

ZUL'FUGAROV, Z.G.; GUSEYNOVA, Z.A.; ALIMARDANOV, G.I.

Activity of oxide catalysts in the conversion of gas condensate  
to unsaturated hydrocarbons. Azerb.khim.zhur. no.4:75-82  
'60. (MIRA 14:6)

(Olefins) (Catalysts)

ALIMARDANOV, G.I.; AGAMIRZOYEVA, Z.S.; ZUL'FUGAROV, Z.G.

Effect of  $Sr^{++}$  and  $Cr^{+3}$  oxides on the stability of  $Cr^{+6}$  in chromium-aluminum-silicate catalysts. Dokl. AN Azerb. SSR 17 no. 11:1033-1037 '61. (MIRA 15:2)

1. Institut khimii AN AzSSR. Predstavleno akademikom AN Azerbaydzhanskoy SSR M.A. Dalinym.  
(Catalysts)

ZUL'FUGAROV, Z.G.; ALIMARDANOV, G.I.; AGAMIRZOYEVA, Z.S.

Effect of the chemical composition of chromaluminosilicate  
catalysts on their activity and chromium oxide forms. Azerb.  
khim. zhur. no.3:75-84 '62. (MIRA 16:12)

ZUL'FUGAROV, Z.G.; ALIMARDANOV, G.I.

Redox reactions of chromium on a strontium silicate carrier.  
Dokl. AN Azerb. SSR 19 no.7:27-30 '63.

(MIRA 17:12)

1. Institut khimii AN AzerSSR.

ZOL'FERGAEV, Z.G.; BUNYATZADE, A.A.; BAKESHIZADE, A.A.; ALIMARDANOV, G.I.

Activity of chromium strontium silicate satalysts in the  
reaction of copolymerization of ethylene with  $\alpha$ -olefins.  
Azarb. khim. zhur. no.1:117-125 '64. (MIRA 17:5)

L 29530-66 EWP(j)/EWT(m)/T IJP(c) RM

ACC NR: AR6004374

SOURCE CODE: UR/0081/65/000/015/S027/S027

AUTHOR: Zul'fugarov, Z. (I.); Zul'fugarova, L. Sh.; Muradova, S. A.; Alimardanov, G. I. 42  
B

TITLE: Effect of the chemical composition of the carrier and promoter on the catalytic activity and form of chromium in polymerization

SOURCE: Ref. zh. Khimiya, Abs. 15S160 1

REF SOURCE: Sb. Nauchn. osnovy podbora i proiz-va katalizatorov. Novosibirsk, Sib. otd. AN SSSR, 1964, 288-295

TOPIC TAGS: ~~polymer~~, polymerization catalyst, chromium oxide, nickel, cobalt, iron, CHROMIUM, CHEMICAL COMPOSITION

ABSTRACT: The effect of the chemical composition of the carrier, the amount of Cr<sup>+3</sup> in hydrogel, Cr<sup>6+</sup>, K<sub>2</sub>CrO<sub>4</sub>, Ni, Co and Fe on the activity and form of chromium oxides as a compound in chromalumosilicate, chromalumomagnesiumsilicate and a chromomagnesiumsilicate catalyst, were studied and the relationship between the factors determined. The synthesis of the carriers was carried out by coprecipitation or substitution, and the synthesis of catalysts, by the method of

Card 1/2

L 29530-66

ACC NR: AR6004374

depositing chromium hydroxide on the carrier and by enriching the chromium-containing carrier with chromium anhydride. The activation of the catalyst was performed by oxidizing it by air for 5 hours at 480-510° with a speed of air flow equal to 400 volume units of air for one volume of catalyst per hour. The yield of polyethylene per 1kg of the catalyst obtained in one working cycle was used as a criterion of catalyst efficiency. V. Agasandyan.

SUB CODE: 07/ SUBM DATE: none

Card 2/2 JS

MAMEDALIYEV, Yu.G. [deceased]; ALIMARDANOV, R.S.

Alkylation of p-chlorobromobenzene by propylene. Azerb.khim.zhur.  
no.6:15-18 '61. (MIRA 15:5)

(Benzene) (Propene)



MAMEDALIYEV, Yu.G.; ALIMARDANOV, R.S.

Alkalization of paradibromobenzene by propylene. Dokl. AN Azerb. SSR 17 no.7:575-578 '61. (MIRA 14:10)

1. Institut neftekhimicheskikh protsessov AN AzerSSR.  
(Benzene) (Propene)

S/249/62/018/001/003/003  
1001/1201

AUTHORS: Mamedaliyev, Yu. G. (Deceased) and Alimardanov, R. S.

TITLE: Alkylation of some meta-dihalobenzenes by propylene in the presence of sulfuric acid

PERIODICAL: Akademiya nauk Azerbaydzhanskoy SSR. Doklady, v. 18, no. 1, 1962, 23-26

TEXT: Alkylation of metadichlorobenzene, meta-chlorobromobenzene, and meta-dibromobenzene was studied in order to check experimentally some earlier conclusions and to compare the respective yields. The following compounds were synthesized for the first time by alkylation of meta-chlorobromobenzene and meta-dibromobenzene, and their properties were characterized. 2-chloro-4-bromoisopropylbenzene, 1-chloro-3-bromo-4,6-diisopropylbenzene, and 2,4-dibromoisopropylbenzene. The tendency to alkylation decreases in the order: meta-dichloro, meta-chlorobromo-, meta-dibromobenzene. Kinetic factors favor introduction of the isopropyl group in the ortho position to the chlorine atom rather than to the bromine atom. Positions meta to the halogen atoms and positions blocked from the two ortho positions by halogen atoms are not easily available to the isopropyl group. There are 2 tables.

ASSOCIATION: INKhP

SUBMITTED: January 2, 1962

Card 1/1

MAMEDALIYEV, Yu.G.; ALIMARDANOV, R.S.

Alkylation of p-dichlorobenzene, p-chlorobromobenzene, and  
p-dibromobenzene with propylene in the presence of sulfuric acid.  
Dokl. AN SSSR 140 no.2:381-383 S '61. (MIRA 14:9)

1. Institut neftekhimicheskikh protsessov AN Azerbaydzhanskoy SSR.
2. Chlen-korrespondent AN SSSR (for Mamedaliyev).  
(Benzene) (Propene)

S/249/62/018/003/002/002  
1018/1218

*Authors:* Mamedaliyev, Yu. G. (Deceased) and Alimardanov, R. S

*Title:* ALKYLATION OF *o*-BENZYL DIHALIDES BY PROPYLENE IN THE PRESENCE OF SULFURIC ACID

*Periodical:* *Akademiya nauk Azerbaydzhanskoy SSR Doklady*, 18(3), 1962, 21-23

*Text:* Alkylation of *o*-chlorobromobenzene and *o*-dibromobenzene by propylene is reported for the first time. The following compounds were synthesized for the first time: iso-propyl-*o*-chlorobromobenzene and 2,4-dibromo-iso-propylbenzene. It has been shown that the reactivity of the compounds towards propylene in H<sub>2</sub>SO<sub>4</sub> decreases in the following order: *o*-dichloro, *o*-chlorobromo and *o*-dibromo benzene. The experiments showed that the optimal conditions for alkylation are as follows: temperature, 40°C; H<sub>2</sub>SO<sub>4</sub>, 95%; the ratio of reaction components and sulfuric acid, 1:1:1.5; the flow rate of propylene, 3 liters per hour; the duration of the reaction, 2 hours. There is 1 table

*Association:* INKhP

*Submitted:* January 23, 1962

Card 1/1



MAMEDALIEV, Yu.G. [deceased]; ALIMARDANOV, R.S.

Orientation and reactivity of the benzene ring in the alkylation  
of dichlorobenzene: by propylene. Dokl. AN SSSR 144 no. 2:363-366  
My '62. (MIRA 15:5)

1. Institut neftekhimicheskikh protsessov AN AzerbSSR. 2. Chlen-  
korrespondent AN SSSR (for Mamedaliyev).  
(Benzene) (Propene)

ALIMARDANOVA, Sh.S.

Changes in the ocular fundus in patients with cancer.  
Azerb. med. zhur. no.7:74-77 J1 '63. (MIRA 17:1)

PROCESSES AND PROPERTIES INDEX

**Modern methods of studying mineral products. 1. P. Alimarin. *Trans. Inst. Geol. Mineral.* (U. S. S. R.) 10-year Vol. 1933, 307-80.—The proposed procedure for the detn. of the comp., constitutional formula and classification of pure and mixed mineral products is based on the standard methods of analysis, x-ray, phase-chem., phase-phys. and other methods, all of which are considered indispensable in the work of a mineralogical lab.**

Chas. Blaw

AS R - S L A METALLURGICAL LITERATURE CLASSIFICATION





1ST AND 2ND GROUPS

PROCESSES AND PROPERTIES INDEX

Common Element

Specials Index

OPEN

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

ca

Determination of boron in silicate rocks and minerals. I. P. ALKMAN, AND I. I. ROMM. *Trans. Inst. Econ. Mineral.* (U. S. S. R.) No. 53, 6-44 (in German 45 0) (1932) — A critical review of the various methods used for the detn. of B shows that Chapin's method of distg. the B as  $Me_2BO_3$  into NaOH soln. and then titrating the excess NaOH with HCl is by far the best. Some modifications, such as the addn. of a few drops of HCl in the presence of an indicator to the  $Me_2BO_3$  before distn., to neutralize the CaO resulting from the addn. of  $CaCl_2$ , are recommended. A description is given of a new method in which distn. with MeOH is replaced by extrn. of the NaOH fusion with hot water, and removal of cations other than B with  $(NH_4)_2CO_3$ . Fusion and extrn. must be repeated twice for complete extrn. Titration is completed as in Chapin's method.

Vest. Inst. Ekong  
Minerals

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND GROUPS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

PROCESS AND PROPERTIES INDEX

a-1

Vest. Inst. Ekon. Mineral.

*BC*

Colorimetric determination of small quantities of silica in solutions, minerals, and technical products. I. R. AVRAMY and V. S. ZVANNY (Trans. Inst. Econ. Min. U.S.S.R., 1964, No. 63, 15 pp.).— A crit. survey. Diwan and Wandambalcke's method based on the formation of  $H_2Si(Mo_2O_7)_2$  is best for 0.005–5%  $SiO_2$ . In presence of large amounts of mineral acids and their hydrolysable salts, NaOAc should be added. The effects of P and Fe are counteracted by adding excess of  $H_2PO_4$ . The phosphomolybdate colour may also be removed with tartaric or citric acid. The effect of F is avoided by adding  $AlCl_3$ , which forms  $H_2AlF_6$  from  $H_2SiF_6$ . (M. Abs. (c))

METALLURGICAL LITERATURE CLASSIFICATION

CA

PROCESSES AND PROPERTIES INDEX

Collection of chemical analyses of minerals and rocks.  
 I. P. Alimarin and I. I. Romm. *Travaux AD-Union Sci. Research Inst. Geol. Mineral. (U. S. S. R.)* No. 76, 7 62 (1955).—The analytical methods used, essentially those of W. P. Hillebrand (cf. C. A. 24, 316), H. S. Washington (cf. C. A. 25, 1066) and C. Ducloux (cf. C. A. 26, 1540), are summarized. The following numbers of analyses of minerals are given: anthophyllite 1, amphibole asbestos 5, chrysotile 30, hastnäsite 1, beryl 1, halloysite 1, garnet 4, datolite 1, clintonite 2, calcite 1, kersantite 1, magnesite 1, orthite 5, picroilite 3, retinalite 1, serpentine 12, mica (species not stated) 1, biotite 4, vermiculite 5, muscovite 10, phlogopite 10, spodumene 1, talc 1, chlorite 2, chloritoid 2, schreiblerite 1. There are also analyses of 152 igneous, sedimentary and metamorphic rocks. R. H. Beckwith

Vest. Inst. Ekon-Mineral.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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PROCESSING AND PREPARATION INDEX

LIST AND INDEX

8  
Date: AN SSSR

*ca*

The chemical composition of chevkinite. I. P. Alimov. *Compt. rend. acad. sci. U. R. S. S. 1; 645-51* (in German 651-3)(1935).—Chevkinite from Kuishtuin (Ural) was glossy and amorphous, with hardness 5.5; sp. gr. 4.491; fusibility 4;  $BaO$  19.53,  $TiO_2$  19.61,  $ThO_2$  0.73,  $Er_2O_3$  traces,  $(Ce, Ta)_2O_3$  0.01,  $Al_2O_3$  2.17,  $Fe_2O_3$  2.30,  $Cr_2O_3$  0.07,  $CaO$  20.52,  $(La, Dy)_2O_3$  18.77,  $(Y, Er)_2O_3$  0.88,  $P_2O_5$  8.75,  $MnO$  1.11,  $MgO$  0.08,  $CaO$  2.40,  $BeO$  traces,  $Na_2O + K_2O$  0.10,  $H_2O$  0.81,  $CO_2$  traces,  $B$  0.15. Probable formulas are discussed. J. D. S.

COMMON ELEMENTS

OPEN

ASB-SEA METALLURGICAL LITERATURE CLASSIFICATION

SEARCHED INDEXED SERIALIZED FILED

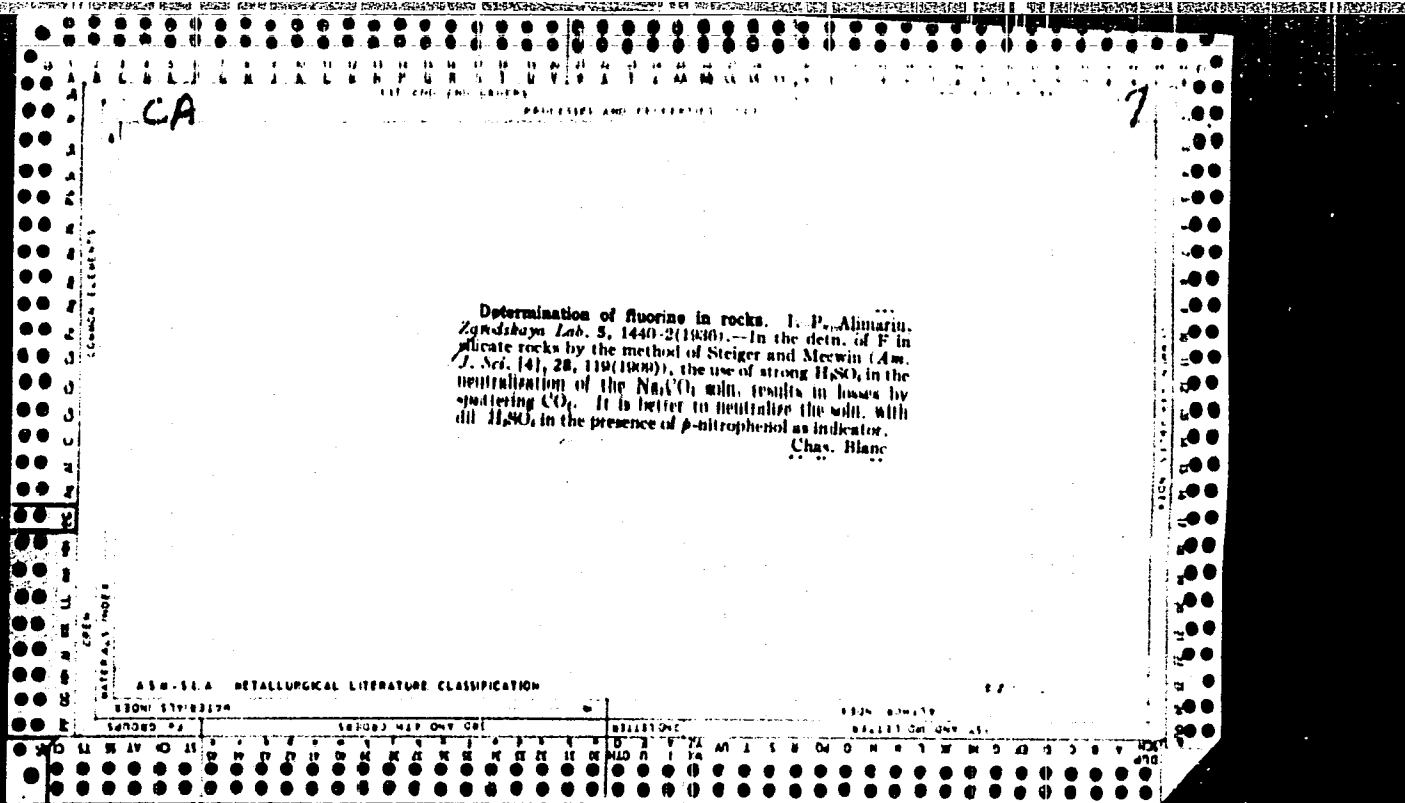
APR 1966

U.S. DEPARTMENT OF COMMERCE

NATIONAL BUREAU OF STANDARDS

U.S. GOVERNMENT PRINTING OFFICE





1st and 2nd copies      PROCESSED AND PROPERTIES INDEX      3rd and 4th copies

BC      B-I-P

Common Elements      Common Variable Metals

Chemical concentration of gallium, indium, thallium, germanium, and rhodium, in their determination in oxide and sulphide ores. I. P. ALIKHIN and B. N. IVANOV-ESIN (J. Appl. Chem. Russ., 1958, 9, 1194-1196).—Ge is extracted as GaCl<sub>3</sub> by H<sub>2</sub>O in presence of Hg. In is isolated by pptn. on Zn. Tl is pptd. as Tl<sub>2</sub>SO<sub>4</sub> in aq. Na tartrate, the Tl<sub>2</sub> is dissolved in HCl, and Tl<sub>2</sub>S is pptd. by (NH<sub>4</sub>)<sub>2</sub>S in presence of KCN. Ge is separated by distillation of GeCl<sub>4</sub> in a stream of Cl<sub>2</sub>, and In by distilling In<sub>2</sub>O<sub>3</sub> from aq. H<sub>2</sub>SO<sub>4</sub> solution. R. T.

Zhuk. Prikl. Khim.

ASB-15A METALLURGICAL LITERATURE CLASSIFICATION

SEARCHED INDEXED SERIALIZED FILED

APR 1959

PROCESSING AND PRIORITIES INDEX

9

Zhuk. Prik. Kiz.

**Colorimetric Method of Determining Germanium.** I. P. Alimarin and H. N. Ivanov-Emin (*Zhurnal Prikladnoy Khimii (J. Applied Chem.)* 1936, 9, (7), 1334-1339).—(In Russian.) The HCl solution obtained by distillation in a current of  $Cl_2$  is decolorized with  $NaHSO_3$ , treated with  $H_2O$  until pale yellow, again bleached as before and, if much  $Se$  is present, treated with  $NH_4OH \cdot HCl$ . The filtrate from the  $Se$  is adjusted to 6N-HCl, treated with  $H_2S$  for 1 hr., and filtered next day. The  $GeS_2$  precipitate is dissolved in 10 c.c. of 1%  $NaOH$  free from  $SiO_2$  and  $P_2O_5$ , the solution oxidized with  $H_2O_2$  and boiled to decompose excess, and an aliquot portion treated with 20-40 c.c. of 5%  $(NH_4)_2MoO_4$  and  $HNO_3$  to 0.11-0.35N. The resulting yellow colour is compared with that of a standard solution of  $K_2CrO_7$  or picric acid (10 mg./litre of picric acid corresponds to 74.8 mg./litre of  $GeO_2$ ).—N. A.

A S M - I L A METALLURGICAL LITERATURE CLASSIFICATION

GROUPS										SUBGROUPS										SUBGROUPS										SUBGROUPS																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50



PROCESSES AND PROPERTIES INDEX

9

**Special Reaction of N. A. Tananayev and A. V. Tananayeva for Zirconium.**  
 I. P. Alimarin (*Zhurnal Prikladnoi Khimii*), 1936, 9, (9), 1897-1899 (in Russian); and (in German) *Z. anal. Chem.*, 1936, 106, 276-279).—A. points out the analogy between T. and T.'s method and that of C. H. Bailey (*J. Chem. Soc.*, 1886, 69, 149, 481), and remarks on some doubtful points in the suggested course of analysis.—N. A.

ASH 31A METALLURGICAL LITERATURE CLASSIFICATION

TECHNICAL	TECHNICAL
TECHNICAL	TECHNICAL

BC

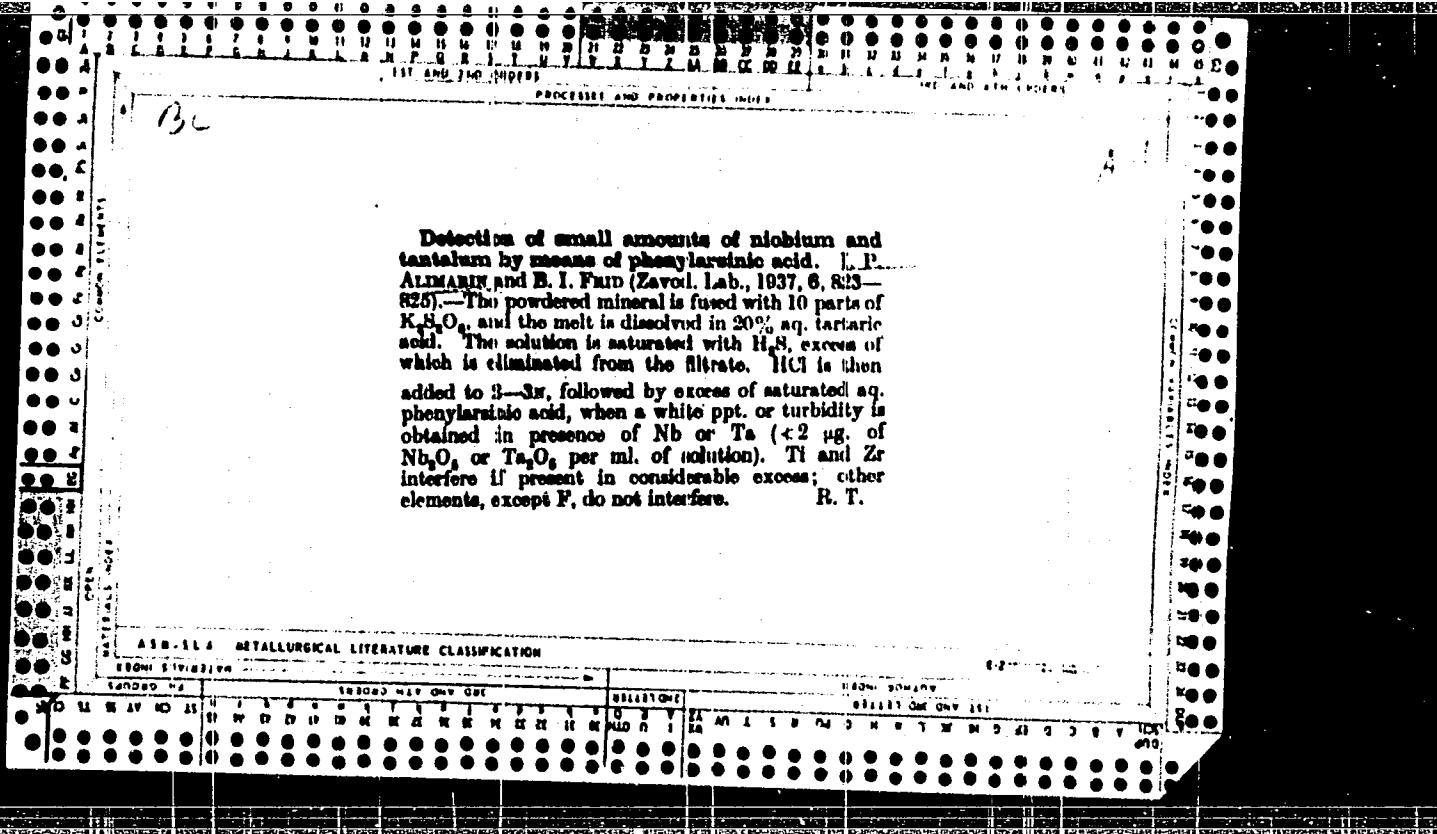
PROCESSES AND PROPERTIES INDEX

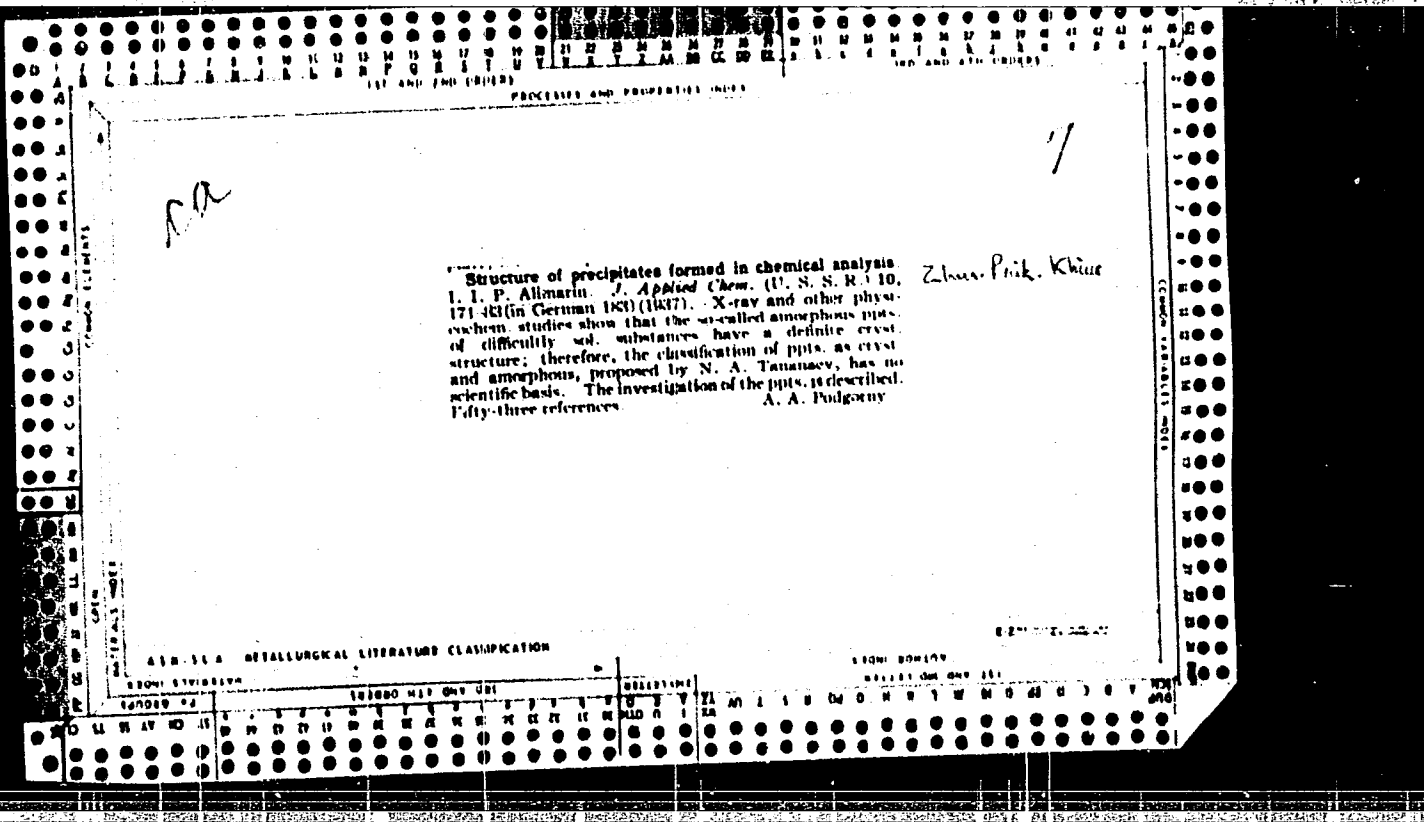
α-1

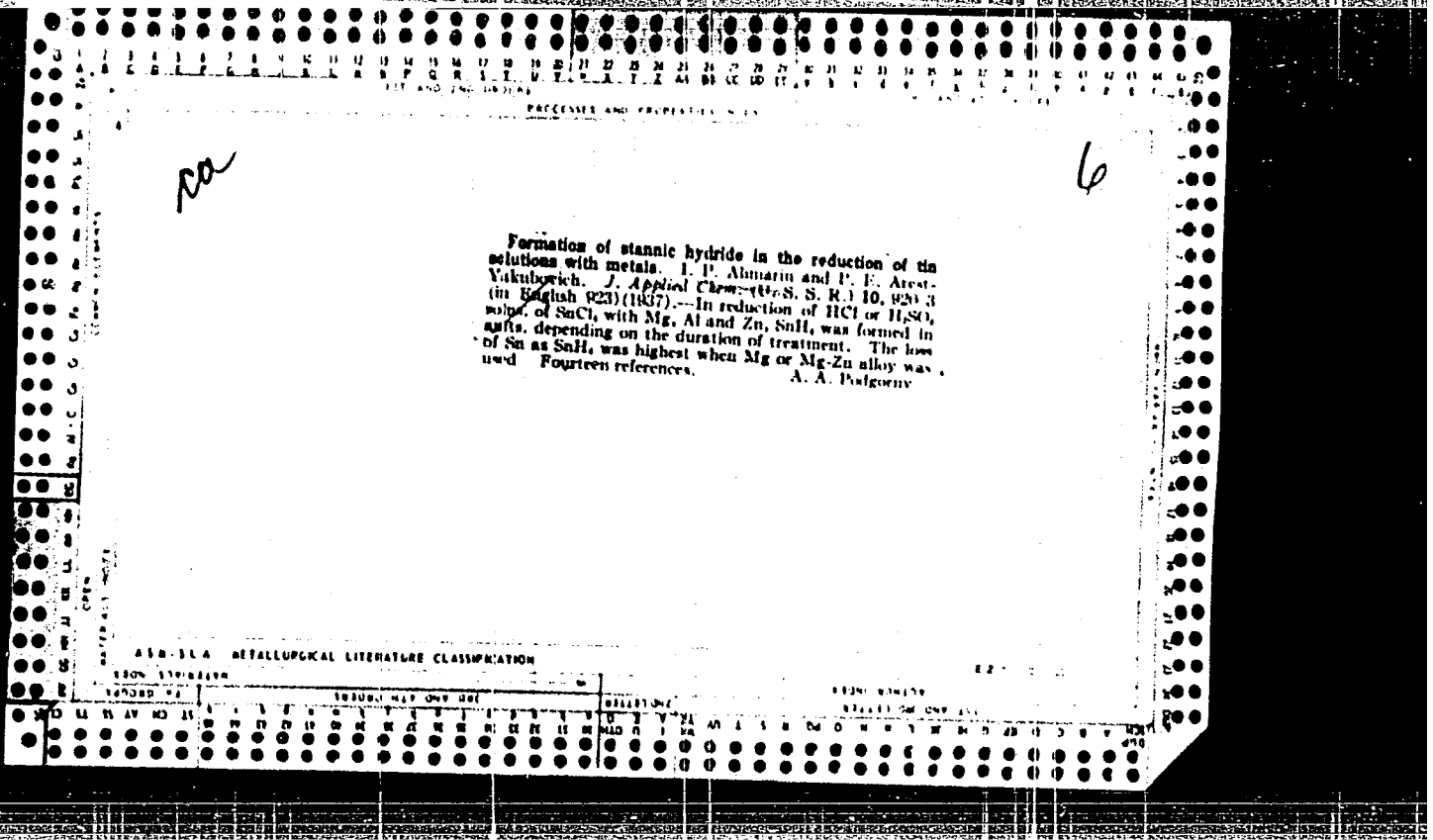
Determination of tin by means of phenyl-arsinic acid. I. P. ALLMARIN and M. S. VESHENKOVA (Zavod. Lab., 1937, 6, 644-645).—Polemical, against Sirokumski and Pilnik (B., 1937, 570).  
R. T.

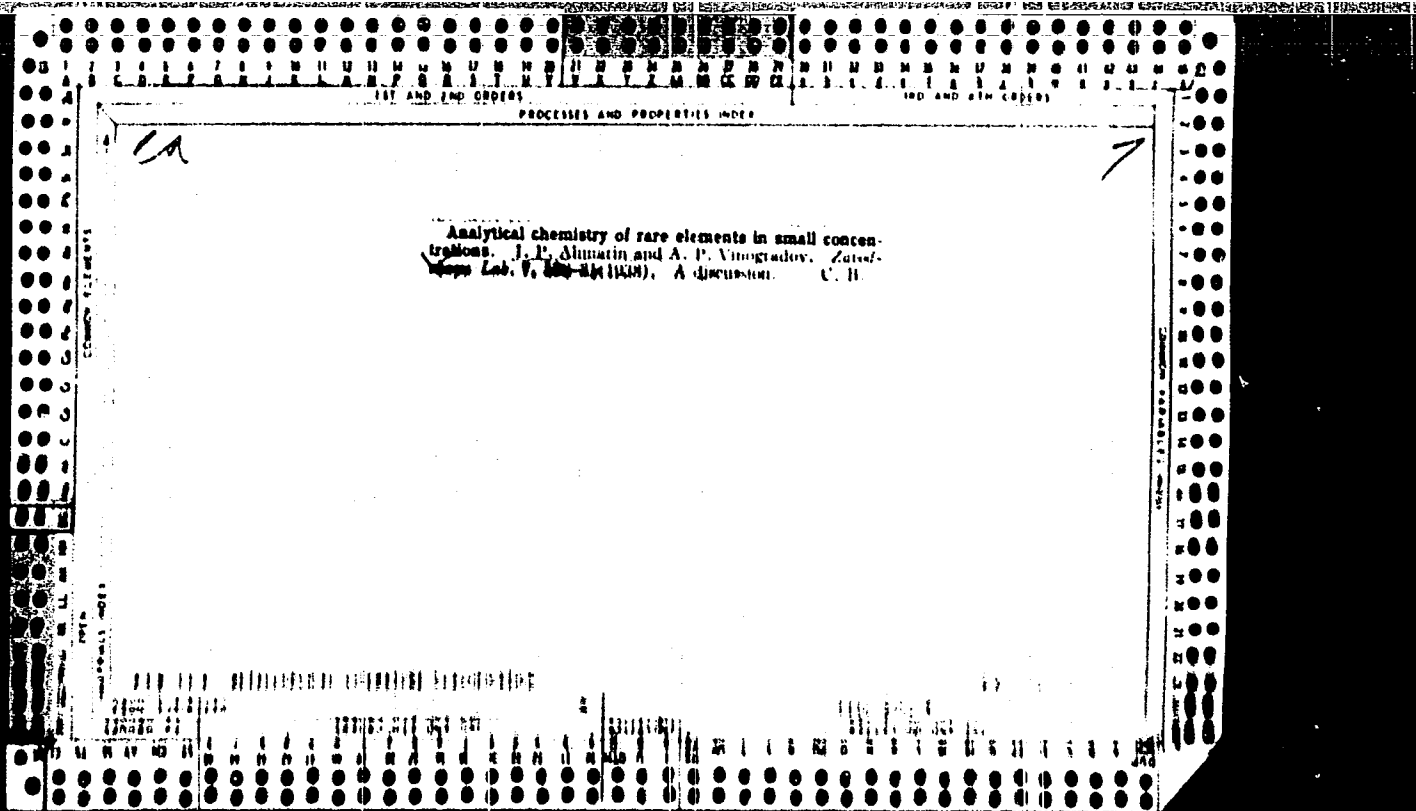
ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

GROUP	SECTION	SUBSECTION	ALPHA	BETA	GAMMA	DELTA	EPSILON	ZETA	ETA	THETA	IOTA	KAPPA	LAMDA	MU	NU	Xi	OMICRON	PICHA	RHO	SIGMA	TAU	Upsilon	PHI	CHI	PSI	OMEGA









PROCESS AND PROPERTY INDEX

17-1

BC

**Determination of niobium and tantalum with the aid of phosphoric acid: I. F. ALIMARIN and B. I. FINE (Soviet Lab., 1966, 7, (17)-116).—The mixture, containing 0.1 g each of  $Al_2O_3$ ,  $Fe_2O_3$ ,  $V_2O_5$ ,  $U_2O_5$ ,  $HfO_2$ ,  $CaO$ ,  $La_2O_3$ , and 2–30 mg. of  $Nb_2O_5$  +  $Ta_2O_5$ , is fused with  $H_2SO_4$ , the melt is dissolved in 100 ml. of  $m-HCl$ , and the solution is filtered. Excess of 3%  $PhAsO_4H_2$  is added to the filtrate, which is boiled for 1 hr.; on the next day the ppt. of  $[M_2O_4(PhAsO_4)_2]H_2$  ( $M = Ta, Nb$ ) is collected, washed with 1%  $NH_4NO_3$  (ignited at 1000°, and weighed as  $M_2O_5$ ). The ppt. may contain  $Ti$ ; if this is present, it should be determined colorimetrically, and the corresponding wt. of  $TiO_2$  subtracted from that of  $M_2O_5$ . R. T.**

ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

FROM SYMBIUM

FROM BOWERY

SC

Quantitative separation of niobium and tantalum from titanium and zirconium, with the aid of pyrogallol. I. P. ALKMAN and B. I. FRID (Zaved. Lab., 1938, 7, 1109-1116).—The mineral is fused with  $K_2S_2O_8$  at 600–700°, the melt is boiled with 5% aq. pyrogallol, the solution is boiled with excess of aq.  $NH_3$ ,  $HCl$  is added to approx. 1N., and the solution is boiled for 30–40 min. The ppt. is washed with 1% pyrogallol and ignited, and the entire process is repeated. The final residue of  $Nb_2O_5 + Ta_2O_5$ , which is still contaminated with  $SiO_2$ ,  $Ti$ , and  $Fe$ , is heated with  $H_2SO_4-HF$  to eliminate  $Si$ , the residue is fused with  $K_2S_2O_8$ , the melt is dissolved in 10% tartaric acid (adding aq.  $NH_3$ , if the solution is turbid), and the solution is separated with  $H_2S$ , and filtered. The filtrate + washings are boiled to eliminate  $H_2S$ ,  $HCl$  is added to 1N., and the solution is boiled with 3%  $PhAsO_4H_2$ . The ppt. is collected, washed with 4%  $NH_4NO_3$ , ignited, and weighed as  $Nb_2O_5 + Ta_2O_5$ . R. T.

ASB-316 METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

1ST AND 2ND EDITIONS

Zhur. P. i. K. Khim. 7

CA

Volumetric determination of small amounts of tin in ore by means of methyl orange. I. P. Allmarin and S. M. Levner. *J. Applied Chem.* (U. S. S. R.) 11, 1368-77 (in French, 1977)(1978).— The method is based on the reduction and decomn. of methyl orange by Sn in acid soln. to sulfanilic acid and dimethyl-p-phenyl-enediamine. Sn in HCl soln. (the final concn. of HCl should be 15-20%) is heated for 60-60 min. in a CO<sub>2</sub> atm. (freed from traces of O and H<sub>2</sub>S) and then titrated with 0.01 or 0.05% soln. of methyl orange (in air-free water). The soln. of methyl orange should be standardized against a standard soln. of Sn. Sb<sup>+++</sup>, As<sup>+++</sup>, Bi<sup>+++</sup>, Cu<sup>++</sup>, Cd<sup>++</sup>, Pb<sup>++</sup>, Fe<sup>++</sup> and salts of alkali metals change the color of the methyl orange soln. somewhat, but this does not affect the results of the Sn detn. Ti, V, Mo and W (all at lowest stage of oxidation) decolorize the methyl orange and, therefore, should be removed before the Sn detn. The method permits repetition of the titration of the same sample by re-reducing the soln. The accuracy of the method is the same as that of the volumetric detn. A. A. Podgorov

METALLURGICAL LITERATURE CLASSIFICATION

SECTION DIVISION

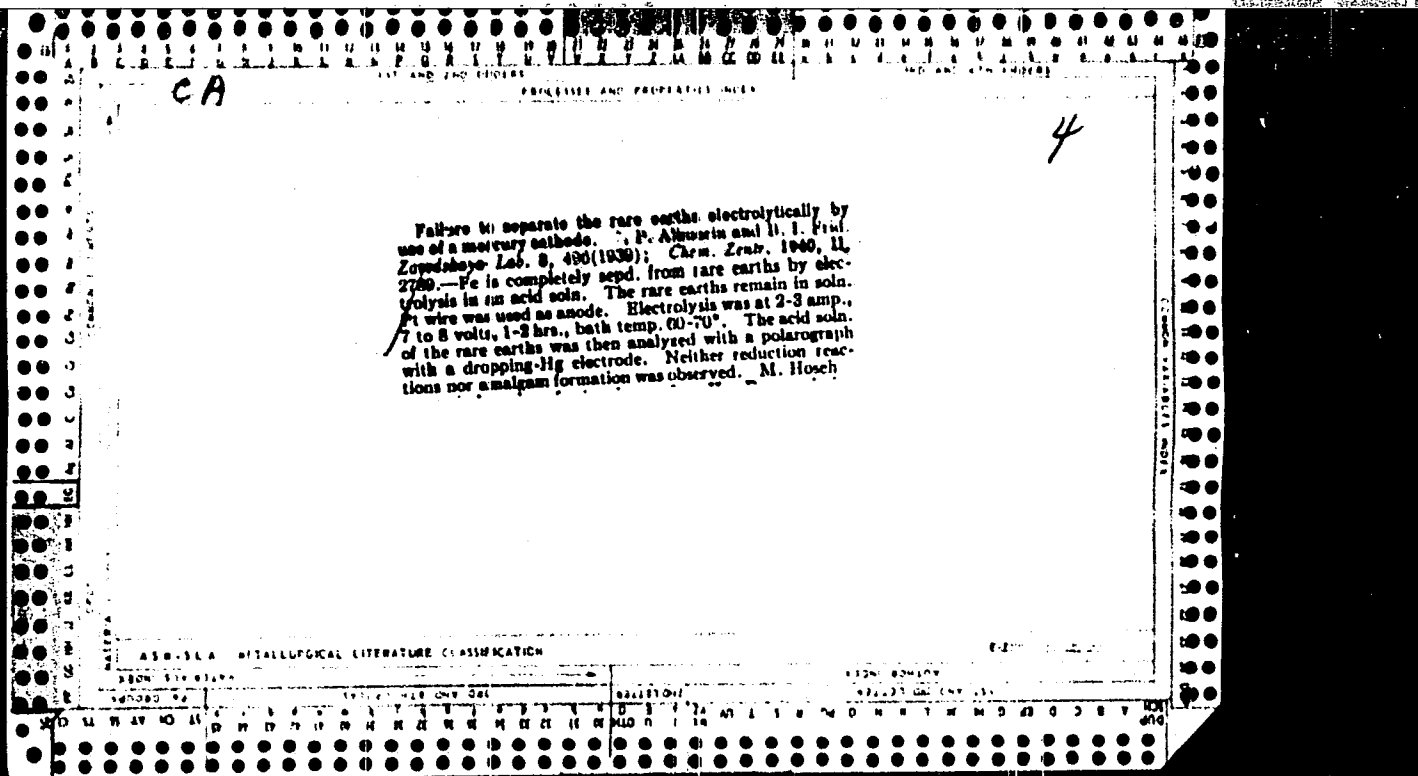
SUBJECT MATTER ONLY

CLASSIFICATION

SECTION DIVISION

SUBJECT MATTER ONLY

CLASSIFICATION



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

11' AND 2ND ORDER

PROCESSING AND IDENTIFICATION

101

Rare and nonferrous metals. Methods for the determination of disseminated and rare metals in mineral ores.

I. P. Alimarin. *Trans. All-Union Sci. Research Inst. Geol. Mineral. (U. S. S. R.)* 147, 43 (1968) English, 69 (1968). A crit. discussion of the common methods of phys., chem., and x-ray analysis based on the literature. Approx. 100 references. Class. Blank.

Vest. Inst. Ekonom. Mineral.

ASAC-31A METALLURGICAL LITERATURE CLASSIFICATION

3204 579 03194

440389 14

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

CA

**Determination of germanium by means of 8-hydroxyquinoline.** 1. P. Aljuzin and O. A. Akkerova. *J. Applied Chem.* (U. S. S. R.) 12, 1900 (1939); *Ch. C. A.* 34, 5023. — To 50 ml. of neutral or slightly acid soln. of the germanate add 2 ml. of 5% freshly prepd. soln. of  $(NH_4)_2MoO_4$ . Add 3 ml. of a 10%  $H_2SO_4$  soln. with  $H_2O$  to 100 ml., add after 5 min. 9 ml.  $HCl$  (d. 1.19) and add slowly, with vigorous agitation, 20 ml. of a 2%  $AcOH$  soln. of hydroxyquinoline (20 g. hydroxyquinoline is dissolved in 120 ml. concd.  $AcOH$  and the soln. is dild. to one l.). Let the ppt. stand at room temp. for 3 hrs. (or overnight if the concn. of Ge is low), filter through a weighed porcelain glass crucible, wash with a mixt. of 7 ml. concd.  $HCl$  and 25 ml. of a 2% soln. hydroxyquinoline acetate in one l. of  $H_2O$ , and dry at  $110^\circ$ . From the wt. of hydroxyquinoline complex subtract the wt. of the residue obtained in a blank expt., and multiply by the factor (for  $GeO_2$ , 0.0448, for Ge 0.0311). For volumetric detn., dissolve the ppt. on the filter in a mixt. of hot  $H_2O$  and 10 ml.  $HCl$  (d. 1.19) and 10 ml.  $C_2H_5OH$  free from other org. substances that might be oxidized by  $Br$ , wash with hot  $H_2O$ , and boil the filtrate in an Erlenmeyer flask for 2 min. to destroy the heteropoly acid. Add 1 g. of oxalic acid, cool, dil. with  $H_2O$  to 100-150 ml., titrate with 0.1 N bromide-iodate soln. to the appearance of distinct  $Br$  odor, add 0.5-1.0 ml. of bromate, agitate, add 0.2 g. of solid  $KI$  free of iodates and again agitate. Titrate sep'd. I with 0.05 N thiosulfate to a noticeable fading of the yellow color, add

Zhur. Prikl. Khim.

2-3 ml. of a freshly prepd. 0.5% starch soln. and complete the titration with thiosulfate. To det. Ge in coal ash, treat 1-3 g. of sample with  $HF$  and  $H_2SO_4$ , first on the water bath and then on the sand bath to the sept. of  $H_2SO_4$  vapors, cool, add a small amt. of  $H_2O$  and evap. to the appearance of  $H_2SO_4$  vapors. Transfer the residue to a distn. flask, and add 1-2 g.  $H_2O$ , and 150 ml. of  $HCl$  (d. 1.120). If chlorides are present in the sample, fuse in a nickel or an iron crucible with 8 parts of  $NaCl$ , ext. with 200 ml.  $H_2O$ , neutralize with  $H_2SO_4$ , acidify to 5-6 N, set. in the cold with  $H_2S$ , filter after 12 hrs., wash with 5-6 ml. 10%  $NaOH$ , being the alk. soln. to boiling, add 10-15 drops of a 30%  $H_2O_2$  to oxidize the sulfides, transfer to the distn. flask, and add concd.  $HCl$  to give a  $HCl$  concn. of 2-3 N (per l.). Distil off half of the liquid, add 100 ml. of  $HCl$  (d. 1.120) and continue the distn. To the 300 ml. of distillate add hydroxylamine hydrochloride to remove free  $Cl$  or  $Br$ . Titrate the acid with 0.1 N  $NaOH$  (p-nitrophenol indicator) and bring the concn. up to 4 N.

SEE OTHER SIDE

Return the titrated soln. to the flask and again sat. with  $H_2S$ . Filter the white  $GeS_2$  ppt. after 12 hrs., wash with 5-6 N  $H_2SO_4$  satd. with  $H_2S$  and dissolve on the filter in 20-30 ml. of 10 N  $NH_4OH$  contg. some  $(NH_4)_2S$  or in a 5% soln. of  $NaOH$  and wash the filter with  $H_2O$ . The filtrate contains thiogermanate. Oxidize with 0.1 ml. of  $H_2O_2$ , evap. to a small vol., dissolve the residue in 20 ml.  $H_2O$ , neutralize excess alkali with  $H_2SO_4$  (to phenolphthalein). Ppt. with hydroxyquinoline and  $(NH_4)_2MoO_4$ . Weigh the ppt. as hydroxyquinoline germanomolybdate or titrate with bromate as above. All treatments with alkali hydroxide after the distn. of  $GeCl_4$  should be carried out in Pt or Ag vessels and the reagents should be stored in paraffin-covered containers.

A. A. Hochlingk

PROCESSES AND PROPERTIES INDEX

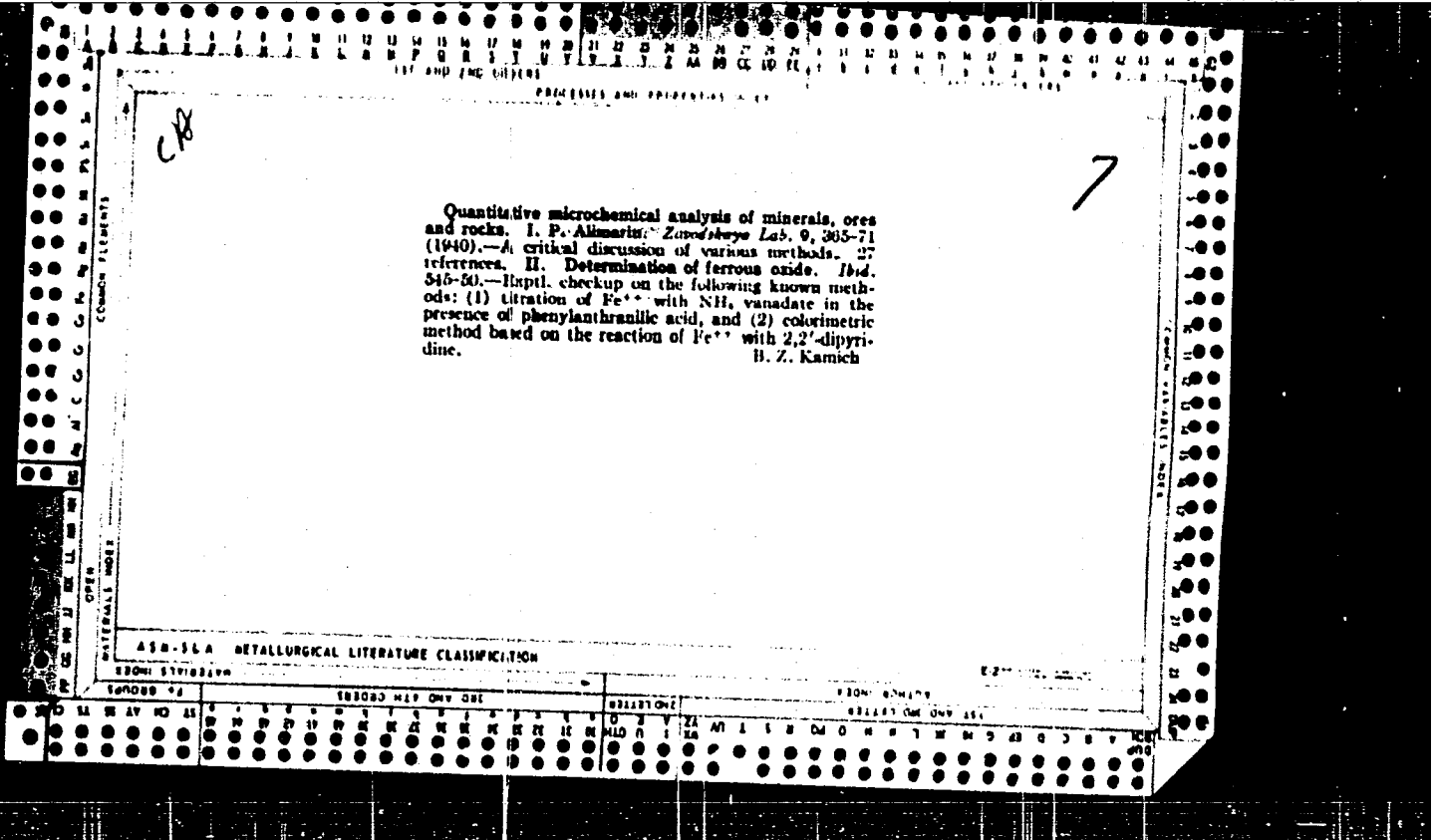
27

**Determination of germanium in coal ash and other commercial wastes.** I. P. Ahmarin, B. N. Ivanov-Kimin, O. A. Medvedeva and Ch. Ya. Yanovskaya. *Zashchita* L. S. 9, 271 0(1949).--If the ash contains over 0.05% GeO<sub>2</sub>, the method of Dennis and Johnson (cf. C. A. 17, 2882) gives dependable results. In this method the GeS<sub>2</sub> is dissolved in 10 N NH<sub>3</sub>, the thiogermate is oxidized with H<sub>2</sub>O<sub>2</sub>, then evapd. in a Pt cup and ignited to GeO<sub>2</sub>. The GeS<sub>2</sub> can also be detd. by igniting the GeS<sub>2</sub> in a porcelain crucible. If it is not possible to increase the sample up to 20-100 g, the following method is used: The Ge is pptd. as germanonyldibic acid by means of o-hydroxyquinoline followed by weighing or titration of the ppt. If the ash contains chlorides it is fused with Na<sub>2</sub>O<sub>2</sub>. If there are no chlorides the sample is decompd. with a mixt. of HF and H<sub>2</sub>SO<sub>4</sub>. In the latter case the HF is driven off, the residue is mixed with 1-2 g. boric acid and distd. over a stream of Cl<sub>2</sub> to give GeCl<sub>4</sub>. Prior to distn. Br is added to oxidize the S, S compds. and As. The distillate is decolorized with hydroxylamine-HCl. The Ge is pptd. with H<sub>2</sub>S. If the GeS<sub>2</sub> ppt. is small (0.1% or less), the detn. is finished colorimetrically or by pptn. with hydroxyquinoline, and if the ppt. is greater the detn. is finished gravimetrically as GeO<sub>2</sub>. For a sample of 2-3 g. contg. 1.0-0.1% GeO<sub>2</sub>, differences between parallel detns. did not exceed 0.02%. B. Z. Kamich

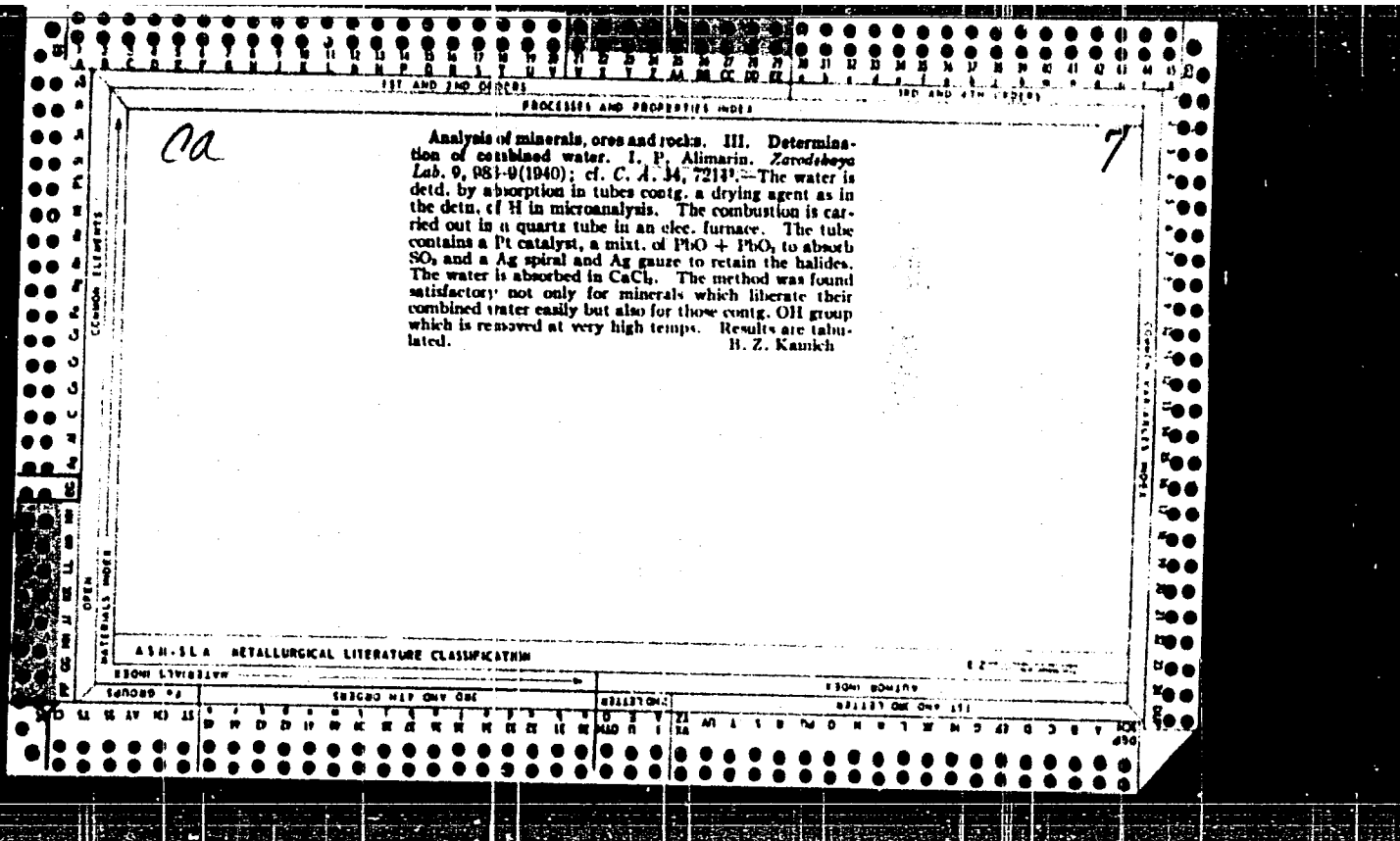
A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

GROUP 1										GROUP 2																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30













PROCESSES AND PROCEDURES INDEX

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*Ca*

Quantitative microchemical analysis of minerals, ores and rocks. V. Colorimetric determination of iron. I. P. Alimarin and B. I. Fed. *Zhurnal* 10, 252 (1971). *W. C. A.* 35, 2813. Moisten 10-20 mg. of mineral or ore powder with 0 ml. of water and 3-4 drops of 18 N H<sub>2</sub>SO<sub>4</sub>, and add 1 ml. of concd. HF soln. Heat first on a steam bath and then on a sand bath. Heat residue with K<sub>2</sub>SO<sub>4</sub>, dissolve the cold melt in very dd. hot H<sub>2</sub>SO<sub>4</sub>, add 1 drop HNO<sub>3</sub>, and heat for 1 min. For each 0.1 mg. Fe<sub>2</sub>O<sub>3</sub> add 3 ml. of 25% sulfosalicylic acid and dropwise 25% NH<sub>4</sub>OH until yellow and then 0.5 ml. in excess. Dil. the colored soln. to the mark (1 ml. of colored soln. should contain not over 0.05 mg. Fe<sub>2</sub>O<sub>3</sub>) and after 5 min. compare in a colorimeter with a standard soln. contg. about 0.02 mg. Fe<sub>2</sub>O<sub>3</sub> per ml.). In the presence of Mn add 0.2 g. of NH<sub>4</sub>OH.HCl before adding the NH<sub>4</sub>OH. With rich Mn ores increase the hydroxylamine to 1 g. If the sample contains over 20% Al<sub>2</sub>O<sub>3</sub> or MgO use 5 ml. of sulfosalicylic acid.

B. Z. Kamich

METALLURGICAL LITERATURE CLASSIFICATION

**Determination of columbium and tantalum in minerals and ores.** I. P. Alimarin and B. I. Pybl. *Trudy Vsesoyuznogo Nauchno-Issled. Inst. 2, 333-37 (1959).*—Good results are obtained in detns. of small quantities of Cb by the

Schuller method (use  $\text{Cl}_2$  with  $\text{K}_2\text{S}_2\text{O}_8$ ), dissolve the melt in  $\text{H}_2\text{C}_2\text{O}_4$ , hydrolyze in 80 ml. of the soln. in the presence of 5 ml. of  $\text{HNO}_3$ . Errors are introduced by the presence of much Ta. Schuller's methods for earth acids in the presence of Ti and Zr are satisfactory if considerable quantities of the earth acids are present and if the empirical correction is made to the final wt. of the pentoxides. If the content of the earth acids is approx. 0.1% and considerable quantities of Ti are present, then all 3 of Schuller's methods give very low or, sometimes, neg. results. Cb and Ta can be sep'd. from Ti and Fe by pyrogallic acid; no empirical corrections are necessary. Sepn. of Cb and Ta from Zr by leaching the pyrosulfate melt of the mixt. of oxides with 5% pyrogallic acid in  $\text{N HCl}$  is more satisfactory than the sepn. from Ti. Even after the 1st sepn. of the mixt.  $\text{M}_2\text{O}_3$  and  $\text{ZrO}_2$ , most of the Zr remains in soln. and after the 2nd sepn. the ppt. of the earth acids contains less than a mg. of  $\text{ZrO}_2$ . Ppta. of Cb and Ta by acidifying the alk. pyrogallic soln. with  $\text{HCl}$  is unsatisfactory, because of the formation of  $\text{Zr(OH)}_4$  on the addn. of excess  $\text{NH}_3$  to the pyrogallic acid soln. Cb and Ta can be det'd. by benzenecarmonic acid even in the presence of Al, Fe, U, V, Mn, and the rare earth elements. As a result of expts. an improved method for detg. Cb and Ta was developed. Decomp. the sample with a mixt. of  $\text{HF}$  and  $\text{H}_2\text{SO}_4$ , or fuse with  $\text{K}_2\text{S}_2\text{O}_8$ , and dissolve the melt in 100

ml. of 5% pyrogallic acid. In the presence of large quantities of Ti and Fe the soln. assumes a dark-brown color and a ppt. of Cb and Ta pyrogallate is formed. Add a slight excess of  $\text{NH}_3$  to the soln., heat to boiling (the ppt. of the earth acids dissolves), neutralize the hot soln. with  $\text{HCl}$ , add excess acid to make the soln. approx.  $\text{N}$ , heat for 30-40 min. to boiling, add macerated filter paper, and let stand for several hrs. Filter, wash with 1% pyrogallol soln. acidic with  $\text{HCl}$ , and ignite the filter and the ppt. in a porcelain crucible. Fuse the resulting oxides with  $\text{K}_2\text{S}_2\text{O}_8$  or dissolve in  $\text{HF}$  and  $\text{H}_2\text{SO}_4$ , and repeat the sepn. with pyrogallic acid. If the sample contains much Ti, or if a large sample (2.5 g.) is used, a 3rd sepn. is necessary. The filtrates after the 1st sepn. are dark and on the following day a slight ppt. contg. Ti is formed by the atmospheric oxidation of pyrogallol. The pentoxides obtained are usually contaminated by small quantities of Ti and Fe and, if sep'd. with  $\text{K}_2\text{S}_2\text{O}_8$ , contain nearly all of the  $\text{H}_2\text{SO}_4$ , which can be removed by heating the Cb and Ta pyrogallates in a Pt crucible, treating with  $\text{HF}$  and  $\text{H}_2\text{SO}_4$ , and dissolving the ppt. in 20 ml. of 10% aq.  $\text{H}_2\text{C}_2\text{O}_4$ . If Ta predominates in the pentoxide mixt., the soln. of the residue is incomplete, owing to the partial sepn. of  $\text{HTeO}_5$ , which forms turbid or opalescent colloidal solns. In such cases make the soln. alk. with  $\text{NH}_3$ , heat to boiling (the soln. becomes clear), acidify with  $\text{HCl}$ , ant. the soln. with  $\text{H}_2\text{S}$ , and filter the sulfides of the heavy metals and Pt formed. Remove the excess  $\text{H}_2\text{S}$  by boiling, add  $\text{HCl}$  to bring the soln. to  $\text{N}$ , heat to boiling, ppt. the Cb and Ta with 30-40 ml. of 3% aq. benzenecarmonic acid, heat the liquid with the

ALM 31.4 METALLURGICAL LITERATURE CLASSIFICATION

ppt. on a sand bath until the ppt. coagulates completely, add macerated paper, and let stand overnight. Filter, wash with 4%  $\text{NH}_4\text{NO}_3$  soln. acidic with  $\text{HNO}_3$ , and ignite in porcelain. Remove the suboxide alkali metals by moistening the ignited pentoxide with 1-2 ml. of 6%  $\text{HNO}_3$ , digest on a water bath for 5-10 min., make alk. with  $\text{NH}_3$ , filter through a dense filter, wash with 4%  $\text{NH}_4\text{NO}_3$ , and ignite the filter with the residue in the same crucible. To correct the results for the residue in the same crucible with  $\text{K}_2\text{SO}_4$ , dissolve the melt in 5%  $\text{H}_2\text{SO}_4$ , cool,  $\text{H}_2\text{O}$ , transfer the colored soln. to a measuring flask, and det. Ti colorimetrically. Cb and Ta in cassiterite can be detd. colorimetrically by the Platow method (C.A. 31, 4014; 32, 3203), which is based on their property of forming sol. colored compds. with pyrogallol acid in  $\text{H}_2\text{C}_2\text{O}_4$  soln. (Ta gives a color in acid soln. only, and Cb in basic soln.). In the presence of large quantities of the earth acids, better results are obtained with a combination tannin and pyrogallol method: a single sepa. with tannin in  $\text{H}_2\text{C}_2\text{O}_4$  soln. according to Schoeller, and colorimetric detn. of Cb in the Ta ppt. and of Ta in the Cb ppt. Twenty-one references.

W. R. Hunt

CA

7

Chemical methods for the determination of Ge in the ash of coals and industrial wastes. I. P. Allmarin. *Trudy Vsesoyuz. Nauchnoiss. Anal. Khim.* 2, 371-92 (1943). — Ge in the ash of coal cannot be extd. completely with acid nor sepd. directly from other elements by distn. Fuse the ash with  $\text{Na}_2\text{CO}_3$  + S. Leach with water, add 10 ml. of 15%  $\text{Na}_2\text{SO}_3$ , and boil until all Na salts are dissolved. Filter the hot soln. and wash with hot water. To the filtrate add 1-2 ml. of concd.  $\text{H}_2\text{O}_2$  and boil 30 min. Cool, neutralize with 10%  $\text{H}_2\text{SO}_4$  to *p*-nitrophenol indicator, add 10 ml. of 2 N  $\text{H}_2\text{SO}_4$  + 8-10 g.  $(\text{NH}_4)_2\text{SO}_4$ , dissolved in a little water, dil. to 300 ml., heat nearly to boiling, and add 0.5-2.0 ml. of 5% tannin soln. per mg. of  $\text{GeO}_2$ . Cool, filter, wash with 5%  $\text{NH}_4\text{NO}_3$  soln. contg. a little  $\text{HNO}_3$  and tannin, ignite and weigh as  $\text{GeO}_2$ . Small quantities of Ge are conveniently pptd. with *N*-hydroxyquinoline. The tannin ppt. can be dissolved in  $\text{NH}_4\text{OH}$  + concd.  $\text{H}_2\text{O}_2$  and the org. matter oxidized by repeated evapn. with  $\text{HNO}_3$  before treating with osme. 107 references.

W. R. Henn

CA

7

**Polarographic determination of tin in ores.** I. P. Alumarin, I. N. Ivanov-Rimin, and S. M. Pevner. *Trudy Vsesoyuz. Konferentsii Anal. Khim.* 2, 471-92 (1943).—The normal reduction potential of Sn in 0 N HCl is -0.4 v. As little as 0.008 mg. Sn can be detd. polarographically in 10 ml. of soln. Fuse 3 g. of sample with Na<sub>2</sub>O<sub>2</sub>. Dissolve the melt in water, and from an aliquot of the soln. ppt. the second-group cations with H<sub>2</sub>S in the presence of H<sub>2</sub>SO<sub>4</sub> and tartaric acid. Dissolve out the Sn and As sulfides with Na<sub>2</sub>S<sub>2</sub> soln., filter, and ppt. SnS<sub>2</sub> and As<sub>2</sub>S<sub>3</sub> with AcOH. Dissolve the ppt. in HNO<sub>3</sub> + H<sub>2</sub>SO<sub>4</sub> and evap. to fumes. Cool and dil. to 100 ml. with 0 N HCl. Take 20 ml. for the polarographic detn. Full directions are given for carrying out the measurements.

W. R. Henn

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

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AS	B	S	L	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00



A.C.S.

Edmunds & Whynes

Microcolorimetric determination of vanadium in rock minerals and ores with benzidine. I. P. ALIMARIN. *Zhur. Priklad. Khim.*, 17 [1-2] 83-83 (1944). A highly sensitive reaction of benzidine oxidation in 10% phosphoric acid has been worked out, in consequence of which an intense yellow color is developed, permitting the determination of vanadium in a dilution of 1:5,000,000. It is recommended for the colorimetric microdetermination and semimicrodetermination of vanadium in minerals and ores. The effect of the presence of chromates and manganates was eliminated by reduction with Mohr's salt and sodium nitrite. Decomposition of ores and minerals was performed with phosphoric acid and with a mixture of phosphoric and fluoric acids. The method permits detection of 0.5 to 0.02%  $V_2O_5$  within 1.5 to 2 hr. in specimens weighing 5 to 30 mg.

ALIMARIN, I.P.

REDUCTION OF Ge COMPOUNDS AT THE DROPPING-Hg CATHODE. ~~X~~I. P. ALIMARIN and B. N. IVANOV-EMIN. J. Applied Chem. (U.S.S.R.) v.17, 204-12 (1944) (English summary). Investigation of behavior of solns. of Ge ~~+++~~ upon electrolysis at the dropping-Hg cathode in acid and alk. solns. and in the presence of complex-forming reagents (HF and oxalic acids) showed that reduction does not take place; thus the behavior of Ge is analogous to that of compds. of higher states of oxidation of As and Se. Ge ~~++~~ is readily reduced to the metal giving a well-defined wave, with reduction potential in 6 N HCl being 0.45-0.5v, for  $10^{-4}$  M soln. At lower concns. of Ge it becomes more neg., while on reduction of concn. of HCl it becomes more pos. Along with Ge formation there is observed considerable lowering of H overvoltage. Polarography permits Ge detns. in acid solns. in dilns. of 1 p.p.m. For detn. it is necessary to reduce the Ge compd. in HCl soln. by Na hypophosphite. The detn. is interfered with by As, Pb, and Sn.

Immediate source clipping

**CA**

**Quantitative microchemical analysis of minerals, ores, and rocks. VII. Colorimetric and volumetric micro-determination of titanium.** I. P. Alimarin and A. Ya. Shkol'nikova. *Zhurnal Khim. Anal. i Prikl. Khim.* 1948, 21, 131-4 (1948); cf. C.A.B. 23, 7310; 29, 1110. — *Colorimetric method.* Melt the sample in a 3-5-ml. crucible with 3 drops of water, add 6 drops of HF and 6 drops of H<sub>2</sub>SO<sub>4</sub> (1:1), heat on a micro w.: bath to remove HF, place the crucible in an electrically heated massive Cu block, heat until SO<sub>2</sub> vapors appear, cool the crucible in another Cu block, add 2-4 drops of water, evap. as before and dissolve the contents in 1 ml. of water, heating on a water bath. In analyses of Fe ores, fuse the sample in a narrow-bottom porcelain or quartz crucible with 0.5 g. of K<sub>2</sub>CO<sub>3</sub>, dissolve in 1 ml. of hot 5% H<sub>2</sub>SO<sub>4</sub>, add 2-4 drops of 5% H<sub>2</sub>O<sub>2</sub>, transfer the soln. into a microcolorimeter test tube with a 2-ml. or a 5-ml. mark, wash the crucible several times with small portions of 5% H<sub>2</sub>SO<sub>4</sub>, add H<sub>2</sub>SO<sub>4</sub> to the mark, mix, and compare the color with that of a standard soln. If the sample contains much Cr or V, fuse the residue (after decompn. with HF) with 0.5 g. of Na<sub>2</sub>CO<sub>3</sub> to which several grains of Na<sub>2</sub>O<sub>2</sub> had been added, treat the melt with a small quantity of hot water, filter in a King filtering tube, wash with 5% hot Na<sub>2</sub>CO<sub>3</sub> soln., ignite the insol. residue with the filter, fuse the oxides obtained with 0.5 g. of K<sub>2</sub>CO<sub>3</sub>, dissolve the melt in 5% H<sub>2</sub>SO<sub>4</sub>, add H<sub>2</sub>O<sub>2</sub>, and det. Ti colorimetrically. If the content of V in the sample exceeds 0.5%, repeat the fusion with Na<sub>2</sub>CO<sub>3</sub> and Na<sub>2</sub>O<sub>2</sub>. The deviations of results between micro and macro detns. were from zero to +0.3 or -0.1%. *Volumetric detn.*

**Decomp.** 10-20 mg. of sample with HF and H<sub>2</sub>SO<sub>4</sub> (1:1), fuse with K<sub>2</sub>CO<sub>3</sub>, dissolve in 1% H<sub>2</sub>SO<sub>4</sub>, transfer the soln. into an electrolytic contg. Hg to the level of the side tube with a stopcock (the contn. of free H<sub>2</sub>SO<sub>4</sub> in the soln. should be approx. 1%), immerse the anode in the liquid, electrolyse for 1.5-2.0 hrs. at 10 v. and 0.5-0.8 amp. (raise the anode slightly 15-20 min. before the end of electrolysis and wash the walls with a small quantity of water), pour off the liquid through the stopcock into a 10-ml. beaker, wash with 5% H<sub>2</sub>SO<sub>4</sub>, add sufficient H<sub>2</sub>SO<sub>4</sub> (1:1) to the soln. (free from Fe and Cr) to bring its concn. to approx. 5%, and reduce as follows: wash the micro-reductor twice with 5% H<sub>2</sub>SO<sub>4</sub>. Add to an Erlenmeyer flask 10 ml. of dil. H<sub>2</sub>SO<sub>4</sub> (H<sub>2</sub>SO<sub>4</sub> 3 parts, water 1 part) and 10 ml. of 0.01 N Ce(SO<sub>4</sub>)<sub>2</sub>, connect the flask to the reductor, pass CO<sub>2</sub> for 15-20 min. at the rate 2-3 bubbles/sec., pour the sample soln. into the funnel of the reductor, pass the liquid through the stopcock at the rate of 1 ml./min. (the CO<sub>2</sub> keeps the soln. mixed). After the whole soln. has been passed through the reductor, wash the reductor with 5% H<sub>2</sub>SO<sub>4</sub>, wash the funnel 2-4 times with 5% H<sub>2</sub>SO<sub>4</sub>, disconnect the flask, wash with 5% H<sub>2</sub>SO<sub>4</sub>, add an excess of standard Ce(SO<sub>4</sub>)<sub>2</sub> and titrate the excess with 0.01 N soln. of Mohr's salt and a drop of 0.05% aq. phenylanthraquinone acid until the violet color of the indicator is decolorized. Seven references. VIII.

430.154 METALLURGICAL LITERATURE CLASSIFICATION

**Determination of Barium in Minerals, Rocks, and steel by means of benzenearsonic acid.** I. P. Akhmetov and G. A. Medvedeva. *Zashchita Laz.* 11, 264-6 (1945).—If the sample contains no P, discamp. 1-3 g.

in a Pt crucible with 5 ml. of  $H_2SO_4$  (1:1) and 30 ml. of HF, heating first on a water bath, then on a burner until  $H_2O$  vapors appear, cool, dil. the re-blue with a small quantity of water, evap. until all P is removed, dil. the contents with water, and heat. If a ppt. is present, filter, wash the ppt. with water, heat in a porcelain crucible, fuse with 1 g. of  $K_2SO_4$ , dissolve the melt in 10%  $H_2SO_4$ , and combine the soln. with the filtrate. In the presence of P fuse the sample in a Pt crucible with  $Na_2CO_3$ , treat it with hot 2%  $Na_2CO_3$  soln., wash the ppt. from the filter into the beaker, wash the filter 2-3 times with hot 10%  $H_2SO_4$ , add to the beaker 10 ml. of  $H_2SO_4$  (1:4), evap. until  $SO_3$  vapors appear, dil. with water, filter the  $H_2SO_4$  formed, ignite the ppt., treat it with HF and  $H_2SO_4$  (1:1), fuse the residue with a small quantity of  $K_2SO_4$ , dissolve the melt in 10%  $H_2SO_4$ , and combine the soln. with the  $H_2SO_4$  filtrate. Dil. the soln. obtained by either of the 2 methods with water to 200-300 ml., if necessary add concd.  $H_2SO_4$  and HCl so that the soln. contains 10% of acid by vol., add 3 ml. of 30%  $H_2O_2$  contg. no  $H_2PO_4$ , heat the soln. to boiling, add 6-10 ml. of 10% benzenearsonic acid, heat for several min. until the ppt. completes, cool, add some macerated filter paper contg. 0.1% of benzenearsonic acid, ignite the ppt. with the filter under a draft in a porcelain crucible, fuse the contaminated  $ZrO_2$  obtained with 1-2 g.  $K_2SO_4$ , dissolve the melt in

50 ml. of 10% tartaric acid (if Sn and heavy metals are present in the sample, sat. the soln. with  $H_2S$  and filter the sulfides formed), and add HCl so that the content of acid is 10% by vol. In the presence of Ti, add 1 ml. of 30%  $H_2O_2$  and repeat the pptn. with benzenearsonic acid. Ignite the ppt. fused over a burner, then in a muffle oven at  $1000^\circ$  to const. wt. To det. Zr in steel (in the absence of W) dissolve the sample (10-20 g.) in HCl (1:12), add  $HNO_3$  (1:4) to oxidize Fe, add HCl after all N oxides have evolved, heat until all  $HNO_3$  disappears, dil. the soln. with water, filter, ignite the ppt. in a Pt crucible, treat with HF and  $H_2SO_4$  (1:1), fuse the residue with 1 g. of  $K_2SO_4$ , dissolve the melt in 10% HCl, and combine it with the main soln. The total vol. of the liquid should be 200-300 ml. and it should contain approx. 10% of HCl. Heat the soln. to boiling, add 2-3 g. of benzenearsonic acid, mix well, heat on a boiling water bath for 1 hr., add some macerated paper, cool, filter the ppt., wash on the filter with 1% HCl contg. a little benzenearsonic acid, ignite the ppt. with the filter in a porcelain crucible, fuse the  $ZrO_2$  ppt. contaminated with Fe with  $K_2SO_4$ , dissolve the melt in 100 ml. of 10% HCl, ppt. Zr from the soln. with benzenearsonic acid, add some macerated filter paper, filter the white flake-like ppt., ignite at  $1000^\circ$ , and weigh. The percentage errors of detns. of steel, yellow granite and rhyolite were, resp.: from -0.0005 to 0.0015, zero, and from zero to +0.01%. Thirteen references. W. R. H.

AN-514 METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

7

Colorimetric determination of small quantities of columbium as thiocyanate complex. I. P. Alimarin and R. L. Palvalmaya. *Zhur. Anal. Khim.* 1, 30:46(1946).

- To det. Cb in minerals, ores, etc., remove quinquevalent Cb and Ta as described by A. and Fridl (C.A. 33, 2034; 36, 3731). Mix the sample with 0.5-2.0 g. of  $K_2S_2O_8$  and fuse at 600-700°. If the fusion reaction is incomplete, add a few drops of concd.  $H_2SO_4$  and fuse again. Cool, dissolve in 10-20 ml. of hot 15% tartaric acid soln., transfer into a 25-100 ml. (depending on size of sample) volumetric flask, and add  $H_2O$  to mark. Transfer (pipet) an aliquot contg. 0.008-0.2 mg. of  $CbCl_3$  to a ground-glass stoppered cylinder, add 5 ml. of a 20% KCNS, 3 ml. of 15%  $SuCl_2$ , and 5 ml. of HCl. Mix after each addn. In the final mixt. KCNS should be 7-15 and HCl 30-50%. To this soln. add 10 ml. of ether and shake well. In the presence of Cb, the ether layer will be yellow. If more than 0.1 mg. of Cb is present, the yellow color appears even before the addn. of ether. The max. intensity of color appears after 30-40 min. and remains for several hrs. After some time, the intensity of color will increase owing to decompn. of KCNS. Measure the color intensity by comparing with standards. Interfering ions are Mo, W, U, V, Fe, Cr, Co, Cu, Au, Pt,  $C_2O_4$ , F,  $SO_4$ ,  $PO_4$ , and  $AsO_4$ . Oxalate interferes most; sulfate, phosphate, and arsenate cause discoloration when present in considerable excess.

M. Hoesch

ASM-ISA METALLURGICAL LITERATURE CLASSIFICATION

140089 42

INDEXED - REF - ONLY - ONE

SERIALIZED

ANALYST - ONE - ONLY - 151

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

PROCESSES AND PROCEDURES

7

**Microchemical determination of sulfur in minerals and ores.** J. P. Alimov and A. Ya. Neshed'skaya (All Union Inst. Mineral Raw Materials, Moscow). *Zhur. Anal. Khim.* 1, 100-75 (1948). A titration procedure is described in which all S is converted into sulfate by fusion with  $\text{Na}_2\text{CO}_3$  and  $\text{KNO}_3$ , and the aq. soln. of the melt is treated with a  $\text{HCl}$  soln. of  $\text{BaCrO}_4$ , as in the method of Hinman (*Am. J. Sci. and Arts* 114, 478 (1877)) except that the chromate equiv. to the sulfate is detd. by adding a definite quantity of standard ferrous soln., and the excess is measured by titration with standard  $\text{Ce}(\text{SO}_4)_2$  soln. A colorimetric detn. is described in which the chromate is detd. in a small aliquot by the reaction with diphenylcarbazide (cf. Kocis, C.A. 33, 10234).

M. Houch

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

GROUP	SECTION	SUBSECTION	ALPHABETIC	NUMERIC
1	2	3	4	5





PROCESSED AND PREPARED INDEX

7

**A**

Precipitation of columbium and tantalum in the presence of hydroxy acids by means of the condensation products of formaldehyde and phenols. I. P. Allmarin, *Zved-zhnye Lab.* 13, 1647-8 (1947).—The reagent is prepd. by mixing equal vols. of 10% solns. of pyrogallol and urotropine and dissolving the ppt. in a little HCl. Add 10 ml. of the reagent and 2.5 ml. of 6 N HCl to the oxalic acid soln. contg.  $Cb_2O_5$  and  $Ta_2O_5$  and then heat to 60-70°. In the presence of considerable Ta, a bright yellow coloration will form and, upon heating, a yellow ppt. will begin to sep. Add to the hot soln.  $NH_4OH$  dropwise until the soln. is basic to litmus paper and then immediately add HCl dropwise until faintly acidic. The greater part of the sepd. products of condensation again goes into soln. while the complex compts. of Cb and Ta remain undissolved. If the oxalic acid soln. contains Cb, the ppt. will have a bright, orange-red color. After stirring thoroughly for several min., add paper pulp and filter. The filtrate may be cloudy because of the oxidation of higher polymers. Wash the ppt. with water contg. some of the reagent and ignite at 900-1000°. H. Z. Kamich

METALLURGICAL LITERATURE CLASSIFICATION

ASB-11A

1950

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

CA

7

Quantitative microchemical analysis of minerals, ores, and rocks. IX. Determination of combined alkali metals. I. P. Almarin. *Zvezdshaya Lab.* 13, 917-20 (1947); cf. *C.I.* 40, 1423. --The described procedure is an adaptation of the Tausnady method (*C.I.* 24, 5628) to mineral and rocks. A micro-sample is decompd. with HF and the residue is treated with oxalic acid. The oxalates are ignited to  $800^\circ$ , thereby converting most of the metals to oxides and Ca, Sr, Ba, and alkali metals to carbonates. The residue is treated with  $H_2O$ , thereby dissolving the alkali carbonates,  $Mg(OH)_2$ , and a little alk. earth carbonates. Al, Fe, and Cr, when present in large quantities, form aluminates, ferrates, and chromates. They are decompd. with  $(NH_4)_2CO_3$ . Metals in soln. are pptd. with 8-hydroxyquinoline and the ppts. filtered off. The filtrate is evapd. and ignited and the combined alkali carbonates are transformed into sulfate and weighed as such. M. Houch

ALIMARIN, I. P.

Field methods of evaluating the grade of mineral resources.  
Sov. geol. no. 21:3-6 1947. (MIRA 8:8)  
(Mineralogy, Determinative)

ALIMARIN, I.P.

Mobile field chemical laboratory for testing iron and manganese  
ores. Sov.geol. no.21:37-57 '47. (MLRA 8:8)  
(Ores--Sampling and estimation) (Manganese ores--Analysis)  
(Iron ores--Analysis)

ALIMARIN, I.P.

Alimarin, I. P. and Ivanov-Emin, B. N. - "On the distillation of lead in the form of haloid compounds", Trudy Mosk. in-ta tonkoy khim. tekhnologii im. Lomonosova, Issue 2, 1948, p. 89-96, - Bibliog: 7 items.

SO: U-3042, 11 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 8, 1949).

ALIMARIN, I. F.

Alimarin, I. F. - "The microchemical diagnosis of carbonate minerals in powder and in cross-section by obtaining colored products on their surfaces", Trudy Mosh, in-ta tonkoy khim. tekhnologii im. Lomonosova, Issue 2, 1948, p. 96-106.

SO: U-3042, 11 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 3, 1949).

PA 3/4972

USSR/Academy of Sciences  
Chemistry - Analytical

Aug 48

"Works of the Commission on Analytical Chemistry,"  
edited by A. P. Vinogradov, Corr Mem, Acad Sci  
USSR; reviewed by Prof I. P. Alimarin, Dr Chem Sci,  
1 1/2 pp

"Zavod Lab" Vol XIV, No 8

First volume of series devoted to original articles  
and surveys of existing knowledge. Chief defects:  
(1) Work of Russian analysts not fully treated;  
(2) relative merits of various methods not indicated;  
(3) haphazard selection of material. Criticizes  
eight articles in detail. Publication of Acad Sci  
3/4972

USSR/Academy of Sciences (Contd)

Aug 48

USSR, Moscow, 1948, 195 pp.

ALIMARIN, PROF. I. P.

3/4972

ALIMARIN, I. P.

"Qualitative Semimicroanalysis" (Kachestvennyy Polumikroanaliz), I.P. Alimarin and V. N. Arkhangel'skaya, Goskhimizdat, Moscow/Leningrad, 1949, 192 pages and four enclosures, 7 rublis 10 Kopeks.

SO: Uspekhi Khimii, Vol 18, #6, 1949; Vol 19, #1, 1950 (W-10083)



~~12~~ ALLIMARIN, J.P.

Chemical Abst.  
Vol. 48 No. 8  
A pr. 25, 1954  
Analytical Chemistry

Ultramicromethod of chemical analysis. I. I. P.  
Alliman and M. S. Petukova (V. I. Vernadsky Inst. Chem., Moscow). *J. Inorg. Nucl. Chem.*  
7, 17-18 (1952) (Engl. translation).—See C.A. 47, 4734e  
H. L. H.

ALIMARIN, I.P.

FEYNBERG, S.Yu.; ALIMARIN, I.P., professor, doktor, retsenzent; SOCHEVANOV, V.G., kandidat khimicheskikh nauk, retsenzent; TITOV, V.I., kandidat khimicheskikh nauk, retsenzent.

[Analysis of ores of non-ferrous metals] Analiz rud tsvetnykh metallóv. 2. ispr.i dop. izd. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1953. 832 p. (MLRA 7:4)  
(Assaying)

ALIMARIN, I. P.

Brit. Abs, C

Sept 1953

General techniques  
+ laboratory  
apparatus

✓ 2044. Ultramicro-method of chemical analysis. II. Separation  
and detection of elements by electrolysis. I. P. Alimarin and M. N.  
Petrova (J. anal. Chem., USSR, 1953, 8, 11--17).--Apparatus for  
ultramicro-electrolysis with Pt and Hg electrodes in solution vol. of  
0.001 ml. containing  $10^{-8}$ -- $10^{-6}$  g. of metallic cation is described.  
G. S. SMITH.

Chem 4

2

Zhurn. Anal. Khim.

MF  
7-27-54

ALIMARIN, I.P.

Chemical Abst.  
Vol. 48 No. 4  
Feb. 25, 1954  
Analytical Chemistry

Extraction of molybdenum from hydrochloric acid solutions with ether. I. P. Alimarin and V. N. Polyanski (M. V. Lomonosov Institute of Chemical Technol., Moscow). *Zhur. Anal. Khim.* 8, 200-9 (1953).—Small quantities of Mo were successfully extd. from 5-5N aq. HCl solns. with ether. One extn. yielded 84.5% of the Mo present, 4 extns. increased the yield to approx. 99.5%. It is preferable to carry out the extn. in an automatic app. M. Il'pach

3

AP 3-54

ALIMARIN, I. P.

USSR/ Chemistry - Ultramicro-Analysis

Card : 1/1

Authors : Alimarin, I. P., and Petrikova, M. N.

Title : Ultramicro chemical analysis method. Part 3.- Potentiometric titration

Periodical : Zhur. Anal. Khim., 9, Ed. 3, 127 - 133, May-June 1954

Abstract : Devices and methods adopted for potentiometric ultramicro-titration under a microscope are described. The use of a calomel electrode with thin capillary tip, as working part in the role of comparative electrode, is explained. Notes are given on potentiometric ultramicro-determination of  $10^{-10}$  -  $10^{-7}$  grams of a substance in solutions with a volume of  $10^{-3}$  ml. Data obtained showed quite high accuracy in determination of analysis values. Nine references: 6-USSR, 3-USA. Tables; graphs; drawings.

Institution : Acad. of Sc. USSR, The V. I. Vernadsky Institute of Geo- and Analytical Chem., Moscow.

Submitted : Jan. 27, 1954

ALIMARIN, I.P.

U S S R

Ultramicrochemical analysis. III. Potentiometric titration. I. P. Alimarin and M. N. Petrikova. *J. Anal. Chem. U.S.S.R.* 1964, 9, 2054 (Engl. translation).  
Sec. C.A., 48, 69(2) H. L. H.

ALIMARIN, I. P. Prof. Cor. Mbr., AS USSR

"The Utilization of Tagged Atoms in Analytical Chemistry," report presented at the Fourth Conference of Workers in Plant and Industrial Laboratories In Kazakh SSR and Central Asia, Alma-Ata, 1956

SO: TI 170982

ALIMARIN, I. P.

"Application of Radioactive Isotopes in Chemical Analysis," a paper presented at the Atoms for Peace Conference, Geneva, Switzerland, 1955



Alimarin, I. P.

8

Coprecipitation of nickel, manganese, titanium, and zinc with the metal sulfides of the hydrogen sulfide group. I. P. Alimarin, N. A. Rudnev, and L. I. Gusakov. Primeneniye Metoda Alomov v Anal. Khim., Akad. Nauk S.S.S.R., Inst. Geokhim. i Anal. Khim. 1955, 12-23. cf. C.A. 47, 4008a. -- Copptn. of these metals with members of the IV and V groups was studied with the aid of  $Mn^{2+}$ ,  $Ni^{2+}$ ,  $Zn^{2+}$  and  $Ti^{2+}$ . Pptn. with  $H_2S$  was carried out in 0.3N acid solns. In the solns. contg. Ni there was 101  $\gamma$  Ni and the Ni:M ratio was 1:58. The Mn solns. contained 111  $\gamma$  Mn and the Mn:M ratio was 1:49. Ni and Mn copptd. only slightly with the sulfides, except in the case of  $Bi_2S_3$  and  $SnS_2$  where copptn. of Ni was 1.24 and 2.81%, resp., and  $HgS$  and  $SnS_2$  where copptn. of Mn was 1.6 and 1.5, resp., in the Ti-contg. solns. There was 2.96  $\gamma$  and the Ti:M ratio was  $1:6.95 \times 10^4$ . Copptn. in these solns. was very high; copptn. was smallest with  $Ag_2S$  (28.0) and highest (96.0%) with  $HgS$  in solns. where the mol. ratio of Ti:M was 1:1 copptn. was appreciably smaller; in these solns. copptn. was smallest (1.9 and 2.0% with  $HgS$  and  $Ag_2S$ , resp.) and highest (48.1%) with  $As_2S_3$ . The Zn solns. contained 600  $\gamma$  of Zn and the Zn:M ratio was 1:12. When the  $H_2S$  was passed at the same rate as in the other expts. (50-60 bubbles/min.) copptn. of Zn was small and reached 7% with  $CdS$  and 10% with  $Sa_2S_3$ . When the rate of  $H_2S$  passing was raised to 500 ex./min. the copptn. of Zn went up from 7.0 to 56.6% with  $CdS$ , from 10.0 to 47.7% with  $Sa_2S_3$ , from 0.8 to 43.2% with  $HgS$ , and from 0.4 to 11.1% with  $Bi_2S_3$ . Copptn. with  $CuS$ ,  $PbS$ ,  $Ag_2S$ ,  $As_2S_3$ , and  $Sb_2S_3$  remained unaffected. Delay between pptn. and filtering caused more Zn to be pptd. with  $CdS$ . In changing the acidity between 0.05 and 0.4N the amt. of Zn copptd. with  $CdS$  and  $Sa_2S_3$  dropped with increasing acidity. Id. Hosh.

MSK

(2)

ALIMARIN J.P.

✓ Determination of admixtures in germanium by radioactivity analysis. I. P. Alimarin, S. V. Krovich, and A. I. Zhabin. Trudy Akad. Nauk S.S.S.R., Inst. Geokhim. i Inzh. Khim. 1955, 118-60. — The method is based on bombarding elements with primarily slow neutrons and thereby producing radioactive isotopes having characteristic gamma rays, such as emission, its energy, and half period. The data is based on the relation between activity ( $A_0$ ) and consequently the quantity of isotope produced and the quantity ( $m$ ) of element exposed to neutron bombardment  $A_0 = (n/M)0.693 \times 10^{20} \lambda_0 (1 - e^{-\lambda_0 t})$ , where  $A_0$  is the no. of decays/sec. at the end of bombardment,  $M$  is the at. wt. of the element being detd.,  $\lambda_0$  is the flux intensity of the bombardment, i.e., the product of isotopic cross section time the per-

cent of the isotope in the material,  $t$  is the irradiation time, and  $n$  is the number of neutrons per unit area per unit time. Rare earths Sb, Mo, Cu, and Zn were detd. in Ge. The rare earths were detd. in the presence of GeO<sub>2</sub> was placed in a quartz weighing bottle previously boiled in an equal mixt. of HNO<sub>3</sub> and HCl. The samples were dried at 115°. The weighing bottles were placed in Al containers and exposed to a neutron flux of  $2.5 \times 10^{14}$  neutrons/cm<sup>2</sup> sec for 56-48 hrs. Standards were prepared from pure salt solutions of known concentration in a similar manner. The radioactivated GeO<sub>2</sub> specimens containing admixtures were dissolved in 8N HCl to which were added solutions of active salts of the mentioned elements to act as carriers and standards. The latter was added because the radioactivity of the standards was the same and the end state percentage activity by using the initial time as 100%. The decay curves were analyzed graphically. The activity of the samples and the standards were adjusted to the same dose of the element as detd. from the curves and divided by the percentage yield. The amt. of the element in the specimen was calculated from the radioactivity of the specimen and the standard. The sensitivity of detg. admixtures in Ge by this method was approx. rare earths  $1 \times 10^{-4}$ , Cu  $1 \times 10^{-4}$ , Sb  $3 \times 10^{-4}$ , Mo  $3 \times 10^{-4}$ , and Zn  $5 \times 10^{-4}$ .

in which the dose was the same and the end state percentage activity by using the initial time as 100%. The decay curves were analyzed graphically. The activity of the samples and the standards were adjusted to the same dose of the element as detd. from the curves and divided by the percentage yield. The amt. of the element in the specimen was calculated from the radioactivity of the specimen and the standard. The sensitivity of detg. admixtures in Ge by this method was approx. rare earths  $1 \times 10^{-4}$ , Cu  $1 \times 10^{-4}$ , Sb  $3 \times 10^{-4}$ , Mo  $3 \times 10^{-4}$ , and Zn  $5 \times 10^{-4}$ .

M. Hirsch ②

~~V. I. Nozdrin, A. P. ALIMARIN, I. P.~~

1400  
RML 1-

✓ 1013 AEC-11-1435 (Pt. 2) (p. 65-78)  
 RADIOCHEMICAL INVESTIGATION OF THE FISSION OF  
 BISMUTH, THORIUM AND URANIUM WITH 400 MEV  
 PROTONS. A. P. Vinogradov, I. P. Alimarin, V. I.  
 Baranov, A. K. Izraelina, T. V. Bityayeva, I. I.  
 Pavlovskaya, A. A. Bragina, and Yu. V. Yelovlev. p. 65-  
 78 of CONFERENCE OF THE ACADEMY OF SCIENCES OF  
 THE USSR ON THE PEACEFUL USES OF ATOMIC ENERGY,  
 JULY 1-5, 1955. (SESSION OF THE DIVISION OF CHEM-  
 ICAL SCIENCE. (translation). 14p.  
 This paper was originally abstracted from the Russian  
 and appeared in Nuclear Science Abstracts as NSA 9-7938.

*How Sci*

*8*

*RML*

ALIMARIN, I. P.

1009 - Eml

1009  
Eml

✓ 4105 AEC-tr-2435 (Pt. 2) (p. 85-100)  
RADIOCHEMICAL INVESTIGATION OF THE SPALLATION  
OF COPPER AND BISMUTH NUCLEI WITH HIGH-ENERGY  
PARTICLES. A. P. Vinogradov, I. P. Alimarin, V. I.  
Baranov, A. K. Lavrukhin, T. V. Bzragova, and F. I.  
Pavlotskaya. p. 85-100 of CONFERENCE OF THE ACAD-  
EMY OF SCIENCES OF THE USSR ON THE PEACEFUL  
USES OF ATOMIC ENERGY, JULY 1-5, 1955. SESSION  
OF THE DIVISION OF CHEMICAL SCIENCE. (Translation).  
16p.

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This paper was originally abstracted from the Russian  
and appeared in Nuclear Science Abstracts as NSA 9-7938.

Eml  
text

ALLMARIN, I. I.

800-1-100

Radiochemical study of the products of high-energy spallation of copper and bismuth. A. P. Vinogradov, I. I. Allmarin, V. I. Baranov, A. K. Lavrukina, G. V. Pavlovskaya, and F. I. Pavlotskaya. *Sessiya Akad. Nauk S.S.S.R. po Atomnoy i Ispol'zovaniyu Atomnoy Energii*, July 1-6, 1955, *Zasedaniya Otdel. Khim. Nauk (Moscow)* 11: 3-57. (English summary, 157-9).—The spallation products of Cu nuclei bombarded with 280-m.e.v. deuterons and 480-m.e.v. protons as well as of Bi nuclei bombarded with 480-m.e.v. protons were studied by the radiochem. method. From the shape of the curve of the distribution yield of the residual nuclei vs. mass no., it was possible to establish the presence of a great variety of nuclear processes, e.g. the emission of light nuclei, the fusion and spallation of nuclei, and secondary reactions increasing the at. no. of the initial nucleus. Cu spallation at 480 m.e.v. yielded predominantly neutron-deficient nuclei. However, only  $\beta$ -active nuclei were detected in the case of radioisotopes with  $Z \leq 20$ . The total cross section of the formation of radioactive products was  $0.12 \times 10^{-24}$  sq. cm.

By extrapolation and interpolation, a complete spallation-yield picture for Cu bombarded with 680-m.e.v. protons was established. Stable isotopes accounted for 43% of the total cross section, neutron-deficient isotopes accounted for 40.4%, and isotopes with a neutron excess for 16.6%. The following isotopes show a max. yield  $Cu^{64,65}$ ,  $Ni^{58}$ ,  $Co^{57}$ ,  $Fe^{56}$ ,  $Mn^{55}$ ,  $Cr^{52}$ ,  $V^{51}$ ,  $Ti^{48}$ ,  $Sc^{46}$ ,  $Ca^{44}$ , and  $K^{41}$ . The total cross section in this case was equal to  $0.6 \times 10^{-24}$  sq. cm., which is about 60% of the geometrical cross section of Cu nuclei. The spallation products of Bi bombarded with 480-m.e.v. protons were studied. The principal feature of this process is the predominant formation of nuclei with a marked neutron deficiency. The yield of Pb, Hg, and Pt isotopes increases with the decrease in their mass nos. The cross section of Bi spallation is about  $1.0 \times 10^{-24}$  sq. cm. The following hitherto unknown radioisotopes of Hg were discovered among the spallation products:  $Hg^{197}$ ,  $Hg^{198}$ ,  $Hg^{199}$ ,  $Hg^{200}$ ,  $Hg^{201}$ . J. R. Leach

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800-1-100

ALIMARIN, J. P.

14  
1-2m  
8

✓ 1279, AEC-4r-235  
RADIOCHEMICAL STUDY OF THE FISSION PRODUCTS OF  
BISMUTH, THORIUM, AND URANIUM UPON BOMBARD-  
MENT WITH 450 MEV PROTONS. A. P. Vinogradov, J. P.

Alimarin, V. I. Baranov, A. N. Lavrukina, E. V. Baranova,  
T. I. Pishotskaya, A. A. Dragina, and Yu. M. V. Yakovlev.

p.97-119 in Meetings of the Division of Chemical Sciences  
Session of the Academy of Sciences of the U.S.S.R. on the  
Peaceful Use of Atomic Energy. July 1-5, 1955. Moscow,  
Publishing House of the Academy of Sciences of the  
U.S.S.R. 1955. 378p.

Radiochemical investigations of the products of bombard-  
ment of U, Th, and Bi with 450-Mev protons have revealed  
similar nuclear processes. There has been observed the  
production of light elements, fission products, and spallation  
products in all cases. The detailed investigation of the  
fission of U, Th, and Bi with 450-Mev protons has shown  
that the yield mass curve is symmetrical with one wide  
maximum. The fission of these nuclei with fast protons  
does not produce long radioactive chains. There is ob-  
served the formation of a significant number of fragments  
emitting positrons and undergoing K-capture. All this  
points toward the emission of neutrons upon fission. It has  
been established that the characteristics of the fission of  
Th and U with fast particles of different energy are simi-  
lar. This indicates that these characteristics will be

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Vinogradov, A.P., Alimarin, I.P. . . .

present in the fission of other heavy elements also. The cross section for the fission of U and Th with 480-Mev protons is of the order of geometrical. The cross section for the fission of Bi is significantly lower ( $\sim 10^{-24}$  cm<sup>2</sup>). On the average, 2 photons and 16 neutrons are emitted before fission of Bi indicating the emitter character of this process. (math)

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*7/2*

*Rank*  
*[Signature]*

ALIMPK 02.11

1100. The separation of molybdenum and iron  
 with ion-exchange chromatography. I. P. Allmann  
 and A. M. Molodtsova. *Trudy Khim. Akad. Nauk SSSR*, 1955, 8, 351-384; Ref.  
 Zh., *Khim.*, 1956, Abstr. No. 29,332. — The opti-  
 mum conditions for the separation of Mo and Fe in

the presence of citrate ions by ion exchange on  
 Yofattit R and SBS are studied. On passing  
 citrate soln. of molybdates containing HCl through  
 the column, all the Mo ( $\approx 1$  mg) in 0.1 N HCl is  
 found in the filtrate. Increasing the molybdenum  
 content to about 100 mg and, in particular, raising  
 the concn. of HCl (to 0.6 N) leads to partial adsorp-  
 tion of Mo. Increasing the concn. of citric acid  
 (I) lowers the adsorption of Mo in all cases to nil  
 (at M I). Iron from FeCl<sub>3</sub> (HCl concn. 0.01 to  
 0.1 M) is completely adsorbed on the resins in the  
 absence of I. At a HCl concn.  $> 0.2$  M, Fe passes  
 into the filtrate. In the presence of M I there is  
 a max. in the adsorption curve. Raising the HCl  
 concn. from 0.01 to 0.1 M increases the adsorption  
 from 44 to 100%. Further increase of acidity leads  
 to Fe passing through again. In the analysis of  
 soln. 0.1 N in HCl and M in I, no Fe is found in the  
 filtrate after passage through the column. To  
 remove Mo from the column, from 150 ml (for 1 mg  
 of Mo) to 250 ml (for 100 mg of Mo) of water is  
 necessary. Separation is possible with Fe:Mo  
 1:3000:1. The method may be applied to the  
 analysis of samples of steel, iron ore and ferro-  
 molybdenum. In analysing steel, dissolve 0.1 g

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1/2





ALMARIN, I. C.

USSR

2760. Precipitation of quadrivalent vanadium by  
 8:7-dibromo- and 8:7-di-iodo-8-hydroxyquinoline.  
 I. P. Almarin and V. G. Krenkov (*Zh. Anal. Khim.*,  
 USSR, 1956, 10 (1), 88-90). — Acetone solutions of  
 8:7-dibromo- and 8:7-di-iodo-8-hydroxyquinoline  
 added to VOSO<sub>4</sub> solution at pH 4 to 5 and at 50° to  
 65° C precipitate the V quantitatively as yellow  
 $VO(C_8H_6ONBr)_2$  (after drying at 150° to 200° C)  
 and yellow  $VO(C_8H_6ONI)_2$  (after drying at 170° to  
 185° C), with conversion factors to V of 0.9760 and  
 0.9894, respectively. The ppt. are sol. in conc.  
 acids, chloroform, amyl acetate and xylene, and  
 are insol. in alkali. G. S. Surin

CH  
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SALIMARIN, I.P.

[Radioisotopes in chemical analysis] Primenenie radioaktivnykh izotopov v khimicheskom analize. Moskva, 1955. 31 p.

(MIRA 14:6)

(Chemistry, Analytical) (Radioisotopes)

ALIMARIN, I.P.; PETRIKOVA, N.N.

Use of silicon-organic coatings in ultramicroanalysis. Zhur.anal  
khim. 10 no.4:251-255 J1-Ag '55. (MLRA 8:9)

1. Institut geokhimi i analiticheskoy khimii imeni V.I.Venad-  
skogo AN SSSR, Moscow.  
(Microanalysis) (Silicon organic compounds)

ALIMARIN, I.P.; GIBALO, I.M.

Radiometric titration. Zav.lab.21 no.1:1022-1027 '55. (MLRA 9:1)

1.Moskovskiy gosudarstvennyy universitet.  
(Volumetric analysis)

ALIMARIN, I.P.

A vibrating platinum microelectrode. Zav.lab. 21 no.2:244-245  
'55. (MIRA 8:6)

1. Monkovskiy gosudarstvennyy universitet.  
(Electrochemical analysis)

ALIMARIN, I. P.

Differential amperometric titration of iron and vanadium.  
 I. P. Almarin and S. I. Terin (M. V. Lomonosov Inst. Eng. Chem. Technol., Moscow). *Zavodskaya Lab.* 21, 477-8 (1955). -- With a rotating Pt microelectrode the current-voltage curve of Fe(II)-Fe(III) ion system yields a distinct electrode reaction with diffusion current in the anodic and cathodic areas. At -0.1 to +0.3 v. the cathodic reduction area shows a good diffusion current, which at 0.7-1.1 v. the anodic oxidation area shows a good diffusion current. The current strength is proportional to ion concn. V(IV) does not give an electrode reaction under these conditions, while V(V) at 1.5 v. shows an indistinct diffusion current, while at above 1.5 v. no current is observable. This permits detn. of Fe and V in mixts. Titration of Fe(II) with Ce(IV) or KMnO<sub>4</sub> at potential of 0.8-0.9 v., and titration of V at 0.5 v. is thus feasible. At 0.9 v. only Fe(II) is affected and after its titration and cessation of current flow, the potential is adjusted to 0.5 v. and V is now titrated with Ce(IV). Typical curve and results of analysis of mixts. are shown. The method shows good reproducibility and accuracy comparable to other methods of simultaneous detn. of Fe and V.  
 G. M. Kosolapoff

No 1

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ALIMARIN, I.P.

5/2/59

1878 Separation of small amounts of nickel from cobalt by extracting nickel salicylaldehyde complex with chloroform from aq. solutions; Be, Ti, Zr, La, Mn, Fe, Co, Ni, Cu, Ca, Pb, Ce, Pr, Nb, Sr, Th and U are also extracted, but Co are not extracted. Chloroform dissolves 0-026 mg of Ni in the complex form per 1 ml. Procedure - The solution, containing 0.01 to 0.1 mg of nickel, is treated with 3 ml of 4 N NH<sub>4</sub>Cl, 0.5 ml of 3 per cent. alcoholic salicylaldehyde, and 20 per cent. aq. NH<sub>3</sub> to give a pH of 7.5 to 9.2. The solution is diluted with water to 10 ml and extracted with 10 ml of chloroform for 1 or 2 min. The chloroform layer is removed and the Ni extracted with dil. HCl (1 + 10). The solution is evaporated with HNO<sub>3</sub> and HCl to destroy the reagent and Ni is determined photometrically. In the presence of amounts of Co up to 100 mg in 10 to 20 ml, 1.5 ml of 100-*vol.* H<sub>2</sub>O<sub>2</sub> are added after the aq. NH<sub>3</sub>. The max. ratio of Co to Ni is 20,000:1. The method is applicable to the analysis of metallic cobalt, and cobalt ores and salt.

G. S. SMITH

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MS 2/2



Alimarin, A. P.

Metal

Use of the Method of Ion-Exchange Chromatography in the Determination of Molybdenum in Steels and Ores. I. P. Alimarin and A. M. Melnyakova. (Zavodskaya Laboratoriya, 1965, 21: (12), 1416-1418). (In Russian). The use of cation-exchange resins in the presence of hydrogen peroxide for the

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separation of molybdenum from iron and other elements is the basis of the method described for molybdenum determination in steels and ores. The hydrogen peroxide prevents the sorption of molybdenum by forming permolybdate, but iron, copper, nickel, manganese and small quantities of titanium are sorbed. Tungsten and vanadium are not separated from molybdenum. Results for standard samples of a steel (0.31% Mo) and iron ores (0.31-1.28% Mo) are presented, showing satisfactory agreement. —S. K.

31

ALIMARIN, I. P.

USSR/Chemistry--Micro-analysis

Card 1/1 Pub. 86--18/39

Authors : Alimarin, I. P., Mem. Corresp. Acad. Sc. USSR; and Petrikova, M. N.

Title : Ultramicroanalysis

Periodical : Priroda 44/1, 89--94, Jan 1955

Abstract : Ultramicroanalysis is presented as a branch of chemistry dealing with the analysis of very minute quantities, and as having been developed by Russian scientists. In such analysis quantities ranging from 0.001 milliliter to 0.1 microliter and weighing 20--600 micrograms are analyzed. The instruments required are illustrated and explained. The procedure is described, covering such steps as weighing and staining the specimens and the use of capillary attraction. Five Soviet references (1949--1954). Illustrations; table.

Institution : The V. I. Vernatskiy Institute of Geochemistry and Anal. Chem. of the Acad. of Sc., USSR

Submitted : .....

Alimarin, I. P.

*Chem*

Research in analytical chemistry. I. P. Alimarin, B. S. F. (M. V. Lomonosov), and V. S. (M. V. Lomonosov). *Gosizy Zepish*, *Mosk. Gosudarst. Un. im. M. V. Lomonosova* No. 174, 17-3 (1955).--A review of work of the department since 1949 reveals an emphasis on problems of extraction of inorganic complex compounds as a means of analytical separation. The use of org. reagents has been studied for many applications in the analytical chemistry of metallic elements.

C. H. Fuchsman

*dm*

*3-4*

*Alimarin, I.P.*

PRZHEVAL'SKIY, Ye.S., prof.; ALIMARIN, I.P., prof.; NOVOSILOVA, A.V., prof.,  
otv.red.

[Program in analytic chemistry; for Chemistry Faculty] Programma po  
analiticheskoi khimii dlia khimicheskogo fakul'teta. 1956. 14 p.  
(MIRA 11:3)

1. Moscow. Universitet. 2. Chlen-korrespondent AN SSSR (for  
Novosilova)  
(Chemistry, Analytical--Study and teaching)

~~ALIMARIN~~, I.R., professor, otvetstvennyy redaktor; BUSEV, A.I., doktor  
khimicheskikh nauk, otvetstvennyy redaktor; MULIN, Ye.V., tekhnicheskiy redaktor

[Methods of analyzing rare and nonferrous metals] Metody analiza  
redkikh i tsvetnykh metallov. [Moskva] 1956. 174 p. (MIRA 10:1)

1. Moscow. Universitet. Kafedra anliticheskoy khimii<sup>2</sup>. Chlen-  
korrespondent Akademii nauk SSSR (for Alimarin).  
(Metals--Analysis)

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., tekhnicheskii  
redaktor

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

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

ALIMARIN, I. P.

USSR/analytical Chemistry. General Questions

G-1

Abs Jour : Ref Zhur - Khimiya, No 3, 1957, 8405

Author : Alimarin, I.P., and Bilimovich, G.N.

Title : Chemical Analytical by Isotope Dilution Methods

Orig Pub : Khim. nauka i prom-st, 1956, Vol 1, No 1, 74-84

Abstract : A survey with a bibliography listing 89 items.

Card : 1/1

Alimarin, I. P.

APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000101110012-4"

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 12, p 368 (USSR)

AUTHORS: Alimarin, I. P., Belyavskaya, T. A., Bazhanova, L. A.

TITLE: Separation of Titanium From Accompanying Elements by the Method of Ion-exchange Chromatography (Otdeleniye titana ot soputstvuyushchikh elementov metodom ionoobmennoy khromatografii)

PERIODICAL: Vest. Mosk. un-ta, Ser. matem., mekhan., astron., fiz., khimii, 1956, Nr 2, pp 167-170

ABSTRACT: A systematic study of exchange of  $Ti^{4+}$  and  $Fe^{3+}$  ions in solutions of  $HCl$ ,  $H_2SO_4$ , and  $CNS^-$  was performed. The distribution coefficient  $\phi$  was studied with regard to the ion-exchange resin and the solution. It may be computed from the formula  $\phi = M_1 v / m (M - M_1)$ , where  $M_1$  is the cation fraction in the resin,  $M$  is the initial quantity of cation,  $v$  is the volume of the solution,  $m$  is the mass of the synthetic basic resin (SBS). In all experiments  $v = 60$  ml,  $m = 0.5$  g. It is established that at 0.4 N and 0.1 N  $H_2SO_4$   $\phi_{Fe} / \phi_{Ti} = 13.1$  and 17.5, respectively.

Card 1/2 Results obtained with thiocyanate are of little practical interest.

137-1957-12-25523

Separation of Titanium From Accompanying Elements (cont.)

The method of segregation was verified in a cylindrical tank 12 cm high and 0.8 cm in diameter. The completeness of the segregation was controlled by colorimetric and radiometric methods and involved the employment of  $\text{Fe}^{59}$ . The separation of Fe and Ti was examined for Fe:Ti ratios varying from 1:1000 to 10,000:1 (the amounts of Ti varying from 0.001 to 10 mg, and those of Fe, from 0.001 to 1 mg). 100-425 ml of 0.4 N HCl are employed to elute  $\text{Ti}^{4+}$ , and 100-500 ml of 4.0 N HCl to elute  $\text{Fe}^{3+}$ . The separation was complete.

Z. G.

1. Titanium-Separation
2. Ion exchange-Applications

Card 2/2



ALIMARIN, I. P.

USSR/Analytical Chemistry - General Questions

G-1

Abs Jour : Referat Zhur - Khimiya, No 3, 1957, 8369

Author : Alimarin, I. P. and Gibalo, I. M.

Inst : ~~Moscow University~~

Title : The Application of Complex Formation in the Separation and Determination of Elements by Extraction.

Orig Pub : Vestn. Mosk. un-ta, 1956, No 5, 55-59

Abstract : Acetylacetonate (I) and Disodium diethylenediammoniumtetracetate (II) form complexes of varying stability with various elements. The acetylacetonates in contrast to the complexonates are easily extracted by organic solvents, such as  $\text{CCl}_4$ . The behavior of the acetylacetonates of Fe, Be, Cd, Co, Ni, Mn, Cu, Pb, and Zn during extraction with  $\text{CCl}_4$  in the presence of II has been investigated. Be is completely extracted with  $\text{CCl}_4$  at pH 9. For the separation of Be from Fe, 5 ml of a 15% solution of I, 7 ml of 0.05M solution of II, 2 drops of conc.  $\text{NH}_4\text{OH}$ , and 7 ml of  $\text{CCl}_4$  are added to 15 ml of a solution (pH 2-3) containing  $\text{BeSO}_4$  and  $\text{FeCl}_3$  in a separatory funnel. The mixture is shaken for five minutes and the organic phase is separated; the extraction is repeated a second time,

Card 1/2

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USSR/Analytical Chemistry - General Questions

G-1

Abs Jour : Referat Zhur - Khimiya, No 3, 1957, 8369

using the same amounts of reagents with the exception of II. 20 ml  $\text{H}_2\text{O}$  and 15 ml  $\text{HCl}$  are added to the organic phase, and the aqueous phase is evaporated to one-half its volume; the Be is precipitated with  $\text{NH}_4\text{OH}$  and determined gravimetrically as  $\text{BeO}$ . The extraction of the Be is practically complete; the Fe is not extracted. For the separation of small amounts of Co from Fe, the solution to be investigated is neutralized with  $\text{NH}_4\text{OH}$  to pH 3-4, 8-10 ml of 0.05 M II, 5-6 ml of 15% I, 2.5 ml of conc.  $\text{NH}_4\text{OH}$ , and 7 ml  $\text{CCl}_4$  are added and the solution is shaken for 3-4 minutes in a separatory funnel. The extraction is repeated twice, using the same amounts of I and  $\text{CCl}_4$ . The above-described method permits the complete separation from Fe not only of Co, but also of Cu, Ni, Pb, Cd, Zn, and Mn.

Card 2/2

-7-

...analytical chemistry since they form  
...with many metals. Two 1/ml. sat. solns. of  
Zn, Cd, Fe, Bi(II), Sn(II), Ni(IV), Cr(III), Ag, Mn  
(II), Ba, Ca, Mg, Ga, Ge, Pb, and Bi with 0.0001M  
soln. of Complexon III were studied by using spectropho-  
tometric methods. Max. are present with Ga ( $\lambda = 255 \text{ m}\mu$ ),  
Bi (263-5), Pb (240-1). A weak max. exists with Ag  
(300); other metal complexon(ite)s have no max. Spectro-  
chem. detn. of Bi as complexon(ite) was found to be practical  
in the presence of a 500-fold amt. of Pb.

*CP*

ALIMARIN, I.P.  
ALIMARIN, I.P.; BELYAVSKAYA, T.A.; BAZHANOVA, L.A.

Separating titanium from accompanying elements by means of ion exchange chromatography. Vest. Mosk. un. Ser. mat. mekh., astron., fiz., khim. 11 no.2:167-170 '56. (MIRA 10:12)

1. Kafedra analiticheskoy khimii Moskovskogo gosudarstvennogo universiteta.

(Titanium) (Iron) (Ion exchange) (Chromatography)

ALIMARIN, I. P.

7 21-1-86  
 Extraction of 8-hydroxyquinolates of niobium, tantalum  
 and tungsten. I. P. Almarin and I. M. Gubala. *Vysokoye Uchebnoye Zavedeniye, Astrakhan. Fiz. i Khim. Nauch. Seriya*, 1965-8(1966).-- Nb 8-hydroxyquinolate can be  
 quantitatively extd. from a 2.5% HCl tartarate or citrate  
 soln. at pH 6-9 by several org. substances, immiscible with  
 H<sub>2</sub>O. 8-Hydroxyquinolates of Ta and of W are not ex-  
 tractable with the investigated org. solvents. Nb can be  
 quantitatively sepd. from Ta by exng. with isoamyl alc.,  
 from W with CHCl<sub>3</sub>. B. Ryshtetskiy

FM  
MT