ALIMARIN, I.P.; BILIMOVICH, G.N.

Isotope dilution applied to the determination of various rare elements. Trudy kom.anal.khim. 9:219-225 '58. (MIRA 11:11)
(Metals, Rare and minor) (Isotopes)

5(0)

AUTHOR: Alimarin, I. P., Corresponding Member, SOV/30-58-12-21/46
Academy of Sciences, USSR

TITLE: Brief Communications (Kratkiye soobshcheniya) Symposium on Microchemical Analysis (Simpozium po mikrokhimicheskomu analizu)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 12, pp 78 - 79 (USSR)

ABSTRACT: This symposion was convened by the Midland Section and by the Microchemistry Group of the Society of Analytical Chemistry at the International Association of Theoretical and Applied Chemistry. It was held in Birmingham (England) from August 20 to 27, and was attended by about 400 delegates from 25 countries. The Soviet delegation consisted of I. P. Alimarin, A. S. Zhukhovitskiy, R. P. Lastovskiy, and S. P. Motornyy. At the sessions reports were heard on the analysis of organic substances, on radiochemical methods in microchemistry, on chromatographical microanalysis, on physical methods in microchemistry, on organic reagents in chemical analysis and the technique of microchemical experiments.

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PUZDRENKOVA, I.V.; ALIMARIN, I.P.; FROLKINA, V.A.

Determination of cerium by potassium periodate. Vest.Mosk.un. Ser.mat.,mekh.,astron.,fiz.,khim. 13 no.2:183-186 '58. (MIRA 12:2)

1. Kafedra analiticheskoy khimii Moskovskogo universiteta.
(Cerium--Analysis) (Potassium periodate)

ALIMARIN, I.P.; GOLOVINA, A.P.; KUTEYNIKOV, A.F.; STEPANOV, N.F.

Investigation of the light absorption spectra of compounds of various elements with quercetin. Part 1: Determination of thorium in monazite sand. Vest.Mosk.un.Ser.mat.,mekh.,astron., fiz.,khim. 13 no.2:203-206 '58. (MIRA 12:2)

1. Kafedra analiticheskoy khimii Moskovskogo universiteta.
(Quercetin) (Thorium--Analysis) (Monazite)

SAVOSTIN, A.P.; ALIMARIN, I.P.

Separation of microquantities of tantalum and titanium using pyrogallic acid. Vest.Mosk.un.Ser.mat.,mekh.,astron.,fiz.,khim. 13 no.2:211-215 '58. (MIRA 12:2)

1. Kafedra analiticheskoy khimii Moskovskogo universiteta.
(Tantalum--Analysis) (Titanium--Analysis) (Pyrogallol)

TSINTSEVICH, Ye.P.; ALIMARIN, I.P.; MARCHENKOVA, L.F.

Behavior of gallium and aluminum during ion exchange in the presence of some complex-forming substances. Vest.Mosk.un.Ser. mat.,mekh.,astron.,fiz.khim. 13 no.3:221-227 '58. (MIRA 12:4)

1. Kafedra analiticheskoy khimii Moskovskogo universiteta.
(Gallium) (Aluminum) (Ion exchange)

AUTHORS: Alimarin, I.P., Sotnikov, V.S. 75-13-3-14/27

TITLE: Determination of Zirconium by Means of the Ammonium Salt of Benzene- and Naphthalene-Selenic Acid (Opredeleniye tsirkoniya pri pomoshchi benzol- i naftalinseleninata ammoniya)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 3, pp 332-336 (USSR)

ABSTRACT: Besides inorganic reagents organic precipitants are also successfully used for the quantitative determination of zirconium and its separation from other elements (references 1 - 10). These precipitants, however, do not always form compounds of strictly stoichiometrical composition; besides a co-precipitation of foreign ions often occurs. Recently benzenesulfonic acid was suggested for the precipitation of zirconium and its separation from a number of other elements (reference 11). The authors of the present paper synthesized a number of organic reagents containing the SeO_2H group and forming compounds difficult to solve (reference 12) with several tetravalent elements (Ti, Zr,

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Hf, Ce(IV), Nb, Ta). Benzene- and naphthalene-selenic acid and their ammonium salts were most thoroughly investigated. In highly acid solutions these compounds with zirconium salts yield white amorphous precipitates which furnish pure zirconium dioxide after annealing. The maximum dilution at which zirconium is still precipitated is for ammonium-benzene-seleninate 1:100 000, for ammonium-naphthalene-seleninate 1:1 500 000. The composition of the precipitates dried by air approximately corresponds to the formula $ZrO(R\text{-}SeO_2)_2$, but these compounds cannot be used for gravimetric determination. The quantitative determination is done after annealing by weighing out as ZrO_2. The nonconstant composition of these precipitates is caused by the tendency of the zirconium salts to hydrolysis, and the formation of polymeric ions (references 13, 14). The optimum conditions for the precipitation of zirconium are a 1n nitric or hydrochloric solution and a concentration of ammonium-benzene-seleninate of 0,7%, or of ammonium-

-naphthalene-seleninate of 0,5% respectively. In a sulfuric acid solution a higher concentration of the precipitant is needed, as complex anions of zirconium form. The determination can be performed in the presence of aluminium, beryllium, rare earths and trivalent iron. In the presence of large amounts of these elements the precipitate must be dissolved and reprecipitated. The disturbing influence of titanium, niobium and tantalum can be removed by the addition of hydrogen peroxide, tin (IV) must be precipitated and removed before the determination of zirconium with hydrogen sulfide. In the presence of large amounts of titanium the precipitate must be dissolved and reprecipitated; for this purpose it is dissolved in concentrated HNO_3. The described method cannot be employed for the analysis of samples with a higher than 10-fold excess of niobium and tantalum. When the precipitation of zirconium is performed in the absence of hydrogen peroxide, zirconium can be used as collector for the separation of small amounts of titanium,

Determination of Zirconium by Means of the Ammonium Salt of Benzene- and Naphthalene-Selenic Acid 75-13-3-14/27

niobium and tantalum. The determination of zirconium with ammonium-benzene- and ammonium-naphthalene-seleninate was used for the analysis of steels and eudialite. The absolute error of determination at a zirconium content of 2-10% is ± 0,01%. There are 1 figure, 5 tables, and 17 references, 8 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

SUBMITTED: May 23, 1957

1. Zirconium--Determination

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SAVOSTIN, A.P.; ALYMARIN, I.P.

Separation of small quantities of niobium from tatanium by means of pyrogallic acid. Vest.Mosk.un.Ser.mat.,mekh.,astron.,fiz.,khim. 13 no.6:111-119 '58. (MIRA 12:4)

1. Kafedra analiticheskoy khimii Moskovskogo gosudarstvennogo universiteta.
(Niobium) (Titanium) (Pyrogallol)

ALIMARIN, I.P.; BORZENKOVA, N.P.

Separation of niobium and titanium by ion-exchange chromatography. Vest.Mosk.un.Ser.mat.,mekh.,astron.,fiz.,khim. 13 no.6:191-199 '58. (MIRA 12:4)

1. Kafedra analiticheskoy khimii Moskovskogo gosudarstvennogo universiteta.
(Chromatographic analysis) (Niobium) (Titanium)

ALIMARIN, I.P.; TSZEN YUN'-E [Ching Yün-o]; PUZDRENKOVA, I.V.

Use of periodic acid for the quantitative determination of some rare elements. Vest.Mosk.un.Ser.mat.,mekh.,astron.,fiz.,khim. 13 no.6:201-206 '58. (MIRA 12:4)

1. Kafedra analiticheskoy khimii Moskovskogo gosudarstvennogo universiteta.

(Periodic acid) (Metals, Rare and minor--Analysis)

5(2)

AUTHORS: Belyavskaya, T. A., Alimarin, I. P., Kolosova, I. F.

SOV/75-13-6-9/21

TITLE: Separation of Titanium From Accompanying Elements by Means of Ion-Exchange Chromatography (Otdeleniye titana ot soputstvuyushchikh elementov metodom ionoobmennoy khromatografii) Communication 3. Separation of Titanium and Zirconium (Soobshcheniye 3. Razdeleniye titana i tsirkoniya)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 6, pp 668-670 (USSR)

ABSTRACT: The authors of the present paper investigated the adsorption of tetravalent titanium and zirconium in ion-exchange resins in hydrochloric solutions. The use of hydrochloric solutions is of interest in chromatography because frequently a slight modification of the acid concentration leads to a considerable difference in the adsorbability of elements the properties of which are very similar to each other (Refs 1-8).
The adsorbability was investigated by determination of the distribution coefficients. Here, an exactly weighed sample of the air-dried exchange resin is shaken with a certain volume

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of the solution to be investigated until equilibrium is attained. From an aliquot of the solution the amount of the element is determined that has not been adsorbed by the resin. The distribution coefficient φ is computed according to the formula

$$\varphi = \frac{M_1}{M - M_1} \cdot \frac{V}{m} \quad \text{(Ref 9)},$$

where M_1 is the adsorbed part of the element in mg, M the total amount of the element in mg contained in the initial solution, V the volume of the solution and m the quantity of the resin. The authors determined the relative adsorption of titanium and zirconium by this method. V and m were kept constant. As adsorbents the cation exchange resins SBS and KU-2 (both in the H-form) and the anion exchange resins EDE-10 and AN-2F (in the Cl-form) were used. The content of titanium in the equilibrated solutions was determined photometrically with chromotropic acid, the content of zirconium with arsenazo.

Separation of Titanium From Accompanying Elements by Means of Ion-Exchange Chromatography. Communication 3. Separation of Titanium and Zirconium

SOV/75-13-6-9/21

It was found that neither titanium nor zirconium were adsorbed by the two anion exchange resins in 0.1 - 6 n hydrochloric solution. In dilute hydrochloric solution (0.1 - 1 n) zirconium is quantitatively adsorbed at both cationites used. That indicates that zirconium under present conditions is present in the form of positive ions. On the increase of the acid concentration a slight difference occurs in the adsorption at the two cationites. The resin SBS adsorbs Zr to a very small extent even in the stronger acid solution. There is only a small adsorption of titanium in 0.1 - 1 n hydrochloric solution, in stronger acid solutions there is no adsorption any more. On the basis of the different adsorption of titanium and zirconium in 1 n hydrochloric solution at the cation exchangers KU-2 (Zr is quantitatively adsorbed, Ti not at all) a method of quantitative chromatographic separation of titanium and zirconium at concentration ratios of Ti : Zr as 1000 : 1 up to Ti : Zr as 1 : 10,000 was devised. The separation occurs in 1 n hydrochloric solution; zirconium is washed out from the exchanger by 4 n HCl .

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Separation of Titanium From Accompanying Elements. SOV/75-13-6-9/21
by Means of Ion-Exchange Chromatography.
Communication 3. Separation of Titanium and Zirconium

After the separation neither titanium in the solution of zirconium, nor zirconium in the solution of titanium could be found. The use of the resin SBS cannot be recommended since, first the elution of the same quantity of titanium requires an amount of 1n HCl that is 2.5 times higher, secondly, because Zr could be eluted by 4 n HCl only up to 80-85%. The procedure of the separation is described in detail. There are 2 tables and 19 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: October 22, 1957

Card 4/4

AUTHORS: Alimarin, I.P., Petrikova, M.N. 32-1-11/55

TITLE: Ultramicroanalysis. Survey of Works From 1952 to 1957 (Ultramikroanaliz. Obzor rabot 1952-1957 gg.).

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 1, pp. 29-32 (USSR)

ABSTRACT: It is said in this report that the methods of microanalysis have not been dealt with until quite recently, and that therefore very few scientific works dealing with this field have existed up to now. The report mentions 40 foreign works dealing with this subject, while only 4 Soviet works by the authors of this paper, 1 by P. Kirk, one by I.M. Korenman and one by I.M. Korenman and Ye.V. Gronsberg are mentioned. On the whole, foreign works on this subject are given preference, above all those by Benedetti and Pichler, which (as may be seen from the list of references) are used as a standard work in a Russian translation also in the USSR. The works mentioned are divided into two groups: 1.) Works mainly consisting in various kinds of chemical analysis for which, perhaps, the most simple devices are used, and, 2.) works in which microscopes, manipulators, and other precise apparatus are used.

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Ultramicroanalysis. Survey of Works From 1952 to 1957 32-1-11/55

The Soviet works by Kirk, Korenman and Grosberg belong to the first group, whereas the four works by the authors of this paper belong to the second and deal with electrochemical methods of analysis, ultramicroelectrolysis with the application of platinum- or mercury electrodes, and further such methods as the potentiometric, amperometric and ultramicrotitration, as well as the quantitative determination for iron, vanadium and chromium with an accuracy of 1 - 3%. In conclusion, Soviet scientists are requested to pay more attention to this branch of science, above all in the fields of electron microscopy and the application of radioactive isotopes. There are 47 references, 7 of which are Slavic.

AVAILABLE: Library of Congress

Card 2/2 1. Microanalysis-Methods 2. Chemical analysis
3. Mercury electrodes

AUTHORS: Dymov, A.M., Professor, Lur'ye, Yu.Yu., Professor, 32-24-4-67/67
Alimarin, I.P., Corresponding Member AS USSR,
Feygel', L.V., Members of the Chair for
Analytical Chemistry at the Moscow Institute for Steel

TITLE: Vladimir Nikolayevich Alekseyev (Deceased) (Vladimir Nikolayevich Alekseyev)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 4, pp. 512-512 (USSR)

ABSTRACT: On January 23, Vladimir Nikolayevich Alekseyev, author of many textbooks on analytical chemistry and an excellent pedagogue, died at the age of 70 after a prolonged sickness. From 1915 to 1954 Vladimir Nikolayevich Alekseyev worked at various institutes where he was concerned with investigations and pedagogic work in the field of analytical chemistry. During recent years he was appointed docent to the chair for analytical chemistry at the Moscow Institute for Steel. He is the author of 7 textbooks, among others of the first textbook on qualitative semimicroanalyses. His textbooks for technical high schools attained the number of 8 editions, and those for universities 11 editions. His works are distinguished by their high degree of methodical arrangement,

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clear interpretations, and distinct formulations, which contributed largely towards promoting the self-education of students of analytical chemistry. Vladimir Nikolayevic Alekseyev will for a long time to come be held in high esteem by students and pedagogues, mainly by the wide use that is made of his excellent textbooks.

1. Chemists---USSR

Card 2/2

USCOMM-DC-60240

AUTHORS: Alimarin, I. P., Alikberov, S. S. SOV/32-24-7-8/65

TITLE: The Quantitative Determination of Thorium by Precipitation With Sodium Benzene Sulfinate (Kolichestvennoye opredeleniye toriya osazhdeniyem benzolsul'finatom natriya)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 7, pp. 804 - 807 (USSR)

ABSTRACT: Concerning the theory by Hecht and Donan (Ref 2) it was found that also benzene sulfo acid can be used for the determination of thorium and zirconium. The precipitate has the composition $Th(C_6H_5SO_2)_4$. It can be dried at 110° and then be weighed. An acidity of up to 1 n hydrochloric acid is best suited for the precipitation. Hence, the experiments were conducted in 0,5 normal hydrochloric acid-or nitrous acid solution, a 1% sodium benzene sulfinate solution serving as reagent. In order to verify the precipitation process the reagent "thoron" ("toron") proposed by V. I. Kuznetsov was used. After the method itself was investigated, determinations of thorium in the presence of rare earths were performed. Among others, ground samples of orthite and monazite were investigated. It was found that

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The Quantitative Determination of Thorium by Precipitation With Sodium Benzene Sulfinate

beryllium, aluminium, rare earths and small amounts of titanium and iron do not disturb the determination. If iron is contained in greater amounts, it must be reduced with ascorbic acid and transferred into the trilonate complex. The uranyl ion does not precipitate with sodium benzene sulfinate whereas uranium (IV) forms a crystalline pale green precipitate. Hence, it is possible to determine uranium. Zirconium, which has a disturbing effect, can be removed by a precipitation in a more acidous medium. Experimental results and the prescriptions for the analysis are given.
There are 2 figures, 3 tables, and 5 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute for Fine Chemical Technology imeni M. V. Lomonosov)

AUTHORS: Alimarin, I. P., Stepanyuk, Ye. I. SOV/32-24-9-9/53

TITLE: The Separation of Niobium From Zirconium With Selenious Acid (Otdeleniye niobiya ot tsirkoniya selenistoy kislotoy)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 9, pp 1064-1065 (USSR)

ABSTRACT: The literature contains descriptions of the use of selenious acid for the separation of elements, in particular for the separation of niobium and tantalum. The present method is based on the fact that in the presence of organic oxy-acids (such as tartaric acid), zirconium is not precipitated by selenious acid. The analytical procedure and a table of the results obtained are given. It has been observed that dependable results are obtained, unless larger amounts of zirconium are present, in which case a niobium loss occurs. The resultant niobium pentoxide precipitations were shown by spectral analysis to contain less than 0,05% zirconium. Attempts for the separation of tantalum from zirconium with selenious acid in a solution of tartaric acid were unavailing, as the preponderant amount of zirconium kept tantalum in solution. If niobium and tantalum are precipitated besides zirconium, the tantalum loss is reduced by niobium coprecipitation. A table of the results of these experiments

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The Separation of Niobium From Zirconium With Selenious Acid

is also given.
There are 2 tables and 1 reference, which is Soviet.

ASSOCIATION: Institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova
(Institute of Fine-Chemical Engineering imeni M. V. Lomonosov)

ALIMARIN, I.P.

Symposium on microchemical analysis. Vest.AN SSSR 28 no.12: 78-79 D '58. (MIRA 11:12)

1. Chlen-korrespondent AN SSSR.
(Microchemistry)

21(7) SOV/56-35-5-6/56

AUTHORS: Malysheva, T. V., Alimarin, I. P.

TITLE: Investigation of the Reactions (p,pxn), (p,4pxn) and (p,5pxn) by the Radiochemical Method (Issledovaniye reaktsiy (p,pxn), (p,4pxn) i (p,5pxn) radiokhimicheskim metodom)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 5, pp 1103-1112 (USSR)

ABSTRACT: The reactions mentioned in the title occur in connection with the interaction between complex nuclei and high-energy protons. They have already been investigated on medium-weight nuclei (cobalt, yttrium, cesium, tantalum) at various energies (Refs 1-5) as well as on heavy nuclei (uranium, thorium, E_p = 340 MeV, (Ref 6), bismuth, E_p = 375 MeV and 450 MeV (Ref 7); E_p = 480 MeV, (Refs 8, 9); 660 MeV (Ref 9)). Theoretically, L- and K-capture (Refs 10, 11) and the ratio g_L^2/g_K^2 (Ref 12) have already been dealt with. The results obtained by these investigations are discussed in short. The authors of this paper investigated the reactions mentioned in the title on the basis of the example of the radioisotopes

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SOV/56-35-5-6/56

Investigation of the Reactions (p,pxn), (p,4pxn) and (p,5pxn) by the Radiochemical Method

of gold, mercury, and bismuth produced by the disintegration of bismuth by 660 MeV protons. Investigations were carried out on the synchrocyclotron of the Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute for Nuclear Research). The Bi-samples (0.5-1 g) were exposed to the external proton beam of the synchrocyclotron; after irradiation the bismuth plate was dissolved in concentrated sulfuric acid and separated from the solution with corresponding isotopic carriers Au, Hg, and Bi. Identification of isotopes was carried out according to the half-life, the radiation energy, and on the basis of genetic composition. The proton flux was determined according to the yield of the $Al^{27}(p,3pn)Na^{24}$-reaction (Ref 13). The counting method is discussed in detail. The authors used an argon-filled standard end-window counter of the type TM-20. A further chapter deals with determination of the half-life of Hg^{193} (decay scheme shown by figure 5) as Seaborg (Siborg) (Ref 22) mentions a number of values (5, 10, 14.5 and 29 hours). Here the following values are given: Hg^{193}: 4 h, Hg^{193m}: 12 h, Au^{193}: 16 h ($Hg^{193} \xrightarrow{4h} Au^{193} \xrightarrow{16h} Pt^{193}_{stable}$). A further chapter deals with the E-capture of Au^{193m}.

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Investigation of the Reactions (p,pxn), (p,4pxn) and (p,5pxn) by the Radiochemical Method

The transition Au^{193m} (3.8 sec) $\longrightarrow$ Pt^{193m} (3.8 d) has already been investigated by Brunner (Ref 24). The data found for Au^{193m}, Au^{195m} and Au^{197m} (Refs 26, 27, 18) for γ-transition energy and conversion coefficients are shown in table 2. The half-life of Hg^{194} was also investigated (130 d). The results obtained by half-life investigations are shown in table 3. This very valuable table contains the decay type, half-life according to published table (reference given) as well as according to the measurements carried out by the authors and to the corresponding cross section values for 5 Au-, 9 Hg- and 6 Bi-isotopes. In conclusion the investigation of the production cross sections of the various Au-, Hg-, and Bi-isotopes is described; results are shown by diagrams. There are 8 figures, 3 tables, and 42 references, 7 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii Akademii nauk SSSR (Institute for Geochemistry and Analytical Chemistry of the Academy of Sciences USSR)

Card 3/4

LAVRUKHINA, Avgusta Konstantinovna; ALIMARIN, I.P., otv.red.; TRIFONOV, D.N., red.izd-va; RYLINA, Yu.V., tekhn.red.

[Achievements in nuclear chemistry] Uspekhi iadernoi khimii. Moskva, Izd-vo Akad.nauk SSSR, 1959. 143 p. (MIRA 12:5)
(Radiochemistry)

ALIMARIN, I. P.

p. 4, 5

PHASE I BOOK EXPLOITATION SOV/3818

Postoyannyy mezhinstitutskiy kollokvium po tverdym fazam peremennogo sostava

Kachestvo materialov dlya poluprovodnikovoy tekhniki (Quality of Materials for Semiconductor Technology) Moscow, Metallurgizdat, 1959. 192 p. (Series: Its: Trudy, 1957-1958, vyp. 8-30) 3,600 copies printed.

Sponsoring Agencies: USSR. Sovet Ministrov. Gosudarstvennyy komitet po khimii; Akademiya nauk SSSR. Fiziko-khimicheskiy institut imeni L.Ya. Karpova.

Ed. (Title Page): B.F. Ormont, Professor; Ed. (Inside Book): Yu.V. Yakovlev; Ed. of Publishing House: L.M. El'kind; Tech. Ed.: P.G. Islent'yeva; Editorial Board of Series: I.P. Alimarin, Corresponding Member, Academy of Sciences USSR, Geochemistry Institute, M.V. Grigor'yev, Scientific Research Institute, Committee on Radioelectronics, R.P. Lastovskiy, Professor, Institute of Chemical Reagents, Chemistry Committee, B.F. Ormont, Professor, Academy of Sciences USSR, Institute of Physics and Chemistry imeni L.Ya. Karpov, B.L. Porozhenko, State Rare Metals Scientific Research Institute, N.P. Sazhin, Corresponding Member, Academy of Sciences USSR, State Rare Metals Scientific

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Quality of Materials for Semiconductor Technology SOV/3818

Research Institute, G.Ya. Tarasov, Scientific Research Institute, Committee on Radioelectronics, Yu.V. Yakovlev, (Resp. Secretary of the Board) Institute of Geochemistry, Academy of Sciences USSR.

PURPOSE: This book is intended for technical personnel engaged in the manufacture and utilization of semiconductors.

COVERAGE: This book treats methods of obtaining quality semiconductor materials and presents current standardized specifications for semiconductors and auxiliary materials. The book is divided into three parts. Part I consists of 16 reports delivered at two conferences in January 1957 and December 1958 at the Fiziko-khimicheskiy institut imeni L.Ya. Karpova (Institute of Physics and Chemistry imeni L.Ya. Karpov) by members of 36 participating institutes and industrial plants. The reports deal with the standardization of characteristics of pure semiconductor materials and describe spectral and spectrochemical analysis, and chemical, vacuum-fusion, polarographic, and radioactivation methods for studying semiconductor materials and determining impurities in them, along with the equipment used. Part II and III include specifications approved at the second conference. The following organizations participated in the work of preparing the specifications: Institute imeni L.Ya. Karpov, GEOKhI, IREA, NII of the Committee on Radio Electronics, Vsesoyuznyy alyuminevo-magniyevyy institut (All-Union Aluminum and Magnesium Institute), Vsesoyuznyy institut aviatsionnykh

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materialov (All-Union Institute of Aviation Materials), IMET AN SSSR, Gipronikel', Gintsvetmet, MGU, Technical Administration of the former Ministry of Nonferrous Metallurgy, Giredmet, Shchekovskiy Chemical Plant of MKhP, NIUIF, OKB, GIGKhS, FTI, NII MRTP, Stalin Plant of Chemical Agents, Sverdlovskiy Plant of Chemical Agents, "Krasnyy khimik" Plant, VAMI, Giprotsvetmetobrabotka, Kudinovskiy Plant of Elektrougol', Elektrougol'nyy nauchno-issledovatel'skiy institut (Electrode-Carbon Scientific Research Institute) of Gosplan USSR, and Nauchno-issledovatel'skiy institut kislorodnovo mashinostroyeniya (Scientific Research Institute of Oxygen Equipment). No personalities are mentioned. References accompany 15 of the reports in Part I.

TABLE OF CONTENTS:

PART I. REPORTS ON METHODS FOR THE DETERMINATION OF ULTRAMICROIMPURITIES IN SEMICONDUCTOR MATERIALS PRESENTED AT THE CONFERENCES ON THE QUALITY OF SEMICONDUCTOR MATERIALS

Quality of Materials for Semiconductor Technology SOV/3818

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ALIMARIN, I.V.

5(2) PHASE I BOOK EXPLOITATION SOV/2402

Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii

Redkozemel'nyye elementy; polucheniye, analiz, primeneniye (Rare Earth Elements; Production, Analysis, and Use) Moscow, Izd-vo AN SSSR, 1959. 331 p. 5,000 copies printed.

Resp. Ed.: D. I. Ryabchikov, Professor; Eds. of Publishing House: D. N. Trifonov and T.G. Levi; Tech. Ed.: S. G. Markovich; Editorial Board: I. P. Alimarin, Corresponding Member, USSR Academy of Sciences, I. N. Ermerskiy, Doctor of Chemical Sciences, E. V. Kotlyarov, Candidate of Chemical Sciences, V. I. Nesmeyanov, Doctor of Chemical Sciences, M. M. Senyavin, Candidate of Chemical Sciences, and Yu. S. Sklyarenko, Candidate of Chemical Sciences.

PURPOSE: This book is intended for chemists in general and for geochemists and analytical chemists in particular.

COVERAGE: This collection of articles consists of reports presented at the Rare Earth Elements Symposium held in June 1956 at the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy. The book may be divided into three sections: the characteristics, uses and production of rare earth elements (REE); the methods of analyzing REE; and the application of individual rare earth elements and REE mixtures in the glass and metallurgical industries, and their use as catalysts. Considerable space is devoted to the application of ion-exchange chromatography in the production of pure forms of all rare earth elements. The combination of this method with other methods in separating REE on an industrial scale are discussed by D. I. Ryabchikov, Yu. S. Sklyarenko, and M. M. Senyavin. Chemical methods of separating REE compounds are discussed by I. V. [illegible] (who is said to be the first in the USSR to develop methods of processing REE), . V. P. Kotlyarov, I. F. Andreyeva, A. V. Nikolayev, and G. P. Aleksandrov. Quantitative X-ray spectral analytical methods are described by E. Ye. Vaynshteyn, and chemical methods of analysis by I. P. Alimarin and P. I. Pavlotskaya. The determination of REE impurities in pure products and atomic materials are discussed at length in these articles by A. N. Zaydel' and his associates. All articles are accompanied by photographs, diagrams, tables, and bibliographic references.

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5(2) SOV/156-59-2-19/48

AUTHORS: Sotnikov, V. S., Alimarin, I. P.

TITLE: Benzene- and Naphthalene Seleninic Acid Ammonia as Reagents for the Quantitative Determination of Titanium (Benzol- i naftalinseleninovokislyy ammoniy kak reagenty dlya kolichestvennogo opredeleniya titana)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 2, pp 296-298 (USSR)

ABSTRACT: Two reagents $C_6H_5SeO_2NH_4$ and $C_{10}H_7SeO_2NH_4$ forming white, flocculent precipitates in 0.5 ordinary nitrohydrochloric acid with titanium are suggested for the determination of titanium and its separation from other elements (aluminum, beryllium, elements of the rare earths, and iron). For the first-mentioned reagent the sensitivity of the reaction amounts to 1 : 750,000, for the second 1 : 1,000,000. The composition of the precipitate corresponds approximately to the formulas $TiO(C_6H_5SeO_2)_2$ and $TiO(C_{10}H_7SeO_2)_2$. For the quantitative determination the precipitates are annealed and titanium is determined as TiO_2. The presence of Cu, Ag, Be, Mg, Ca, Sr, Ba, Zn, Cd, Al, Mn, Co and Ni does not disturb

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Benzene- and Naphthalene Selenonic Acid Ammonia as Reagents for the Quantitative Determination of Titanium

the reaction. There are 1 figure, 2 tables, and 3 references, 2 of which are Soviet.

PRESENTED BY: Kafedra analiticheskoy khimii Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova
(Chair of Analytical Chemistry, Moscow State University imeni M. V. Lomonosov)

SUBMITTED: November 17, 1958

ALIMARIN, I.P.

21(8) 5(0)

AUTHOR: Lapitskiy, A.V. SOV/55-59-3-29/32

TITLE: The First All-Union Conference of Universities and Colleges on Radiochemistry

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1959, Nr 3, pp 221-225 (USSR)

ABSTRACT: This conference was convened by the initiative of the Laboratoriya radiokhimii khimicheskogo fakul'teta MGU (Laboratory of Radiochemistry of the Department of Chemistry of Moscow State University) and was held in Moscow from April 20 to April 25, 1959. It was attended by professors, teachers, and scientific collaborators of 32 universities and colleges of the Soviet Union. In his opening address, An.N.Nesmeyanov, Doctor of Chemical Sciences, stressed the importance of radiochemistry. 30 lectures were delivered by members of Moscow State University: Laboratoriya yadernoy fiziki (Laboratory of Nuclear Physics) N.P Rudenko, A.I.Sevast'yanov: Production of Beryllium-7 by the Reaction (T,2n); I.Stary, N.P.Rudenko: Production of Radioactive Isotopes by Extraction as β-Diketonates. Laboratoriya radiokhimii (Laboratory of Radiochemistry): An.N. Nesmeyanov, B.N. Korolev, L.A.Sazonov: Separation of Radioactive Isotopes in the Irradiation of Colloids; An.N.Nesmeyanov, [illegible], [illegible], [illegible], [illegible], K.Panek, B.Shukla: Secondary Reactions of the Recoil Atoms ^{80}Br and ^{82}Br in Methyl Bromides; B.G.Dzantiyev, I.M.Barkalov, V.V.Khrapov: Reactions of "Hot" Sulfur- and Nitrogen Atoms With Hydrocarbons; B.Z.Iofa, L.V.Bobrov, A.N.Ratov: The State of Radioactive Isotopes in Extremely Dilute Solutions; N.S. Merkulova, I.V.Melikhov: General Theory of the Coprecipitation of Radioactive Elements With Non-isomorphous Crystalline Precipitates; A.V.Lapitskiy, I.A.Savich, Chzhuan Ya-uy: Coprecipitation of Protactinium With Complex Compounds of Ti, Nb, and Ta; V.M.Fedoseyev, V.V.Ivanenkov, V.S.Bochkarev: Application of Radioactive Paper Chromatography"; K.B. Zaborenko, A.M.Babeshkin, M.S.Kul'chenko: Accumulation and Separation of Recoil Atoms on the Basis of the Example Ra^{224} and Ra^{228}; K.B.Zaborenko, A.M.Babeshkin, V.A.Beyevskaya, L.L.Melikhov: Application of the Emanation Method for the

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Investigation of the Transformation of Solids; V.I.Spitsyn, K.B.Zaborenko, A.M.Babeshkin, M.A.Radicheva: Transformation of Heteropoly-compounds; K.B.Zaborenko, A.M.Babeshkin, I.V. Kovalenko: Geochemistry of Radium; K.B.Zaborenko, V.I. Korobkov: Microanalytical Determination of Uranium by Means of Nuclear Emulsions. An.N.Nesmeyanov, De Dyk-Man: Partial Vapor Pressure of Co in Alloys With Ni; Yu.A.Priselkov, Yu.A. Sapozhnikov, A.V.Tseplyayeva, V.V.Karelin: The Behavior of a Molecular Metal Beam in the High-frequency Field; I.V.Golubtsov, A.V.Lapitskiy, V.K.Shiryayev: Vapor Pressure of Niobium Dioxide; I.V.Golubtsov, Yu.A.Likhachev, Ye.K.Bakov: Various Constructions of the Scintillation Attachment to the Apparatus of the Type B. Kafedra analiticheskoy khimii (Chair of Analytical Chemistry): I.P.Alimarin, N.P.Borzenkova: Niobium^{95} as a Radioactive Tracer; I.P.Alimarin, T.A.Belyavskaya, Hu Bin-ven': Sorption of Zr by Ion Exchangers; A.I.Busev, V.M. Byr'ko: The Use of Complex Pyrazolinedithiocarbamates in Radiometry. Kafedra neorganicheskoy khimii (Chair of Inorganic Chemistry): Ye.A. Ippolitova, Yu.P.Simanov, L.M.Kovba, G.P. Polunina, I.A. Bereznikova: Uranates of Some Bivalent Metals; V.G.Korsgina, G.G. [illegible]: Uranium Compounds With Acids of Low-valence P; V.I. Spitsyn: The Influence of the Radioactive Radiation of Solids on Their Physico-chemical Properties; I.Ye.Mikhaylenko, V.I.Spitsyn: Isotope Exchange in the System $K_2SO_4 - SO_3$ at High Temperature: Kafedra khimicheskoy kinetiki (Chair of Chemical Kinetics): I.V.Berezin, V.L.Antonovskiy, N.F.Kazanskaya: Application of Tritium for the Purpose of Determining the Velocity Constants of the Separation of Organohydrogen Compounds. An.N.Nesmeyanov delivered a detailed lecture on the Methodology of Radiochemical Instruction at the chemical departments of universities.

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5(4) SOV/20-[illegible]-4-8/43

AUTHOR: Alimarin, I.P., Corresponding Member, AS USSR

TITLE: Progress and Problems of Analytical Chemistry (Uspekhi i problemy analiticheskoy khimii)

PERIODICAL: Priroda, 1959, Nr 4, pp 41-44 (USSR)

ABSTRACT: The author describes the successful development of new methods in analytical chemistry, which are generally known and widely used in the USSR and abroad. He mentions, e.g. ultra-microanalysis and sub-microanalysis with the help of electronic microscopes, the use of radioactive properties for revealing minute substances, mass-spectrum analysis, and analysis of radioactive radiation spectra. Due to these new methods, the analytical process can be better controlled, simplified and carried out much quicker. The author emphasizes the theoretical research which led to spectro-photometric and extraction methods, the application of radioactive iso-

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Progress and Problems of Analytical Chemistry SOV/26-59-4-8/43

topes and organic reagents in analysis.

ASSOCIATION: Akademiya nauk SSSR (AS USSR); Institut geokhimii i analiticheskoy khimii im. V.I. Vernadskogo (Moskva) (Institute of Geochemistry and Analytical Chemistry imeni V.I. Vernadskiy (Moscow))

Card 2/2

ALIMARIN, I.P.; BELYAVSKAYA, T.A., MU BIN-YEN' [Mu Ping-wen]

Forms in which zirconium exists in solutions of hydrochloric acid, ammonium carbonate, and complexon III. Radiokhimiia 1 no.6:645-649 '59. (MIRA 13:4)
(Zirconium compounds)

5(4) SOV/63-4-2-13/39

AUTHORS: Alimarin, I.P., Corresponding Member of the AS USSR, and Petrikova, M.N.

TITLE: Achievements of Ultramicroanalysis

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 2, pp 223-229 (USSR)

ABSTRACT: The ultramicromethod analyzes quantities of $n \cdot 10^{-6}$ to 10^{-12} g in $n \cdot 10^{-3}$ to 10^{-6} ml. Volumes of less than 10^{-3} ml are handled by micromanipulators under the microscope. Techniques for larger quantities have been developed by Koranman and others [Ref 4, 5]. Conical capillary test tubes of 0.3 - 2 mm in the lower part and 3 - 6 mm in the upper part are used for this purpose. In titration the end point is determined by electrochemical methods. In ultramicropotentiometric titration [Ref 11] of 1 mm^3 of a solution the cell is placed in a humidity chamber (Figure 3) to avoid evaporation. The coulombometric method of analysis is investigated in [Ref 12, 13]. In the spectrophotometer PMQ-II adsorption can be measured in volumes of 100 mm^3. A photographic microcolorimeter may be used in the colorimetric analysis of small volumes [Ref 25]. In the ultramicroanalysis under the microscope introduced by Benedetti-Pichler [Ref 29-30] the vessels are

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0.5 - 1.5 mm in diameter. They are placed in a special chamber with wet cotton wool to reduce evaporation (Figure 6). The separation of solution and precipitate is obtained by centrifugation, not filtration. Electrolytic separation of metals may be carried out under the microscope with solid or liquid electrodes [Ref 38]. Extraction from volumes of less than 10^{-3} ml is possible in a soldered capillary tube. The burettes used in this method are 0.5 mm in diameter with an end drawn to 0.02 mm in diameter. For potentiometric analysis a capillary vessel of 1 - 2 mm with a platinum wire as electrode is employed. In amperometric titration the mixing is carried out by a vibrating electrode (Figure 10). The quantitative analysis is carried out by means of vessels with hydrophobic walls [Ref 41]. For weighing ultramicroscales are used with a quartz torsion thread of 25 μ. The weights are placed on cups of platinum foil. Such scales weigh substances of a few tenths of mg with an error of $2 \cdot 10^{-9}$ g. The ultramicromethod is used in biochemistry and clinical laboratories for the determination of calcium or gas in the blood. A pipette for this method is shown in Figure 12. It is also applied in the synthesis of minerals under high

pressure, nuclear reactions, etc. It is recommended to use also the electronic microscope.
There are 8 diagrams, 4 photos, 1 table and 47 references, 12 of which are Soviet, 17 German, 15 English, 1 French, 1 Czechoslovak., 1 Canadian.

21(7)

AUTHORS: Zolotov, Yu. A., Alimarin, I. P. SOV/89-6-1-11/33

TITLE: Separation of Np^{239} in Radiochemically Pure State by Using the Recoil of the Nuclei of Fission Products (Vydeleniye Np^{239} v radiokhimicheski chistom sostoyanii s ispol'zovaniyem otdachi yader produktov deleniya)

PERIODICAL: Atomnaya energiya, 1959, Vol 6, Nr 1, pp 70 - 71 (USSR)

ABSTRACT: UO_2 is crushed in an agate bowl, and by means of elutriation a fraction of all those particles is produced which precipitate with a velocity of $\leq 2.16 \cdot 10^{-3}$ cm/sec. The concentration of the suspension is determined by weighing. A certain quantity of the suspension is emptied into a glass, diluted, and saturated with calcium nitrate. The solution is very thoroughly stirred and the calcium carbonate is precipitated with concentrated carbonate of ammonia. The precipitate is filtered, washed, and dried. The weight ratio between UO_2 and $CaCO_3$ fluctuated in the various experiments between 1:100 and 1:500.

The ready mixture is then irradiated in a reactor in the

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course of 12 to 48 hours with a neutron flux of 7.10^{12} to $2.10^{13} n/cm^2.sec$. The irradiated sample is dissolved in a small quantity of cold 1.5 n HCl, centrifuged, and washed 2 to 3 times with 1.5 n hydrochloric acid and 3 times with water. The UO_2 washed in this way was dissolved in $\sim$ 2ml hot concentrated nitric acid, and potassium bromide is added to the solution for neptunium oxidation. The solution ($\sim$ 0.1 molar $KBrO_3$) is then heated for 15 minutes at 90 to $100^{\circ}C$.

After cooling aluminum nitrate is added, and the solution is diluted up to 1.5 mol for $Al(NO_3)_3$ and 1 mol for HNO_3, after which it is filled into a measuring bowl for ether extraction. Extraction was carried out 3 to 4 times. Neptunium is recovered from the extracts.

The purity of the Np^{239} thus separated was checked on the basis of the half-life. The method described makes it possible to separate Np^{239} in the course of 1 to 2 hours, the

active fission products being separated already during the first two minutes.
The mixture of UO_2 and the carrier substance can be produced quickly and can be easily used for a long time. Instead of $CaCO_3$ it is possible to use also other material, which is easily able to stand the high temperature in the reactor.
There are 1 figure and 5 references.

SUBMITTED: March 14, 1958

Card 3/3

ALIMARIN, I.P.; TSINTSEVICH, Ye.P.; BURLAKA, V.P.

Study of the behavior of indium, zinc, and cadmium complex compounds in an ammonium carbonate solution using ion-exchange resins. Zav.lab. no.11:1287-1290 '59. (MIRA 13:4)

1.Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Indium compounds) (Zinc compounds) (Cadmium compounds)

ALIMARIN, I.P.;GOLOVINA, A.P.;PUZDRENKOVA, I.V.

Studying absorption spectra of hydroxyquinolates of some rare elements. Part 2: Photometric determination of titanium. Vest Mosk. un. Ser. mat., mekh. astron., fiz., khim. 14 no.2:185-188 '59 (MIRA 13:3)

1. Kafreda analiticheskoy khimii Moskovskogo gosuniversiteta. (Titanium--Analysis) (Rare earth compounds)

TSINTSEVICH, Ye.P.; ALIMARIN, I.P.; NIKOLAYEVA, L.I.

Sorption of indium by ion-exchange resins from solutions containing hydrohalic acids. Vest. Mosk. un. Ser. mat., mekh., astron., fiz., khim. 14 no.2:189-197 '59 (MIRA 13:3)

1. Kafedra analiticheskoy khimii Moskovskogo gosuniversiteta.
(Indium) (Hydrogen halides)

ALIMARIN, I.P.;PUZDRENKOVA, I.V.

Periodate complex compounds of rare earth elements. Vest Mosk. un. Ser. mat., mekh., astron., fiz., khim. 14 no.2:213-216 '59 (MIRA 13:3)

1. Kafedra analiticheskoy khimii Moskovskogo gosuniversiteta.
(Rare earth elements) (Periodates)

5(0)

AUTHORS: Alimarin, I. P., Lastovskiy, R. P. SOV/75-14-2-23/27

TITLE: International Symposium on Microchemistry (Mezhdunarodnyy simpozium po mikrokhimii)

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 2, pp 252-253 (USSR)

ABSTRACT: From August 20 to 27, 1958, a symposium on microchemical analysis took place at the University of Birmingham, England, which was convened by the Midland Section and the Group of Microchemistry of the Society of Analytical Chemistry in the International Association of Theoretical and Applied Chemistry. The symposium was attended by approximately 400 representatives from 25 countries. Members of the delegation of the Soviet Union were I. P. Alimarin, Corresponding Member, AS USSR, Professor R. P. Lastovskiy, Professor A. A. Zhukhovitskiy, and Professor S. P. Motornyy. In the symposium three sections worked simultaneously. Also plenary meetings took place with abstracts of leading microchemists. The abstracts given may be divided into the following groups: Analysis of organic substances: The majority of these abstracts dealt with the modernization and the elaboration of new methods of elementary analysis (determination of carbon, hydrogen, oxygen,

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halogens, sulfur, and of the functional groups).
Radiometric methods in microanalysis.
Electrochemical methods in microchemistry.
Chromatographic microanalysis: 2 abstracts.
Physical methods in microchemistry: 4 abstracts.
Organic reagents in chemical analysis: This group of abstracts mainly dealt with the investigation of Complexons and metallochrome indicators. Technique of microchemical experiments: Unfortunately, only 7 abstracts dealt with this important field of microchemistry.

Also 4 lectures were delivered on the symposium. The lectures delivered made it possible to become acquainted with a number of new methods of microchemical analysis of organic and inorganic substances. The development of microchemical methods is successfully promoted in many countries, among them also in the USSR. This symposium offered an opportunity of learning all recent achievements in this field of chemistry. At the symposium also an exhibition of new laboratory equipment, physico-chemical apparatus, and chemical reagents as well as of new books, arranged by British industrial firms, was shown. The participation

of the Soviet delegation in the symposium was of great importance for the establishment of scientific relations with many famous analytical chemists in Britain and many other countries.

ALIMARIN, I.P.; KUZNETSOV, D.I.

Oxidation-reduction properties of benzenesulfinic acid. Vest. Mosk.un.Ser.mat., mekh., astron., fiz., khim. 14 no.3:189-200 '59. (MIRA 13:5)

1. Kafedra analiticheskoy khimii Moskovskogo gosudarstvennogo universiteta.
(Benzenesulfinic acid) (Oxidation-reduction reaction)

ALIMARIN, I. P.

5(0)

AUTHOR: Bilimovich, G. N. SOV/75-14-4-30/30

TITLE: Section of Analytical Chemistry of the VIII Mendeleyev Congress on General and Applied Chemistry

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 4, pp 511-512 (USSR)

ABSTRACT: Approximately 300 persons participated in the work of the Department of Analytical Chemistry, among them representatives of various scientific research institutes, higher schools and industrial enterprises in Russia, scientists from China, Bulgaria, the ČSR, Poland, Hungary, and Italy. Approximately 70 reports were heard. In his opening speech I. P. Alimarin reported on the achieved results and on modern problems of analytical chemistry. I. V. Tananayev reported on the application of physico-chemical analysis in heterogeneous systems for the solution of a series of problems of analytical chemistry. V. I. Kuznetsov reported on modern aims in the use of organic reagents; A. K. Babko showed at the example of halide and thiocyanate complexes the correlation between the stability of complexes and the position of the corresponding central atoms in the periodic system. V. M. Peshkova and V. M. Bochkova lectured on the stability

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of oximates of Cu, Co, and Ni as depending on the structure of the oxime molecule. V. F. Toropova lectured on the double character of reaction of some compounds in the formation of complexes. The problem of the application of heteropolyacids in analytical chemistry was dealt with in the lectures of Z. F. Shakhova and co-workers, and A. I. Kokorin and N. A. Polotebnova. A large number of lectures dealt with the use of new organic reagents in analysis: A. I. Busev and M. I. Ivanyutin reported on the application of dialkyl and diaryl dithiophosphoric acid for the separation of elements, A. I. Portnov used aryl arsonic acid and aryl phosphinic acid. R. P. Lastovskiy and his co-workers treated some properties of new complexons. The lectures of V. A. Nazarenko, G. G. Shitareva and A. I. Kononenko dealt with the photometric determination of a series of elements using fluorine derivates. A. I. Cherkesov lectured on the use of halochromation in analytical chemistry. B. M. Dobkina and T. M. Malyutina lectured on the determination of tantalum using differential spectrophotometry. Yu. V. Morachevskiy and I. A. Stolyarova reported on new highly sensitive analysis methods using an ultraviolet microscope. Several lectures dealt with

methodical and theoretical problems of spectrum analysis (N. F. Zakhariy and G. A. Sheynin; E. Ye. Vaynshteyn and co-workers). N. S. Poluektov and M. N. Nikonova treated the perfection of flame photometry. Several lectures dealt with the determination of elements by polarography (S. I. Sinyakova; Z. B. Rozhdestvenskaya and I. A. Yarovoy; Ya. P. Gokhshteyn). New results in using fixed electrodes were reported by I. D. Panchenko and Yu. S. Lyalikov and co-workers. The lecture of N. I. Udal'tsova and P. N. Paley treated the use of amperometric titration with two electrodes in the chemistry of uranium and thorium. M. M. Senyavin showed possibilities of predicting the conditions of chromatographic separation of elements based on their position in the periodic system. T. A. Belyavskaya reported on the use of ion exchange in the investigation of the state of substances in solutions. A. S. Vernidub and V. I. Petrashen' lectured on the chromatographic separation of a series of elements, N. G. Polyanskiy reported on adapting the properties of ion exchanger resins, F. M. Shemyakin and associates reported on the chromatographic proof of sulfanilamide preparations in liquids of the organism. G. L. Starobinets and associates treated

the application of high polymers in chromatographic analysis. The lecture of A. A. Zhukhovitskiy and N. M. Turkel'taub, G. Shay dealt with gas chromatography. Several lectures treated the use of radioactive isotopes for the chromatographic investigation of complex formation (D. I. Ryabchikov and associates), for the investigation of the co-precipitation mechanism of ions of rare metals with sulfides (N. A. Rudnev) and for determining rare elements by means of isotope dilution (I. P. Alimarin, G. N. Bilimovich). In the field of elementary organic microanalysis the lectures of M. O. Korshun, N. E. Gel'man and V. A. Klimova with associates have to be mentioned, who treated the elaboration of rapid micromethods for the simultaneous determination of several elements from one weighed portion of boron, fluorine and silicium-organic compounds.

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5(0)
AUTHORS: Vinogradov, A. P., Alimarin, I. P., SOV/32-25-2-78/78
Tananayev, I. V., Dymov, A. M., Terent'yev, A. P.,
Lur'ye, Yu. Yu., Chernikhov, Yu. A., Korenman, I. M.,
Kuznetsov, V. I., Gel'man, N. E., Klimova, V. A.,
Sheveleva, N. S., Chumachenko, M. N., Terent'yeva, Ye. A.
and others

TITLE: Mirra Osipovna Korshun (Mirra Osipovna Korshun)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 2, p 255 (USSR)

ABSTRACT: Mirra Osipovna Korshun, one of the leading scientists in the field of the microanalysis of organic compounds, died on December 1, 1958. The deceased graduated in 1929 from the II MGU where she had studied chemistry. In 1933 she became head of the analytical group. From 1935 onward she was Head of the Laboratory for Microanalyses at the Institut organicheskoy khimii (Institute of Organic Chemistry) and, in recent years at the Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Elemental-Organic Compounds, AS USSR). Moreover, she was a Member of the Komissiya po analiticheskoy khimii pri Prezidiume AN SSSR (Commission for Analytical Chemistry

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With the Presidium of the AS USSR). In 1958 she was appointed Member of the Komitet po mikrokhimicheskim metodam Mezhdunarodnogo soyuza po chistoy i prikladnoy khimii (Committee on Micro-Chemical Methods of the International Association for Pure and Applied Chemistry). M. O. Korshun introduced into organic analysis the principle of "pyrolytic combustion" in the empty tube which makes it possible to determine simultaneously several elements contained in one weighed portion of complicated organic compounds. The school of organic microanalysis founded by the deceased is still being further developed in the USSR in the spirit of her work.

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AUTHORS: Alimarin, I. P., Tsintsevich, Ye. P., Burlaka, V. F. SOV/32-25-11-2/69

TITLE: Investigation of the Behavior of Complex Compounds of Indium, Zinc, and Cadmium in Ammonium Carbonate Solution on Ion Exchange Resins

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 11, pp 1287-1290 (USSR)

ABSTRACT: The behavior of indium in an ammonium carbonate solution used as a complex-forming substance was investigated by ion exchange, and the results were utilized for the separation of indium from zinc, cadmium, and aluminum. No indium-carbonate complexes have hitherto been used in ion exchange chromatography. Indium perchlorate, zinc sulfate, cadmium sulfate, and aluminum chloride were used in these experiments. The indium concentration was determined gravimetrically (by the oxyquinoline method), volumetrically by complexometric titration using the indicator eriochrome black T (Ref 2), or by means of the indicator 4-(α-pyridylazo) resorcinol suggested by A. I. Busev and N. A. Kanayev. Cadmium was determined as anthranilate (Ref 3) or polarographically (Ref 4), zinc gravimetrically (phosphate method) or polarographically, and aluminum by precipitation with

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Investigation of the Behavior of Complex Compounds of Indium, Zinc, and Cadmium in Ammonium Carbonate Solution on Ion Exchange Resins

oxyquinoline or colorimetrically. The cation exchange resin KU-2 and the anion exchange resin EDE-10 P were used as sorbents. Absorption spectra taken in the 220-300 mμ wave range on the SF-4 apparatus showed that a soluble compound is formed from $In(ClO_4)_3$ and $(NH_4)_2CO_3$. Distribution coefficients (q) on the KU-2 cation exchanger (in the NH_4 form) calculated according to equation of Tompkins and Mayer (Ref 5) showed that the indium-carbonate complex ion bears a negative charge, which was confirmed by experiments performed with the anion exchanger EDE-10 P (in the CO_3 form). This fact was utilized to separate indium from zinc and cadmium. Indium was separated from zinc on the anion exchanger EDE-10 P (in the CO_3 form) in the ratios 1:17 to 1:1000. The indium complex on the resin remained absorbed, was then eluted with acetic acid, and determined as mentioned above (Table 1). The separation of indium from small amounts of cadmium was performed on the cation exchanger KU-2 (in the NH_4 form) in ratios In:Cd = 20:1 to 1000:1. Cadmium

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Investigation of the Behavior of Complex Compounds of Indium, Zinc, and Cadmium in Ammonium Carbonate Solution on Ion Exchange Resins SOV/32-25-11-2/69

remained absorbed, was then eluted with nitric acid, and finally determined (Table 2). Indium could be separated from aluminum in ratios 4:1 to 1000:1 on the resin KU-2 as well, indium being eluted with an ammonium carbonate solution, and aluminum with 2n alkali (Table 3). There are 4 figures, 3 tables, and 5 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

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5(2,3)

AUTHORS: Alimarin, I. P., Corresponding Member, Academy of Sciences, USSR, Zolotov, Yu. A., Pal'shin, Ye. S.

SOV/ 20-124-2-24/71

TITLE: Extraction of Pentavalent Neptunium (Ekstraktsionnoye izvlecheniye pyativalentnogo neptuniya)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 2, pp 328-330 (USSR)

ABSTRACT: Reliable data on the extraction of pentavalent neptunium have hitherto not been available. In the present paper, the authors prove that this extraction is possible by using 1-nitroso-2-naphthol solution in n-butyl and isoamyl alcohol at pH 9-10. Indicator quantities of Np^{239} served for this purpose. The controls were performed with weighable quantities of Np^{237}. The isotope Np^{239} was isolated from uranium which had been irradiated with neutrons (Ref 3). The initial solutions of neptunium-(V) were obtained by reduction of neptunium-(VI) by means of hydrazine in the cold. The results obtained are presented in figure 1. As can be seen from it the neptunium compound cannot be extracted up to pH 6 . The percentage rate of extraction is dependent to a considerable extent on the nature

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of the extracting agent; with n-butyl alcohol 90-95% are extractable at one single extraction, with isoamyl alcohol 80-85%, whereas methyl-ethyl ketone, chloroform and amyl acetate are far less effective. Benzene and diethyl ether sparingly extract neptunium-(V). Higher amounts of fluorides, carbonates, phosphates, acetates and citrates interfere with the extraction. Nitrates, chlorides and sulfates exert no negative influence. The said extraction is first of all indicative of the interaction of the NpO_2 ion with 1-nitroso-2-naphthol. Reactions of the neptunium-(V) with organic reagents are unknown with a few exceptions only (complex formation Refs 5, 6). Analytical reactions for Np(V) are missing. The mentioned interaction is in agreement with earlier observed spectroscopic data (Ref 6). The results obtained can be utilized in the separation of neptunium from plutonium and uranium. The extraction of tetravalent plutonium (proved by the authors together with D. Mishanov) took place already at pH 1.0 - 1.5. The investigations are being

carried on. There are 1 figure and 6 references, 5 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo Akademii nauk SSSR
(Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences, USSR)

SUBMITTED: October 16, 1958

EARLIER PUBLICATIONS FOR THIS AUTHOR ARE AVAILABLE IN THE INACTIVE FILE -- WE WILL PULL THEM UPON REQUEST.

L 34208-65 EWT(m)/EWP(t)/EWP(b) IJP(c) JD S/0075/65/020/002/0165/0171

ACCESSION NR: AP5005841

AUTHOR: Zolotov, Yu. n.; Alimarin, I. A.; Sukhanovskaya, A. I.

TITLE: Extraction of trivalent thallium from chloride solutions

SOURCE: Zhurnal analiticheskoy khimii, v. 20, no. 2, 1965, 165-171

TOPIC TAGS: thallium extraction, thallium determination, ether, amyl acetate, ultraviolet absorption, chloride solution

ABSTRACT: The authors studied the extraction of thallium (III) from hydrochloric acid solutions and lithium chloride solutions with ethers (diethyl, diisopropyl, dibutyl ether) and amyl acetate. The extraction was studied as a function of the HCl concentration or hydrogen ion concentration at a constant ionic strength and constant chloride ion concentration, and also as a function of the thallium concentration. The organic phases were analyzed for the main components, and the absorption spectra of aqueous chloride solutions and extracts were recorded in the ultraviolet. The data obtained indicate that in all cases thallium was extracted only in the form of the complex acid $HTlCl_4$, since the spectra of the extracts were independent of the HCl concentration and of the nature of the solvent. The extraction of thallium with diethyl and diisopropyl ether from solutions with very low HCl concentrations is of practical interest; thus, diethyl ether will extract

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L 34208-65
ACCESSION NR: AP5005841

thallium to the extent of 98-99% even in 0.3-0.8 NHCl. Orig. art. has: 5 figures and 3 tables.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V.I. Vernadskogo AN SSSR, Moscow (Geochemistry and analytical chemistry institute, AN SSSR)

SUBMITTED: 04May64 ENCL: 00 SUB CODE: IC

NO REF SOV: 006 OTHER: 008

Card 2/2

ALIMARIN, Ivan Pavlovich; USHAKOVA, Nina Nikolayevna; KONDRASHKOVA, S.F., red.; YERMAKOV, M.S., tekhn.red.

[Reference tables for analytical chemistry] Spravochnye tablitsy po analiticheskoi khimii. Moskva, Izd-vo Mosk.univ., 1960. 55 p. (MIRA 13:12)

(Chemistry, Analytical--Tables, etc.)

PHASE I BOOK EXPLOITATION SOV/5495

Alimarin, Ivan Pavlovich, and Mira Nikolayevna Petrikova

Neorganicheskiy ul'tramikroanaliz (Inorganic Ultramicroanalysis) Moscow, Izd-vo AN SSSR, 1960. 151 p. Errata slip inserted. 8,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo.

Resp. Ed.: A. P. Vinogradov, Academician; Ed. of Publishing House: N. S. Vagina; Tech. Ed.: I. A. Makogonova.

PURPOSE : This book is intended for chemical analysts interested in the application of ultramicroanalysis.

COVERAGE: The book deals with the application of the ultramicro-method in chemical analysis of inorganic substances. The material includes published and unpublished data that have been gathered by the authors for many years. The special features of ultramicroanalysis are described, and quantitative and qualitative analyses, including the techniques, methods, and apparatus

Card 1/11

KORENMAN, Izrail' Mironovich; VINOGRADOV, A.P., akademik, glavnyy red.; BUSHEV, M.I., prof., red.toma; ALIMARIN, I.P., red.; BABKO, A.K., red.; VAYNSHTEYN, E.Ye., red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., prof., red.; PALEY, P.N., red.; RYABCHIKOV, D.I., red.; TANANAYEV, I.V., red.; CHERNIKHOV, Yu.A., red.; VOLYNETS, M.P., red.izd-va; KASHINA, P.S., tekhn.red.

[Analytical chemistry of thallium] Analiticheskaia khimiia talliia. Moskva, Izd-vo Akad.nauk SSSR, 1960. 170 p. (MIRA 14:3)

(Thallium--Analysis)

VINOGRADOVA, Yevgeniya Nikolayevna; GALLAY, Zoya Aleksandrovna; FINOGENOVA, Zoya Mikhaylovna; ALIMARIN, I.P., prof., otv.red.; KONDRASHKOVA, S.F., red.; GEORGIYEVA, G.I., tekhn.red.

[Polarographic and amperometric analysis methods] Metody poliarograficheskogo i amperometricheskogo analiza. Moskva, Izd-vo Mosk. univ., 1960. 279 p. (MIRA 13:12)

1. Chlen-korrespondent AN SSSR (for Alimarin).
(Polarography) (Conductometric analysis)

RYABCHIKOV, Dmitriy Ivanovich; GOL'BRAYKH, Yevgeniya Kas'yanovna; VINOGRADOV, A.P., akademik, glavnyy red.; ALIMARIN, I.P., red.toma; PALEY, P.N., red.toma; BABKO, A.K., red.; BUSEV, A.I., red.; VAYNSHTEYN, E.Ye., red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., red.; TANANAYEV, I.V., red.; CHERNIKHOV, Yu.A., red.; TRIFONOV, D.N., red.izd-va; POLENOVA, T.P., tekhn.red.

[Analytical chemistry of thorium] Analiticheskaia khimiia toriia. Moskva, Izd-vo Akad.nauk SSSR, 1960. 295 p. (MIRA 13:10)
(Thorium--Analysis)

ALIMARIN, I. P., YAKOVLEV, Yu. V.

"Opportunities in the Use of Modern Methods for the Determination of Ultra-Small Amounts of Impurities in Ultra-Pure Materials."

submitted at the Conference on Kinetic Methods of Analysis,,Ivanovo, 14-16 June 1960

So: Izvestiya Vysshikh Uchebnykh Zavedeniy SSSR, Khimiya i Khimicheskaya Technologiya, Vol III, No 6 Ivanovo, 1960, pages 1113-1116.

PHASE I BOOK EXPLOITATION SOV/4443

Akademiya nauk SSSR. Komissiya po analiticheskoy khimii

Metody opredeleniya primesey v chistykh metallakh (Methods of Determining Admixtures In Pure Metals) Moscow, 1960. 411 p. (Series: Its: Trudy, 12) 3,500 copies printed.

Resp. Eds.: A.P. Vinogradov, Academician, and D.I. Ryabchikov, Doctor of Chemical Sciences; Ed. of Publishing House: M.P. Volynets; Tech. Ed.: T.V. Polyakova.

PURPOSE: This collection of articles is intended for chemists, metallurgists, and engineers.

COVERAGE: The articles describe methods for detecting and determining various admixtures and their traces in pure metals. Also discussed are many chemical, physicochemical, electrochemical, spectrochemical and luminescence methods of analyzing materials of high purity. The editors state that these methods have been developed within the last five or six years by various Soviet scientific institutes, and are now widely used in research and factory laboratories of the Soviet Union. No personalities are mentioned. References, mostly Soviet, accompany each article.

AVAILABLE: Library of Congress

Alimarin, I.P.

24081
S/186/60/002/006/001/026
A051/A129

21.4200

AUTHORS: Alimarin, I. P.; Zolotov, Yu. A.; Pal'shin, Ye. S.

TITLE: The extraction of 1-nitroso-2-naphtholate of pentavalent neptunium

PERIODICAL: Radiokhimiya, v. 2, no. 6, 1960, 637 - 642

TEXT: Pentavalent neptunium was extracted at a pH = 9 - 10 using solutions of 1-nitroso-2-naphthol in n-butyl and isoamyl alcohols and the optimum conditions of the extraction were established. It is thought that the NpO_2^+ ion is capable of forming intra-complex compounds, which can be extracted with organic solvents with a reagent correspondingly selected. The 1-nitroso-2-naphthol was chosen as reagent in this work. It was shown that extraction can be used for purifying neptunium from plutonium and uranium. Indicator quantities of Np^{239} separated from uranium irradiated with neutrons according to the method based on the nuclear emission of the decay products (Ref. 15: Y. A. Zolotov; I. P. Alimarin Atomnaya energiya, 6, 1, 70, 1959) and in some cases according to the extraction method by Pal'shin (Ref. 16: E. S. Pal'shin, Y. A. Zolotov, Radiokhimiya, 1, 4, 482, 1959) were used. The effect of a series of factors on the extraction degree

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24081
S/186/60/002/006/001/026
A051/A129

The extraction of 1-nitroso-2-naphtholate ....

was studied. The results confirmed that neptunium extraction takes place at a pH over 6. The optimum pH value for each solvent depends in addition to other factors - on the solubility of the reagent in the solvent. Seven solvents were studied: benzene, chloroform, isoamyl alcohol, n-butyl alcohol, diethyl ether, amylacetate, methylethyl ketone. The best solvents for the extraction of 1-nitroso-2-naphtholate proved to be n-butyl and isoamyl alcohol; It is pointed out that uranyl 1-nitroso-2-naphtholate is well extracted with alcohols. The extraction of macroquantities of Np^{237} (0.6 mg/ml) showed that macro-quantities are extracted in the same manner as the indicator quantities. Since the extraction takes place within a pH range where neptunium (V) is quite hydrolyzed, the concentration of the element should be as low as possible to avoid the formation of a hydroxide precipitate. It was seen that large quantities of fluorides, phosphates, carbonates, oxalates and nitrates hinder the extraction of $Np^{(IV)}$ 1-nitroso-2-naphtholate with n-butyl or isoamyl alcohol at a pH = 9 - 10. Ethylenedimaninetetraacetic acid has a significant negative effect on the extraction. Small quantities of fluorides, carbonates and hydrogene peroxide have little effect. Nitrates, chlorides and sulfates have no effect at all. The presence of borax (buffer solution, concentration 9.05 M) does not impair the extraction, but uranium (VI)

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The extraction of 1-nitroso-2-naphtholate ....

and plutonium (IV) not bound in the complexes and being highly hydrolyzed have a great negative effect. When extracting with a 0.25 % solution of the reagent in isoamyl alcohol from a 0.05 molar solution of borax (pH = 9.24) a complete extraction of $Np^{(IV)}$ is reached as a result of four extractions. Neptunium (V) can be easily extracted from accumulated organic fractions by double washing with a solution of a pH less than 6. In order to produce pure $Np^{239}(V)$, it is suggested using the extraction of nitroso-naphtholate with subsequent reextraction of neptunium in hydrochloric or nitric acid of a given concentration. The following method for $Np^{(V)}$ purification without a carrier is recommended: the initial solution of neptunium not containing interfering $Np^{(V)}$-ions is processed for the purpose of transferring it to the pentavalent state with a 0.1 M solution of hydrazine-nitrate in 1 M HNO_3 at room temperature. The solution is neutralized by a universal indicator and an equal volume of 0.1M borax solution is added. Neptunium is extracted 4 times with equal volumes of a 0.25 % solution of 1-nitroso-2-naphthol in n-butyl or isoamyl alcohol, shaking the funnel each time for 4 minutes. The organic fractions collected (3-minute shaking) are processed twice with small volumes of 0.1 M nitric acid. The combined water fractions are washed with chloroform until the water solution becomes colorless. The coexistence of $Np^{(V)}$, $U^{(VI)}$ and $Pu^{(IV)}$ in solution is accomplished in the easi-

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The extraction of 1-nitroso-2-naphtholate ....

est way by processing the element mixture with sodium nitrite in nitric acid, heating it for a long time. The authors investigated the extraction of $Pu^{(IV)}$ using various solvents (methylethylketone, amylacetate, isoamyl alcohol, n-butyl alcohol, chloroform). It was found that extraction starts at pH = 0.5 - 1.0; n-butyl alcohol extracts 1-nitroso-2-naphtholate of $Pu^{(IV)}$ better than isoamyl alcohol. The separation of the elements was found possible in certain cases only. The purification from small quantities of plutonium was accomplished in the following manner: plutonium was bound with a small excess of ammonium sulfate and $Np^{(V)}$ was extracted with a solution of 1-nitroso-2-naphthol in isoamyl alcohol. The main plutonium mass remains non-extracted. If the organic fractions are then washed with an aqueous solution at pH = 3, neptunium (V) is re-extracted and partially extracted plutonium remains in the organic phase. The washing is performed twice. There are 2 tables, 2 figures and 17 references: 8 Soviet-bloc and 9 non-Soviet-bloc. The references to the four most recent English language publications read as follows: H. A. C. McKay, Ind. Chem., 33, 297, 1957; J. Kooi, Tracer experiments on the solvent extraction of neptunium and plutonium. Amsterdam, 1956; G. Gibson, D. M. Gruen, J. J. Katz, J. Am.

Card 4/5

ALIMARIN, I.P.; BRAGINA, A.A.

Separating small quantities of cobalt from large quantities of nickel.
Trudy Kom. anal. khim. 12:377-382 '60. (MIRA 13:8)
(Precipitation (Chemistry)) (Cobalt) (Nickel)

5.5210

77745
SOV/75-15-1-7/29

AUTHORS: Alimarin, I. P., Shên Han-Si

TITLE: Quantitative Determination of Scandium Using Mandelic Acid

PERIODICAL: Zhurnal analiticheskoy khimii, 1960, Vol 15, Nr 1, pp 31-35 (USSR)

ABSTRACT: Gravimetric determination of Sc by precipitation with mandelic acid was studied. Procedure: add 15 ml of an 8% mandelic acid solution to 35 ml of Sc solution; heat on water bath for 30 min, cool, filter, and wash the white precipitate with 0.5% mandelic acid solution; ignite the precipitate to constant weight at 800°. The results of the study and the conditions of precipitation are shown in Figs. 1 and 2. It was found that for the complete precipitation of Sc, an excess of mandelic acid must be present and the precipitation should be conducted at pH 1.8-3.2. Accuracy of the method is illustrated by the data given in Table 1. Composition and properties of the precipitate were studied. The precipitate obtained at pH 2.5, washed with 0.5% mandelic acid, and

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Quantitative Determination of Scandium Using Mandelic Acid

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SOV/75-15-1-7/29

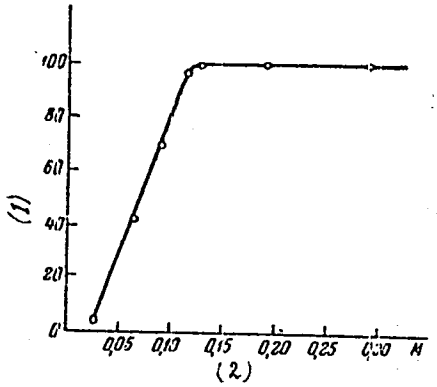

Fig. 1. Effect of mandelic acid concentration on the extent of Sc precipitation: (1) precipitation %: (2) mandelic acid concentration.

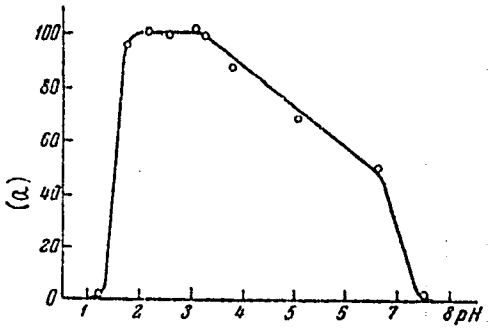

Fig. 2. Effect of pH on extent of Sc precipitation: (a) precipitation.

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dried at 110° (after the acid was removed by final washing with ether in which the precipitate is insoluble), has the following composition: $H_3[Sc(C_8H_6O_3)_3] \cdot nH_2O$. The precipitate ignited at 800° is Sc_2O_3. The precipitate obtained at 110° reacts with ammonia:

$$H_3[Sc(C_8H_6O_3)_3] + 3NH_4OH \rightleftarrows (NH_4)_3[Sc(C_8H_6O_3)_3] + 3H_2O.$$

A thermogravigram of the precipitate obtained on the continuous weighing balances shows that the precipitate is stable up to 280°; at higher temperatures it decomposes, forming Sc_2O_3 (see Fig. 3). It was found that rare earths and thorium do not form a precipitate with mandelic acid at pH 2-3; therefore, Sc can be determined in the presence of rare earths and thorium, and Sc can be separated from these elements by precipitating Sc with mandelic acid at pH 2-3. There are 4 figures; 5 tables; and 22 references, 11 U.S., 4 German, 1 Dutch, 1 Indian, 5 Soviet. The 5 most recent U.S. references are:

Quantitative Determination of Scandium Using Mandelic Acid

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SOV/75-15-1-7/29

Table 1

Precipitation of scandium with mandelic acid
(1) Error; (2) taken; (3) found.

Sc_2O_3, mg		(1)		Sc_2O_3,		(1)	
	(3)	mg	%	(2)	(3)	mg	%
9,90	9,92	+0,02	20,2	4,95	4,90	−0,05	−1,0
9,90	9,90	±0,00	±0,0	4,95	4,98	+0,03	+0,6
4,95	4,95	±0,00	±0,0	0,99	1,02	+0,03	+2,0
4,95	4,94	−0,01	−0,2	0,99	0,98	−0,01	−1,0

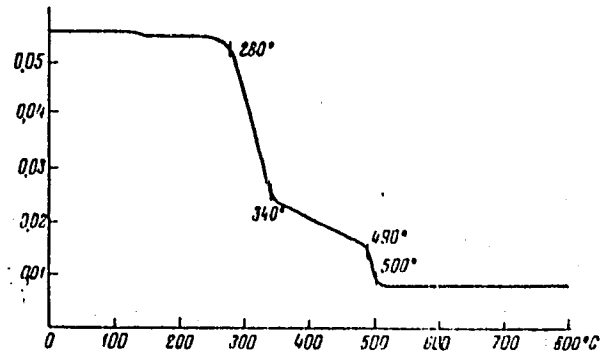

Fig. 3. Thermogravigram of precipitate $H_3[Sc(C_8H_6O_3)_3] \cdot nH_2O$: (a) weight of precipitate in g.

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Quantitative Determination of Scandium Using Mandelic Acid

77745
SOV/75-15-1-7/29

Bomberger, D. K., Analyt. Chem. 30, 1907 (1958); Morrison, G. H., Freiser, H., Solvent Extraction in Analytical Chemistry, New York, 1957; Pokras, L., J. Chem. Educ., 33, 16, 284 (1956); Hahn, R. B., Weber, L., Analyt. Chem., 28, 414 (1956); Hahn, R. B., Joseph, P. I., J. Am. Chem. Soc., 79, 1298 (1957).

ASSOCIATION: M. V. Lomonosov Moscow State University (Moskovskiy gosudarstvennyy universitet imeni M. V. Lomonosova)

SUBMITTED: February 24, 1959

Card 5/5

SAVOSTIN, A.P.; ALIMARIN, I.P.

Determination of small amounts of tantalum and niobium in granites with the aid of isotope dilution. Vest.Mosk.un.Ser. 2: Khim. 15 no.1:45-48 '60. (MIRA 13:7)

1. Kafedra analiticheskoy khimii Moskovskogo universiteta.
(Isotopes)
(Tantalum--Analysis)
(Niobium--Analysis)

ALIMARIN, I.P., TSZE YUN'-SYAN

Determination of thorium with N-benzoylphenylhydroxylamine.
Vest. Mosk. un. Ser. 2: khim. 15 no.2:53-57 Mr-Ap '60.
(MIRA 13:6)

1. Kafedra analiticheskoy khimii Moskovskogo universiteta.
(Thorium--Analysis) (Hydroxylamine)

ALIMARIN, I.P.; TSINTSEVICH, Ye.P.; GOROKHOVA, A.N.

Behavior of complex compounds of gallium and zinc in ammonium carbonate solution on ion exchange resins. Quantitative separation of gallium from zinc. Vest. Mosk un. Ser. 2: Khim. 15 no.4:46-51 Jl-Ag '60. (MIRA 13:9)

1. Kafedra analiticheskoy khimii Moskovskogo universiteta.
(Gallium compounds) (Zinc compounds)

ALIMARIN, I.P.; TSINTSEVICH, Yo.P.; LEONOVA, T.N.

Ion-exchange study of the behavior of indium in the presence of different organic complex-forming compounds. Vest. Mosk. un. Ser. 2: Khim. 15 no.6:33-37 N-D '60. (MIRA 14:2)

1. Kafedra analiticheskoy khimii Moskovskogo universiteta.
(Indium)

ALIMARIN, I.P.; SHEN' SHAN'-SI [Shên Han-hsi]

Dissociation of *p*-bromomandelic acid in water. Vest. Mosk. un. Ser. 2: Khim. 15 no.6:38-41 N-D '60. (MIRA 14:2)

1. Kafedra analiticheskoy khimii Moskovskogo universiteta.
(Mandelic acid)

ALIMARIN, I.P.; TSINTSEVICH, Ye.P.; GOROKHOVA, A.N.

Separation of gallium form zinc in a solution of ammonium carbonate by means of ionites. Zav.lab. 26 no.2:144-145 '60.
(MIRA 13:5)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Gallium—Analysis) (Zinc—Analysis)

ALIMARIN I. P.

S/032/60/026/04/44/046
B010/B006

AUTHOR: None given

TITLE: Conference on the Analysis of Rare- and Semiconductor Elements

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 4, pp. 514-515

TEXT: From December 7 - 11, 1959, a conference was held in Moscow, which dealt with the present state of the analytical chemistry of rare metals, and methods applied for the determination of impurities in high-purity metals used in semiconductor engineering. The conference was convened by the Gosplan SSSR (Gosplan of the USSR), GNTK Soveta Ministrov SSSR (GNTK of the Council of Ministers of the USSR), the Academies of Sciences of the USSR, Institut Geokhimii i analiticheskoy khimii im. V.I. Vernadskogo (Institute of Geochemistry and Analytical Chemistry imeni V.I. Vernadskiy) and Komissiya po analiticheskoy khimii (Commission of Analytical Chemistry). A thousand persons - representatives of 285 different institutions - participated in it. After the opening speech by Academician A.P. Vinogradov, N.P. Sazhin, Corresponding Member of the AS USSR, read a paper on "The Industry's Demands With Respect to the Purity of Materials", and I.P. Alimarin, Corresponding Member of the AS USSR, read a paper on

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Conference on the Analysis of Rare- and Semiconductor Elements

S/032/60/026/04/44/046
B010/B006

"Perspectives of Increasing the Sensitivity and Accuracy of Analytical Methods". The analytical chemistry of the elements Ge, Si, Li, Rb, Cs, Be, Y, In, Ga, Tl, Zr, Hf, Nb, Ta, Mo, W, Re, Se, Te, Ti, V, Th, and the rare earth elements was discussed at twelve separate sectional meetings. Furthermore, discussions were held on new analytical methods for these elements. At the two intersectional meetings, among other things, a new alternating-current polarograph designed by the Tsentral'naya laboratoriya avtomatiki (Central Laboratory of Automation) was reported on. At the final meeting of the two plenary meetings R.L. Globus, Chief Engineer of the Upravleniye poluproduktov, krasiteley i reaktivov GKSM SSSR (Administration of Semiproducts, Dyes, and Reagents GKSM of the USSR) gave a report on the present state and the perspectives of the development of the chemical reagents industry. It was mentioned at the conference that the analytical methods for rare elements have been improved by the application of instrumental analytical methods, but that rapid methods and several other analyses have not been developed sufficiently. It was found that the small variety and low quality of laboratory equipment detains the application and development of modern analytical methods. Several questions on the future development of the analytical chemistry of rare elements were discussed and

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Conference on the Analysis of Rare- and Semiconductor Elements

S/032/60/026/04/44/046
B010/B006

a number of resolutions were passed in this connection.

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S/032/60/026/06/10/044
B010/B126

5.5300

AUTHORS: Alimarin, I. P., Golovina, A. P., Torgov, V. G.

TITLE: Photometric Determination of Gallium and Indium With Quercetin

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 6, pp. 709 - 711

TEXT: A photometric determination of gallium and indium is described, wherein quercetin is used instead of morin. Both elements give a precipitation with the reagent in a weak medium, which is of strong yellow color in water-alcohol solution, and fluoresce yellow-green in ultraviolet light. Examinations with a ФЭК-52 (FEK-52) photoelectrocolorimeter at 455 mμ showed that the intensive color is reached at pH = 4 for gallium, and at pH = 5 for indium. The stability of the color depends on the alcohol concentration, for example the solution must contain at least 20% methanol (or ethanol) with Ga, and 55% alcohol with In. Beer's Law is valid for colored solutions at concentrations of from 2.5 to 20γ Ga and from 10 to 100γ In. The sensitivity of the reaction is 0.005γ/cm^3 for Ga

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Photometric Determination of Gallium and Indium With Quercetin

S/032/60/026/06/10/044
B010/B126

and 0.01γ/cm^3 for In. Aluminum, like the fluoride-, oxalate-, citrate-, and tartrate-ions disturb the determination. In ratios of Ga : Zn $\approx$ 1 : 50, Ga : Cd $\approx$ 1 : 30, In : Zn = 1 : 10 and In : Cd = 1 : 10, zinc and cadmium do not disturb the determination (Table, results of analyses). The composition of the complex compounds of gallium and indium with quercetin corresponds to a ratio of 1 : 1 metal : quercetin. There are 2 figures, 1 table, and 4 references: 2 Soviet, 1 British, and 1 Rumanian.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

Card 2/2

S/03[illegible]/60/026/008/00[illegible]/01[illegible]
B015/B064

AUTHORS: Al'manin, I. P., Yakovlev, Yu. V.

TITLE: The Present State of the Methods of Determining Impurities in Semiconductor Materials

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 8, pp. 915-921

TEXT: The present paper explains in how far the analytical methods available meet requirements, where their lower limit of sensitivity lies, and what [illegible] in the latter. The following methods are examined: chemical, above all colorimetric analytical methods, methods of investigating reaction products with the help of instruments (spectrophotometry), electrochemical methods (polarography), ultramicrochemical methods, methods of physical analysis, and methods of concentrating microimpurities. It was found that none of the methods mentioned can be regarded as universal. For this reason it is necessary to employ several of the existing analytical methods to determine a larger number of impurities in high-purity substances. It is pointed out that at present the main task consists in a wider

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