (Compounds, Complex)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

USSR/ Inorganic Chemistry. Complex Compounds. C

Abs Jour : Referat. Zhurnal Khimiya, No 6, 1957, 18842

Author : A.K. Babko, G.S. Lisetskaya
Inst : -
Title : Concerning Reaction Equilibrium of the Formation of Tin, Antimony and Arsenic Thio Salts in Solution.

Orig Pub : Zh. Neorgan. Khimii, 1956, 1, No 5, 969-980

Abstract : A method of determination of the solubility of sulfides of Sn (4+), Sb (3+) and As (3+) in alkaline solutions was worked out. This method is based on the capacity of sulfides to produce stable colloidal solutions. Buffer solutions with a certain concentration of OH^- and S^{2-} were mixed with various volumes of titrated colloidal suspensions of a sulfide and the maximum quantity producing a transparent solution was determined This method was used to study the formation of thio and hydroxythio salts of Sn, Sb and As. It was shown that, when SnS_2 was dis-

State Univ., Kiev

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

USSR/Inorganic Chemistry. Complex Compounds. C

Abs Jour : Referat. Zhurnal Khimiya No 6 1957 18842

solved in an alkaline solution a complex was forming in accordance with the reaction $SnS_2 + OH^- \rightleftarrows [SnS_2OH]^-$ (1); $K = [SnS_2OH] / [OH^-] = 1.6$. Equation (1) is confirmed also by the reaction in alcohol medium. In a hydrogen sulfide containing solution, SnS_2 dissolves producing a thio salt according to the equation $SnS_2 + S^{2-} \rightleftarrows SnS_3^{2-}$; $K = [SnS_3^{2-}] / [S^{2-}] = 1.1 \times 10^{7}$. The study of equilibrium in solutions containing Sb(3+) and As (3+) is difficult in consequence of their oxydation and only approximate results have been obtained. SbS_3 dissolves noticeably at pH>9, and in presence of sulfide ions at pH>7. The reaction equation of dissolution in an alkaline medium is: $Sb_2S_3 + 2OH^- \rightleftarrows SbS_2^- + [SbS(OH)_2^-]$; $K = [SbS_2^-][SbS(OH)_2^-] / [OH^-]^2 = 0.08$. The presence OF H_2S raises the solubility strongly owing to the reaction $Sb_2S_3 + S^{2-} \rightleftarrows 2SbS_2^-$; $K = [SbS_2^-] / [S^{2-}] = 8.0$, and in presence of 0.04 M of H_2S it starts at

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

Once more about the development of spectrophotometry. Ukr.khim. zhur. 22 no.2:262-264 '56. (MLRA 9:8)

1. Institut obshchey i neorganicheskoy khimii AN USSR.
(Spectrophotometry)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKA, A. K., and MARCHENKO, P. V.

"Studying the Effect of Bromine and Iodine Ions on the Process of Reducing Arsenic to the Elemental State," by A. K. Babka and P. V. Marchenko, Institute of General and Inorganic Chemistry, Academy of Sciences Ukrainian SSR, Ukrainskiy Khimicheskiy Zhurnal, Vol 22, No 5, 1956, pp 665-669

The authors investigated the effect of bromine and iodine ions on the process of reducing trivalent arsenic to its elemental state. It was found that, similar to the action of hydrocloric acid, these ions accelerate reduction regardless of the nature of the reducing agent. The authors investigated the optimum conditions for the reduction of As^{III} to its elemental state in the presence of additives. It was found that the introduction of 0.05-0.5 gram-equivalents per liter of potassium iodide made it possible to remove arsenic quantitatively from solutions with a lower concentration of hydrochloric acid and a smaller excess of reducing agent. Under these conditions, the reduction of trivalent arsenic compounds takes place in 3 N hydrochloric acid. By using lead chloride as a reducing agent, arsenic can be separated in 5 N hydrochloric acid. The effect of the above conditions was checked by using radioactive indicators.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

Category: USSR/Analytical Chemistry - Analysis of inorganic substances. G-2

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 31000

Author : Babko A. K., Mikhal'chisin G. T.
Inst : not given
Title : Separation of Iron from Aluminum and Magnesium by Extraction of Nitrosonaphtholate of Iron

Orig Pub: Ukr. khim. zh., 1956, 22, No 5, 676-687

Abstract: A method has been worked out for separating Fe from Al and Mg by a chloroform extraction of the complex of Fe(3+) with 1-nitroso-2-naphthol (I). Small amounts of Mg and Al can be determined quantitatively in the same solution after separation of the Fe. To the solution under study, which has been adjusted to approximately pH 1.5 with NH_4OH or HNO_3, is added slowly and with stirring a freshly prepared acetone solution of I, in an 1.3-fold excess, over the amount required to precipitate all of the Fe. The resulting mixture is shaken from time to time over a period

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

Category: USSR/Analytical Chemistry - Analysis of inorganic substances.

G-2

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 31000

of 10 minutes, then $CHCl$ is added and shaking is continued for 1-2 minutes. After 2 extractions several ml of the solution of I are added and the extraction is repeated 3 times again. Duration of a quantitative separation of Fe is of 30-40 minutes. A determination has been made of the solubility of I, and of the complex of I with Fe, in $CHCl_3$, CCl_4, C_2H_5OH, dichlorethane, benzene, toluene, acetone and 50% CH_3COOH.

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peratures are 500 and 900° C. The experimental blank determines the minimal quantity of oxygen which can be dealt with.—S. K.

Institut obshchey i neorganicheskoy Khimii Akademii nauk USSR.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

Babko, A. K.

Category: USSR/Analytical Chemistry - General Questions. G-1

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30920

Author : Babko A. K., Radzikovskaya S. V.
Inst : not given
Title : Coprecipitation in Quantitative Analysis. Communication IV. Study of Mercurothiocyanate of Zinc as a Collecting Agent.

Orig Pub: Zavod. laboratoriya, 1956, 22, No 11, 1271-1276

Abstract: A quantitative study of the solubility of mercorothiocyanates of Zn, Cu and Co ($1.4 \cdot 10^{-4}$, $2.7 \cdot 10^{-4}$ and $4.8 \cdot 10^{-4}$ g-mole/liter) and of coprecipitation of Cu^{2+} and Co^{2+} with $ZnHg(SCN)_4$. Coprecipitation is observed at concentrations of the microcomponents, which are considerably lower than their solubility, as such, and Cu^{2+} is coprecipited more completely than Co^{2+}. Percentage content of Cu and Co in the precipitate increases with increasing concentration of Zn, but only in the case of an excess of mercurothiocyanate ions. A practically complete coprecipitation of Cu^{2+} and Co^{2+} is observed already with a ten-

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Kiev State Univ.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

USSR/Inorganic Chemistry - Complex Compounds C.

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4114

Author : Babko, A.K.
Title : Thiocyanate Complexes of Metals

Orig Pub : Uspekhi khimii, 1956, 25, No 7, 872-893

Abstract : A review.
Bibliography 113 references.

Card 1/1

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

5000

Oxalate complex of iron(III). A. K. [illegible] Dubovenko, State Univ. Kiev. [illegible] A ph. sicochem. [illegible] complex of Fe in soln. The compn. of the complex was detd. by investigation of the oxalate equil. with the colored complexes $FeSCN^{2+}$ and $FeSal^{+}$; and of the ultraviolet absorption and optical d. measurements of isomolar series of solns. of the system $Fe(ClO_4)_3$-$H_2C_2O_4$ with varying concns. of $HClO_4$. At pH ≦ 1 the complex is $FeC_2O_4^{+}$. With increasing concn. of the oxalate ion, particularly when the pH of the soln. is increased to approx. 2, the complex anion $Fe(C_2O_4)_3^{-}$ appears. At pH 2.5 the anion predominates in the soln.

I. M. Widom

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

Babko, A. K.

Oxalate complexes of iron(III). II. Dissociation constants and equilibrium curves. A. K. Babko and L. I. Dubovenko (State Univ., Kiev) Zhur. Obshchei Khim. 26, 996-1003. J. Gen. Chem. [illegible] (English translation [illegible]

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resp. The equil. curves of I, II, and III are given.

J. M. Widom

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Babko, A.K.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

Неорганическая Химия, т. 2, янв. 1957, p. 139-146.

Optical characteristics of the complexes and changes in the equilibrium with the pH. Determ...

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

Babka, A. K.

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BABKO, A. K.

27

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Cerium oxalate. A. K. Babko and L. I. Dubovenko (T. G. Shevchenko State Univ., Kiev). *Zhur. Neorg. Khim.* 2, 893-15(1957).—The soly. of $Ce_2(C_2O_4)_3$ (I) in solns. of HNO_3 having an ionic strength of $\mu = 2$ was measured and the $K_{s.p.}$ was calcd. as $(3 \pm 1) \times 10^{-28}$. The instability consts. were detd. for the complex ions $CeC_2O_4^+$ ($0.9 \pm 0.3 \times 10^{-3}$) and $Ce(C_2O_4)_2^-$ (1.7×10^{-3}). Thus it was established that I belongs to that group of ppts. whose soly. decreases with an increase in a common ion but as the concn. of the common ion is increased the soly. increases due to the formation of a complex ion. J. Roytar Leach

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Babko, A. K.

Complex compounds of aluminum

optical d. of solns. over a broad pH range. The concn. conditions for the formation of the Al complexes, their compn., and instability consts. were det. The formation of 3

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.; NABIVANETS, B.I.

Conditions of molybdates in solutions. Part 1: Ion migration in electrolysis. Solubility of molybdic anhydride. Zhur.neorg.khim. 2 no.9:2085-2095 S '57. (MIRA 10:12)

1.Institut obshchey i neorganicheskoy khimii AN USSR.
(Electrolysis) (Solubility) (Molybdenum oxides)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.; NABIVANETS, B.I.

Conditions of molybdates in solutions. Part 2: Absorption of molybdenum by ionites. Zhur.neorg.khim. 2 no.9:2096-2101 S '57. (MIRA 10:12)

1.Institut obshchey i neorganicheskoy khimii AN USSR.
(Absorption) (Molybdenum) (Ion exchange)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

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BABKO, A.K.

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PHOTOMETRIC DETERMINATION OF TUNGSTEN AND MOLYBDENUM AS RHODANIDE COMPLEXES [illegible]

The optical density [illegible] depending on their [illegible] and the [illegible] of rhodanide [illegible]

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BABKO, A.K.

11

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2959. Sulphur method for determining oxygen (oxides) in metals. II. Determination of micro amounts of oxygen in copper, nickel, chromium and molybdenum. [illegible] and O. F. Drako. Inst. Gen. Inorg. Chem. Acad. Sci. UkrSSR [illegible]

Chem

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

73-3-16/24

AUTHOR: Babko, A. K., and Popova, O. I.

TITLE: Determination of Titanium in Steels by Extracting its Complex with 1,8-α-Dihydroxynaphthalene. (Opredeleniye Titana v Stalyakh Ekstragirovaniyem Yego Kompleksa s 1,8-Dioksinaftalinom)

PERIODICAL: Ukrainskiy Khimicheskiy Zhurnal, 1957, Vol. 23, No.3, pp. 376-380 (USSR).

ABSTRACT: 1,8-dihydroxynaphthalene was shown to form complexes with titanium which has analogous properties as titanium-chromotropic complexes but can be extracted by means of organic solvents (Ref. 6). 1,8-dihydroxynaphthalene forms 2 compounds with titanium: a red complex at pH 1 - 4 (λ_{max} = 490 mμ) and a yellow complex at pH $\geq$6 (λ = 430mμ). These complexes are insoluble in water, form colloidal solutions which coagulate after 2 days. Chemico-physical analyses showed that the relation titanium: dihydroxy-naphthalene = 1:2 in the red complex and 1:3 in the yellow complex, the first complex being formed in a more acid medium, the second when the pH$\geq$6. The dependence of the formation of the complexes on the pH, the effect of some anions as well as the properties of the complexes were

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73-3-16/24

Determination of Titanium in Steels by Extracting its Complex with 1,8-α-Dihydroxynaphthalene.

investigated. The complex can be extracted with butanol, ethyl ether, isobutanol and benzene at pH 2 - 8. One extraction only is required. Figure 1 shows the effect of excess 1,8-dihydroxynaphthalene (H_2R) during the extraction of the complex at pH 4 and pH 6. The intensity of coloration of the extract of the complex is proportional to the titanium content in the solution (Fig. 2). Measurements were carried out on a photometer φM at an effective wavelength 465 mμ.(pH = 4). Co^{2+}, Ni^{2+} and Cu^{2+}- ions do not impede the extraction of the complex. Fe(III) forms a green precipitate with 1,8-dihydroxynaphthalene, but when converted into divalent Fe it will not react with the diol. Ascorbic acid, thiosulphate, Na-sulphite, hydroxylamine and hydrazine sulphate were used as reducing agents. Figures 3 and 4 give the light absorption curves of titanium-diol complexes in aqueous solution at pH 2 - 7 and in butanol at the same pH. Measurements were carried out on a spectrophtometer Cφ - 4. Optimum conditions for the red complex are at λ~540 mμ and for the yellow complex at λ~430 mμ. A method for the determination of titanium in steels by extraction without separating the chrome isgiven.

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73-3-16/24

Determination of Titanium in Steels by Extracting its Complex with 1,8-α-Dihydroxynaphthalene.

The concentration of the coloured complex was determined by comparing the intensity of colouration of the butyl extract with standard solutions on a colorimeter KOA - 1 at $\lambda \sim 478$ mμ. The titanium content was also determined by extraction and separation of chrome (used in proportion of Cr:Ti $\gg$ 50. The determination of titanium by extraction in ferrosilicon is also described. Results of the investigations are tabulated. There are 4 figures, 1 table and 8 references, 4 of which are Slavic.

SUBMITTED: November, 21, 1956.

ASSOCIATION: Kiyev State University imeni T. G. Shevchenko. (Kiyevskiy Gosudarstvennyy Universitet im. T.G. Shevchenko)

AVAILABLE: Library of Congress.

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BABKO, A.K.

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4E4

3825. Colorimetric determination of phosphorus and silicon as the reduced heteropolymolybdates. A. K. Babko and L. M. Bytushenko (Inst. of Gen. and Inorg. Chem. [illegible] S.S.R. [illegible] Zhur. [illegible] 20 [illegible] 427 [illegible] and the [illegible]

[illegible]

H_2SO_4 [illegible] must be [illegible] determined by the decomposition of the heteropoly acid and [illegible] With the [illegible] intensity [illegible] H_2SO_4 [illegible] agent [illegible] 5 A. In determining [illegible] in the presence of Si the [illegible] [illegible] during [illegible]

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

AUTHOR: Babko, A. K., Member, Academy of Science Ukr SSR 32-10-2/32

TITLE: The Development of Analytical Chemistry in the USSR (Razvitiye analiticheskoy khimii v SSSR)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol 23, Nr 10, pp 1153-1161(USSR)

ABSTRACT: It is pointed out in this paper that since the beginning of the 20th century analytical chemistry has been used mainly for the control of production thus contributing largely to its development. An important part was played in this connection by the works laboratories which must keep pace with the development of science in the USSR. An important contribution was made in this direction by Soviet scientific publications, particularly by the periodical "Zavodskaya Laboratoriya". In the chapter dealing with General problems and problems of organization the mistakes made in previous years in this field are described and commared with present "better conditions". A particularly important part is said to have been played by the respective reference works dealing with certain fields, among which the works by Tanayev, N. A., A. M. Dymov, Yu. N. Knipovich and Yu. V. Morachevski deserve mention in connection with the analysis of raw materials, as also the works by such Soviet scientists as Yu. Yu. Lur'ye, who translated foreign scientific works and thus enriched

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Soviet science considerably. In the further course of the article the stages of development of various branches of the fields of science mentioned are dealt with in detail in that the scientific tasks which arose at the XX Congress of the Communist Party of the USSR were described as the basis of all Soviet branches of science. The fact is stressed that Soviet publications at present contain much that is new, but that "only that may be accepted as new which is also better". Therefore the new methods suggested must be examined and judged before being admitted for use. In the chapter Classical Methods of Chemical Analysis numerous methods mentioned in Soviet publications are enumerated and their advantages are described. Considerable attention is paid to the methods of precipitation, co-precipitation and application of microadmixtures in connection with analytical concentrates. The application of reactions of complex formation and volume precipitation as also the research of masking substances, of the precipitation spectrum and the complex carriers. Though the application of radioactive isotopes is already being practiced, there still are faults which must be removed. The individual elements and families of adjoining elements, in particular with respect to rare metals, are still insufficiently investigated. The chapter dealing with Optical and Electrochemical Methods of analysis

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stresses the great achievements of Soviet scientists, particularly with respect to the practice of control in industry, as e. g. in colorimetric polarography and in spectral analyses. Nevertheless also this field is described as being insufficiently developed: there are still many elements that have as yet not been subjected to calorimetric investigation. Coloring reactions for germanium, hafnium, lead, tantalum, etc. are lacking. Though great success has been achieved by Soviet scientists in the field of electrochemical methods, the fact is stressed that in modern polarography chemical processes have as yet not been sufficiently investigated; the solubility properties of various ions are still unknown; often the normal data concerning the complex-forming base are lacking ("Phon"). In general the application of electrochemical methods appears still to be badly organized in the USSR. In reality, electrochemical analysis should mainly be used in automatic control, but, as is emphasized here, this field is still very little developed in the USSR.

ASSOCIATION: Akademiya nauk USSR (Academy of Science Ukr SSR)

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Card 3/3 1. Chemistry-Development-USSR

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

Babko, A.K.

AUTHORS: Babko, A.K., Marchenko, P.V. 32-11-2/60

TITLE: The Utilization of the "Simultaneous Precipitation Method" for the Conservation of the Analytical Concentrations of Cd, Pb, Bi and Zn When Analyzing Alloys (Ispol'zovaniye soosazhdeniya dlya polucheniya analiticheskikh kontsentratov Cd, Pb, Bi i Zn pri analize splavov)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 11, pp. 1278-1283 (USSR)

ABSTRACT: When analyzing refractory alloys of nickel with tungsten or molybdenum, the content of easily meltable components must be determined, for which purpose the conservation of the concentration of the elements to be determined is necessary. The present work is intended to examine the conditions that offer the possibility of attaining the highest possible degree of separating microcomponents in that they are precipitated in such a manner that only the basic component remains in the solution. In order to be able to control the complete separation of zinc and cadmium components, the radioactive isotopes Zn^{65} and Cd^{115} were used, the lead- and bismuth content was determined by spectral analysis. For spectral analysis it is necessary to transform the deposit obtained into oxide. The usual precipitation of the microcomponents concerned is then repeated several times until it is quite certain that these components are no longer present. In the chapter dealing with the pre-

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32-11-2/60

The Utilisation of the "Simultaneous Precipitation Method" for the Conservation of the Analytical Concentrations of Cd, Pb, Bi and Zn When Analyzing Alloys

cipitation of secondary ingredients in form of sulphides in an acid medium for the separation of cadmium-, bismuth-, lead-, and zinc sulphides a solution with pH=3-4 is recommended, but this solution is well suited only for the sorting out of Cd, Bi and Pb and not for Zn. (The experiment is described). In the chapter: The precipitation of microcomponents in form of sulphides in an ammonia medium it is pointed out that in this case only the separation of molybdenum and tungsten components is possible in a perfect manner. Ostroumov recommended the use of pyridine in this case, where the so-called "crystallite sulphides" of nickel, cobalt, etc. are obtained. (The process is described. In the chapter: The application of thioacetaminide for the precipitation (simultaneous precipitation) of the microcontents of Cd, Pb, Bi and Zn including nickel sulphide, this application is recommended as particularly practical, especially in order to conserve the analytical concentrations of zinc, cadmium, lead, and bismuth. (The experiment is described). In the chapter: The purification of reagents and filters the particular importance of the purity of reagents and filters is described on the basis of examples and several purification methods are recommended. There are 4 tables and 4 references, 3 of which are Slavic.

Card 2/3

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32-11-2/60

The Utilization of the "Simultaneous Precipitation Method" for the Conservation of the Analytical Concentration of Cd, Pb, Bi and Zn When Analysing Alloys

ASSOCIATION: Institute for General and Inorganic Chemistry AN Ukrainian SSR (Institut obshchey i neorganicheskoy khimii Akademii nauk USSR)

AVAILABLE: Library of Congress

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BABKO, A. K.

5(2); 21(5) PHASE I BOOK EXPLOITATION SOV/1900

Akademiya nauk SSSR. Komissiya po analiticheskoy khimii

Primenenie radioaktivnykh izotopov v analiticheskoy khimii (Use of Radioactive Isotopes in Analytical Chemistry) Moscow Izd-vo An SSSR, 1958. 366 p. [Series: Its: Trudy, t. 9 (12)] Errata slip inserted. 3,000 copies printed.

Resp. Ed.: I.P. Alimarin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: A.N. Yermakov; Tech. Ed.: T.V. Polyakova.

PURPOSE: The book is intended for chemists and chemical engineers concerned with work in analytical chemistry.

COVERAGE: The book is a collection of the principal papers presented in Moscow at the Second Conference on the Use of Radioactive Isotopes. The problems discussed at the Conference included coprecipitation, aging, and solubility of precipitates, determination of the instability constants

Card 1/10

of complex compounds, separation of rare earth metals, and ion-exchange chromatography. No personalities are mentioned. There are 351 references, 175 of which are Soviet, 33 German, 19 French, 8 Swedish, 2 Hungarian, and 2 Czech.

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Use of Radioactive Isotopes (Cont.) SOV/1900

Ismaylov, N.A., and V.S. Chernyy. Study of the Solubility of Salts in Nonaqueous Solvents with the Aid of Tagged Atoms 44

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Babko, A.K., and P.V. Marchenko. Study of the Conditions for Precipitation of Microquantities of Some Metals in the Form of Halogen Compounds With Basic Dyes 65

Kuznetsov, V.I., and G.V. Myasoyedov. Organic Coprecipitants. 9. Coprecipitation of Rare Earth Elements 76

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

BABKO, A. K.

5(4)

AUTHORS: Vasil'yev, V. P., Korableva, V. D., Yatsimirskiy, K. B. SOV/153-58-3-30/30

TITLE: Conference Discussion on the Methods of Investigating the Complex Formation in Solutions (Soveshchaniye-diskussiya po metodam issucheniya kompleksoobrazovaniya v rastvorakh)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 3, pp 173 - 174 (USSR)

ABSTRACT: From February 18 to 21, 1958 a conference discussion took place in the town of Ivanovo. It dealt with the subjects mentioned in the title. It was called on a decision of the VIIth All-Union Conference on the Chemistry of Complex Formations. More than 200 persons attended the conference, among them 105 delegates from various towns of the USSR. At the conference methods of determining the composition of the complexes in solutions were discussed, as well as the methods of calculating the instability constants according to experimental data and problems concerning the influence of the solvent upon the processes of complex formation.

1. In the lecture by A. K. Babko and N. M. Tananayko, "Physical and Chemical Analysis of the Systems With 3 Colored Complexes in the Solution", the results of a systematic investigation in copper-quinoline-salicylate, as well as in copper-pyridine-salicylate systems by means of the optical method were dealt with. In the lecture by Ya. A. Fialkov the idea of a further investigation of the complex formation processes in solutions was developed. Besides the determination of the composition and stability of the complexes also the physical and chemical properties, the chemical nature and the structure of the complex compounds must be investigated.

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2. Alekseyeva and K. B. Yatsimirskiy in their lecture "Investigation of the Polymerization of Iso-Poly Acids in Solutions" mentioned experimental results of the investigation of the polymerization in solutions of molybdic acid. The authors proved that especially the molybdic acid within a certain range of the pH values and the concentrations exists as a number of compounds that can be expressed by an overall formula $MoO_4(HMoO_4)^{n-2}$. In the lecture by N. V. Aksel'rud and V. B. Spivakovskiy investigation results on basic salts taking into account the complex formation in solutions by means of the potentiometric method were mentioned for systems with zinc, cadmium and indium. In the evaluation of their results the authors employed the method of the table difference. The calculation of the consecutive constants was carried out according to the interpolation formula by Newton. M. A. Chepelevitskiy held a lecture on "pH Measurement Method of the Solutions in Combination With the System Analysis of the Solubility Diagram of the System Cu^{2+}-HCl - H_2O in Investigating Complex Copper Compounds in Saturated Solutions". It was found that the substance at the bottom of the liquid is more basic than the solution: furthermore, the increased acidity of the solution from the viewpoint of the formation of hydroxy-chloro complexes in the solution was explained. V. I. Kusnetsov opened the discussion with his lecture: he pointed out the necessity of utilizing the concepts worked out in the investigations of the polymerization in organic chemistry in the chemistry of polynuclear complexes. A. A. Grinberg thinks that the new approach of the hydrolysis

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investigation as developed by the Scandinavian school is of high value. He also pointed to the necessity of studying the kinetics of the polymerization process and a quantitative determination of the strength of the polymers. A. K. Babko pointed out that the study of the polymer structure was necessary. N. P. Komar' mentioned in his lecture that the rather widely spread polymerization type according to the scheme "nucleus + chain members" is not obtained in all cases. The following scientists took part in the discussion: V. N. Telnachev, A. V. Ablov, I. S. Mustafin, I. V. Tananayev and K. B. Yatsimirskiy. A. K. Babko then discussed in his lecture "Methods of Determining the Dissociation Constant of the Complex Groups in Solutions" the main principles of determining the instability constants. N. P. Komar' discussed in his lecture "Calculation Methods of the Instability Constants of the Complex Compounds According to Experimental Data" the possibilities of using the known calculation methods of the instability constants for various cases of the complex formation in solution. If several mononuclear complexes are formed the displacement method by Abegg and Bodlender (completed by A. K. Babko) cannot be recommended for the calculation of the instability constant. The lecturer discussed the dissolution methods of the polynomials proposed by B'yerrum, Leden, Rossotti, Sketchard, Edsolloy and other authors. The constants calculated in this way are not very accurate. It was proved that the method of successive approximations can lead to wrong conclusions as to the chemical processes taking place in the system investigated. The most probable value of the physical constants can be obtained by the method of the least squares. B. V. Pitsyn, Ye. N. Tekster and L. I. Vinogradova described the determination methods of the instability constants of the oxalate complexes of niobium, uranium and iron which are based on the investigation of the equilibrium displacement of the complex formation by silver ions. N. K. Bol'shakova, I. V. Tananayev and G. S. Savchenko held a lecture on "The Role of the Time Factor in the Investigation of the Complex Formation". In the discussion on the lectures A. A. Grinberg mentioned that due to the slow adjustment of the equilibria the methods discussed of determining the instability constants (palladium and cobalt complexes) can often not be employed. A. V. Ablov pointed out the necessity of devising direct methods of proving the existence of intermediate forms in a step-wise complex formation. K. B. Yatsimirskiy mentioned that the instability constants of slowly dissociating complexes can be calculated from thermochemical data. L. P. Adamovich, A. M. Golub among others took part in the discussion on the lectures. A. K. Babko requested inclusion in the next conference on the chemistry of complex compounds a lecture in which various calculation methods of the instability constants should be discussed by the example of actual cases. This should clarify to which divergencies of the values of the constants different methods of evaluating the experimental data can lead. N. P. Komar' stressed that in the determination of the instability constants all chemical equilibria should be taken into account that render complex the complex formation process in the solution, especially the hydrolysis processes of the central ion and the addendum. In the lecture delivered by V. M. Peshkova and A. P. Zozulya "Application of the Distribution Method to the Investigation of the Stability Constants

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of Some Thorium Complex Compounds" results obtained from the experimental investigation of the distribution of thorium compounds in the systems: acetylacetone - benzene - water, and 2-oxy-1,4,-naphthoquinone - chloroform - water were given. From these data the instability constants of the thorium complexes with acetyl-acetone and 2-oxy-1,4-naphthoquinone were calculated. I. V. Tananayev, G. S. Savchenko and Ye. V. Gonchorov held a lecture on the application of the solubility method in the determination of the stability of complex compounds in solutions. In this lecture also other methods of investigating complex formation processes in the solution were discussed (pH measurement, measurement of the optical density, as well as of the heat of mixing). B. D. Berezin held a lecture on the "Application of the Solubility Method in Studying the Phthalocyanine Complexes of Metals". He used the determined quantitative characteristics of the reaction of the transition of the phthalocyanides of cobalt, nickel, copper and zinc, as well as of the free phthalocyanine into the sulfuric acid solution for the theoretical reasoning, and as an experimental proof of the existence of

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π-bonds in the complexes investigated. These characteristics also served him as a proof of new electronic formulas of phthalocyanine and its complex derivatives. In the lecture delivered by I. L. Krupatkin on "The Method of the Two Solvents as a Method of Investigating the Formation and Properties of Organic Complexes" it was proved that this method makes it possible to determine the number of complexes formed in the system, their composition and relative stability. V. I. Kuznetsov, A. K. Babko, N. P. Komar', I. S. Mustafin and Ya. I. Tur'yan took part in this discussion. In the lecture delivered by A. A. Grinberg and S. P. Kiseleva on the complex palladium compounds (II) with a coordination number above four it was proved that in the case of a large chlorine and bromine ion excess complexes with the coordination number 5 are formed. The instability constants of these complexes were estimated. L. P. Adamovich mentioned a new manipulation in the spectrophotometric investigation of the complex compounds that can be used in systems with the formation (or predomination) of one single complex. This method makes it possible to determine the composition and instability constant

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of the complex. In the lecture delivered by K. B. Yatsimirskiy and V. D. Korableva the application of the theory of crystalline fields for the determination of the composition and structure of the chloride complexes of cobalt, nickel and copper according to the absorption spectra of these complexes was discussed. It was proved that in a hydrochloric acid concentration above 5 mole/liter in the solution there exists an equilibrium between the tetrahedric and octahedric form of the cobalt chloro complexes. Yu. P. Nazarenko proved in his lecture "The Application of Radioactive Isotopes in the Investigation of the Solvation Equilibrium in Solutions of Complex Compounds" the possibility of using data on the isotope exchange to clarify the structure of the complex and mechanism of the hydration processes. V. Klimov mentioned in his lecture the use of radioactive isotopes in the study of tin and antimony complexes in non-aqueous solutions. A. V. Ablov, V. N. Tolmachev, V. I. Kuznetsov and A. M. Golub took part in the discussion of the lectures. The usefulness of employing the theory of the crystalline fields in explaining the results obtained from the absorption spectra of the com-

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plex compounds was stressed. In the lecture delivered by I. A. Shek on "The Investigation of the Complex Formation by the Method of the Dielectric Permeability and the Polarization" the principles of the methods mentioned were presented. This method was employed for investigating the compounds of the type of the "affiliation" products. The lecture delivered by I. A. Shek and Ye. Ye. Kriss "Employing the Method of the Dielectric Constant for Investigating Complex Compounds of the Type of Crystal Solvates in Solutions" dealt with the investigation of the solvates of lanthanum and cerium chlorides with ketones, as well as with the study of the compounds formed in heterogeneous systems with tributyl phosphate and nitric acid. V. F. Toropova gave in her lecture "The Polarographic Method of Investigating the Complex Formation in Solutions" a survey of the applications of the polarographic method in the study of the complex compounds, and illustrated several fine characteristic features of this method. In the lecture delivered by T. N. Sumarokova "The Cryoscopic Method of Investigating the Complex Formation Reactions" a survey of the possibilities of the cryoscopic method was given, and its applicability in the study of several complex compounds of stannic chloride with organic substances was proved. A. M. Golub described the results of his investigations of thiocyanate complexes of several metals. A vivid discussion took place on the lectures held. Ya. A. Fialkov and Yu. Ya. Fialkov considered the cryoscopic method of investigating complex compounds to be of considerable value. K. B. Yatsimirskiy pointed out that the publication of the surveys on individual methods of investigating the complex formation reactions would be desired; this concerns especially the polarographic method. The cryoscopic method should be brought to a level that makes the calculation of the equilibrium constants of the processes to be investigated possible. The problem of the method of evaluating the experimental results becomes more and more important. Many scientists use the instability constants without taking into account the way in which they had been obtained. The calculation methods employed by A. M. Golub are one step back, as compared to those employed at present. In his lecture N. P. Komar' pointed out the extremely great importance of the mathematical evaluation of the results obtained, as well as of the plotting of curves. A. K. Babko suggested selecting one or two systems that are experimentally well investigated, and to evaluate the results obtained according to different methods so that it is possible to check and evaluate them. Ya. I. Tur'yan took part in the discussion. Ya. A. Fialkov discussed in his lecture "The Effect of the Solvent on the Complex Formation Process as Well as on the State of Equilibrium in the Solutions of Complex Compounds" the influence exerted by the solvents upon the molecular state, upon the solvation of the system components, upon the stabilization of the complexes formed in the system, upon the step-wise dissociation of the complexes and upon a number of other processes. The influence exercised by the dielectric constant upon the complex formation process was discussed. It was concluded that a direct relation does not exist, and that the chemical nature of the solvent must be taken into account. A. V. Ablov and L. V. Nagarova held a lecture on "The Spectroscopic Investigation of Nickel Cobalt 'Pyridinates' in Various Solvents". The instability constants of the complexes were determined and it was proved that the

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Conference Discussion on the Methods of Investigating the Complex Formation in Solutions SOV/153-58-3-30/30

stability of the 'pyridinates' is changed in dependence on the solvent. Ya. I. Tur'yan in his lecture "The Influence of the Solvent Upon the Composition and Stability of Complex Ions" discussed the polarographic investigation method of the chloride and thiocyanate complexes of lead in aqueous ethanol solutions at different content of the non-aqueous solvent and at a constant ionic strength. A step-wise character of the complex formation was found as well as the instability constants of the complexes. The influence of the dielectric constant of the solution on the stability of the investigated complexes was proved. In the lecture by V. P. Vasil'yev on the "Investigation of Aquo Complexes in Mixed Solvents" the main attention was devoted to the necessity of the qualitative recording of the solvation effects in the complex formation. The applicability of the polarographic method in the determination of the composition and stability of the aquo complexes in mixed solvents was proved and experimental material on the thermodynamics of the dissociation of the cadmium-aquo complexes in aqueous ethanol solutions was mentioned. V. N. Tolmachev, V. I. Kuznetsov

Card 15/16

and I. V. Tananayev stressed in their lectures the necessity of a more complete and general investigation of the solvation processes. A. K. Babko and A. M. Golub pointed out the great importance of the investigations of the complex formation equilibria in non-aqueous solutions, and made several critical comments on the lecture by Ya. I. Tur'yan. The following scientists took part in this discussion: L. P. Adamovich, O. I. Khotyanovskiy, A. P. Meskvin and A. G. Mustakhov. At the final meeting of the conference A. A. Grinberg, Corresponding Member, AS USSR, said in his speech that such a conference was very urgent. A detailed discussion of the determination methods of the composition of the complexes, as well as of the method used in the study of the quantitative characteristics of the stepwise complex formation was extremely useful for all who attended this conference.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

SOV-21-58-9-14/28

AUTHORS: Babko, A.K., Academician of the AS UkrSSR, and Shevchenko, L.L.

TITLE: A Study of the System Cobalt Halogenide (Rhodanide) - Water in Organic Solvents (Izucheniye sistemy galogenid (rodanid) kobal'ta - voda v organicheskikh rastvoritelyakh)

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1958, Nr 9, pp 970 - 973 (USSR)

ABSTRACT: The effect of water on the state of equilibrium of cobalt halogenide compounds has been studied in ten organic solvents. This effect is characterized by the concentration of water, denoted by $(H_2O)_{\frac{1}{2}}$, at which half the cobalt halogenide compound is dissociated and the initial optical density of the liquid reduced by half. In the given solvent, the different effects of water on the cobalt compounds with various halogens is explained by a decrease in the energy of the Co^{2+} - Hal^- bond in the series: $ScN^- > Cl^- > Br^- > I^-$ (where S denotes an organic solvent). The various solvents can be arranged by their $(H_2O)_{\frac{1}{2}}$ value in a series which characterizes the energy of the H_2O - solvent bond:

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

SOV-21-59-9-14/28

A Study of the System Cobalt Halogenide (Rhodanide) - Water in Organic Solvents

n-amyl < i.-amyl < n.-butyl < i.-butyl alcohol < ethyl acetate < i.-propyl alcohol < acetonitryl < acetone. There are: 1 graph, 1 table and 5 references, 3 of which are Soviet, 1 Polish and 1 American.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN UkrSSR (Institute of General and Inorganic Chemistry of the AS UkrSSR)

SUBMITTED: May 9, 1958

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration

1. Cobalt compound-water systems--Analysis 2. Organic solvents--Performance 3. Water--Chemical reactions 4. Chemical equilibruim

Card 2/2

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K., akademik; SHEVCHENKO, L.L.

Colorimetric determination of water in certain organic solvents on the basis of changes in the color of cobalt halide complexes. Dop.AN URSR no.11:1212-1214 '58. (MIRA 11:12)

1. Institut obshchey i neorganicheskoy khimii AN USSR. 2. AN USSR (for Babko).
(Water) (Solvents) (Cobalt halides)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

AUTHORS: Babko, A. K., Yeremenko, O. M. 75-13-2-9/27

TITLE: Investigation of the Photometric Determination Method of Cerium as a Peroxide Complex (Izucheniye fotometricheskogo metoda opredeleniya tseriya v vide perekisnogo kompleksa)

PERIODICAL: Zhurnal Analiticheskoy Khimii, 1958, Vol. 13, Nr 2, pp. 206-210 (USSR)

ABSTRACT: For the photometric determination of cerium this method has the greatest importance, being based upon the formation of a colored compound in the reaction with hydrogen peroxide in alkaline solution (Reference 1-4). This method permits the determination of cerium in presence of other rare earth metals. The colored complex forms in citrate containing solutions (References 2,5,7, in ammoniacal solution (Reference 6), and also in a 5% solution of potassium carbonate (Reference 4). The reaction is well reproducible and specific and is marked by high sensitivity (References 3,4). The determination methods described in publications, which are based upon

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

this reaction, however, have deficiencies; above all the colored peroxide complex of cerium is not soluble in water. Plank (Reference 1) indicated that the colora= tion with H_2O_2 is formed quickly, but that in this in= stance a precipitate deposits. In later works (Referen= ces 3,4) this fact was not considered and no attention was paid to the influence of the formation of a solid phase. Experiments, however, showed that just this fact represents the main difficulty of the determination. Even in case of strict observation of the prescription usually after short time turbidity or the formation of a precipitate occurs, so that the measurement of the color in a colorimeter or photocolorimeter often is not possible at all. Experiments showed that the formation of the colored peroxide complex of cerium depends much on the acidity of the solution. In acid solution or also at a p_H-value of 7 or 8 only a weak or no color at all forms, while at p_H 8 or above coagulation or turbidity

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

of the solution occurs. The authors tried to find conditions on which the photometric determination of cerium as peroxide complex is possible. To prevent the deposition of a precipitate various stabilizers were tested. Of all investigated compounds only glycerol was an suitable stabilizer. This action has only in presence of complex forming compounds glycerol has this effect. An increase of the citrate concentration increases the stability of the colloidal suspension, however, binds it, a part of the cerium and by this prevents the quantitative formation of the peroxide complex. As former Complexion III was suited. In presence of Complexion III and of a buffer solution with $p_H 9$ a highly dispersive form of the colored cerium complex forms, so that a stabilizer is not necessary. But if a high quantity of salts is present in the solution the application of glycerol is expedient. Because cerium usually detected from the precipitate of the rare earth metals, the authors worked out a method to solve the oxalates of the rare earth metals

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Investigation of the Photometric Determination Method of Cerium as a Peroxide Complex 75-13-2-9/27

without previously annealing them. This can be obtained by direct dissolving of the oxalates in sulfuric acid with persulfate or in nitric acid with permanganate. The performance of the developed photometric determination is given exactly. There are 1 figure and 7 references, 6 of which are Soviet.

ASSOCIATION: Ukrainskoye geologicheskoye upravleniye, Kiyev (Kiyev, Ukrainian Geology Administration)

SUBMITTED: January 7, 1957

1. Rare earths--Analysis 2. Cerium--Determination 3. Photometry 4. Dithioglycerol--Chemical reactions

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APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

AUTHORS: Babko, A. K., Volkova, A. I. 32-2-3/60

TITLE: The Amperometric Determination of Molybdenum and Tungsten in the Presence of Nickel (Amperometricheskoye opredeleniye molibdena i vol'frama v prisutstvii nikelya)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 2, pp. 135-137 (USSR)

ABSTRACT: An amperometric titration of molybdenum and tungsten in a medium combined with acetic acid at 5 - 8 pH was investigated and the authors found that a quantitative separation is possible only at pH 6,5 - 7. In case that SO_4^{2-} or Cl^- ions are present they are removed with sodium acetate. In order to exclude possible actions of nickel (by means of the formation of tungstate or molybdate) it is transformed into a complex salt; here glycocoll and ethylenediamide were found to be the formers of the most stable complex salts. The titration was carried out on a polarograph M-7 of the Institute for Chemical-Scientific Investigations at the University of Gor'kiy. The

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sensitivity of the galvanometer was 10^6. The authors worked with a simplified method without polarograph with galvanic elements which can be used for a wide field if the latter are exchanged. The arrangement is shown in a diagram. A calomel standard electrode was used while a 0,5 M lead nitrate solution was used for titration at 1 V voltage. The calomel electrode is put down in a drawing, it is exactly described and is said to be able to operate for 8 - 1o months. The amounts to be determined were 0,015 - 0,05 g of Molybdenum and 0,03 - 0,2 g tungsten. The duration of the first method of analysis is put down to be 2o minutes. Compared with one another, the results obtained from the polarographic method are equivalent to those of the simplified method. There are 2 figures, 3 tables, and 6 references, all of which are Slavic.

ASSOCIATION: Institute for General and Inorganic Chemistry AS Ukrainian SSR (Institut obshchey i neorganicheskoy khimii Akademii nauk USSR)

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Card 2/2

1. Molybdenum-Determination 2. Tungsten-Determination
3. Nickel-Applications 4. Titration

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A. K.

N.A.Tananaev; on his 80th birthday. Ukr. khim. zhur. 24 no. 2:274-276 '58. (MIRA 11:6)
(Tananaev, Nikolai Aleksandrovich, 1878-)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BAHKO, A.K.; TANANAYKO, M.M.

Study of complex formation in solutions where water enters into the complex. Coblat halide - water system. Ukr. khim. zhur. 24 no.3:298-304 '58. (MIRA 11:9)

1.Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Cobalt chlorides) (Complex compounds)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.; TANANAYKO, M.M.

Ternary complexes in the organic base - metal - rhodanide systems. Ukr. khim. zhur. 24 no.4:499-505 '58. (MIRA 11:10)

1. Kiyevskiy gosudarstvennyy universitet imeni T.G. Shevchenko. (Systems (Chemistry)) (Complex compounds)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.; MARKOVA, L.V.

Colorimetric determination of sulfate ions by means of colored complex zirconium and thorium compounds. Zav. lab. 24 no.5:524-528 '58. (MIRA 11:6)

1. Institut obshchey i neorganicheskoy khimii Akademii nauk USSR.
(Sulfates--Analysis)
(Colorimetry)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

AUTHORS: Babko, A.K., Shtokalo, M.I. 32-24-6-4/44

TITLE: Co-Precipitation in Quantitative Analysis (Soosazhdeniye v kolichestvennom analize). Communication V (Soobshcheniye V). The Influence Exercised by Complexon Upon the Precipitation of Zirconium Phosphate (Vliyaniye kompleksona na osazhdeniye fosfata tsirkoniya)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 6, pp 674-677 (USSR)

ABSTRACT: "Hidden precipitants" are frequently used for the separation of numerous elements, because the forming of crystals is retarded by a formation in stages of the precipitation anions, so that, as e.g., in the presence of pyridine, denser sulfide precipitations are obtained. In the present paper the influence exercised by ethylene-diamino-tetraacetic acid upon some processes of precipitation is investigated, because a sharp modification of the form of precipitation as well as a decrease of co-precipitation was observed. Data concerning the separation of zirconium and titanium by means of the phosphate method are given. Zirconium was transferred before precipitation with trilon in a weakly acid medium into a complex, and after precipitation it was found that the precipitation

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Co-Precipitation in Quantitative Analysis. Communication V. The Influence Exercised by Complexon Upon the Precipitation of Zirconium Phosphate 32-24-6-4/44

obtained was much more dense and more easily filtratable than that to which no trilon was added, and also electronmicroscopic photos showed a difference. The observation made to the effect that precipitation comes to a standstill if acidity increases is explained by the presence of two forms of ions, viz., of zirconyl ZrO^{+2} and zirconium Zr^{+4}. From the method of operation described it follows that for the quantitative precipitation of zirconium phosphate from the trilon complex acidification of up to 3-4 n must be carried out. The experimental separation of zirconium and titanium showed that, in the presence of trilon the co-precipitation of titanium is decreased by more than ten times its amount if trilon is present in the case of phosphate precipitation, whereas, if triethylphosphate is used as a "hidden precipitant" no positive results were obtained, which is explained by the decomposition of hydrogen peroxide after long boiling. There are 1 figure, 1 table, and 5 references, 3 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Akademii nauk USSR (Institute of General and Anorganic Chemistry, AS Ukrainian SSR)

Card 2/2

1. Zirconium phosphate--Precipitation 2. Zirconium--Separation 3. Titanium--Separation 4. Ethylenediamino tetracetic acids--Chemical effects

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

AUTHORS: Babko, A. K., Mityureva, T. T. SOV/78-3-9-13/38

TITLE: The Effect of Chlorine, Bromine, and Sulfate Ions on the Reduction of Selenious Acid by Sulfurous and Hypophosphorous Acids (Vliyaniye khlor-, brom- i sul'fat-ionov na vosstanovleniye selenistoy kisloty sernistoy i fosfornovatistoy kislotami)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 9, pp 2082-2086 (USSR)

ABSTRACT: In the present paper comparative investigations of the effect of sulfuric and hydrochloric acid, and of chlorine, bromine, and sulfate ions on the reduction of selenious acid are described. The reduction of selenious acid with sulfurous acid at an isomeric behaviour and with different acidity of the solutions with sulfurous and phosphorous acid was investigated. It was ascertained that after three hours a complete reduction of the selenious acid by hydrochloric acid takes place, whereas in the medium of sulfuric acid the reduction remains imperfect even after seven hours. The sulfate ion has no effect on the reduction of selenious acid, neither with sulfurous nor with phosphorous acid. Chlorine and bromine ions considerably accelerate the reduction of selenious acid. The quantitative

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

The Effect of Chlorine, Bromine, and Sulfate Ions on the Reduction of Selenious Acid by Sulfurous and Phosphorous Acids SOV/78-3-9-13/38

precipitation of selenium from solutions of selenious and phosphorous acid in the presence of halides proceeds very fast in the boiling state. If there is a surplus of sulfurous acid, the reduction of selenious acid in the presence of halides does not proceed quantitatively. The effect of the halides on the reduction of selenious acid with sulfurous acid was observed at 30, 50 and 70°C. The experiments showed that at 50°C the complete reduction proceeds within an extremely short time. The acceleration of the reduction process in the presence of halides is explained by the fact that intermediate compounds between halides and selenium are formed which considerably accelerate the reduction. There are 6 figures and 18 references, 7 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Akademii nauk USSR (Institute of General and Inorganic Chemistry, AS, UkrSSR)

SUBMITTED: July 8, 1957

Card 2/3

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

SOV/21-58-11-14/28

AUTHORS: Babko, A.K., Member of the AS UkrSSR, and Shevchenko, L.L.

TITLE: The Colorimetric Determination of Water in Some Organic Solvents by the Change in Color of Cobalt Halogenide Complexes (Kolorimetricheskoye opredeleniye vody v nekotorykh organicheskikh rastvoritelyakh po izmeneniyu okraski galogenidnykh kompleksov kobal'ta)

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1958, Nr 11, pp 1212-1215 (USSR)

ABSTRACT: There are various methods for determining the amount of water in organic solvents, among which exist the colorimetric and spectrophotometric methods. The authors propose to use the change in the color of cobalt halogenides in the presence of water in some solvents, such as acetone, acetone-nitryl, ethyl acetate and methyl, ethyl, propyl, butyl and amyl alcohols. The authors made a comparison of various cobalt halogenides and found that the most sensitive reagent to water was cobalt iodide. As a reagent to water in methyl alcohol, the mixture of ammonium bromide and iron perchlorate (III) in a molar ratio of 3:1 is proposed. There are: 1 graph, 1 table and 6 references, 3 of which are Soviet, 1 French, 1 English and 1 Polish.

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SOV/21-58-11-14/28

The Colorimetric Determination of Water in Some Organic Solvents by the Change in Color of Cobalt Halogenide Complexes

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN UkrSSR (Institute of General and Inorganic Chemistry of the AS UkrSSR)

SUBMITTED: June 21, 1958

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration.

Card 2/2

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

NEKRYACH, Ye.F. [Nekriach, IE.F.]; NAZARENKO, Yu.P.; CHERNETSKIY, V.P., [Chernets'kyi, V.P.]; BABKO, A.K., akademik, otv.red.; ROZUM, Yu.S., kand.khim.nauk, red.; FIALKOV, Ya.A., red. [deceased]; FOMENKO, G.S. [Fomenko, H.S.], kand.khim.nauk, red.; SHEKA, I.A., prof., doktor khim.nauk, red.; GNATYUK, G.M. [Hnatiuk, H.M.], red.-leksikograf; POKROVSKAYA, Z.S. [Pokrovs'ka, Z.S.], red.izd-va; YEFIMOVA, M.I. [IEfimova, M.I.], tekhn.red.

[Russian-Ukrainian chemical dictionary; 6000 words and terms] Russko-ukrainskii khimicheskii slovar'; 6000 terminov. Sost.E.F.Nekriach, IU.P.Nazarenko i V.P.Chernetskii. Kiev, 1959. 204 p. (MIRA 13:4)

1. Akademiya nauk USSR, Kiyev. 2.AN USSR (for Babko). 3. Chlen-korrespondent AN USSR (for Fialkov).
(Chemistry--Dictionaries)
(Russian language--Dictionaries--Ukrainian)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.

5(1,4) PHASE I BOOK EXPLOITATION SOV/3113

Akademiya nauk Ukrainskoy SSR. Institut obshchey i neorganicheskoy khimii

Raboty po khimii rastvorov i kompleksnykh soyedineniy, vyp. 2 (Papers on the Chemistry of Solutions and Complex Compounds, Nr 2) Kiyev, 1959. 229 p. Errata slip inserted. 2,000 copies printed.

Resp. Ed.: Ya.A. Fialkov (Deceased) Corresponding Member, Ukrainian SSR, Academy of Sciences; Ed. of Publishing House: Z.S. Pokrovskaya; Tech. Ed.: M.I. Yefimova.

PURPOSE: This book is intended for research scientists, teachers in schools of higher education and technical schools, aspirants, and students of advanced chemistry courses.

COVERAGE: The collection contains 9 articles which review work conducted at the Institute for General and Inorganic Chemistry, Ukrainian Academy of Sciences, on electrolytic aqueous and nonaqueous solutions, the chemistry of complex compounds,

Fialkov, Ya.A. and Yu.P. Nazarenko. Study of Inorganic Halides on the Basis of Isotope Exchange Reactions 116

Sheka, Z.A., and Ya.Ye. Kriss. Metal Xanthates 135

Sheka, I.A. Physicochemical Analysis of Solutions on the Basis of Dielectric Properties 163

Babko, A.K., and T.Ye. Gatman. Spectrophotometric Study of Complexes of Low Stability During Complex Formation 186

Babko, A.K., and T.N. Nazarchuk. Study of Metal Compounds Dyed With Oxyanthroquinones 199

Markov, B.F. Electromotive Forces of Chemical Bonds With Individual Fused Slats 216

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

5(2) SOV/21-59-1-14/26

AUTHORS: Babko, A.K., Member of the AS UkrSSR, and Markova, L.V.

TITLE: Color Reactions to Sulfate Ions. (Tsvetnyye reaktsii na sul'fat-iony)

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, Nr 1, 1959, pp 52-54 (USSR)

ABSTRACT: The sulfate ions do not form colored compounds, though color reactions to SO_4^{2-} are known. The authors studied reactions based on the interaction of sulfate ions with lacquers Zr^{4+}, Th^{4+}, and Ce^{3+}. It was stated that the SO_4^{2-} ions decompose the lacquers. The sensitivity of the reaction to the SO_4^{2-} ions was stated to depend on the acidity of the solution (the highest sensitivity found a pH corresponding to the beginning of the decomposition of lacquer), and to increase in the presence of alcohol and acetone. The absorption spectra and the molar absorption coefficients of lacquers

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SOV/21-59-1-14/26

Color Reactions to Sulfate Ions.

and reagents were measured. The effect of organic solvents was studied. Three groups of color reaction to SO_4^{2-} -ions are proposed, differing from one another by discoloration of the solution's color: lacquers Zr^{4+} or Th^{4+} with alizarin or aluminum; change in the solution's color: lacquers Z^{4+}, Th^{4+}, acidic chrome-blue K, amaranth and "in"; by the color of organic reagent (released under the influence of SO_4^{2-} ions), that transmutes into a non-liquid phase, such as alizarins, hematoxilyn and stilbo-naphtazo lacquers. There are 14 references, 7 of which are Soviet, 5 English and 2 German.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN UkrSSR (Institute of General and Inorganic Chemistry of AS UkrSSR)

PRESENTED: September 15, 1958.

Card 2/2

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.; GET'MAN, T.Ye.

Spectrophotometric study of short-lived complex compounds.
Rab.po khim.rastv.i kompl.soed. no.2:186-198 '59.
(MIRA 13:4)

(Complex compounds--Spectra)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

BABKO, A.K.; NAZARCHUK, T.N.

Colored compounds of metals with hydroxyanthraquinones. Rab. po khim.rastv.i kompl.soed. no.2:199-215 '59. (MIRA 13:4)

(Anthraquinone) (Organometallic compounds)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

SOV/153-2-2-2/31

5(2)

AUTHORS: Babko, A. K., Shkaravskiy, Yu. F.

TITLE: Investigation of the Extraction of the Phosphomolybdic Acid (Izucheniye ekstragirovaniya fosfornomolibdenovoy kisloty)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 2, pp 157-160 (USSR)

ABSTRACT: The subject mentioned in the title is interesting for the colorimetric determination of small phosphorus quantities, as well as for the separation of phosphorus and silicon (Refs 1-3). The extraction is connected with the solubility of the substances in corresponding solvents; from this point of view, the acid mentioned in the title (PhMA) is very poorly investigated. The following problems are particularly important: The distribution coefficient $K_{distr.} = C_{org} : C_{wat}$ must be equal to the ratio of the solubility values of the corresponding substance in the organic solvent and in water (C_{org} and C_{wat} representing the concentration of this substance in the organic solvent and in water, respectively, under various conditions of equilibrium between them). It is further known that PhMA with butanol-1 can be completely extracted in practice from the aqueous solution. Consequently, there must be a great difference between the PhMA-state in water and in

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SOV/153-2-2-2/31

Investigation of the Extraction of the Phosphomolybdic Acid

butanol. There are, however, few numerical data in publications on this point. At the beginning, the experiments concerning the PhMA-solubility in water and in butanol-1 are described. The values of its solubility were described. Subsequently, the extraction of PhMA with butanol-1 is dealt with. On the basis of the results obtained in samples of the aqueous and non-aqueous phases, the distribution coefficients (Fig 1) were computed. The results show a strong and rather peculiar dependence of the PhMA-distribution on its concentration: at an equilibrium concentration of the PhMA in the aqueous phase not higher than 0.3 m, a stratification is formed: the ratio of the PhMA-concentrations is, in both phases, near the solubility ratios in the corresponding solvents. The value of the distribution coefficient is slightly changed by a threefold dilution. A further dilution produces a very strong increase in the distribution coefficient (Fig 1, Curve 2). At the equilibrium concentration of 0.1-0.01 m, the PhMA-state is changed in one of the phases, most likely in the aqueous phase. By measuring the electric conductivity of the PhMA-solution in water and in butanol, it was ascertained that seemingly the molecular form of PhMA is mainly extracted. This circumstance may account for the reduced extractability of PhMA in

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dilutions below 0.004 m. Here namely, in the aqueous phase, it passes, for the most part, from the molecular into the ionic form. It is much more difficult to explain the initial increase in the distribution coefficient at the concentration change of 0.1 - 0.01 m. Apparently, there is no other explanation than that of a PhMA-polymerization in concentrated solutions. In fact, particularly the monomeric PhMA-forms are soluble in butanol (Ref 5). On the basis of the above data, an extraction scheme of PhMA in water and in butanol is put forward. In the presence of nitric acid and sodium nitrate, the PhMA-distribution coefficient rises by about 350 times (Figs 2, 3). There are 3 figures and 5 references, 4 of which are Soviet.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet imeni T. G. Shevchenko; Kafedra analiticheskoy khimii
(Kiyev State University imeni T. G. Shevchenko; Chair of Analytical Chemistry)

SUBMITTED: March 19, 1958

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

5(2) SOV/21-59-7-16/25

AUTHOR: Babko, A.K., Member of the AS UkrSSR and Shtokalo, M.I.

TITLE: Coprecipitation of Fe^{3+} and MnO_4^- Ions with Slightly Soluble Sulfates

PERIODICAL: Dopovidi Akademii Nauk Ukrains'koi RSR, 1959, Nr 7, pp 766-768 (UkrSSR)

ABSTRACT: The authors studied the coprecipitation of permanganate and iron with precipitates of barium, lead, strontium, and calcium sulfates. It is shown that the coprecipitation of permanganate decreases slightly from barium to lead and strontium, and sharply decreases when passing on to $CaSO_4$. A comparison of the degree of coprecipitation of permanganate with the parameters of the crystal lattices of these sulfates confirms the fact that the coprecipitation of $KMnO_4$ is mainly due to the formation of solid solutions. The coprecipitation of iron is of different character (inner adsorption) and is linked rather with the form of the crystals. There are 2 tables and 3

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SOV/21-59-7-16/25

Coprecipitation of Fe^{3+} and MnO_4^- Ions with Slightly Soluble Sulfates

references, 1 of which is Soviet and 2 German

ASSOCIATION: Instytut zahal'noy ta neorhanichnoyi khimiyi AN URSR (Institute of General and Inorganic Chemistry AS UkrSSR)

SUBMITTED: April 7, 1959

Card 2/2

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000102910011-6

SOV/21-59-9-14/25

AUTHORS: Babko, A.K., Member of AS UkrSSR and Klibus, H.Kh.

TITLE: Separation of Zinc and Cadmium by Dithizone and Trilon

PERIODICAL: Dopovidi Akademiyi nauk Ukrayins'koyi RSR, Nr 9, 1959, pp 991-994 (USSR)

ABSTRACT: In this paper, the authors study the problem of the reaction rate of the complex formation and state that, besides the electronic structure of the central ion complex, the retardation of the reaction of this formation may be caused by the structural properties of the addend. The retardation of the process of coordinative sphere formation is particularly noted during the interaction of metals with the ethylenediaminetraacetic acid (EDTA). These phenomena were investigated by the authors on the example of the zinc and cadmium complex with EDTA, whereupon it was investigated by the authors on the example of the zinc and cadmium complex with EDTA, whereupon it was as-

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