

CHEBNIK, G.V.

Relocating electric stations in geological prospecting. Razved
i okh. nedr. 30 no.3:58-59 Mr '64 (MIRA 18:1)

1. Severo-Kavkazskiy gorno-metallurgicheskiy institut.

CHEPNIK, G.V.

Electric power stations in geological prospecting. Izv.vys.ucheb.
zav.; geol.i razv. 7 no.8:107-111 Ag '65.

(MIRA 18:11)

1. Severo-Kavkazskiy gornometallurgicheskiy institut.

L 6334-66 EWT(m)/ETC/EWG(m)/EWP(t)/EWP(b) IJP(c) RDW/JD
ACCESSION NR: AP5019876 UR/0181/65/007/008/2524/2527

AUTHOR: Yefimova, B. A.; Kaydanov, V. I.; Moyzhes, B. Ya.; Chernik, I. A.

57

TITLE: On the band model of SnTe

SOURCE: Fizika tverdogo tela, v. 7, no. 8, 1965, 2524-2527

TOPIC TAGS: tin compound, telluride, electric conductivity, Hall effect, thermoelectric power, Nernst effect, impurity band

ABSTRACT: By introducing impurities (Sn, Te, Cl) the authors have succeeded in obtaining polycrystalline samples of p-SnTe with concentrations at $P_{300K}^* = 2.8 \times 10^{19} - 2.0 \times 10^{21} \text{ cm}^{-3}$, and determine the band model of SnTe for this range of concentrations, which was not investigated thoroughly in the past. Measurements were made of the electric conductivity, thermoelectric power, Hall constant, and the isothermal constant of the transverse Nernst-Ettingshausen effect, as well as the variation of the thermoelectric power in a magnetic field. The authors suggest that the results obtained provide some new evidence of the correctness of the semiconductor model of SnTe with two valence bands. The anomalously large Nernst-Ettingshausen effect can then be explained by supplementing this model with an account of the intraband scattering. Orig. art. has: 2 figures, 1 formula, and 1 table.

Card 1/2

0902 0022

L 6334-66

ACCESSION NR: AP5019876

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semicon-
ductors AN SSSR)

SUBMITTED: 12Mar65

ENCL: 00

SUB CODE: SS

NR REF SOV: 000

OTHER: 006

nw
Card 2/2

YEFIMOVA, E.A.; KAYDANOV, V.I.; MOYZES, B.S.; CHERNIK, I.A.

Model of SnTe band structure. Fiz. tverd. tela 7 no. 3:2524-2527 Ag '65. (MIRA 18:9)

1. Institut poluprovodnikov AN SSSR, Leningrad.

L 21227-66 EWT(m)/ETC(f)/EWG(m)/EWP(t) IJP(c) RDW/JD

ACC NR: AP6003823 SOURCE CODE: UR/0181/66/009/001/0295/0297

AUTHORS: Zhitinskaya, M. K.; Kaydanov, V. I.; Chernik, I. A.

ORG: Leningrad Polytechnic Institute im. M. I. Kalinin
(Leningradskiy politekhnicheskij institut)

TITLE: On the nonparabolicity of the conduction band of lead telluride

SOURCE: Fizika tverdogo tela, v. 8, no. 1, 1966, 295-297

TOPIC TAGS: conduction band, lead compound, telluride, Nernst effect, Etingshausen effect, carrier density, carrier scattering

ABSTRACT: The authors report the results of an investigation of the electric conductivity σ , the Hall constant R , the thermoelectric power α , and the coefficient Q of the isothermal transverse Nernst-Etingshausen effect, made on ten samples of n-type PbTe with concentrations 2.1×10^{18} -- $1.9 \times 10^{20} \text{ cm}^{-3}$ in the temperature interval 77 -- 300K. The samples were prepared by zone melting and subsequent

Card 1/2

L 21227-66

ACC NR: AP6003823

heat treatment in such a way that the investigated properties were not dependent on the method of sample preparation. Plots of the values of Q and of the dimensionless Nernst-Ettingshausen effect did not agree with the results expected from a simple parabolic model. The experimental results were analyzed on the basis of the theory developed by J. Kolodziejczak and S. Zukatynski (Phys. Stat. Sol. v. 5, 145, 1964) for an ellipsoidal nonparabolic band as applied to cubic crystals. And show that the effective mass of the carriers increases in the semiconductor with increasing concentration in accordance with Kane's model, generalized to the case of ellipsoidal equal-energy surfaces. From the analysis of the data it is concluded that the experimental dependence of the measured quantities on the carrier density can be attributed to a mixed scattering of the carriers by acoustic lattice vibrations and impurity ions. Orig. art. has: 2 figures and 2 formulas.

SUB CODE: 20/ SUBM DATE: 09Jun65/ ORIG REF: 001/ OTH REF: 004

Card *2/2 dda*

CHERNIK, L.N.; BABKIN, A.S.

Metasomatic granites in eastern Transbaikalia and some characteristics
of their genesis. Zap.Vses.min.ob-va. 92 no.2:159-172 '63.

(MIRA 16:5)

1. Leningradskiy gornyy institut.

(Transbaikalia--Metasomatism (Geology))

(Transbaikalia--Granite)

BUNIN, A.Ya., kand.med.nauk; YAKOVLEV, A.A., nauchnyy sotrudnik;
POZHARSKAYA, A.M., kand.khim.nauk; CHERNIK, L.Ye., nauchnyy
sotrudnik; FINKEL'SHTEYN, M.Z., kand.khim.nauk; TIMOKHIN, I.M.,
kand.khim.nauk

Method for increasing and prolonging the hypotensive action
of pilocarpine. Vest.oft. no.4:63-65 '61. (MIRA 14:11)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut glaznykh
bolezney imeni Gel'mgol'tsa (for Bunin, Yakovlev). 2. Vsesoyuznyy
nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut
imeni S. Ordzhonikidze (for Pozharskaya, Chernik). 3. Institut
neftekhimicheskoy i gazovoy promyshlennosti imeni I.M. Gubkina
(for Finkel'shteyn, Timokhin).

(PILOCARPINE)

POPOV, Anatolii Vasil'yevich; ~~CHERNIK, R.I., red.~~; POPOV, V.N.,
tekh. red.

Anatolii Tikhonovich Asotikov. Tambov, Tambovskoe knizhnoe
izd-vo, 1960. 17 p. (MIRA 16:3)
(Asotikov, Anatolii Tikhonovich)
(Rzhaksa District—Agricultural workers)

CHERNIK, T.P.

Characteristics of Bact.radiobacter. Trudy Vses. inst.sel'khoz.
mikrobiol. 13:74-86 '53. (MLRA 8:1)
(Radiobacter)

CHEERNIK, T. B.

"Study of a Bacterium of the Type Bacterium Radiobacter, Obtained From the Root System of Flax and Wheat." Cand Biol Sci, Inst of Microbiology, Acad Sci Latvian SSR, Riga, 1955. (KL, No 11, Mar 55)

So: Sum No 670, 29 Sept 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)

BONDARENKO, G.A. (Moskva); ~~CHERNIK, T.P. (Moskva)~~

Digestion in the rumen of ruminants. Usp.sovr.biol. 42 no.2:229-248
S-0 '56. (MIRA 9:11)
(RUMINATION)

CHERNIK, T.P.; KRIVISKIY, A.S.

Induction of mutations by ultraviolet irradiations and nitrous acid in the extracellular phage FX174. Genetika no.2:39-46
Ag '65. (MIRA 18:10)

1. Institute of Radiation and Physico-Chemical Biology,
Academy of Sciences of the U.S.S.R., Moscow.

BRESLER, S.Ye.; KRIVISKIY, A.S.; PERUMOV, D.A.; CHERNIK, T.P.

Comparative study of the mutagenic effect of ultraviolet radiation
on *Bacillus subtilis* cells and transforming DNA. Genetika no.5:
53-60 N '65. (MIRA 19:1)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad i
Institut molekulyarnoy biologii AN SSSR, Moskva. Submitted February
5, 1965.

1966, Chernik
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KROL', E.G., inzh.; KHOKHLOVA, A.N., inzh.; BEGLYAROV, S.A., inzh.,
rukovoditel' raboty; IGNATYUK, G.L., glavnyy red.; KAGAN, G.S.,
zamestitel' glavnogo red.; GANKIN, M.Z., red.; DEVILLERS, B.P.,
red.; ZHEREBTSOV, V.V., red.; ZHUKOV, G.A., red.; KREMER, Ye.S.,
red.; OFFENGENDEN, S.R., red.; PAVLOV, Ye.L., red.; PETROVSKAYA,
I.V., red.; FAYNTSIMMER, V.M., red.; FROG, N.P., red.;
CHERNIKEVICH, L.A., red.; SHAPAYEV, A.M., red.

[Special operating conditions of irrigation pumping stations.]
Spetsial'nye rezhimy orositel'nykh nasosnykh stantsii. Moskva,
Giprovdkhkh, 1964. 136 p. (Moscow. Vsesoiuznyi proektno-
izyskatel'skii i nauchno-issledovatel'skii institut Giprovd-
khkh. Trudy, no.27). (MIRA 19:1)

1. Nachal'nik otdela nasosnykh stantsiy Vsesoyuznogo gosudarst-
vennogo proyektno-izyskatel'skogo i nauchno-issledovatel'skogo
instituta vodokhozyaystvennogo stroitel'stva (for Beglyarov).

CHERNIKEVICH, L.A.

SUBJECT: USSR/Melioration

99-3-7/7

AUTHOR: Chernikevich, L.A., Engineer

TITLE: "Typical Projects for Melioration Construction."
(Tipovyye proyekty dlya gidromeliorativnogo stroitel'stva)

PERIODICAL: Gidrotekhnika i Melioratsiya, 1957, # 3, pp 55-65, (USSR)

ABSTRACT: A large number of typical projects for melioration has been developed by the Ministry of Water Economics and the Ministry of Agriculture. Together with the typical projects are forwarded cost estimates. A list of typical projects, approved prior to Jan 1957 by USSR Ministry of Agriculture is given below. Projects which were prepared and approved in 1955-56 by GIDROVODKHOZ, ROSGIPROVODKHOZ, LENGIPROVODKHOZ and others are superior to the previous ones. Typical projects which are being subjected to further testing have a limited approval period of 2 years. For timely reproduction and distribution a special printing department has been established in 1956.

Typical projects, approved in 1955-56 for melioration use are:

Card 1/2

I. Gates, sluices, flumes, and driveways over irrigation

TITLE:

99-3-7/7

"Typical Projects for Melioration Construction".
(Tipovyye proyekty dlya gidromeliorativnogo stroitel'stva)

- systems of prefabricated reinforced concrete or concrete;
II. Dams, spillways, gates, floodgates and siphons;
III. Locks for hydro-installations;
IV. Water supply installations for farms;
V. Water - lifting devices;
VI. Experimental water-lifting devices for ranches;
VII. Typical schemes and standard cross sections;
VIII. Manuals and Catalogs;
IX. Typical installations for irrigation systems.

The article contains 1 table (9 pages)

ASSOCIATION: Ministry of Agriculture of the USSR

ГОСТРОЙ СССР - GOSTROY SSR
ГЛАВВОДХОЗ СССР - GLAVVODKHOZ SSR

PRESENTED BY:

SUBMITTED:

AVAILABLE: At the Library of Congress.

Card 2/2

AUTHOR: Chernikevich, L.A., Engineer

SOV/99-58-11-9/9

TITLE: ~~_____~~
The Mechanized Uprooting of Jungles on Ceylon (Mekhanizatsiya raskorchevki dzhungley na Tseylone)

PERIODICAL: Gidrotekhnika i melioratsiya, 1958, Nr 11, pp 62 - 64 (USSR)

ABSTRACT: In 1957, five Soviet specialists visited the island of Ceylon to study methods of the mechanized removal of primeval jungle. The machines used and methods applied are described. The costs of preparing one hectare of forest for the growing of agricultural crops is given. There are 4 photos.

Card 1/1

USCOMM-DC-60467

BEREZINSKIY, A.R., prof., doktor tekhn.nauk; SOKOLOVA, V.F., mladshiy nauchn.sotrudnik; ALIPOV, V.V., mladshiy nauchn.sotrudnik; Prinimali uchastiye: CHERNIKEVICH, L.A., inzh.; SHEVYAKOV, M.N.; TSHKPKB, V.F., inzh.; GRISHIN, M.M., prof., doktor tekhn.nauk, retsenzent; SPANKEVICH, V.I., inzh., red.; BORSHCHEVSKAYA, N.M., red.izd-va; MEDVEDEV, L.Ya., tekhn.red.

[Using precast reinforced concrete in hydraulic engineering structures] Primenenie sbornogo zhelezobetona v gidrotekhnicheskikh sooruzheniyakh. Pod red. A.R.Berezinskogo. Leningrad, Gos.izd-vo lit-ry po stroit., arkhitekt. i stroit.materi-alam, 1959. 430 p. (MIRA 12:8)

1. Giprovodkhoz (for Chernikevich). 2. Gidroyekt (for Shevyakov).

(Hydraulic engineering)

(Precast concrete construction)

15(6),25(5)

SOV/99-59-7-1/9

AUTHOR: Chernikevich, L. A., Engineer

TITLE: Means of Cost Reduction of Prefabricated Reinforced Concrete Hydraulic Installations in Land Melioration Works

PERIODICAL: Gidrotekhnika i Melioratsiya, 1959, Nr 7, pp 3-9 (USSR)

ABSTRACT: Until 1955 the use of prefabricated reinforced concrete in land reclamation development amounted to about 2% of the total consumption of concrete. However, over the last three years this use has sharply increased and amounted in 1958 to about 20% of the total concrete consumption. At the present time there are about 130 different types of reinforced concrete structures required for construction of various installations used in land reclamation, and this figure shows a steady tendency to increase. The first step to take in order to cut down the cost of these prefabricated reinforced concrete structures would be to standardize their types and reduce their number. The reinforced concrete, blocks and pipes, which are the main components used in land reclamation development, should be unified as much as possible.

Card 1/3

SOV/99-59-7-1/9

Means of Cost Reduction of Prefabricated Reinforced Concrete Hydraulic Installations in Land Melioration Works

Particularly the possibility should be envisaged of using the strained concrete constructions instead of the unstrained. The use of the first type gives an economy of 26-50% (on metal) and 5-10% (on concrete), as compared to the unstrained constructions. It was used, until lately, for reinforcing prefabricated concrete blocks, the hot-rolled round steel with a fluidity limit of 2850 kg/cm². At present a proposition was made to replace it with the cold-flattened armature with a fluidity limit of 3500 kg/cm². Through application of such armature, the consumption of steel will be reduced by 10-20%. For heavy pipes with a diameter of 120 to 150 cm it is recommended to reinforce their armature by 17-22%, but to diminish the concrete volume by 27-31%. As a result, the cost of such pipes will be cut down by 22%. The thickness of protective coats on thinwalled reinforced concrete components should be reduced to 2 cm instead of 3 cm, as previously used. This will enable cutting down by 3-10% the volume of concrete used in prefabri-

Card 2/3

SOV/99-59-7-1/9
Means of Cost Reduction of Prefabricated Reinforced Concrete
Hydraulic Installations in Land Melioration Works

cated structures. For additional protection of the armature against corrosion, and the concrete against aggressive action of water, the hydro-insulation should be used; such an insulation is accomplished by coating the concrete surface with a hot bitumen solution in gasoline or by impregnating concrete blocks with it. The realization of the above methods will permit reduction already within the next 2-3 years of the cost of prefabricated reinforced concrete structures, an improvement of their quality, less cement, steel and timber consumption and labor and additional land reclamation development. There is 1 table.

ASSOCIATION: Giprovodkhoz MSKh SSSR (Chief Administration of the Water Economy of the Ministry of Agriculture of the USSR)

Card 3/3

VIMOKUR, Ya.Ye., inzh.; CHERNIKOVICH, L.A., inzh.

Using precast reinforced concrete in hydraulic developments;
at the seminar in the "Water management" pavilion, Exhibition
of Achievements of the National Economy of the U.S.S.R. Gidr.
i mel. 15 no.2:60-63 F '63. (MIRA 16:4)

(Hydraulic engineering--Congresses)
(Precast concrete construction)

SHUBLADZE, K.K., kand. sel'skokhoz. nauk; VINOKUR, Ya.Ye., inzh.;
CHERNIKEVICH, L.A., inzh.

Production and use of precast reinforced concrete in irrigation and drainage construction work. Gidr. i mel. 15
no.7:3-13 J1 '63. (MIRA 16:8)

1. Ministerstvo sel'skogo khozyaystva SSSR (for Shubladze).
2. Glavsredazirsovkhosztroy (for Vinokur).
3. Vsesoyuznyy gosudarstvennyy proyektno-izyskatel'skiy i nauchno-issledovatel'skiy institut Ministerstva sel'skogo khozyaystva SSSR (for Chernikevich).

YATSUNSKAYA, O.I.; CHERNIKEVICH, L.I.; SMIRNOV, N.A.; GUTNOV, R.B.;
ZUBREV, O.N.

Production of crumbling open-hearth furnace slag. Metallurg
10 no.5:20-21 My '65. (MIRA 18:6)

1. Metallurgicheskiy zavod "Serp i molot".

CHERNIKEVICH, L. P.

"Prefabricated Reinforced Concrete Hydraulic Installations in USSR Irrigation System," paper presented at the Third International Congress on Irrigation and Drainage, San Francisco, 29 Apr-4 May 1957

C-3,800,020

CHERNIKOV, K.F.

Report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb '60.

- 301. G. L. Pobe (Moscow): Investigation of the visco-plastic flow of stratified systems (laminates, slabs, etc.) by the differential method.
- 302. B. P. Davitov (Moscow): Experimental investigation of the strain distribution in soil layers under foundations of varying dimensions.
- 303. M. M. Zhukovskiy (Sverdlovsk): On the stability and vibrations of thin plates and shells.
- 304. I. E. Shvabman (Yerevan): On the theory of thick plates.
- 305. D. G. Eshelby (Izrael): Some biharmonic problems concerning thin laminas with reinforced edges.
- 306. P. A. Krot (Sverdlovsk): Reversed creep, a result to the creep loading theory of laminar and fibrous materials.
- 307. E. M. Babitskiy (Minsk): Minimal weight design in a reinforced beam designed for combined loading.
- 308. P. G. Babitskiy (Minsk) and G. M. Gerasimov: The stability of a reinforced beam under combined compression, tension, and bending.
- 309. L. A. Izrael (Moscow): The nonlinear equations of the general theory of shells for small elastic-plastic deformations and their linearization in the method of finite differences.
- 310. E. M. Babitskiy (Moscow): The physical foundations of the theory of reinforced shells.
- 311. E. M. Babitskiy (Moscow): Saint Venant's problem for reinforced shells.
- 312. E. M. Babitskiy (Moscow): On some properties of the beam theory of shells in the range of small elastic-plastic deformations.
- 313. E. M. Babitskiy (Moscow): A two-dimensional problem concerning elastic bodies with a reinforced surface.
- 314. E. M. Babitskiy (Moscow): On the forced transverse vibrations of a thin shell.
- 315. E. M. Babitskiy (Moscow): On the integration of the equations of the plane problem of plasticity.
- 316. E. M. Babitskiy (Moscow): Stability of reinforced shells under load.
- 317. G. L. Pobe (Moscow): On the limit equilibrium of shells of revolution.
- 318. E. M. Babitskiy (Moscow): A contribution to the formulation of problems concerning anisotropic plastic bodies.
- 319. E. M. Babitskiy (Moscow): Solutions of some three-dimensional problems of plasticity with application to the filling of metal.
- 320. E. M. Babitskiy (Moscow): The solution of some contact problems of elasticity (equation of Prandtl type).
- 321. D. I. Shvabman (Moscow): A heavy medium weakened by an elliptical cavity.
- 322. D. I. Shvabman (Moscow): The method of integral equations in static problems of elasticity.
- 323. E. M. Babitskiy (Moscow): Creep of non-uniformly heated bodies.
- 324. E. M. Babitskiy (Moscow): Anomalous sections of a perfectly plastic medium.

CHERNIKOV, G., podpolkovnik; MERINYUKOV, A., kapitan

Political lessons in service troop units. Tyl i snab.Sov.Voor.Sil
21 no.3:27-30 M^r '61. (MIRA 14:6)
(Russia--Army--Education, Nonmilitary)

VENIKOV, V.A.; TELESHEV, B.L.; CHERNIKHOV, A.M.; IOKHVIDOV, E.S.;
GLAZUNOV, A.A. ; FEDCSENKO, R.Ya.; FIGNER, L.M. ; LERMAN,
D.N.; MEL'NIKOV, N.A.

I.S.Bessmertnyi; on his 60th birthday. Elektrichestvo no.10:
93 0 '63. (MIRA 16:11)

CHERNIKHOV, A.Ya.; MARGARITOVA, M.F.

Emulsion polymerization in the presence of sulfonated polystyrene.
Vysokom.soed. 6 no.2:227-230. F '64. (MIRA 17:2)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.

CHERNIKHOV, V. S.; URITSKAYA, V. M.

Docent, Dnepropetrovsk Affiliate of State Planning Inst. for Metallurgical Plants,
-cl948-

"Utilization of steel to replace the cast-iron charging boxes of casting machines,"
Stal', No. 7, 1948

BRYUKHANENKO, B.A., dotsent, kand. ekonom. nauk; BEN¹, T.G.;
GERSHTENKERN, S.Ya.; KAGAN, I.S.; PRAVDIN, M.V.; STOJNIY, A.F.;
KHAKHALINA, A.N.; CHERNIKHOV, V.S.; KOBYLYAKOV, I.I., dotsent,
kand. ekonom. nauk; SHIRYAYEV, P.A., kand. ekonom. nauk

"Economic aspects of ferrous metallurgy" by N.P. Bannyi,
V.B. Brodskii, IA.A. Oblomskii, V.V. Rikman, L.N. Roitburd.
Reviewed by B.A. Briukhanenko and others. Stal' 22 no.6:
562-565 Je '62. (MIRA 16:7)

1. Dnepropetrovskiy metallurgicheskiy institut (for Ben¹,
Gershtenkern, Kagan, Pravdin, Stogniy, Khakhalina, Chernikhov).
2. Dneprodzerzhinskiy metallurgicheskiy zavod-vtuz (for
Kobylyakov).

(Iron industry)	(Steel industry)
(Brodskii, V.B.)	(Oblomskii, IA.A.)
(Rikman, V.V.)	(Roitburd, L.N.)

FOMIN, G.M.; LAPSHIN, L.Ya.; TARNAVSKIY, A.L.; KAGAN, I.S.; CHERNIKHOV, V.S.

Increasing the diameter of steel rods for wire drawing. Metallurg
8 no.8:24-26 Ag '63. (MIRA 16:10)

1. Magnitogorskiy kalibrovochnyy zavod i Nauchno-issledovatel'skiy institut metiznoy promyshlennosti (for Fomin, Lapshin, Tarnavskiy).
2. Dnepropetrovskiy metallurgicheskiy institut (for Kagan, Chernikhov).

CHERNIKHOV, V.S., kand. ekonom. nauk; KAMENSHCHIKOV, M.I.

Production and transportation of hot sinter. Met. i gornorud.
prom. no.1:11 Ja-F '65. (MIRA 18:3)

CP

7

Volumetric determination of beryllium and silicon in complex fluorides. Yu. A. Chernikhov and E. I. Gul'dina. *Zarodskaya Lab.* 4, 487-90(1953). The modification of the

method of Zvenigorodskaya and Gubova (*J. A. 28, 3775*) makes possible the titration of Be in NaBeF_4 in acid solns. and in the presence of H_2SiF_6 solns. The method is based on the different chem. stabilities of the complexes BeF_4^{2-} and SiF_6^{2-} . In a mixt. of NaBeF_4 with little Na_2SiF_6 , det. SiO_2 by adding to the soln. CaCl_2 and titrating with 0.5 N NaOH with methyl orange as indicator. Det. Be in the same soln. by dil. it to 250 cc. and titrating with phenolphthalein as indicator first in the cold and then with heating. In mixts. of NaBeF_4 with considerable Na_2SiF_6 , det. SiO_2 as above in sep. solns., and Be by filtering off the K_2SiF_6 pptd. with KCl , adding CaCl_2 and titrating first the traces of Na_2SiF_6 and then Be as above. For the detn. of Be in $2\text{BeO} \cdot 3\text{H}_2\text{O}$, dissolve 2.5 g. sample in 10-15 cc. of 50% HCl , dil., filter, add CaCl_2 , neutralize with NaOH to methyl orange and titrate Be as above. Chas. Blum

ASB 514 METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

1ST AND 7TH COLUMNS 10D AND 4TH COLUMNS

11

m

***Determination of Traces of Copper and Lead in Antimony, Tin, and Tin Babbit Metal by External Electrolysis.** Yu. A. Chernikbay and E. V. Shtutser (*Zavod. Lab.*, 1939, 8, 801-806; *Brit. Chem. Abs.*, 1944, [C], 3).---[In Russian.] The Collin-Sand apparatus (*Analyst*, 1931, 56, 90; *J. Ind. Metals*, 1931, 47, 350) is used, with minor modifications. 3-10 gram. of powdered sample of Sb are dissolved in 25-30 c.c. of conc. HNO₃, and the solution is evaporated almost to dryness, moistened with HNO₃, and evaporated again, and the final residue is dissolved in 10-15 c.c. HF. This solution is heated to eliminate HF and H₂O, the residue is moistened with HF, the latter expelled by heating, and the residue moistened with HF and heated again. The SbF₆ so obtained is dissolved in 25 c.c. H₂O, 2-3 c.c. HF are added, and the solution is heated to dissolve PbF₂. Excess of KMnO₄ is now added, followed by 4-5 c.c. of 10% aq. NH₄OH, HCl, and the volume is made up to 300 c.c. Aliquot parts of the solution are placed in an electrolyser, and Cu and Pb are deposited (Fe and Al anodes, respectively) and determined separately. Sb, being present as the stable complex in SbF₆⁻, does not interfere. The same procedure is applicable to the determination of Cu and Pb in commercial Sn and Babbit metals.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

E-Z

MATERIALS INDEX

COMMON ELEMENTS

OPEN

FROM LIBRARY NUMBER

1ST AND 2ND ORDERS PROCESS AND PROPERTIES INDEX 100 AND 6TH CROSS

7

Determination of lithium in light alloys. Yu. A. Chernikhov, T. A. Uspenskaya and R. S. Anan'ina. *Zhurnal Khim. i Metallurg. Lit.*

Lab. 0, No. 1, 28-33(1940).—For Mg-Li alloys contg. 0.08-0.2% of Li, dissolve a 0.25-g. sample in HCl (1:2), filter if necessary, and dil. to 100 ml. Evap. an aliquot part of the soln. (not over 10 ml., 0.025 g. of the alloy) on a water bath until a film is formed and add 5 ml. or more of a reagent prepd. by dissolving 30 g. of $Zn(AcO)_2 \cdot 6H_2O$ in 250 ml. of 90% $AcOH$ with heating to 35-40°, adding 30-5 g. of uranyl acetate, adding some $LiZn(UO_2)_2(AcO)_6 \cdot 6H_2O$, letting the soln. stand overnight and filtering before use (5 ml. of the reagent for pptn. of 1 mg. of Li). Mix the soln. for 2-3 min., let stand overnight, filter, wash 5-6 times each with 2 ml. of the reagent, wash 5-6 times each with 2 ml. of 95% alc. satd. with the triple Li salt, then wash with a little dry ether. Dry the residue for 5 min. at 80-90°, cool in a desiccator and weigh. The conversion factor for converting $LiZn(UO_2)_2(AcO)_6 \cdot 6H_2O$ to Li is 0.00456. For alloys contg. 0.04-0.08% of Li, dissolve 0.2-0.5 g. of sample in HCl (1:2), and evap. until a film is formed. Add 5-10 ml. of the reagent, mix until the white chloride crystals are dissolved and let stand for 30 min. Filter the residue of the triple salt, wash and dry as above, dissolve in a small amt. of HCl (1:90), evap. nearly to dryness, add 50-10 ml. of the reagent, mix, let stand for 30 min., filter, wash, dry and weigh. The amt. of Li pptd. must not be less than 0.2 mg. For the rapid detn. of Li in alloys contg. 0.2-2.0% of Li, dissolve 0.5 g. of sample in HCl (1:2), dil. to 100 ml., evap. an aliquot, not exceeding 20 ml. (100 mg. of Mg) and contg. not less than 0.2 mg. of Li, until a film is formed, add 5-10 ml. of the reagent, mix until the white chloride crystals dissolve, let stand for 30 min., filter, wash and weigh as above. If Al is present, evap. to dryness to ensure complete pptn. of Li. Li is pptd. quantitatively if Al does not exceed 80 mg. With larger amts. of Al considerable losses of Li occur. No Li is pptd. if the soln. contains 150 mg. or more of Al. The presence of Ni, Co, Zn, Cu, Fe and Cd does not interfere with the detn. Sixteen references. W. R. H

ASB-11A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS PROCESS AND PROPERTIES INDEX 100 AND 6TH CROSS

PROCESSES AND PROPERTIES INDEX

Volumetric and gravimetric determination of cerium and thorium by the iodate method. Yu. A. Chereushkov

1 and T. A. Uspenskaya. *Zhurnal Khim. Fiz.* 9, 276 (1940).—Ppt. the Ce by adding an equal vol. of a soln. contg. 100 g. KIO_3 + 333 ml. HNO_3 (d. 1.04) in 1 l. Under such conditions the final soln. should contain 5% by wt. of KIO_3 . Filter through a sintered glass filter, wash with HNO_3 soln. of KIO_3 3-4 times with small portions of 85% alc. and finally 1-2 times with ether. Dry for 10-15 min. at 40-45°, dissolve in acidified KI soln. and titrate the liberated I with 0.1 N thio-sulfate. For less than 1 mg. Ce filter through an asbestos filter, omit the washing with ether and titrate with 0.01 N thio-sulfate. The ppt. corresponds to $2Ce(IO_3)_2 \cdot KIO_3 \cdot 8H_2O$. Volumetric and gravimetric results agreed well. The detn. is not affected by most common elements and is not affected by sulfates, phosphates, oxalic and citric acids. Tartaric acid should not be present and Fe, Ag, Pb, Th, Zr, Ti, Mn and Th should be removed. The method is also applicable for detn. Th. The compn. of the Th ppt. is $4Th(IO_3)_4 \cdot KIO_3 \cdot 18H_2O$. If Ce and Th are both present, add a few drops of 3% H_2O_2 and ppt. as above, filter, wash and titrate. Add a small amt. of cryst. $KBrO_3$ to the filtrate to oxidize Ce to Ce^{IV} . Filter off the ppt., wash and titrate as usual. For the quant. sepn. of Ce and Th, one pptn. of Th is sufficient. For less than 2 mg. Th and large amts. of Ce reppns. are necessary. H. Z. Kowach

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

E2

PROCESSES AND PROPERTIES INDEX

7

Determination of antimony in antimony ores. Yu. A. Chernikboy and P. A. Kuladub. *Zavodskaya Lab.* 9, 407-8(1940).—The method consists of the decompn. of the ore with concd. H₂SO₄ followed by direct titration of the Sb in the soln. with bromate or permanganate in the presence of methyl orange or methyl red indicator. The method does not require the preliminary sepn. of Sb with H₂S because the Fe has no effect upon the detn. De-compn. with H₂SO₄ as applicable also to oxidized ores. The insol. residues after decompn. did not contain any Sb. The As is also titrated by this method and a correction may be required for this. In most cases however, this is unnecessary because the As content in Sb ores is insignificant. Small amts. of As can be removed completely by adding HCl to the soln. and boiling. B. Z. Kamich

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

E2

PROCESSES AND PROPERTIES INDEX

7

CA

Determination of indium by internal electrolysis. Yu. A. Chernikhov and E. V. Shtutser. *Zavodskaya Lab.* 9, 531-3(1940).—Introduce into a beaker a definite amt. of the In soln., 20-25 ml. of 0.1 N HCl or H₂SO₄, 10 ml. of 10% soln. of Rochelle salt and 10 mg. of NH₄Cl, dil. with water to 300 ml., heat to 70-75° and subject to internal electrolysis with Zn anodes. The In is deposited directly on a weighed Pt cathode, which is washed and weighed to det. the In. The optimum medium for detg. In is a soln. contg. a buffer mixt. of Na tartrate and HCl and having a pH of 3.5-3.8. The method can be used for the accurate detn. of small amts. of In (1-50 mg.) in the presence of Zn and metals of the 3rd group. Fe interferes only if more than 150 mg. is present in 300 ml. of soln. Zn, if present, should be as chloride. H. Z. Kamich

METALLURGICAL LITERATURE CLASSIFICATION

A 50-55 A

7

ca

Determination of molybdenum by internal electrolysis.
 Yu. A. Chernikhov and E. V. Shitser. *Zashchita*
Lab. 0, 723 8(1940).—Deposition of Mo on a cathode was
 made in dil. HOAc in the presence of NH_4Ac at pH
 3.5-4.0 by internal electrolysis at a temp. of 70-75° with
 Zn anodes. Any Fe^{3+} is first reduced to Fe^{2+} with
 $\text{NH}_4\text{OH.HCl}$ in the presence of a few drops of N.HCl .
 In the presence of large amts. of V the Mo should be det'd
 after the V has been ppt'd. with NH_4 together with Fe
 (OH).

|| Z. Kamich

ASS. S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

A. C. S.

Chemistry & Physics

Precipitation of aluminum with cupferron. V. M. ZVERZHOVSKAYA AND YU. A. CHIRAKHINOV. *Zvesti. Akad. Nauk SSSR Ser. Khim. Nauk*, 4 (4) 73-74 (1941).—Ta, Nb, Zr, Ti, Fe, and V are first precipitated in an acid medium with cupferron. The acid filtrate is carefully neutralized with ammonia and cooled. To the cooled neutral solution is added 20 ml. of an acetate buffer made up of 7 gm. $\text{CH}_3\text{COONH}_4$ and 2 ml. of CH_3COOH per 100 ml. In the resulting solution having a pH of 4 to 5, cupferron-aluminum complex is precipitated. The precipitate is filtered off and washed with cold 0.1% cupferron slightly acidified with CH_3COOH . The precipitate is ashed and ignited, the temperature being gradually increased to 1100° . This method was tried on pure salts and on various substances containing Al and proved satisfactory. M.Ho.

PROGRESSIVE AND PROPERTIES INDEX

7

Ca

Application of the iodate method to the separation and determination of the rare elements. T. A. Uspenskaya and Yu. A. Chernikhov. *Compt. rend. acad. sci. U. R. S. S. S. 228, 200-1 (1940)* (in English).--It is known that Ce and Th can be pptd. as $2Ce(IO_3)_2 \cdot KIO_3 \cdot 8H_2O$ and $4Th(IO_3)_4 \cdot KIO_3 \cdot 18H_2O$ and the ppts. made the basis of either a gravimetric or volumetric detn. of Ce and Th. Similar ppts. can be obtained with Zr and Ta. The Zr ppt. is $2Zr(IO_3)_2 \cdot KIO_3 \cdot 8H_2O$ and in the Ta ppt. $1Ta = 2IO_3$, although its exact compn. is not yet known. Cb is not pptd. by KIO_3 so that the reaction can be used for sepg. Ta and Cb. Details concerning the procedure are not given. W. T. H.

State Sci. Res. Inst. Rare and Minor Metals

ASB-11A METALLURGICAL LITERATURE CLASSIFICATION

RESONI SCHMITZ

RESONI SCHMITZ

PROCESSES AND PROPERTIES INDEX

1ST AND 2ND COLUMNS 3RD AND 4TH COLUMNS

ca

7

Determination of zirconium by the iodate method.
 Yu. A. Chernikoy and T. A. Uspenskaya. *Zavodskaya Lab.* 10, 948-51(1941).—(a) Content of Zr in soln. is in excess of 1 mg. If soln. contains 1-4 mg. Zr the vol. should not exceed 10 ml. Larger amts. can be pptd. from a vol. of 20 ml. Stir the cold soln. of $Zr(NO_3)_4$ in 5 N HNO_3 and add an equal vol. of a 10% soln. of KIO_3 in 5 N HNO_3 . The amt. of KIO_3 added should be at least 15-20 times that required theoretically. When the soln. has clarified (30-40 min. later), filter and wash 3-4 times with 15-20 ml. of 0.8% KIO_3 in 0.75 N HNO_3 . Then wash 3-4 times with 10-15 ml. of 95% KOH and then with 2-4 ml. of ether. Dry at 40-45° for 10-15 min. and wash off with a stream of water into a flask. Use a mixt. of 20 ml. of 2.5 N HCl and 10 ml. of 10% KI to dissolve any particles of iodate adhering to the walls of the crucible. Combine both portions and dissolve. Dil. to 100 ml. with water and titrate the liberated iodine with 0.1 N thiosulfate in presence of starch. (b) Content of Zr in soln. is less than 1 mg. The vol. of soln. should not exceed 2 ml. Evap. the soln. to dryness on a water bath, dissolve in 2 ml. HNO_3 (1:2), and add 2 ml. of I. Filter after 30-40 min. through asbestos, wash 3-4 times with wash water (using a total of 10-15 ml.), then with small amts. of 95% KOH (using a total of 10-15 ml.). Dissolve with 10 ml. HCl (1:4) on the filter, pour a mixt. of 10 ml. HCl (1:4) and 2 ml. of 4% KIO_3 on the filter and apply suction. Titrate the liberated iodine with 0.1 N thiosulfate in presence of starch. Detns. of less than 1 mg. Zr show an error of -15%, while for over 1 mg. Zr the error is 2.0%. The ppt. corresponds to $Zr(OH)_4 \cdot 4H_2O$.
 H. Z. Kamich

ADD: ILLA METALLURGICAL LITERATURE

1ST AND 2ND COLUMNS 3RD AND 4TH COLUMNS

PROCESSES AND PROPERTIES METALS

CA

7

A review of contemporary analytical chemistry of tantalum and columbium. Yu. A. Chernikhov and V. G. Goryushina. *Zavodskaya Lab.* 11, 877-881(1973). The paper discusses the sepn. of earth acids (pentoxides of Ta and Nb) from other elements and gravimetric methods of their detn., volumetric methods for the detn. of Ta and Nb, color reactions for Ta and Nb and colorimetric methods of their detn., analysis of ores and concentrates containing Ta and Nb, and analysis of ferro alloys and steel containing Ta and Nb. 52 references. W. R. Hunt

ABSTRACTS OF METALLURGICAL LITERATURE CLASSIFICATION

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U.S. DEPARTMENT OF COMMERCE

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ANN ARBOR MI 48106

Use of bivalent chromium solution for the volumetric determination of tungsten. Yu. A. Chernikha, and V. G. Goryushina. *Zavodskaya Lab.* 12, 367-411(10/6).

The effect of various complex-forming acids on the reduction of W by Cr²⁺ was studied. W, in the form of WCl₆, reacts with H₂PO₄, H₂AsO₄, H₂SO₄, H₂SO₃, H₂BO₃, and other acids, to form such heteropoly complexes as R₃[P(W₅O₂₄)₆] or R₃[Si(W₅O₂₄)₆]. Small quantities of H₂PO₄ in HCl soln. decreased the potential jump at the equivalent point, but did not interfere with the detn. of W. The presence of large quantities of H₂PO₄ in HCl soln. interfered with the detn. of the end point. H₂SO₃ had no effect on the reduction of W by Cr²⁺. Addn. of citric, tartaric, malic, and formic acids to concd. HCl solns. had no effect on the reduction of W. Decreasing the concn. of HCl in the soln. resulted in the formation of W blue during the titration. No quant. reduction of W⁶⁺ to W³⁺ was obtained. A complete reduction of W⁶⁺ was obtained with HCl soln. contg. H₂C₂O₄. The concn. of HCl required to keep W in the reduced state can be

decreased by adding H₂SO₃ to the soln. Titration of H₂C₂O₄ solns. of W with Cr²⁺ resulted in quant. reduction of W⁶⁺ to W³⁺ and was accompanied by a considerable jump in the potential at the equivalent point. The presence of Fe²⁺, Cr³⁺, and Cu²⁺ in concd. HCl soln. did not interfere with the redox-titric titration of W by Cr²⁺ soln. In the presence of Mo, the method can be used only to det. the sum of W and Mo. In H₂C₂O₄ soln. W is titrated together with Fe²⁺. Solns. of Cr²⁺ can be used to reduce W, which is then titrated with an oxidizing agent. The method of volumetric detn. of W was checked with a no. of substances contg. large quantities of W (scheelite concentrate, W concentrate, and ferro-tungsten). The results of detns. by titration with CrCl₂ by subsequent oxidation with K₂Cr₂O₇, and by acidimetric titration were, resp.: scheelite concentrate 79.40-80.00, 79.30-79.77, and 79.30-80.02%; W concentrate 69.12-69.68, 69.57-70.01, and 69.25-69.97%; ferrotungsten 74.10-74.10, 73.6-73.6, and 73.2%. Fourteen references. W. R. Henn

ASD-314 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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PROCESSED AND PROPERTIES INDEX

7

CA

The contemporary state of the analytical chemistry of tungsten. Yu. A. Chernikhin and V. G. Goryushina of Zvezdinka Lab. 12, 517-28(1040). - A very complete review with 07 references. W. R. Heun

ASD-51A METALLURGICAL LITERATURE CLASSIFICATION

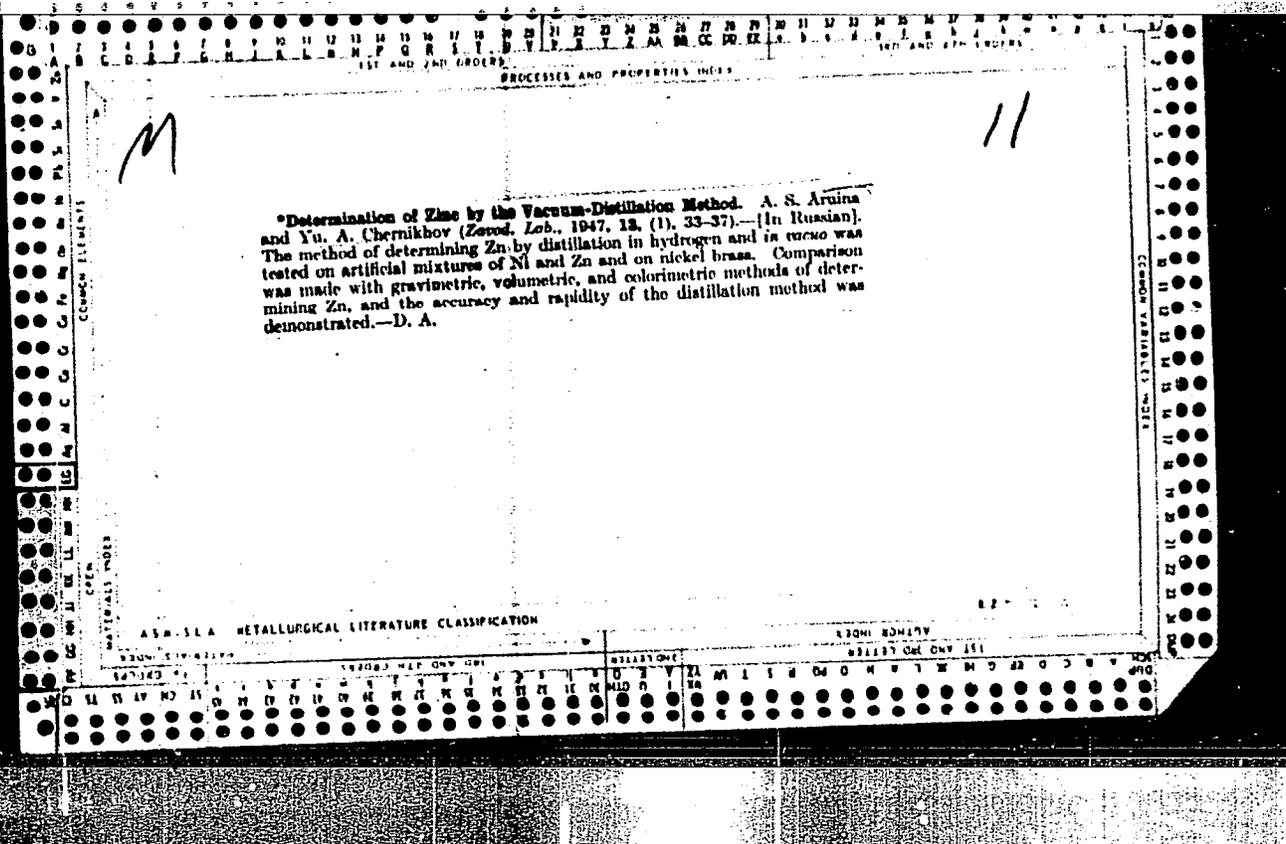
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CA

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Colorimetric determination of silica in tungstic acid.
 Yu. A. Chernikova and B. M. Dobkina. *Zavodskaya
 Lab.* 13, 622-0(1946) (in Russian). The analysis can be
 based on the yellow color of silicomolybdate or the
 Mo-blue color caused by reducing the complex. In a
 soln. contg. 200 mg. Mo and 100-600 γ Si, good results
 were obtained by the first method after carefully neu-
 tralizing with 2 N HCl to pH = 4 and adding 8-10 drops
 of excess acid. With higher acidity, there was pptn. of
 WO_3 which carried SiO_2 with it. In the second method
 better results were obtained with 25 ml. of soln. contg.
 3 ml. of 10% AcOH and 3 ml. of 5% $(NH_4)_2MoO_4$ if not
 more than 80-90 γ of SiO_2 was present and not over 50
 mg. WO_3 . The procedure was the same with both
 methods except for the final addn. of 2 ml. of satd. NaOH,
 in the second method. The results are satisfactory when
 the measurements are made by visual comparison with
 standards. Not more than 0.1 mg. of P should be present
 with 0.18 mg. SiO_2 or 0.5 mg. As. N. Thou

ADDITIONAL DETAILING LITERATURE CLASSIFICATION



15

***244. Determination of Fluorine in Metallic Preparations.**
(In Russian.) **Iu. A. Chernikhov and E. I. Vendel'shteyn. Factory Laboratory (U.S.S.R.), v. 13, July 1947, p. 815-816.**

Describes a special method involving fusion with Na₂CO₃, suitable for the zirconates, which often have to be analyzed in connection with the production of metallic zirconium.

1ST AND 2ND ORDERS
PROCESSES AND PROPERTIES INDEX
3RD AND 4TH ORDERS
COMMON ELEMENTS
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METALLURGICAL LITERATURE CLASSIFICATION
E-2 (REV. 1-15-54) THE NATIONAL BUREAU OF STANDARDS
E-2 (REV. 1-15-54) THE NATIONAL BUREAU OF STANDARDS
E-2 (REV. 1-15-54) THE NATIONAL BUREAU OF STANDARDS

11

M

PROCESSING AND PROPERTIES INDEX

(1) AND (2) COPIES

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USE OF BIVALENT CHROMIUM SOLUTION FOR THE VOLUMETRIC DETERMINATION OF TUNGSTEN. Yu. A. Chernikhov and V. G. Goryashina (Zavod. Lab., 1946, 12, 397-411; C. Abs., 1947, 41, 1172) (In Russian) The effect of various complex-forming acids on the reduction of W by Cr^{+2} was studied. w, in the form of W_2O_7 ---, reacts with H_3PO_4 , H_3AsO_4 , H_2SiO_3 , H_2GeO_3 , H_2BO_3 , and other acids, to form such heteropoly compounds as $H_7(P(W_2O_7)_6)$ or $Re(SiW_2O_7)_6$. Small quantities of H_3PO_4 in HCl solution decrease the

ASIA-51A METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX

COMMON ELEMENTS

COMMON VARIANTS INDEX

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CHERNIKHOV, YU. A.

USSR/Electricity
Electrodes - Coatings
Electrolysis

Jan 1948

"Internal Electrolysis Using Protective Films," Yu.
A. Chernikhov, G. A. Bol'shakova, State Inst Fine and
Rare Metals, 9 pp

"Zavod Labor" Vol XIV, No 1

Reports results of tests carried out by means of new
method in which anode is directly covered by a
colloidal film, thus greatly increasing range within
which this apparatus can be utilized. It also in-
creases amount of precipitate produced.

61F10

7

PROCESS AND PROPERTIES INDEX

Determination of tin in tin concentrates by internal electrolysis. Yu. A. Cherkov and R. N. Roshchina. *Zavodskaya Lab.* 16, 383-6(1948).--Treat 0.1-0.2 g. sample with 10 ml. of concd. HCl and 3 ml. of concd. HNO₃. Evap. nearly to dryness, add 5 ml. concd. HCl, heat, dil. with water to 100 ml., and again heat to boiling. Filter and wash the residue several times by decantation with hot water contg. a little HCl. Treat the residue 3 times with 5-ml. portions of NH₄OH, adding hot water each time. Wash the residue several times with hot water, dry, and calcine slightly. Heat the residue in a Ni crucible with 10 times as much Na₂O₂. Leach the cold melt with dil. HCl, boil to destroy Na₂O₂ completely and to expel Cl, cool, add 40% NaOH until a turbidity forms, and then dissolve it in a few drops of HCl. Add 1 g. NH₄OH.HCl, dil. with water to 200 ml., add 2 ml. of 4 N HCl and, while stirring the soln. with air or CO₂, subject it to inner electrolysis for 3 hrs. in an app. having a Zn anode protected with a coating of collodion (C.A. 43, 8285d). The presence in the electrolyte of up to 20 mg. of Fe⁺⁺⁺ does not interfere but it should be reduced with NH₄OH prior to electrolysis since its electrolytic reduction precedes the sepa. of Sn on the cathode if much Fe⁺⁺⁺ is present. W. is partially co-pptd. during inner electrolysis but the amt. deposited drops as the amt. of oxalic acid increases; in the presence of 100 mg. oxalic acid, there is no sepn. of W. If Cu and As are present in the concentrate, they are removed as above, and washing with NH₃ removes part of the H₂WO₄. B. Z. Kamich

State Sci. Res.
Inst. Rare and
Fine Metals

ASB-513 METALLURGICAL LITERATURE CLASSIFICATION

INDEX NUMBER

CLASSIFICATION

SEARCHED ON NOV 1951

CA

Use of sodium diethyldithiocarbamate in analytical chemistry. Yu. A. Chernikhov and D. M. Doshkina. *Zavodskaya Lab.* 15: 1143-9 (1949). All elements capable of forming water-stable sulfides yield difficultly sol. products with the reagent; the converse is also true and the stability of the dithiocarbamates parallels that of the sulfides; thus Ga, Te, and Re form stable derivs. Many elements are almost completely extd. with H_2O_2 from aq. soln. in the form of diethyldithiocarbamates; at pH 3 this takes place with Ag, Hg, Pb, Bi, Cu, Cd, Mo, Se, Te, Fe, Mn, Ni, V, Co, Zn, In, Ga, and Tl; Bi, Pb, and Ni are removed even from very acid solns. W is extd. at pH 1-1.5, and Re from coned. HCl. For complete removal of Fe, Tl, Ga, and Mn, an excess of Na diethyldithiocarbamate is necessary. The colors of the pptts. are given. G. M. Kosolapoff

CA

7

Determination of vanadium and aluminum with sodium diethyldithiocarbamate. Yu. A. Chernikhov and B. M. Bobkina, *Zhurnal Obshchey Khimii*, 1950, 23, 1673-1674. The diethiocarbamate of V is quant. extd. from acid (0.1-0.2 N) solns. by EtOAc or CHCl_3 . The reverse process cannot be accomplished by HNO_3 alone, but only on addn. of H_2O_2 or HCl ; ams. over 2 y are readily isolated, which permits the sepn. from Al, alk. earths, and other interfering elements which complicate the colorimetry of V. The actual detn. is done according to Vinogradov (*C.A.* 26, 2138). The HNO_3 treatment is best done with 10 ml 1:1 HNO_3 ; H_2O_2 in 10-12 drops ams. with 15-32 ml CHCl_3 ext., after removal of Al by shaking the ext. with 10 ml 1:20 HNO_3 . G. M. Kosolupoff

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948. Compleximetric determination of aluminium in silicates and glass. Yu. A. Chernikoy, B. M. Dobkina and I. M. Icheronokhara. ~~Turch. Lab.~~ 1953, 21 (8), 638-642. — To determine Al in silicates, 0.1 to 0.2 g is mixed with 3.5 to 5 g of NaOH and 0.5 g of Na₂O₂ in a nickel crucible, which is heated gently to fuse the NaOH and then placed in a muffle-furnace at 600° to 700° C for 15 to 20 min. The melt is extracted with 100 ml of 3.5 per cent. NaOH solution, and the solution is mixed with 0.2 to 0.6 ml (according to the concn. of Fe and Mn) of 5 per cent. sodium sulphide solution. After a few min. the solution is filtered into a 250-ml calibrated flask and the ppt. is washed 6 or 7 times with 3.5 per cent. NaOH solution. The solution is made up to the mark and an aliquot portion containing about 6 to 8 mg of Al₂O₃ diluted to 100 ml with water is mixed with 5 to 10 ml of 0.05 M EDTA (disodium salt) (I), so that the excess is 2 to 3 ml and 4-50 per cent. of the amount introduced. The solution is neutralised to Congo red with HCl, and 5 ml of 2 M chloroacetic acid, 10 ml of M sodium acetate and 1.5 ml of 0.1 per cent. alizarin red S solution are added. The excess of I is titrated with 0.05 M thorium nitrate solution from a micro-burette. The thorium nitrate is standardised against the I under the same conditions and the I is standardised against 0.1 N CaCl₂. One ml of 0.05 M I is 2.572 mg of Al₂O₃. When Ti is present its interference can be prevented by including 15 to 20 mg of CaO in the fusion mixture; only insignificant amounts of Ti then go into solution. Up to 50 mg of SiO₂ do not interfere. G. S. SMITH

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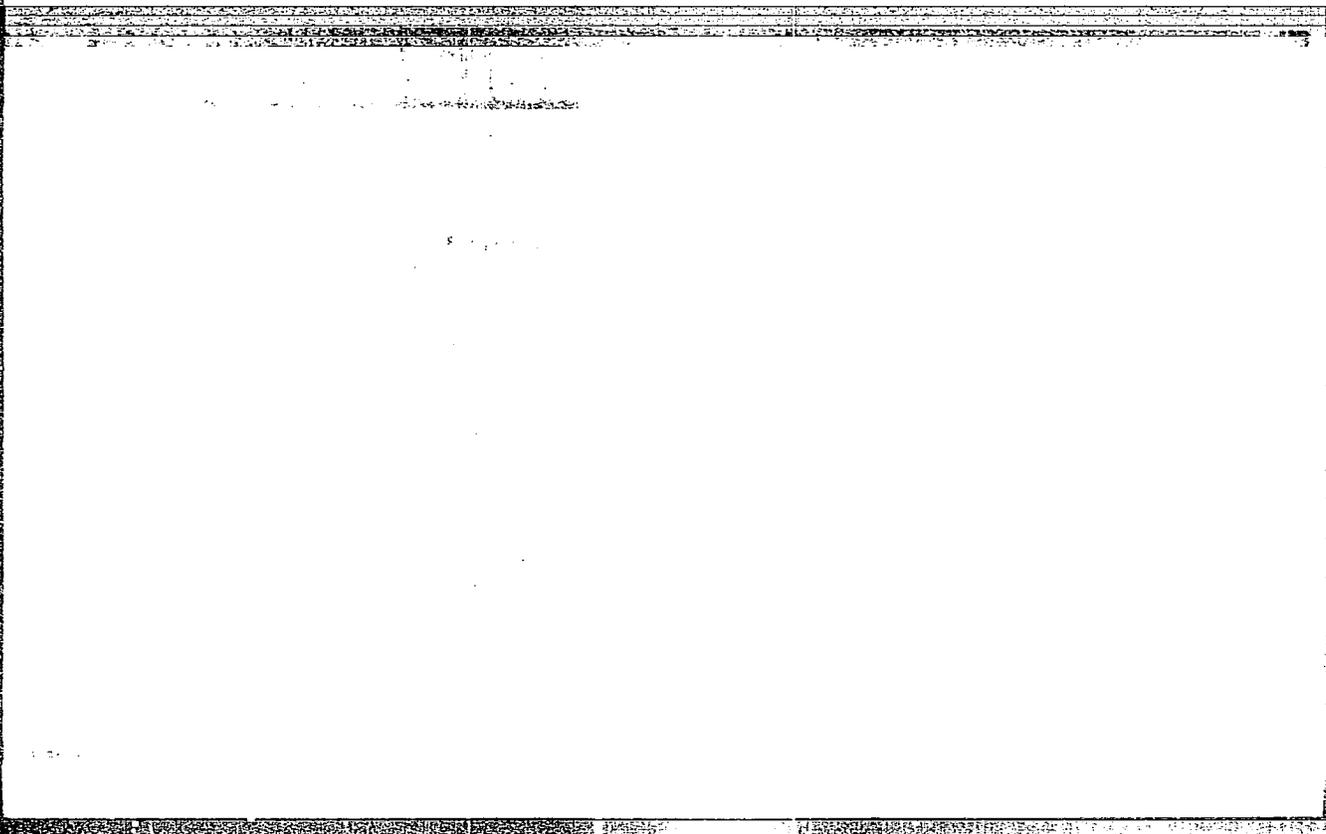
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Chernikhov, Yu. A.
AUTHOR: Chernikhov, Yu. A., and Kuchmistaya, G. I.

TITLE: Detection of Zirconium in Ores by the Iodate Method (Opredeleniye tsirkoniya v rudakh iodatnym metodom)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, No. 1, pp. 14-18 (U.S.S.R.)

ABSTRACT: Zirconium, similarly to thorium and cerium, in an acid medium, is found to form an iodate, which is difficult to dissolve. Davis (1) used this principle for precipitating zirconium from aluminum and Beans and Mossman (2) for separating it from titanium. Zirconium iodate, it is claimed, was first obtained by the authors as a stable compound (4) and used similarly to cerium and thorium (5) for final volumetric detection of zirconium. Classen's (6) claim that zirconium iodate is not stable is refuted. The authors (4) performed experiments using a solution with 1/3 by volume free nitric acid and 15- to 20-fold excess of potassium iodate. A table is given to show the results. Two further tables are given and respective captions are: determination of the composition of zirconium iodate deposited by potassium iodate from nitric acid solutions and determination of zirconium iodate in ores by the

Card 1/2

Detection of Zirconium in Ores by the Iodate Method

iodate method (%). By the methods described, the zirconium is precipitated either in an amorphous or crystalline state, $2Zr(IO_3)_4 \cdot KIO_3 \cdot 8H_2O$ and $2Zr(IO_3)_4 \cdot 5KIO_3$. The zirconium is precipitated from the solution free of other elements by potassium iodate. There are 9 references, of which 5 are Slavic.

ASSOCIATION:

PRESENTED BY:

SUBMITTED:

AVAILABLE:

Card 2/2

AUTHORS: Chernikhov Yu.A., Melamed, Sh.G., Dobkina, B.M. 32-24-6-5/44

TITLE: The Determination of Microquantities of Titanium on a Niobium Background (Opredeleniye mikrokolichestv titana na fone niobiya)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 6, pp 677-679 (USSR)

ABSTRACT: As niobium forms a colored complex with hydrogen peroxide in a highly acid medium, whereas the titanium complex is formed in a weakly acid medium, suitable methods of determination were developed by Schoeller (Ref 2) as well as by Palilla, Adler and Hiskey (Ref 3). It is proved in the course of the present paper that if the ratio between Nb_2O_5 : TiO_2 exceeds 100 : 1, it is not possible to determine titanium. The experiments carried out together with Ye.I.Petrova showed that much too high a value is obtained for titanium, which is explained as being due to the absorption of niobium; different wavelengths are used in this connection, and thus the peroxide method is described as being unsuited for the determination of small quantities of titanium in niobium. For the determination of titanium beside niobium also the application of chromotropic acid is recommended; in view of existing discrepancies in the instructions, experiments were duly carried out.

Card 1/2

The Determination of Microquantities of Titanium
on a Niobium Background

32-24-6-5/44

It was found that by evaporation-fractionation of titanium on carbon in the light arc sensitivity is increased but reproducibility is diminished; it is possible to use different wavelengths. This spectral method was worked out with mechanically mixed standard samples, and it may be seen from the diagram of calibration given that the error limit is $\pm 1.5\%$ with a degree of sensitivity of 0.002%. There are 2 figures, and 5 references, 0 of which are Soviet.

ASSOCIATION: Gosudarstvennyy institut malykh i redkikh metallov (State Institute of Tracer and Rare Metals)

1. Titanium--Determination
2. Niobium--Chemical effects
3. Titanium--Spectra

Card 2/2

AUTHORS: Chernikhov, Yu. A., Cherkashina, T. V. SOV/32-24-9-4/53

TITLE: The Analysis of Antimonous and Arsenous Indium and Arsenous Gallium (Analiz sur'myanistogo i mysh'yakovistogo indiya i mysh'yakovistogo galliya)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 9, pp 1057-1058 (USSR)

ABSTRACT: The alloys analyzed in the present paper have been produced from metals of high purity. In the analysis, a heated mixture of sulfuric acid and ammonium sulfate was used as a solvent. In the solutions thus obtained, antimony could be titrated by the bromatometric method. Arsenic was determined in the same way. The presence of indium and gallium did not interfere with the determinations, as each of these elements has not more than one valence stage. A table of the analyzed samples is given. The titrations were carried out potentiometrically or visually, in the presence of methyl red. A mixture of rhenium and antimony, corresponding in its composition to the intermetallic compounds ReSb, could also be analyzed by the procedure described. Although rhenium has several valences, it did not interfere with the determination. A table of results is given. A determination

Card 1/2

SOV/32-24-9-4/53

• The Analysis of Antimonous and Arsenous Indium and Arsenous Gallium

method of this kind, developed at the same time by other authors (Ref 1), is more complicated and time-consuming. A description is given of the analysis procedure in connexion with the present method.
There are 2 tables and 1 reference.

ASSOCIATION: Gosudarstvennyy Nauchno-issledovatel'skiy institut redkikh i malykh metallov (State Scientific Research Institute of Rare and Trace Metals)

Card 2/2

5(2), 5(3), 5(4)

SOV/75-14-2-11/27

AUTHORS: Chernikhov, Yu. A., Luk'yanov, V. F., Knyazeva, Ye. M.

TITLE: Photometric Determination of Zirconium in Phosphorites With Pyrocatechol Violet (Fotometricheskoye opredeleniye tsirokoniya v fosforitakh s pirokatekhinovym fioletovym)

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 2, pp 207-210 (USSR)

ABSTRACT: The authors investigated the reaction of zirconium with pyrocatechol violet (3,3',4'-trihydroxyfuchstone-2"-sulfonic acid), and ascertained the optimum conditions for a photometric determination of zirconium in solutions of pure salts as well as in natural materials. Hafnium yields a similar reaction with pyrocatechol violet, and therefore disturbs the determination. The determination of zirconium in the presence of a reagent excess is possible since in the range of the absorption maximum of the zirconium complex ($\lambda = 620 \text{ m}\mu$) the pure reagent absorbs only weakly. The absorption maximum of pyrocatechol violet is at 445 $\text{m}\mu$. Since pyrocatechol violet is an acid - base indicator, the determination of zirconium

Card 1/4

SOV/75-14-2-11/27

Photometric Determination of Zirconium in Phosphorites With Pyrocatechol Violet

must be carried out at a constant pH value of the solution. The pH value is maintained by an acetate buffer at 5.2 - 5.4. In this range the reagent is yellow, while the zirconium complex is blue. The formation of the complex takes place much more rapid if the zirconyl chloride solutions are previously treated with concentrated acids (nitric acid, hydrochloric acid or perchloric acid). The absorption of the solutions of the zirconium complex without previous treatment with acids is considerably lower than the absorption of solutions previously treated with acids. The effect of the treatment with acids on the optical density of the solutions is shown in a table. Maximum light absorption is attained 30 minutes after the combination of the two solutions; after 1 - 2 hours the absorption of the solutions decreases again. The reaction of zirconium with pyrocatechol violet is highly sensitive. The coloration of 0.1 γ Zr in a 1 ml solution is still clearly visible. For the photometric determination the range of from 5 to 70 γ zirconium in 50 ml solution is best suited. In this range processes take place according to Beer's law.

Card 2/4

SOV/75-14-2-11/27

Photometric Determination of Zirconium in Phosphorites With Pyrocatechol Violet

In the presence of complexon III neither any amount of alkali and alkaline earth metals at pH 5.2 - 5.4 nor Al,

Fe^{3+} , Be, Ti, Th, UO_2^{2+} , Bi, V, Mo, W and Co disturb the determination of zirconium if their quantitative relation to zirconium is smaller than 100 : 1. Ions with intense natural color (Cu, Ni) disturb the determination if the ratio between their amount and the amount of zirconium surpasses 10 : 1.

Among anions Cl^- , NO_3^- , ClO_4^- and SO_4^{2-} in moderate quantities produce no disturbing effect; F^- , PO_4^{3-} and organic complex-forming anions disturb the determination. A solution of pyrocatechol violet in an acetate buffer serves as a comparative solution. The results of the determination of zirconium in phosphorites according to the method described are given in a table. For the purpose of comparison ZrO_2 was determined

also according to the X-ray spectra. These determinations were made by M. A. Petrova. The determination of zirconium with

Card 3/4

SOV/75-14-2-11/27
Photometric Determination of Zirconium in Phosphorites With Pyrocatechol
Violet

pyrocatechol violet in pure solutions of its salts and also
in phosphorites is described in detail in this paper.
There are 3 figures, 2 tables, and 10 references, 3 of
which are Soviet.

Card 4/4

5(2)

SOV/32-25-1-15/51

AUTHORS: Chernikhov, Yu. A., Cherkashina, T. V.

TITLE: Analysis of Intermetallic Alloys (Analiz intermetallicheskikh splavov)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 1, pp 26-27 (USSR)

ABSTRACT: A previous paper (Ref 1) contained the description of the analysis of binary semiconductor alloys In-Sb, In-As, Ga-As, Re-Sb. In the case of ternary alloys the calculation of the third component content from the difference leads to greater errors. Methods were worked out for the Sb-Al-Ga alloy (supplied by the Leningradskiy fiziko-tekhnicheskii institut Akademii nauk SSSR) (Leningrad Physico-Technical Institute, Academy of Sciences, USSR), in which each of the three metals is determined separately. Antimony was determined bromatometrically. Aluminum was determined by titration of an excess of Trilon B with a thorium nitrate solution in addition to alizarin S as indicator and with pH = 3.5. Since antimony and gallium disturb the determination of aluminum, they are separated from the latter by extraction with butyl acetate (Ref 5) from 6 n hydrochloric acid. From the butyl acetate extract,

Card 1/2

Analysis of Intermetallic Alloys

SOV/32-25-1-15/51

Ga and Sb are extracted with water containing tartaric acid and gallium is trilonometrically determined with zinc, eriochrome black T serving as indicator (Refs 5,6). The disturbing influence of antimony, which causes the indicator to oxidize (Ref 7) is eliminated by an addition of ammonia. The described course of analysis was checked and confirmed with synthetic mixtures and alloys (Tables 1,2). There are 2 tables and 7 references, 4 of which are Soviet.

Card 2/2

5(2)

AUTHORS:

Chernikhov, Yu. A., Dobkina, B. M.

SOV/32-25-2-1/78

TITLE:

Chemical Analysis Methods (Khimicheskiye metody analiza). The Determination of Aluminum in Rare Earths (Opredeleniye alyuminiya v redkikh zemlyakh)

PERIODICAL:

Zavodskaya Laboratoriya, 1959, Vol 25, Nr 2, pp 131-132 (USSR)

ABSTRACT:

References on the precipitation of the oxyquinolates of rare earths are contradictory (Refs 1-6). Since beryllium acts like rare earths (I) with regard to oxines (Refs 4,5) the same principle is applied as in the determination of aluminum in beryllium (Ref 7). The method is based on the extraction of the aluminum oxyquinolate by chloroforme from an acetate solution (pH = 5) and a colorimetric determination of the aluminum in the extraction. Hydroxylamine is used as a reducing agent in order to preserve cerium in its trivalent form. The determination of aluminum in neodymium-magnesium melts as well as in chlorides of (I) obtained in the processing of loparite is of practical interest (Table 2). The disturbing elements, iron, copper, and nickel, are extracted prior to the analysis in the form of diethyl dithiocarbaminates. Thorium can be removed by potassium biphthalate

Card 1/2

Chemical Analysis Methods. The Determination of
Aluminum in Rare Earths

SOV/32-25-2-1/78

(Table 3). The aluminum content is determined either visually
(colorimetric titration) or spectrophotometrically
(at 300-400 m μ) in the usual way. The sensibility of the method
is given as $1 \cdot 10^{-2}$ %. There are 3 tables and 7 references,
1 of which is Soviet.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy institut redkikh i
malykh metallov (State Scientific Research Institute for Rare and
Minor Metals)

Card 2/2

5(2)

SOV/32-25-4-4/71

AUTHORS: Chernikhov, Yu. A., Tramm, R. S., Pevzner, K. S.

TITLE: Determination of Tantalum in Niobium (Opredeleniye tantala v niobii)

PERIODICAL: Zuvodskaya Laboratoriya, 1959, Vol 25, Nr 4, pp 398-400 (USSR)

ABSTRACT: As the niobium is used for heat-resisting alloys, the content of admixtures to it is strictly limited. A method is described by which tantalum in niobium is determined according to the reaction with pyrogallol in a mixture of sulphuric and oxalic acid on the photolorimeter FEK-N with a light filter Nr 2 (413 m μ). The tantalum is extracted from the main quantity of the niobium with cyclohexanone from a hydrofluoric-sulphuric-acid-mixture before the determination (Ref 4). The present paper was completed in 1957, i.e. before the publication of a similar method (Ref 3). It was ascertained that at a concentration of the hydrofluoric acid of 0.4 - 1.2 moles and sulphuric acid 2 N tantalum practically passes completely into the cyclohexane layer (Table 1). The reliability of the described analysis was examined by the method of adding Nb₂O₅ samples (Tables 2,3).

Card 1/2

Determination of Tantalum in Niobium

SOV/32-25-4-4/71

The determination can be carried out with a sensitivity of 0.002% and an accuracy of $\pm 10\%$ which is usual in the analysis for trace elements. It is recommended for analyses of metallic niobium to transfer the niobium into the oxide before breaking it up. There are 3 tables and 4 references, 3 of which are Soviet.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy institut redkikh i malykh metallov (State Scientific Research Institute of Rare and ~~Trace~~ Metals)

G I R E M E T

Card 2/2

KORENMAN, Izrail' Mironovich; VINOGRADOV, A.P., akademik, glavnyy red.;
BUSEV, A.I., prof., red.toms; 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] Analiticheskaya khimiya
tallia. Moskva, Izd-vo Akad.nauk SSSR, 1960. 170 p.

(MIRA 14:3)

(Thallium--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.; CHEBNIKHOV, Yu.A., red.; TRIFONOV, D.N., red.izd-ya; POLENOVA, T.P., tekhn.red.

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

S/075/60/015/004/015/030/XX
B020/B064

AUTHORS: Chernikhov, Yu. A., Luk'yanov, V. F., and Kozlova, A. B.

TITLE: Analytical Chemistry of Thorium. Information 2. Complexometric Determination of Thorium in Monazite Concentrates After Its Separation on the Cationite KY-2 (KU-2)

PERIODICAL: Zhurnal analiticheskoy khimii, 1960, Vol. 15, No. 4, pp. 452 - 454

TEXT: The authors aim at simplifying and shortening the determination of thorium in monazite concentrates. The present paper describes the sorption of thorium from hydrochloric solutions on the cationite KU-2 (Ref. 15) with subsequent thorium titration by means of complexon^{III} at pH 2.4 - 2.6 and xylenol orange as an indicator (Ref. 16). Thorium is quantitatively sorbed on the cationite KU-2 from a 35% hydrochloric acid solution (Table 1). High acidity increases the selectivity of the method. The elution curve (Fig. 1) indicates that for a complete desorption of 40 mg of Th, 24 ml of the eluant (20% ammonium carbonate solution) suffice, which is added in quantities of 2 - 3 ml. Together with Th, zirconium and Card 1/3

Analytical Chemistry of Thorium. Informa- S/075/60/015/004/015/030/XX
tion 2. Complexometric Determination of B020/B064
Thorium in Monazite Concentrates After Its Separation on the Cationite
KY-2 (KU12)

small amounts of rare earths are sorbed on the resin. The rare earths do not affect the complexometric determination of Th. Sorption of Zr on the resin can be avoided if it is bound by tartaric or trioxylglutaric acid (Table 2). With trioxylglutaric acid it is possible to mask approximately 10 mg of Zr, and with tartaric acid, approximately 5 mg of Zr when determining 30 mg of Th. Monazite was decomposed by fusion with sodium peroxide (Ref. 18). In the extraction with water, a large part of phosphorus dissolves as sodium phosphate, while in dissolving the precipitate in hydrochloric acid, the residual phosphoric acid precipitates zirconium down to 0.3 - 1.0 mg compared to its content before sorption. This amount is masked by tartaric or trioxylglutaric acid, and does not affect the determination of thorium. If Na_2O_2 is used instead of acid decomposition, the time of decomposition is reduced from 6 - 8 hours to 1 - 2 hours, and the disturbing phosphate and zirconium ions may be easily removed. The results obtained from analyzing some samples of monazite concentrate are listed in Table 3. They are in good

Card 2/3

Analytical Chemistry of Thorium. Informa-
tion 2. Complexometric Determination of

S/075/60/015/004/015/030/XX
B020/B064

Thorium in Monazite Concentrates After Its Separation on the Cationite
KY-2 (KU-2)

agreement with gravimetric analyses. There are 1 figure, 3 tables, and
18 references: 3 Soviet, 3 German, 7 US, 2 British, 1 Dutch, 1 Japanese, ✓
and 1 Czech. ✓

SUBMITTED: July 14, 1959

Card 3/3

MALYUTINA, T.M.; DOBKINA, B.M.; CHERNIKHOV, Yu.A.

Determination of rhenium by the differential spectrophotometric
method. Zav.lab. 26 no.3:259-263 '60. (MIRA 13:6)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proektnyy institut
redkometallicheskoj promyshlennosti.
(Rhenium--Analysis)

CHERNIKHOV, Yu.A., DOBKINA, B.M., PETROVA, Ye.I.

Determination of zirconium from the reaction with pyrocatechol violet in titanium and its alloys. Zav.lab. 26 no.5:529-531 '60.

(MIRA 13:7)

(Zirconium--Analysis) (Titanium--Analysis)

S/032/60/026/008/012/046/XX
B020/B052

AUTHORS: Chernikhov, Yu. A., Tramm, R. S., and Pevzner, K. S.

TITLE: Successive Complexometric Determination of Thorium and the
Totality of the Rare Earths

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 8, pp. 921-924

TEXT: In the present paper the possibility is examined of successively determining thorium and the total content of rare earths by complexometric titration at different pH values without preceding separation. The selectivity of the method is attained at low pH values, therefore, xylenol orange, alizarin red S, and arsenazo were used as indicators. The composition of the rare earth mixture is such: 51% of Ce converted to Ce_2O_3 , 25% of La_2O_3 , 13% of Nd_2O_3 , 5% of Pr_6O_{11} , and 0.5% of Sm_2O_3 . Approximately 1% of the yttrium group was present; the average molecular weight of the mixture was 392. First, thorium was titrated with complexon III at a pH less than 3. At a pH = 1.5 - 2.5, a distinct color transition from red to lemon takes place when xylenol orange is used, with alizarin red S red

Card 1/4

Successive Complexometric Determination of
Thorium and the Totality of the Rare Earths

S/032/60/026/008/012/046/XX
B020/B052

changes into green. In the presence of rare earths, the pH of the thorium titration must not exceed 2.2. Not even a ten-fold excess of rare earths interferes in the thorium determination at a pH of 1.5 - 1.6. Table 1 gives the effect of some admixtures on the titration of thorium with xylenol

orange. Fe^{3+} interferes even in microamounts, but, like cerium, it can be masked by additions of ascorbic acid. Nitrates and sulfates practically do not interfere, but phosphates must not be present. In the titration of thorium against alizarin red S as indicator, the presence of aluminum interferes even in microamounts. With an addition of sulfosalicylic acid, the maximum amount of Al must not exceed 2 mg. Mn^{2+} can only be present in amounts lower than 3 mg. Niobium must not be present. In the titration of thorium in the presence of ascorbic and sulfosalicylic acids at a pH of 1.6, a color transition from violet to pink takes place (with and without rare earths). Rare earths were titrated in hot solutions, in the presence of an acetate buffer, with pH = 4.5, and xylenol orange as indicator. Cerium was previously reduced by ascorbic acid. The hydrolysis of thorium is prevented by an addition of sulfosalicylic acid. Since the color transition is not distinct (especially in the presence of thorium),

Card 2/4

Successive Complexometric Determination of Thorium and the Totality of the Rare Earths S/032/60/026/008/012/046/XX
B020/B052

methylene blue is added. Table 2 gives the effect of some elements on the titration of the rare earths. Thorium does not interfere in amounts of up to 70 mg for 150 ml. Mn has to be removed by a double extraction by chloroform with pH = 5. Aluminum of not more than 3 mg is blocked by an addition of sulfosalicylic acid. If aluminum is added in amounts of up to 3 mg, rare earths can be titrated without heating the solution. If alizarin red S is used as indicator, not more than 30 mg of Th are allowed to be present. In the titration of rare earths against arsenazo, color transition only takes place at a pH of 5.5, while in the presence of thorium no color transition was observed, since thorium and arsenazo form a complex which is more stable than its complexonate. Thus, xylenol orange and alizarin red S may be used for the above purpose, although the former indicator is suited best. Successive titration was applied for the analysis of a commercial semi-product (Table 3) which besides Th and rare earths contained approximately 10% of Fe, 3% of Mn, and small amounts of Ti and Al. The analysis is described in detail. A. F. Kuteynikov (Ref. 10); and Yu. Yu. Lur'ye are mentioned. There are 3 tables and 10 references: 4 Soviet, 2 Czech, 1 Austrian, 1 Swiss, 1 US, and 1 Hungarian. ✓

Card 3/4

Successive Complexometric Determination of S/032/60/026/008/012/046/XX
Thorium and the Totality of the Rare Earths B020/B052

ASSOCIATION: Gosudarstvennyy ^{State} nauchno-^{Sci.}issledovatel'skiy ^{Res.}i proyektnyy
institut redkometallicheskey promyshlennosti (State Design
and Planning Scientific Research Institute of the Rare
Metals Industry)



Card 4/4

S/032/60/026/011/003/035
B015/B066

AUTHORS: Chernikhov, Yu. A. and Vladimirova, V. M.

TITLE: Determination of Zirconium in Niobium Alloys ✓

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 11,
pp. 1207-1208 ✓

TEXT: An ammetric method of determining zirconium in niobium alloys is described. It is based on back-titration of excess complexon with a bismuth solution at pH = 2 (Ref. 3). By this method it is possible to determine Zr along with ten- to thirtyfold quantities of niobium bound by tartaric acid. At a Zr content of more than 2-3% no previous separation is necessary, whereas at lower Zr content the main mass of niobium has to be separated. Experiments disclosed that among the methods of separating niobium and zirconium described in publications a melting with potassium carbonate (Refs. 4-6) proved to be most convenient. The melt is dissolved in water, the residue which contains the Zr is filtered, ashed, fused with potassium pyrosulfate, the melt dissolved with 10%

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Determination of Zirconium in Niobium Alloys

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tartaric acid is brought to a certain volume, and the ammetric titration is carried out in an aliquot. The complexon excess added is titrated with a 0.01 M bismuth solution. 1 ml of a 0.01 M complexon solution is equivalent to 0.91 mg Zr. The ammetric titration is also possible in the presence of a twentyfold amount of Mo and W. Also that in this way not only systems Zr - Nb may be analyzed but also Zr - Nb - W and Zr - Nb - Mo. There are 3 tables and 6 references: 3 Soviet, 2 US, and 1 British.

ASSOCIATION: Gosudarstvenny ^{state} nauchno-issledovatel'skiy institut ^{Sci} redkometallicheskoj promyshlennosti (State Scientific ^{Res} Research Institute of the Rare Metal Industry)

Card 2/2

ALIMARIN, I.P.; BILIMOVICH, G.N.; BUSEV, A.I.; VAYNSHTEYN, E.Ye.; VOLYNETS, M.P.; GORYUSHINA, V.G.; DYMOV, A.M.; YELINSON, S.V.; ZVIAGINTSEV, O.Ye.; KOLOSOVA, G.M.; KORCHEMNAYA, Ye.K.; LEBEDEV, V.I.; MALOFEYEVA, G.A.; MELENT'YEV, B.N.; NAZARENKO, V.A.; NAZARENKO, I.I.; PETROVA, T.V.; POLUEKTOV, N.S.; PONOMAREV, A.I.; RYABUKHIN, V.A.; STROGANOVA, N.S.; GHERNIKHOV, Yu.A.; VINOGRADOV, A.P., akademik, otv. red.; RYABCHIKOV, D.I., doktor khim. nauk, prof., otv. red.; GUS'KOVA, O., tekhn. red.

[Methods for the determination and analysis of rare elements] Metody opredeleniia i analiza redkikh elementov. Moskva, 1961. 667 p.
(MIRA 14:7)

1. Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii.
(Metals, Rare and minor)

5.5310

25352
S/032/61/027/006/003/018
B124/B203

AUTHORS: Malyutina, T. M., Dobkina, B. M., and Chernikhov, Yu. A.

TITLE: Neodymium determination by the differential spectroscopic method

PERIODICAL: Zavodskaya laboratoriya, v. ., no. 6, 1961, 653 - 656

TEXT: The differential spectroscopic determination of neodymium was made with the Soviet spectrophotometer type Φ -4 (SF-4). For the spectrophotometric Nd determination, the absorption band at 575 m μ is generally used where the maximum lies in perchlorate and nitrate solutions according to the authors' data. In the practice, the use of nitric acid is more convenient than that of perchloric acid as has been suggested in publications. For an accurate determination of the maximum, it is necessary to use sufficiently monochromatic light, i.e., a slit width as narrow as possible. To eliminate the effect of scattered light, the CO-14 (OS-14) light filter was used at 575 m μ . A concentration of 150 mg Nd₂O₃ in 25 ml was used for the comparison solution. With the use of an OS-14 light filter and a slit width

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Neodymium determination by...

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of 0.1 mm, well reproducible results are obtained, and the proportionality between optical density and concentration holds for the range of from 150 to 250 mg Nd_2O_3 in 25 ml. Rectangular cuvettes with a layer thickness of 30 mm were used for the measurements. The measured results (Table 1) did not deviate from the mean value by more than $\pm 1\%$. In the neodymium determination, the neighboring colored elements may disturb, which, first of all, applies to praseodymium, whereas the effect of lanthanum and samarium is low (Table 2). The method tested on pure solutions of neodymium and other rare earths was used to determine the neodymium content in neodymium oxide preparations of varying degree of purity; results obtained under the supervision of S. M. Polyakov are given in Table 3. The method was also used for determining neodymium in Mg-Nd alloys with 15-55% Nd and 45-85% Mg; magnesium did not disturb the neodymium determination. The value of the constant factor was calculated from the equation $F = \Delta C/D$, where $\Delta C = C_1 - C_0$ (C_0 is the concentration of the comparison solution, C_1 the concentration of the solution containing 175-250 mg of Nd_2O_3 , and D is the optical density corresponding to the difference of two concentrations).

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The optical density of the test solution is measured with respect to the comparison solution containing 150 mg of Nd_2O_3 . The Nd concentration C_x is calculated from the equation $C_x = C_o + D_x \cdot F$, where C_o is the Nd concentration in the comparison solution, D_x the optical density, and F the factor. There are 1 figure, 4 tables, and 4 references: 1 Soviet-bloc and 3 non-Soviet-bloc. The three references to English-language publications read as follows: D. C. Stewart, D. Kato, Anal. Chem., 2, 164 (1958); C. V. Banks, J. Z. Spooner, J. W. O'Zaughlin. Anal. Chem., 30, 40 (1), 458 (1958); C. V. Banks, J. Z. Spooner, J. W. O'Zaughlin. Anal. Chem., 12, 18, 94 (1954))

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoj promyshlennosti (State Design and Planning Scientific Research Institute of the Rare Metals Industry)

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