Synthesis of Elemental-organic Compounds in Which Silicon or Tin Are Directly Bound to Phosphorus or Arsenic

S/020/60/135/004/020/037
B016/B062

$[(CH_3)_3Sn]_3P$. Mention is made of a paper by B. Arbuzov and coworkers (Ref. 1). N. Rodionova, S. Dubov, A. Khokhlova, and V. Fedotova examined the spectra. There are 15 references: 2 Soviet, 2 US, 2 Italian, 7 German, and 1 British.

PRESENTED: June 24, 1960, by I. L. Knunyants, Academician

SUBMITTED: June 23, 1960

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S/020/60/135/004/020/037
B016/B062

$$(CH_3)_3SiF + KPH_2 \rightarrow (CH_3)_3Si-PH_2 + KF;$$
$$(CH_3)_3Si-PH_2 + KPH_2 \rightarrow (CH_3)_3Si-PHK + PH_3;$$
$$(CH_3)_3Si-PHK + FSi(CH_3)_3 \rightarrow ((CH_3)_3Si)_2PH + KF;$$
$$((CH_3)_3Si)_2PH + KPH_2 \rightarrow ((CH_3)_3Si)_2PK + PH_3;$$
$$((CH_3)_3Si)_2PK + FSi(CH_3)_3 \rightarrow ((CH_3)_3Si)_3P + KF.$$

Card 4/4

BALASHOVA, L.D.; BRUKER, A.B.; SOBOROVSKIY, L.Z.

Interaction of silane and monoalkylsilanes with hydrohalides under overpressure in the absence of catalysts. Zhur.ob.khim. 32 no.9:2982-2983 S '62. (MIRA 15:9)
(Silane) (Hydrogen halides)

L 16076-66 EWT(m)/EWP(j) RM
ACC NR: AP6005923 SOURCE CODE: UR/0079/66/036/001/0073/0075

27
22
B

AUTHOR: Balashova, L. D.; Bruker, A. B.; Soborovskiy, L. Z.

ORG: none

TITLE: Metal organometallic compounds. Part 2. Synthesis of silyl- and alkylsilylphosphines

SOURCE: Zhurnal obshchey khimii, v. 36, no. 1, 1966, 73-75

TOPIC TAGS: organosilicon compound, organolithium compound, silane

ABSTRACT: Silylphosphines in which the silicon atom is linked to alkyl-alkoxy or alkyl-dialkylamino groups, were synthesized. Thus, action of the corresponding dimethylalkoxychlorosilane on lithium methylhydrophosphide produced bis(dimethylmethoxysilyl)methylphosphine (I) and bis(dimethylisobutoxysilyl)methylphosphine (II):

$$2CH_3PHLi + 2ClSi(CH_3)_2(OR) \rightarrow CH_3P[Si(CH_3)_2(OR)]_2 + CH_3PH_2 + 2LiCl$$

$$(I)\ R = CH_3,\quad (II)\ R = iso\text{-}C_4H_9$$

Reaction of bis(diethylamino)methylchlorosilane with lithium dihydrophosphide yield-

Card 1/3 UDC: 547.241 + 547.245

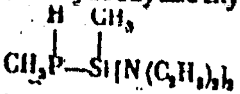
L 16076-66

ACC NR: AP6005923

ed bis(diethylamino)methylsilylphosphine (III):

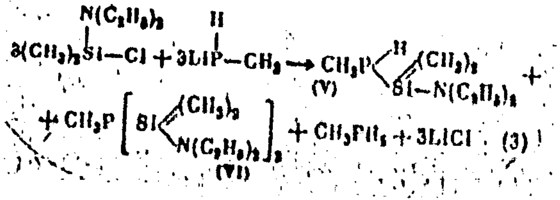
$$CH_3Si[N(C_2H_5)_2]_2Cl + LiPH_2 \rightarrow \underset{(III)}{H_2P-Si(CH_3)[N(C_2H_5)_2]_2} + LiCl$$

Similarly, bis(diethylamino)methylsilylmethylphosphine



$$CH_3\overset{H}{\overset{|}{P}}-\overset{CH_3}{\overset{|}{Si}}[N(C_2H_5)_2]_2$$ (IV).

was obtained from the reaction of bis(diethylaminomethyl)chlorosilane with lithium methylhydrophosphide. When diethylaminodimethylchlorosilane reacted with lithium methylhydroshosphide, the products were (diethylaminodimethylsilyl)methylphosphine (V) and bis(diethylaminodimethylsilyl)methylphosphine (VI):



$$3(CH_3)_2\overset{N(C_2H_5)_2}{\overset{|}{Si}}-Cl + 3Li\overset{H}{\overset{|}{P}}-CH_3 \rightarrow \underset{(V)}{CH_3P\begin{cases}H\\ Si(CH_3)_2-N(C_2H_5)_2\end{cases}} + \underset{(VI)}{CH_3P\left[Si\begin{cases}(CH_3)_2\\ N(C_2H_5)_2\end{cases}\right]_2} + CH_3PH_2 + 3LiCl \quad (3)$$

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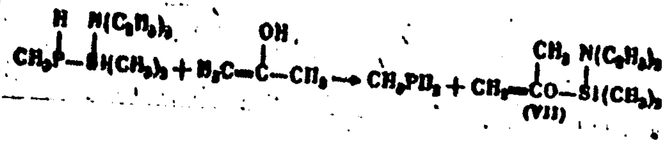
ACC NR: AP6005923

Acetone reacts in the enol form with compound (V); the Si-P bond is broken, and a heretofore undescribed compound, diethylaminodimethyl-α-methylvinyloxysilane (VII), and methylphosphine are formed:



$$CH_3P(H)-Si(N(C_2H_5)_2)(CH_3)_2 + H_2C=C(OH)-CH_3 \rightarrow CH_3PH_2 + CH_2=C(CH_3)O-Si(N(C_2H_5)_2)(CH_3)_2$$

(VII)

SUB CODE: 07/ SUBM DATE: 18Jan65/ ORIG REF: 003/ OTH REF: 000

Card 3/8

L 16077-66 EWT(m)/EWP(j) RM

ACC NR: AP6005924 SOURCE CODE: UR/0079/66/036/001/0075/0078

AUTHOR: Bruker, A. B.; Balashova, L. D.; Soborovskiy, L. Z.

22
21
B

ORG: none

TITLE: Metal organometallic compounds. Part 4. Reaction of dialkyl disulfides with silicon and tin phosphines and with alkali metal hydrophosphides

SOURCE: Zhurnal obshchey khimii, v. 36, no. 1, 1966, 75-78

TOPIC TAGS: organosilicon compound, organic sulfur compound, organosodium compound, organotin compound

ABSTRACT: The general scheme of reactions of alkali metal hydrophosphides and alkylhydrophosphides with dialkyl disulfides can be represented as follows:

$$H_2PMe + 3R'S-SR' \rightarrow \underset{(I)}{P(SR')_3} + MeSR' + 2HSR'$$

$$RHPMe + 2R'S-SR' \rightarrow \underset{(II)}{RP(SR')_2} + MeSR' + HSR'$$

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UDC: 547.241 + 547.245

L 16077-66

ACC NR: AP6005924

The dialkyl disulfide splits to form the corresponding thiol esters of acids of trivalent phosphorus. When silicon and tin phosphines were reacted with dialkyl sulfides, trialkylsilicon and trialkyltin alkyl sulfides and thiol esters of acids of trivalent phosphorus were obtained. Depending upon the ratio of the reactants and temperature of the process, the trialkyltin or trilakylsilicon groups may be partially or completely replaced by thiol groups, e. g., the action of methylbis(triethyloltin)phosphine $CH_3P[Sn(C_2H_5)_3]_2$ on diethyl disulfide at a molar ratio of 1:2 forms compound (II) and $(C_2H_5)_3Sn\text{-}SC_2H_5$. The compound $(CH_3)_3Sn\text{-}SC_2H_5$ was obtained by reacting tris(trimethyloltin)phosphine with diethyl disulfide at 50°. Heating of tris(trimethylsilicon)phosphine with diethyl disulfide gave rise to the following reaction:

$$P[Si(CH_3)_3]_3 + C_2H_5S-SC_2H_5 \rightarrow (CH_3)_3SiP(SC_2H_5)_2 + 2(CH_3)_3Si-SC_2H_5$$

SUB CODE: 07/ SUBM DATE: 18Jan65/ ORIG REF: 003/ OTH REF: 000

Card 2/2

L 25607-66 EWT(m)/EWP(j) RM

ACC NR: AP6016701 SOURCE CODE: UR/0079/65/035/012/2207/2209

AUTHOR: Balashova, L. D.; Bruker, A. B.; Soborovskiy, L. Z.

28

B

ORG: none

TITLE: Investigation of element-elementoorganic compounds. III. Synthesis of alkyltrialkyltin phosphines

SOURCE: Zhurnal obshchey khimii, v. 35, no. 12, 1965, 2207-2209

TOPIC TAGS: organic synthetic process, organotin compound, organolithium compound, organosodium compound, organic phosphorus compound, chlorinated organic compound

ABSTRACT: The preparation of the new compounds -- bis(trimethyltinmethyl)-phosphine (I) and bis(triethyltinmethyl)phosphine (II) by two methods are described. The first method is by reaction of the corresponding trialkyltinhalide with sodium (or potassium) methylhydrophosphide in liquid ammonia or with lithium methylhydrophosphide in an ether solution according to the general reaction:

$$2CH_3PHMe + 2XSnR_3 \longrightarrow CH_3P(SnR_3)_2 + 2MeX + CH_3PH_2$$

Compound (I) is prepared in an 80-90% yield from the reaction of trimethyltin bromide on lithium methylhydrophosphide in ether solution. Compound (II) is obtained in a 70% yield from the reaction of triethyltin chloride and lithium methylhydrophosphide. The second method is by the action of methylchlorophosphine on

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UDC: 547.241

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L 25607-66

ACC NR: AP6016701

the sodium derivative of trimethyltin or triethyltin according to the general reaction:

$$CH_3PCl_2 + 2NaSnR_3 \longrightarrow CH_3P(SnR_3)_2 + 2NaCl$$

The second method gives lower yields of compounds (I) and (II), about 10-15%. In this case the reactions are accompanied by a number of side processes. Thus, in the reaction of methyldichlorophosphine with the sodium derivative of triethyltin, triethyl chloride (11%) and hexaethyldistannane (42%) were isolated:

$$CH_3PCl_2 + 2NaSn(C_2H_5)_3 \longrightarrow CH_3PNa_2 + 2ClSn(C_2H_5)_3$$

The reaction of triethyltin chloride with the Na-derivative of triethyltin can lead to the formation of hexaethyldistannane:

$$(C_2H_5)_3SnNa + ClSn(C_2H_5)_3 \longrightarrow NaCl + (C_2H_5)_3Sn{-}{-}Sn(C_2H_5)_3.$$

[JPRS]

SUB CODE: 07 / SUBM DATE: 18Jan65 / ORIG REF: 001 / OTH REF: 002

Card 2/2

BALASHOVA, L. N.

Cand Med Sci - (diss) "Several types of remission and psychic defect in schizophrenia with favorable course. (In relation to tasks of work-construction)." Moscow, 1961. 14 pp; (Ministry of Public Health RSFSR, Gor'kiy Medical Inst imeni S. M. Kirov); 250 copies; price not given; (KL, 5-61 sup, 201)

FEDOTOV, D.D., prof., otv. red. SEGAL, B.M., zam. otv. red.; AVERBAKH, Ya.K., red.; AVRUTSKIY, G.Ya., red.; ALEKSANDROVSKIY, Yu.A., red.; BALASHOVA, L.N., red.; BELKIN, A.I., red.; GUROVICH, I.Ya., red.

[Problems of exogenous and organic neuropsychic disorders; materials of the scientific conference of the State Scientific Research Institute of Psychiatry of the Ministry of Public Health of the R.S.F.S.R. March 1964] Voprosy ekzogennykh i organicheskikh nervno-psikhicheskikh rasstroistv; materialy nauchnoi konferentsii Gosudarstvennogo nauchno-issledovatel'skogo instituta psikhiatrii MZ RSFSR. Mart 1964. 164 p. No.2. 1964. 164 p. (MIRA 17:9)

1. Moscow. Gosudarstvennyy nauchno-issledovatel'skiy institut psikhiatrii. 2. Direktor Gosudarstvennogo nauchno-issledovatel'skogo instituta psikhiatrii Ministerstva zdravookhraneniya RSFSR (for Fedotov). 3. Otdel psikhozov pozdnego vozrasta Gosudarstvennogo nauchno-issledovatel'skogo instituta psikhiatrii Ministerstva zdravookhraneniya RSFSR (for Belkin). 4. Otdel ekzogennykh nervnopsikhicheskikh rasstroystv Gosudarstvennogo nauchno-issledovatel'skogo instituta psikhiatrii Ministerstva zdravookhraneniya RSFSR (for Segal). 5 Gosudarstvennyy nauchno-issledovatel'skiy institut psikhiatrii Ministerstva zdravookhraneniya RSFSR (for Averbakh).

BALASHOVA, L.N.

Characteristics of the higher nervous activity in schizophrenia patients in a stage of remission. Vop.klin., patog. i lech. shiz. no.1:9-12 '64. (MIRA 18:5)

1. Otdel vrachebno-trudovoy ekspertizy (zav. - prof. D.Ye. Melekhov) Gosudarstvennogo nauchno-issledovatel'skogo instituta psikhiatrii Ministerstva zdravookhraneniya RSFSR.

TARKSH, V.Ya.; BALASHOVA, L.S.

Readers' wishes. Tekst. prom. 19 no.6:90-91 Je '59.
(MIRA 12:9)
(Textile industry--Periodicals)

ALESHINA, F.; KARACHNIK, Ya.; KUZNETSOVA, N.; VASIL'YEVA, V.; BALASHOVA, M.;
NEMCHINOVA, I.

Several results of an experimental study of budgets of workers' families.
Biul.nauch.inform.: trud i zar. plata 3 no.12:24-48 '60. (MIRA 14:3)

(Home economics—Accounting)

BALASHOVA, M.M.; SAZONOVA, M.D.

New data on the stratigraphy and lithology of the terrigenous sediments in the Lower Carboniferous of the Southern part of the Kama arch. Neftegaz. geol. i geofiz. no. 5:33-37 '63. (MIRA 17:5)

USSR/ Physical Chemistry - Crystals

B-5

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11054

Author : Balashova M.N., Shafranovskiy I.I.

Title : Destribution of Minerals by Symmetry Forms

Orig Pub : Sbornik: Kristallografiya, No 5, Moscow, Metallurgizdat, 1956, 203-212

Abstract : A synopsis of the distribution of mineral crystals by symmetry forms

Card 1/1

USSR / Solid State Physics / Structural Crystallography E-4

Abs Jour : Ref Zhur - Fizika, No. 5, 1957 No. 11653

Author : Balashova, M. N. Shifranovskiy, I. I.
Inst : -
Title : Distribution of Minerals by the Symmetry Type.

Orig Pub : Kristallografiya, Vyp. 5. M., Metallurgizdat, 1956, 203 - 212.

Abstract : A list of 1022 minerals is given, distributed by types of symmetry.

Card: 1/1

STULOV, N.N.; SHAFRANOVSKIY, I.I.; MOKIYEVSKIY, V.A.; POPOV, G.M.; BETEKHTIN, A.G.; NIKOLAYEV, V.A.; ANSHELES, O.M.; GRIGOR'YEV, D.P.; YEROFEYEV, B.N.; TATARSKIY, V.B.; SOLOV'YEV, S.P.; NIKITIN, V.D.; RUDENKO, S.A.; DUBININA, V.N.; ALYAVDIN, V.F.; VLADIMIROV, B.N.; KAZITSYN, Yu.V.; FRANK-KAMENETSKIY, V.A.; KALININ, A.I.; ~~BALASHOVA, M.N.~~; SAL'DAU, E.P.; DOLIVO-DOBROVOL'SKAYA, G.M.; LAVRENT'YEV, M.F.

Viktor Ivanovich Mikheev. Zap. Vses. min. ob-va 86 no.2:317-320 '57. (MIRA 10:6)

(Mikheev, Viktor Ivanovich, 1912-1956)

BALASHOVA, N.N.; SAL'DAU, E.P.

Scientific Session of the Fedorov Institute in conjunction with the All-Union Mineralogical Society. Zap. Vses. min. ob-va 87 no.5: 624-632 '58. (MIRA 12:1)

(Petrology)

BALASHOVA, M.N.; MOKIYEVSKIY, V.A.; SAL'DAU, E.P.

Joint scientific session of the Fedorov Institute and the All-Union Mineralogical Society. Zap. Vses. min. ob-va 89 no.5:611-620 '60.
(MIRA 13:10)

(Mineralogy)

BALASHOVA, M.N.; SAL'DAU, E.P.; STULOV, N.N.

The Fedorov anniversary session. Zap.Vses.min.ob-va 86 no.5:632-639 '57. (MIRA 10:10)

(Mineralogy)

BALASHOVA, M.N.; SAL'DAU, E.P.; MOKIYEVSKIY, V.A.

Scientific session on crystallography dedicated to the 40th anniversary of death of Evgraf Stepanovich Fedorov. Zap. Vses. min. ob-va 88 no.5:615-632 '59. (MIRA 13:2)
(Fedorov, Evgraf Stepanovich, 1853-1919)
(Crystallography)

SHAFRANOVSKIY, I.I., prof. Prinimali uchastiye: MOKIYEVSKIY, V.A.; STULOV, N.N.; GENDELEV, S.Sh.; PIS'MENNYY, V.A.; BALASHOVA, M.N.; MIKHEYEVA, I.V.; SAL'DAU, E.P.; KALININ, A.I.; DOLIVO-DOBROVOL'SKAYA, G.M. PIOTROVSKIY, G.L., dotsent, otv.red.; FURMAN, K.P., red.; MALYAVKO, A.V., tekhred.

[Lectures on the morphology of mineral crystals] Lektsii po kristallomorfologii mineralov. L'vov, Izd-vo L'vovskogo univ., 1960. 161 p. (MIRA 14:1)

1. Kafedra kristallografii Leningradskogo gornogo instituta (for Mokiyevskiy, Stulov, Gendelev, Pis'mennyy, Balashova, Mikheyeva, Sal'dau, Kalinin, Dolivo-Dobrovol'skaya).
(Minerals) (Crystals)

STEPANOV, I.V. (Kazan'); BALASHOVA, M.M. (Kazan'); SOKOLOVA, N.G. (Kazan')

Observation of lunar occulatations of stars at the Kazan Astronomical Observatory in 1959. Astron.tsir. no.209:40-41 Mr '60.
(MIRA13:9)

(Occultations)

BALASHOVA, M.N.; SAL'DAU, E.P.; MOKIYEVSKIY, V.A.

Conference of the Fedorovskii Institute and the All-Union Mineralogical Society. Zap.Vses.min.ob-va 90 no.5:616-628 '61. (MIRA 14:10)

(Mineralogical societies)

BALASHOVA, M.N.; SAL'DAU, E.P.; MOKIYEVSKIY, V.A.

Fedorov meeting on the occasion of the 50th anniversary of the discovery of X-ray diffraction. Zap.Vses.min.ob-va 91 no.5:621-634 '62. (MIRA 15:11)
(X-ray crystallography)

BALASHOVA, M.N.; SAL'DAU, E.P.

Session of the Feodorov Institute and the All-Union Mineralogical Society. Zap. Vses. min. ob-va 92 no.5:617-626 '63. (MIRA 17:1)

BALASHOVA, M.N.; MOKIYEVSKIY, V.A.; SAL'DAU, E.P.

Joint meeting of the Fedorov Institute and Mineralogical Society of the U.S.S.R. Zap.Vses.min.ob-va 93 no.6:727-735 '64.
(MIRA 18:4)

BALASHOVA, M.N.; MOKIYEVSKIY, V.A.; SAL'DAU, E.P.

Joint session of the Fedorov Institute and the Mineralogical Society of the U.S.S.R. Zap. Vses. min. ob-va 94 no.6: 737-748 '65.

(MIRA 18:12)

1. Deystvitel'nyye chleny Vsesoyuznogo mineralogicheskogo obshchestva (for Mokiyevskiy, Sal'dau).

MARCHENKO, V.G.; TAUBE, A.M., prof.[deceased]; NEMIROV, I.A.; SHMID, V.A.; MOROZOVSKIY, N.G., kapitan dal'nego plavaniya kontr-admiral, red.; BORISOV, V.V., red.; BALASHOVA, M.V., red.-leksikograf; BERDNIKOVA, N.D., red.-leksikograf; SAVIN, B.V., led.-leksikograf; KUZ'MIN, I.F., tekhn. red.

[English-Russian naval dictionary. Approzimately 40, 000 words and phrases]Anglo-russkii voenno-morskoi slovar'. Pod red. N.G. Morozovskogo. Okolo 40,000 slov i sochetanii. Moskva, Voenizdat 1962. 851 p. (MIRA 15:12)
(Naval art and science—Dictionaries)
(English language—Dictionaries—Russian)

MILLER, Don Dzh. [Miller, D.J.]; PEYN, Tomas G. [Payne, T.G.]; GRIK, Dzh. [Gryc, George]; BALASHOVA, M.V. [translator]; KALINKO, M.K., doktor geol.-miner. nauk; SHOROKHOVA, L.I., ved. red.; VORONOVA, V., tekhn. red.

[Geology of possible petroleum provinces in Alaska] Geologiia neftegazonosnykh provintsii Aliaski. Pod red. i s dopolneniiami M.M. Kalinko. Moskva, Gostoptekhizdat, 1961. 181 p. (MIRA 16:6)
(Alaska--Petroleum geology)

BALASHOVA, N. A.

PROCESSES AND PROPERTIES INDEX

A

154

d

4787. **Electrochemistry of Platinum Sols.** Natasja Bach and N. Balaschowa. *Acta Physicochimica*, 3, 1, pp. 79-96, 1935. *In German.*—Pt-sols, the conductivity of which does not exceed that of the water in which they are prepared, can be produced by the comminution of Pt in a light field, in an O_2-atmosphere, in very pure water ($K = 0·8$–$0·6·10^{-6}\Omega^{-1}cm^{-1}$). By atomization in very pure water and in a H_2 atmosphere a very stable Pt sol is obtained, having a conductivity of $0·7$–$0·8·10^{-6}\Omega^{-1}cm^{-1}$ or 1–$1·2·10^{-6}\Omega^{-1}cm^{-1}$ by the application of a.c. or d.c. The conductivity of air-Pt-sols produced by Pennycuick is 10-15 times greater than the water used. This increase is put down, by the present authors, to the production of foreign electrolytes and not $H_2Pt(OH)_6$. The determination of the adsorption of H_2SO_4 by H_2- and O_2-Pt sols has shown that these sols behave as platinized Pt electrodes, as the conversion from H_2-saturation to O_2-saturation takes place reversibly. Cataphoretic measurements show that H_2-Pt sols obtained in pure water have a negative electrokinetic charge; their cataphoretic velocity is 3-4μ/sec. per Volt/cm. J. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

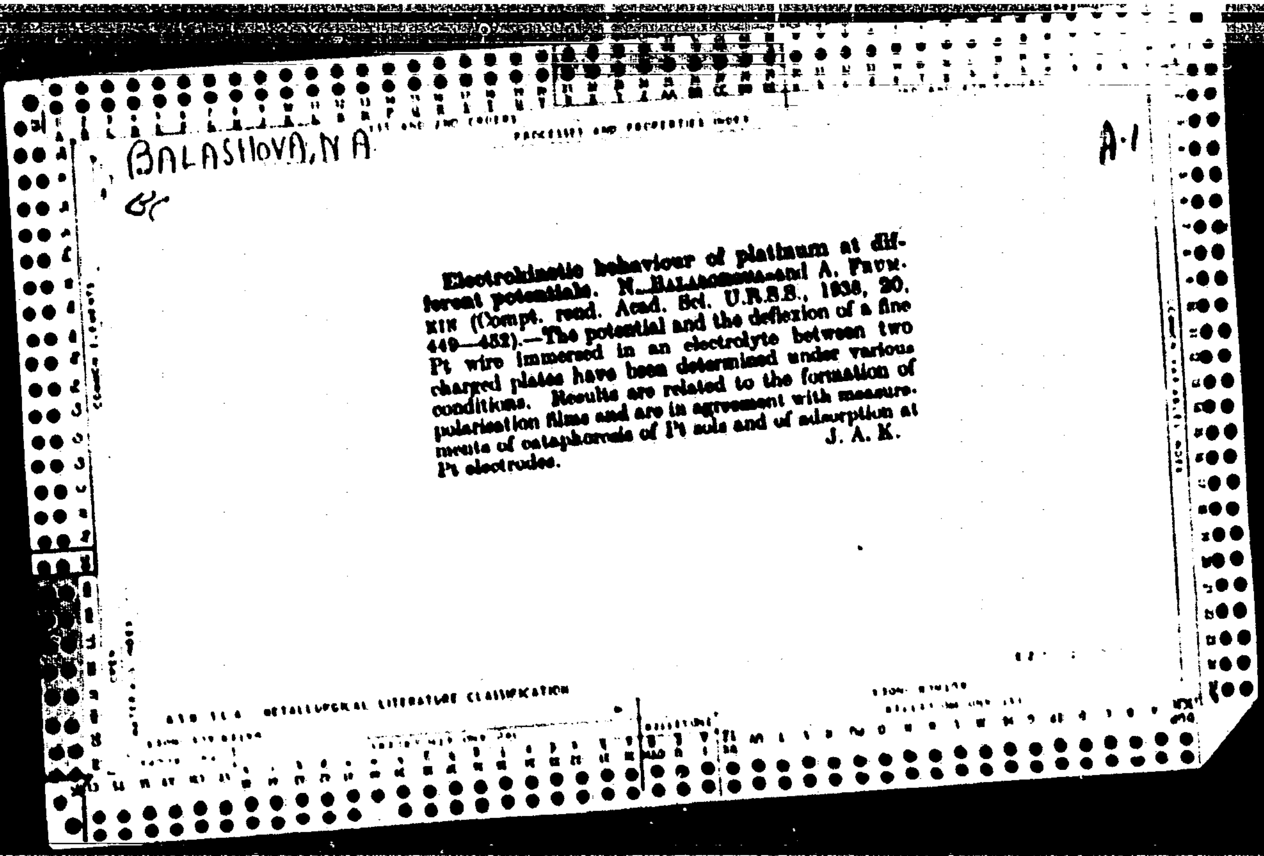
BALASHOVA, N A

CA

11

Electrochemistry of platinum sols. III. N. A. Balashova and N. A. Bakh. J. Phys. Chem. (U.S.S.R.) 10, 575-88 (1937); cf. C. A. 32, 411⁹.—Pos. oxidized Pt sols were prepd. from neg. H_2-Pt sols by passing a slow stream of very dil. O_2 (less than 1% in N_2) through a 0.01 N HCl or H_2SO_4 suspension of the sol until max. adsorption of acid occurred. These pos. oxidized Pt sols are not stable and slowly change to neg. O_2-Pt sols. The cataphoretic velocities of pos. and neg. sols are opposite but equal in abs. value. From the different oxidation velocities of pos. H_2-Pt sols it follows that the individual particles are not of like size and oxidize at various rates. The change of cataphoretic velocity with concn. shows that the ζ potential decreases with increasing acid concn. while in KOH it first increases and then decreases. ζ and ε potential are therefore parallel phenomena.

E. H. Bathmann



BALASHOVA, N A

6c

A-1

PROCESSES AND PROPERTIES INDEX

Electrokinetic behaviour of platinum at different potentials. N. BALASHOVA and A. FRUMKIN (Compt. rend. Acad. Sci. U.R.S.S., 1938, 20, 449—452).—The potential and the deflexion of a fine Pt wire immersed in an electrolyte between two charged plates have been determined under various conditions. Results are related to the formation of polarisation films and are in agreement with measurements of cataphoresis of Pt sols and of adsorption at Pt electrodes. J. A. K.

METALLURGICAL LITERATURE CLASSIFICATION

BALASHOVA, N.A.

Use of tagged atoms for studying the adsorption of sulfuric acid on platinized electrodes. Dokl. AN SSSR 103 no.4:636-642 Ag'55.
(MLRA 8:11)

1. Institut fizicheskoy khimii Akademii nauk SSSR. Predstavleno akademikom A.N.Frumkinym
(Sulfuric acid) (Adsorption) (Electrochemistry)

[illegible], Z. A.,

[redacted]

"The Determination of the Ion Adsorption and of the Zero Point Potential by Means of Tagged Atoms. . . 340, Zeitschrift Fuer Physikalische Chemie (Periodical of Physical Chemistry), [redacted]-Oct 1957.

BALASHOVA, N.A.; MERKULOVA, N.S.

Tagged atom technique used for structural study of electric double layer and adsorption of ions on metals. Trudy Inst. fiz. khim. no.6:12-19 '57. (MIRA 11:10)

(Tracers (Chemistry)) (Electrochemistry)

[illegible]

AUTHOR by N.A. Balashova PA - 2479

TITLE The Present Tasks of Electrochemistry
(Aktual'nyye voprosy elektrochimii, Russian)

PERIODICAL Vestnik Akademii Nauk SSSR 1957, Vol. 27, No. 1, pp. 107-110, (USSR)
Received: 2 May 1957 Reviewed: 4 June 1957

ABSTRACT The Division of Chemical Sciences and the Institute of Physical Chemistry of the Academy of Sciences of the USSR organized from 1 to 6 October 1956 a consultative assembly for the treatment of questions of the mechanism of electrochemical processes. This conference encountered greatest possible interest of many representatives of sciences, technology, and industry, and also attracted several renowned foreign scientists (from the United Kingdom, Hungary, the German Democratic Republic, China, Poland, the United States, the Federal Republic of Germany, France, etc.) With about 1000 delegates as participants, this conference was unique in the history of the Soviet Union. Sixty lectures were given during nine plenary meetings, and all lectures were devoted to the fundamental problems of electrochemistry. In addition, five sections were formed to deal with questions of electrochemical regeneration, processes of chemical sources of current, electrolysis of smelt, application of electrolysis in chemical

CARD 1/3

The Present Tasks of Electrochemistry PA - 2479
(Aktual'nyye voprosy elektrochimii, Russian)

industry, electrodeposition in metals, etc. Altogether eighty lectures were given in the sections. A.N. Frumkin, Member of the Academy, emphasized in his opening lecture that during the last five years electrochemical kinetics has reached the peak of its development and has become a scientific branch of its own. As time passed by, an intensification took place in the attention devoted to phenomena of diffusion, to detailed investigations of the nature of elementary collisions which determine the velocity of electrochemical processes, as well as to the investigation of the structure of the double layer and of the effects of adsorbed ions, atoms and molecules on the kinetics of the reactions. Simultaneously, the relation between different branches of electrochemistry and related branches of science was strengthened. Most of the lectures dealt with general questions of electrotechnical kinetics, furthermore with problems of the processes of the electrochemical regeneration of different anions, of the mechanisms of the processes of the electrochemical oxidation, and with questions of passivism (activation of passive iron etc.) or with questions of electrocrystallization from aqueous solutions. For the first time in a public congress, one of the sections

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The Present Tasks of Electrochemistry PA - 2479
(Aktual'nyye voprosy elektrochimii, Russian)

dealth with the questions of electrolysis in the smelt. In addition to the discussions which had been scheduled in the program of the conference, different questions of electrochemistry were discussed in smaller groups of the Soviet and also foreign scientists; this led to a rapprochement of the different views and also helped to establish more intimate contacts between the participating scientists.

ASSOCIATION:
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress

CARD 3/3

[illegible]

AUTHOR	BALASHOVA,N.A., IVANOV,V.A. and KAZARINOV,V.Ye. 20-2-30/62
TITLE	Dependence of Adsorption of Cations on Platinum Electrode Potential. (Zavisimost' adsorbtsii kationov ot potentsiala platinovogo elektroda.- Russian)
PERIODICAL	Doklady Akademii Nauk SSSR 1957, Vol 115, Nr 2, pp 336-338 (U.S.S.R.)
ABSTRACT	For the majority of metals a study of the adsorption of cations on their surface is complicated by the phenomen of exchange between the cations of the metal and the own or foreign solution cations. Such an exchange was not noticed in the case of platinum. This renders the comparison of its electrochemical and adsorptive properties easy. No special studies of this problem are known. Some results by Erbacher and Lorens do not permit any conclusions on the connection between the adsorption phenomena and the structure of a double electric layer on the surface of the metal. From a number of works with a mercury electrode it could be seen that the anordganic cations (with the exception of thallium ion) do not possess a specific adsorbability. For one-charge cations it was found that they even show a certain nega-
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20-2-59/62

Dependence of Adsorption of Cations on Platinum Electrode Potential.

tive adsorption on the mercury of concentrated solutions. According to measurements of capacity the effect of a hyperequivalent adsorption as against a weakly negative charge was only proved for multi-charge cations of lanthanum and thorium. This was explained by the formation of anion-cation pairs which were adsorbed on the mercury surface in a manner that the anion was inclined to the solution. For a study of the structure of this double electric layer it was interesting to determine the dependence of cation adsorption on platinum electrode potential. This was done in the present paper by the method of labeled atoms. Ill.1 shows a typical curve of dependence of the adsorption of cesium cations of a sulfuric acid solution on the potential of platinum. All potentials are relative to a normal hydrogen electrode. The results show that the mentioned dependence seems to be more complex than described in publications. A maximum value of cation absorption.occurs in the region of highest negative charge. It apparently somewhat surpasses the value which would be necessary for the formation of a double layer

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Dependence of Adsorption of Cations on Platinum Electrode Potential. 20-2-39/62

surface. The adsorption of cations rapidly decreases on a shift of the potential in a positive direction. This decrease corresponds to the decrease in the negative surface charge. In the zero point, however, the cation adsorption does not amount to zero. In the 0.20-0,45 v. region of potential, which corresponds to the increase in positive surface charge, the adsorption of cations increases. This can be explained with regard to the specific adsorption of anions. That on positive charged platinum the author explains by the hyperequivalent adsorption of anions

SO_4^{2-} and ClO_4^- at these potentials. For the first case it was directly proved by the method of labeled atoms. The considerable adsorption of anions noticed in the case of negative and zero charges must lead to an adsorption of cations which must supass that which would correspond to a negative surface charge. The curves recorded for potentials higher

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Dependence of Adsorption of Cations on Platinum Electrode Potential. 20-2-39/52

positive than 0,45 v. are most probably connected with the development of adsorbed oxygen on the surface. The anion adsorption must therefore lead to decrease in cation adsorption, as long as the surface charge remains positive. This explains the decrease of cation adsorption in the 0,45-0,55 region. In the case of greater quantities of adsorbed oxygen the potential shifts to the negative and the electrostatic adsorption of cations increases. After 0,7 v. is reached, the increase in quantity of the adsorbed oxygen is no longer capable of compensating the influence of the increasing positive change in potential. Now the cation adsorption again decreases. Surface oxides may perhaps be concluded from the observed minima and maxima. (2 Illustrations, 9 Slavic references)

ASSOCIATION: not given.
PRESENTED BY: FRUMKIN A.N., Academician, March 8, 1957
SUBMITTED: 8.3.57
AVAILABLE: Library of Congress.

CARD 4/4

5(4)

AUTHOR: Balashova, N. A. SOV/76-32-10-7/39

TITLE: Adsorption of the Bromide and Iodide Ions on Platinum (Adsorbtsiya ionov broma i yoda na platine)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 10, pp 2266-2273 (USSR)

ABSTRACT: The investigation of the adsorption of surface active bromide and iodide ions on solid metals is especially important for the explanation of the structure of the binary electric layer in the presence of ions. Investigations in this field had already been carried out by Z. A. Iofa and G. V. Rozhdestvenskaya (Ref 7) and L. A. Mecvedeva and Ya. M. Kolotyrkin (Ref 8). In the present paper investigations of smooth and platinized platinum in acid solutions were carried out with the potential, the duration of the experiment, and the temperature having been modified. The desorption conditions of the bromide and iodide ions from the platinum surface as well as the penetration of the ions into the interior of the metal were also studied. The method of the radioactive indicators was used with I^{131}_{53} and

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Br^{82}_{35}. In each experiment first the total and then the irreversible adsorption were determined. The platinization was carried out according to a method described in reference 4, and the calculation of the actual surface of the platinized electrodes was carried out by means of data from work by Ershler (Ref 5). The maximum adsorption of iodide on platinized platinum was $3,7 \cdot 10^{-9}$ gram equivalent/cm^2 at a potential of 0,4 Volt and after 30 minutes, for bromide it was $-0,7 \cdot 10^{-9}$ gram equivalent/cm^2, whereas on smooth platinum a value almost 20 times higher was obtained for iodide. This high value is explained by the different adsorption properties of the smooth and platinized platinum. The increase in total adsorption with the time taking place at the expense of the irreversible adsorption so that both values agree after some hours is explained by an intensification of the bond of the anions with the platinum surface (clearer with iodide than with bromide). A decrease in the bromide and iodide adsorption with an increase in temperature is explained by a continuous migration of the adsorbed particles into the interior of the metal at a

Adsorption of the Bromide and Iodide Ions on Platinum SOV/76-32-10-7/39

velocity higher than that of the adsorption increase with the temperature. The adsorption depends to a great extent on the potential of the Pt electrode; it increases with an increase in positive charge, and it decreases with an increase in the negative charge of the electrode surface. Papers by A. I. Shlygin, A. N. Frumkin and V. I. Medvedovskiy (Ref 4), and by A. D. Obrucheva (Ref 15) are mentioned. There are 3 figures, 3 tables, and 15 references, 15 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut elektrokhimii, Moskva (Moscow Institute of Electrochemistry, AS USSR)

SUBMITTED: April 18, 1957

Card 3/3

AUTHORS: Balashova, N. A., Kabanov, B. N. SOV/20-121-1-35/55

TITLE: The Electrochemical Behaviour of Zirconium in Sulfuric Acid (Elektrokhimicheskoye povedeniye tsirkoniya v sernoy kislote)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 121, Nr 1, pp. 126 - 128 (USSR)

ABSTRACT: In the present paper a report is made on the investigation of the cathodic and anodic behaviour of zirconium and of the no-current time variation of its potential in 1N H_2SO_4 at 25°. The experiments were performed in a hermetically sealed glass device at a rodlet of zirconium. According to the experimental results the oxide film which had formed on the surface of zirconium when kept in air for some time displaces the stationary potential towards the positive side. For cleaned electrodes the displacement towards the positive side amounts to 0,10 - 0,16 V. The laws found on occasion of cathodic and anodic polarisation of zirconium in 1N H_2SO_4 speak for a great influence of the oxide films. The cathodic

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The Electrochemical Behaviour of Zirconium in Sulfuric Acid SOV/20-121-1-35/55

curves show a break in the range of potentials from -0,6 to -0,2 V. On both sides of the break the curve of the excess-voltage of hydrogen satisfies the Tafel' equation. The zero point of zirconium according to the work function of the electron seems to be near -1 V. Beginning at very low current densities (1 - 2,10^{-5} amperes/cm^2) zirconium is very much passivated by an anodic polarisation. At a current density exceeding 10^{-4} amperes/cm^2 a gold-colored film with an effective ohmic resistance of the order of some dozens of ohms is produced. In the case of an inverse course of the curve of anodic polarisation a strong hysteresis can be observed. The oxide film obtained on zirconium by anodic polarisation reduces the velocity of hydrogen separation on zirconium. There are 3 figures and 7 references, 4 of which are Soviet.

ASSOCIATION: Institut elektrokhimii Akademii nauk SSSR (Institute of Electrochemistry AS USSR)

Card 2/3

The Electrochemical Behaviour of Zirconium in Sulfuric Acid SOV/20-121-1-35/55

PRESENTED: March 11, 1958, by A.N.Frumkin, Member, Academy of Sciences, USSR

SUBMITTED: March 7, 1958

1. Zirconium--Electrochemistry 2. Sulfuric acid--Chemical effects 3. Work functions

Card 3/3

BALASHOVA, N. A.

5(4) PHASE I BOOK EXPLOITATION SOV/2216

Soveshchaniye po elektrokhimii. 4th, Moscow, 1956.

Trudy...: [sbornik] (Transactions of the Fourth Conference on Electrochemistry: Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 868 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk.

Editorial Board: A.N. Frumkin (Resp. Ed.) Academician, O.A. Yesin, Professor; S.I. Zhdanov (Resp. Secretary), B.N. Kabanov, Professor, S.I. Zhdanov (Resp. Secretary); B.N. Kabanov, Professor, Ya. M. Kolotyrkin, Doctor of Chemical Sciences; V.V. Losev, P.D. Lukovtsev, Professor; Z.A. Solov'yeva; V.V. Stender, Professor; and G.M. Florianovich; Ed. of Publishing House: N.G. Yegorov; Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemical and electrical engineers, physicists, metallurgists and researchers interested in various aspects of electrochemistry.

COVERAGE: The book contains 127 of the 138 reports presented at the Fourth Conference on Electrochemistry sponsored by the Department of Chemical Sciences and the Institute of Physical Chemistry, Academy of Sciences, USSR. The collection pertains to different branches of electrochemical kinetics, double layer theories and galvanic processes in metal electrodepositon and industrial electrolysis. Abridged discussions are given at the end of each division. The majority of reports not included here have been published in periodical literature. No personalities are mentioned. References are given at the end of most of the articles.

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5(4), 5(2)

AUTHORS: Kovba, L. D., Balashova, N. A. SOV/78-4-1-38/48

TITLE: The Determination of the Solubility of Silver Oxides in Alkaline Solutions by the Method of Radioactive Indicators (Opredeleniye rastvorimosti okislov serebra v shchelochnykh rastvorakh metodom radioaktivnykh indikatorov)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 1, pp 225-226 (USSR)

ABSTRACT: The solubility temperature dependence of silver oxides in highly concentrated alkali solutions was determined by radioactive indicators. The radioactive isotope of silver Ag^{110} was used as indicator. On determining the solubility at 25° it was found that saturated solutions can be obtained only after 70-80 hours. At higher temperatures saturation is obtained after 10-15 hours. The solubility of Ag_2O in alkaline solutions of various concentrations is in good agreement with the data by Johnston and Laue. The dependence of the solubility of Ag_2O on the concentration of alkali lye at 25° is shown in figure 1. The solubility of Ag_2O increases

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The Determination of the Solubility of Silver Oxides in Alkaline Solutions by the Method of Radioactive Indicators SOV/78-4-1-38/48

considerably with a rise of the concentration of lye of from 1 to 5 n. In 10 n KOH the solubility of Ag_2O is $6.0 \cdot 10^{-4}$ equiv./1000 g H_2O. With rising temperature the solubility of Ag_2O increases. At 78° the solubility is four times higher than at 25°. The increase of solubility is not proportional to the rise of temperature. The presence of zinc ions does not influence the solubility of AgO and Ag_2O. Experiments of the solubility of AgO in alkali solutions did not yield any quantitative results. The authors thank B. N. Kabanov for his assistance.
There are 2 figures and 5 references, 1 of which is Soviet.

SUBMITTED: October 20, 1957

Card 2/2

24087
S/186/60/002/006/012/026
A051/A129

21.4200

AUTHORS: Balashova, N. A., Merkulova, N. S.

TITLE: The adsorption-electrochemical method of separating radioactive zirconium and niobium

PERIODICAL: Radiokhimiya, v. 2, no. 6, 1960, 699 - 703

TEXT: The authors, investigated in 1953 a method for separating radioactive zirconium and niobium in aqueous solutions containing in many cases low concentrations of stable isotopes of these elements. The method is based on the use of the difference between the adsorption properties of the zirconium and niobium ions under specially chosen experimental conditions. These conditions are determined by the different state of the ions of these elements in the electrolyte solutions. Nitrate and fluoride solutions of zirconium and niobium salts were used in the experiments. It was noted that in strong cathode polarization pure niobium is deposited on platinum or stainless steel from nitrate or fluoride solutions of a mixture of zirconium and niobium salts, whereas zirconium remains in solution. The hydrogen deposit potential on pla-

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tinum from the acid solution of potassium fluoride was 0.03 M containing niobium and zirconium in concentrations of the order of 10^{-10} M. Tests showed that the greatest quantity of niobium passes to the electrode at the lowest positive value of the potential. Experiments on separation of niobium from solutions where zirconium is present showed that pure niobium or niobium with various contents of zirconium can be produced.depending on the potential and concentration of these elements in the solution. The deposition of zirconium and niobium in several stages shows the best results. Attention is drawn to the fact that niobium^{95} is produced in the solution due to the radioactive decay of zirconium^{95} thus causing impurities in zirconium. If oxalate ions are present in solution the method mentioned cannot be applied. It is suggested that first the oxalate ion be destroyed by oxidation on the anode, then to continue the electrolysis with deposition of niobium. The results obtained led to the conclusion that complete separation of zirconium and niobium is possible by the method suggested. This method is also recommended for a rapid qualitative radiochemical analysis of the isotope mixture of Zr^{95} and Nb^{95} at low concentrations of the latter in the solution. In this case it is suggested depositing niobium on the cathode and carrying out a separate analysis of cathode

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The adsorption-electrochemical method S/186/60/002/006/012/026
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and solution. Various methods are considered for the removal of niobium from the platinum or steel cathodes. One of these is the use of the action of nitric acid to transfer niobium to the solution. It is pointed out that an incomplete transfer of pure niobium is achieved here with only 70 - 90 % of the initial amount removed in one hour. There are 4 figures and 20 references: 12 Soviet-bloc and 8 non-Soviet-bloc. The references to the most recent English language publications read as follows: R. E. Connick, W. H. Reas, J. Am. Chem. Soc., 73, 3, 1171, 1951; B. A. J. Lister, L. A. Mac-Donald J. Chem. Soc., 4315, 1952; E. M. Larsen, A. Gammil, J. Am. Chem. Soc., 72, 8, 3615, 1950; M. E. Holt, J. Electroch. Soc., 98, 1, 33, 1951.

SUBMITTED: January 11, 1960.

Card 3/3

KAZARINOV, V.Ye.; BALASHOVA, N.A.

Tracer study of iodine adsorption and desorption on smooth platinum. Dokl.AN SSSR 134 no.4:864-867 O '60. (MIRA 13:9)

1. Institut elektrokhimii Akademii nauk SSSR. Predstavleno akad. A.N.Frumkinym.

(Iodine--Isotopes) (Platinum--Isotopes) (Sorption)

KAZARINOV, V.Ye.; BALASHOVA, N.A.

Interaction of oxygen with the anions adsorbed on platinum from solution. Dokl. AN SSSR 139 no.3:641-644 Jl '61. (MIRA 14-7)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N. Frumkinym.

(Oxygen) (Anions) (Adsorption)

BALASHOVA, N.A.; ZIMAKIN, G.G.

Extent of ion adsorption on platinum as affected by the thermal and mechanical treatment of the surface. Dokl. AN SSSR 143 no.2:358-361 Mr '62. (MIRA 15:3)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N.Frumkinym.

(Adsorption)
(Metals--Finishing)

BALASHOVA, N.A.; RASHKOV, St.

Effect of the electrolyte acidity on the properties of cobalt electrodeposits. Dokl. AN SSSR 152 no.4:896-898 O '63. (MIRA 16:11)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N. Frumkinym.

BALASHOVA, N.A.; KABANOV, B.N.; KOVBA, L.D.

Lead transfer in a positive electrode of a lead accumulator.
Zhur. prikl. khim. 37 no. 4:906-908 Ap '64. (MIRA 17:5)

KAZARINOV, V.Ye.; BALASHOVA, N.A.

Adsorption of ions as dependent on platinum potential. Dokl. AN SSSR 157 no.5:1174-1177 Ag '64. (MIRA 17:9)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N. Frumkinym.

BALASHOVA, N.A., KULEZNEVA, M.I.

Mechanism of the effect of bivalent cations on the electroreduction of oxygen on platinum. Elektrokhimiia 1 no.2:155-158 F '65.

(MIRA 18:6)

1. Institut elektrokhimii AN SSSR.

[illegible]

[illegible]

[illegible] Ba [illegible]

[illegible]

[illegible]

ABSTRACT The migration (from $Cu(NO_3)_2$ and $AuCl_3$ solutions) of copper and gold [illegible] the surface of germanium electrodes [illegible]

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[illegible]

ACCESSION NR AP5009301

[illegible] of the electrode, but in the case of copper it is thought that in addition [illegible]

ASSOCIATION: Institut elektrokhimii Akademii nauk SSSR (Institute of Electro- [illegible]

SUBMITTED: [illegible] ENCL: 00 SUB CODE: IC

NO REF SOV: [illegible] OTHER: [illegible]

Card 2/2

BALASHOVA, N.A.; KAZARINOV, V.Ye.

Relation between the adsorption of cations and anions on platinum from acid solutions at different potentials. Elektrokhimiia 1 no.5:512-516 My '65. (MIRA 18:6)

1. Institut elektrokhimii AN SSSR.

KAZARINOV, V.Ye.; BALASHOVA, N.A.; KULEZNEVA, M.I.

Structure of the surface layer on platinum in alkaline solutions. Elektrokhimiia 1 no.8:975-978 Ag '65. (MIRA 18:9)

1. Institut elektrokhimii AN SSSR.

BALASHOVA, N.A.; KAZARINOV, V.Ye.

Structure of the double electric layer on platinum studied by the radioactive-tracer technique. Usp.khim. 34 no.10:1721-1732 O '65. (MIRA 18:11)

1. Institut elektrokhimii AN SSSR.

CZECHOSLOVAKIA

KAZARINOV, V. E.; BALASHOVA, N. A.

Institute of Electrochemistry, USSR Academy of Sciences (Institut Elektrokhimii, Akademiia Nauk SSSR), Moscow (for both)

Prague, *Collection of Czechoslovak Chemical Communications*, No 12, Dec 1965, pp 4184-4192

"Study of sulfuric and phosphoric acid adsorption on platinum."

BALASHOVA, N.A.; YELETSKIY, V.V.; MEDYNTSEV, V.V.

Effect of various factors on the transfer of copper and gold from aqueous solutions to the surface of germanium and silicon. Elektrokhimiia 1 no.3:274-278 Mr '65. (MIRA 18:12)

1. Institut elektrokhimii AN SSSR.

BALASHOVA, N.A.; KAZARINOV, V.Ye.

Electrochemical method of preparation of radioactive solutions of carrier-free iodate. Radiokhimiia 7 no.6:739-741 '65.

(MIRA 19:1)

BALASHOVA, N.A.; PANGAROV, N.A.; SEMENOVA, Z.V.

Connection between the structure of electrolytic deposits of cobalt and their corrosion resistance in sulfuric acid. Zashch. met. 2 no.1:80-84 Ja-F '66. (MIRA 19:1)

1. Institut elektrokhimii AN SSSR. Submitted July 27, 1965.

3 1

CZECHOSLOVAKIA

FRUMKIN, A.N.; MANSUROV, G. N.; KAZARINOV, V.E.; BALASHOVA, N. A.

Electrochemical Institute, Soviet Academy of Sciences (Institut elektrokhimii, Akademiia nauk SSSR), Moscow (for all)

Prague, Collection of Czechoslovak Chemical Communications, No 2, Feb 1966, pp 806-813

"Study of the adsorption of cadmium cations on a platinum electrode."

L 34392-66 EWT(m)/EWP(k)/EWP(t)/ETI IJP(c) JD/HW/WB
ACC NR: AP6003324 SOURCE CODE: UR/0365/66/002/001/0080/0084

AUTHOR: Balashova, N. A.; Pangarov, N. A.; Semenova, Z. V. 28 B

ORG: Institute of Electrochemistry, AN SSSR (Institut elektrokhimii AN SSSR)

TITLE: Relation between the structure of electrolytic deposits of cobalt and their resistance to corrosion 18 19 27

SOURCE: Zashchita metallov, v. 2, no. 1, 1966 80-84

TOPIC TAGS: cobalt, electrolytic deposition, corrosion resistance, cobalt compound, crystal orientation, cubic crystal, cathode polarization, boric acid, sulfuric acid

ABSTRACT: The relation between the structure of electrolytic deposits of Co and their resistance to corrosion was investigated with samples precipitated from electrolytes containing pure $CoSO_4$ (500 g/l $CoSO_4 \cdot 7H_2O$), 500 g/l $CoSO_4$ + 45 g/l H_3BO_3, and 500 g/l $CoSO_4$ + 45 g/l H_3BO_3 + halide (4 x 10^{-3} N KCl, KBr, or KI). The temperature, pH of the electrolyte, and the current density varied during the experiments. Two parallel Co plates, with Pt cathode (surface 2 cm^2) between them were used as anodes. The electrolysis was made for 2 - 2.5 hr at constant mixing of the electrolyte.

Card 1/3 UDC: 699.25 : 620.193

L 34392-66

ACC NR: AP6003324

The deposits were rinsed with bidistilled H_2O, subjected to a X-ray diffraction study, and then dissolved in 5 N H_2SO_4 at 20 - 23C in the atmosphere. All deposits obtained had hexagonal lattice with different planes of predominant orientation. The temperature, pH, and composition of the electrolyte considerably affected the direction and perfection of the deposit structure. In an ordinary $CoSO_4$ electrolyte with the addition of H_3BO_3, the deposit was oriented predominantly by face $(10\bar{1}0)$ parallel to the cathode surface. An increase of the pH from 1.6 to 5 improved the structure orientation and decreased the scattering of the deposit particles. In the electrolyte without H_3BO_3, the plane of the base (0001) was parallel to the cathode surface. No cubic modification of Co crystals was formed during the experiment. The predominant orientation of the Co crystals correlated with the changes of overvoltage of the discharge of Co ions: the cathode polarization was 200 - 300 mv higher during the formation of deposits, having an orientation (0001), than in deposits with the orientation $(10\bar{1}0)$. The rate of dissolving of Co deposits in H_2SO_4 changed correspondingly. The predominant orientation in the direction (0001) provided for higher stability of the Co deposits than the orientation (1010). The single-phase deposits of hexagonal Co with the orientation (1010) were formed in the presence of Cl^- and Br^- ions. In iodide solutions the

Card 2/3

S BALASHOVA, N. B. Protective coatings

Activation of Metal Surfaces Preparatory to Being Electroplated. N. B. Balashova, Yu. S. Tsareva, and A. T. Vagramyan. (*Doklady Akad. Nauk S.S.S.R.*, 1950, 71, No. 1, 73-76). Experiments to study the activating action of potassium cyanide and ethyl alcohol on copper and silver electrodes are described. Activation of the electrode surface in KCN solution occurs in a few seconds. Passivation in $AgNO_3$ solution occurs slowly (10 min.). Ethyl alcohol does not activate silver electrodes but it has a marked effect, similar to that of KCN, on copper electrodes.—R. A. R.

BALASHOVA, N.I.; LOVACHEVA, M.V.; SELIVANOVA, Ye.P.; ZHIVILIN, N.N.;
MANYAKIN, V.I., red.; SLEMZIN, A.A., red.; PYATAKOVA, N.D., tekhn.red.

[Certified seed sowing in the U.S.S.R. (grain and sunflower); a statistical manual] Sortovye posevy SSSR (zernovye kul'tury i podsolnechnik); statisticheskiy sbornik. Moskva, Gos.stat. izd-vo, 1957. 422 p. (MIRA 11:1)

1. Chlen Kollegii TSentral'nogo statisticheskogo upravleniya SSSR (for Manyakin). 2. Russia (1923- U.S.S.R.) TSentral'noye statisticheskoye upravleniye.

(Field crops)

KRZHEMINSKIY, S.A., kand.tekhn.nauk; KRYZHANOVSKIY, B.B., inzh.; KAMEYKO, V.A., kand.tekhn.nauk; LEVIN, N.I., kand.tekhn.nauk; BALASHOVA, N.M., inzh.; SHUTILO, L.I., inzh.

The technology and basic physicomechanical properties of air-entrained silicate and air-entrained cinder silicate used as insulating materials. Sbor. trud. ROSNIIMS no.20:36-51 '61. (MIRA 16:1)

(Insulating materials) (Sand-lime products)

KAZNACHEY, B.Ya.; BALASHOVA, N.N.

Manufacture of the first original disk (stamper) from a recording disk. Trudy VNAIZ no.5:97-109 '59. (MIRA 15:4)
(Phonorecords)

S/137/62/000/009/025/033
A006/A101

AUTHORS: Kaznachey, B. Ya., Balashova, N. N., Rozhdestvenskaya, A. K.

TITLE: Electrodeposition of nickel with low internal stresses out of sulfamic electrolytes

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 9, 1962, 122, abstract 9I791 ("Tr. Vses. n.-i. in-ta zvukozapisi", 1961, no. 9, 157 - 168)

TEXT: Internal stresses in Ni deposits obtained out of sulfamic electrolytes without admixtures, are much lower (by 1,000 - 2,000 kg/cm^2) than in deposits obtained from sulfuric acid electrolytes. In this connection sulfamic electrolytes are recommended for galvanoplastics and precipitation of thick Ni deposits. Contamination of sulfamic electrolytes with mechanical organic and metallic impurities increases internal stresses. A method is mentioned for electrolyte refining. Internal stresses in Ni deposits obtained in sulfamic eldctrolytes increase with higher D_c and pH of the electrolyte and decrease at elevated temperatures. The considerable proneness to pitting in sulfamic electrolytes is explained by high surface tension of the electrolyte (as compared to sulfuric

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Electrodeposition of nickel with... S/137/62/000/009/025/033
A006/A101

acid electrolyte). The addition of 0.1 - 1.0 g/l Na-laurylsulfate (I) reduces surface tension and eliminates pitting. (I) can be well combined with admixtures to reduce internal stresses. Hydrolysis of sulfamic electrolytes increases internal stresses in Ni-deposits. Refining of sulfamic electrolytes from SO_4^{2-} ions may be performed by $Ba(OH)_2$ precipitation. There are 17 references.

Authors' summary

[Abstracter's note: Complete translation]

Card 2/2

Balashova, N. [illegible]

Cand Chem Sci

Dissertation: "Electrolytic Deposition of Metals."

10 June 49

Moscow Order of Lenin Chemicotechnological Inst imeni D. I. Mendeleyev.

SO Vecheryaya Moskva
Sum 71

CA BALASHOVA, N N.

4

Polarization of metallic electrodes in cyanide solutions. Silver. A. T. Vagramyan and N. N. Balashova (Acad. Sci. U.S.S.R., Moscow). *Zhur. Fiz. Khim.* 24, 96-103 (1950).—Polarization curves of Ag in 0.1-0.2 *N* AgCN + 0.3 *N* KCN and in $AgNO_3$ + 0.3 *N* KNO_3 were detd. by the usual and by a rapid method (*C.A.* 42, 8306a). The current yield was > 90% at c.d. smaller than the limiting c.d. and 25-30% at higher c.d. Presumably, deposition of metal follows discharge of the complex anion such as $Ag(CN)_2^-$, and the deposit is smooth because the complex anions displace impurities from the electrode surface. Glazunov, *et al.* (*C.A.* 34, 3003^{9}), claimed that metal can be electrodeposited on a glass fiber next to the cathode, but V. and B. could not reproduce this expt. Glazunov's theory that the metal deposition is a secondary process is incorrect.

J. J. Bikerman

CA BABAYEVA, N N

7

Activation of the electrode surface. N. N. Babaeva, Yu. S. Tsareva, and A. T. Vagramyan. *Doklady Akad. Nauk S.S.S.R.* 71, 73-5(1950). Initial passivity of an electrode is indicated, and measured, by the change of its cathodic polarization between the moment of beginning deposition of a metal and the stationary polarization established in the electrodeposition at a given c.d. A Ag electrode, rinsed with distd. H_2O, then kept 10 min. in a 2 *N* soln. of $AgNO_3$ without current, then polarized in the same soln. at 0.001 amp./sq. cm. at 18-20°, showed a drop of the overvoltage during the 1st 3-5 sec., then a const. potential; the drop of the overvoltage measures the degree of initial passivity of the Ag. The same electrode pretreated in a soln. of KCN showed, on the contrary, an initial rise of the potential during the 1st few sec. of electrodeposition in 2 *N* $AgNO_3$. Consequently, pretreatment with KCN produces an initially highly active surface, in contrast to the passivity produced by currentless immersion in $AgNO_3$. On Ag electrodes preactivated in KCN, the no. of Ag crystallites in a Ag deposit produced by electrolysis of $AgNO_3$ is much higher than on a non-activated Ag electrode. This no. decreases with increasing length of currentless immersion in $AgNO_3$ following the activating KCN treatment; a 10-sec. immersion in $AgNO_3$ was sufficient to destroy the activation, and the no. of crystallites became equal to that counted on a not previously activated electrode which was kept in $AgNO_3$ for the same length of time. Activation in KCN requires a few sec., whereas passivation in $AgNO_3$ is comparatively much slower. Similar results were obtained with a Cu electrode which is readily activated by KCN, also by EtOH which has no activating effect on Ag. N. Thon

Mechanism of the Electrodeposition of Metals from Cyanide Solutions. A. T. Vagramyan and N. N. Balashova. *Trudy Soveshchaniya po Elektrokhimii 1950* 1953, 737-741 (In Russian). Curves showing the dependence of the cathode potential on the time of polarization were obtained for AgCN, AgCN + KCN and AuCN + KCN [illegible] and [illegible]. It is concluded from the results that in solutions of cyanides the electrode is in an active condition and the metal is deposited as a result of the discharge of complex ions adsorbed on the surface. This explains the production of fine grained deposits from cyanide baths. G. V. E.

①

NALIVKIN, D.V., akademik, redaktor; MENNER, V.V., redaktor; RAUZER-CHERNOUSOVA, D.M.; REYTLINGER, Ye.A.; BALASHOVA, N.N.; DALMATSKAYA, I.I.; CHERNOVA, Ye.I.

[Regional stratigraphy of the U.S.S.R.] Regional'naia stratigrafiia SSSR. Vol. 2. [Stratigraphy of the middle carboniferous deposits in the central and eastern parts of the Russian Platform; on the basis of foraminifera study] Stratigrafiia srednekamennougol'nykh otloshenii tsentral'noi i vostochnoi chastei Russkoi platformy; na osnove izucheniia foraminifer. Pt. 1. [The Moscow Basin] Moskovskaia sineklisa. Glav. red. D.V.Nalivkin, V.V.Menner. Moskva, Izd-vo Akademii nauk SSSR. 1954. 270 p. (MLRA8:2)

1. Akademiya nauk SSSR. Institut geologicheskikh nauk.
(Moscow Basin--Geology, Stratigraphic)

15-57-5-5769

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 5, p 9 (USSR)

AUTHORS: Reytlinger, Ye. A., Balashova, N. N.

TITLE: Stratigraphy of the Middle Carboniferous Strata in Rzhev Volga District (Stratigrafiya srednekamennougol'nykh otlozheniy Rzhevskogo Povolzh'ya)

PERIODICAL: V sb: Regional'naya stratigrafiya SSSR, Vol 2, Moscow, Izd-vo AN SSSR, 1954, pp 121-200.

ABSTRACT: Bibliographic entry

Card 1/1

[illegible]

32-7-23/49

AUTHORS: Raohkulik, V.J. , Berman, M.L., Balashova, N.N.

TITLE: Short Reports
(Korotkiye soobshoheniya)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol.23, Nr 7, pp. 829 - 829 (USSR)

ABSTRACT: On this basis of the investigation of the luminescence properties of rubber mixtures and - ingredients used in the cable industry the advantages offered by the method of luminescence for an accelerated control of the quality of rubber mixtures and ingredients are determined. By means of this method it is possible to determine the purity and quality of the component of rubber admixtures and to detect serious faults existing in these mixtures; furthermore, it is possible to sort out rubber and rubber substances of apparently similar character. N.N. Balashova developed a method for the determination of the strength of galvanically applied silver coatings. A solution of 10 g chrome anhydride in 1 litre 0,1-h sulphuric acid was used for the coating of copper, brass, iron, nickel, and other metals with silver without any destructive effects.

Card 1/2

32-7-23/49

Short Reports

ASSOCIATION: Tashkent Branch of the Cable Industry Institute (Tashkentskoye otdeleniye instituta kabel'noy promyshlennosti)

Scientific Research Institute for the Recording of Sound (Nauchno-issledovatel'skiy institut zvukozapisi)

AVAILABLE: Library of Congress

Card 2/2

BALASHOVA, N.N., mladshiy nauchnyy sotrudnik

Resistance of table peas to the lima bean pod borer. Zashch. rast. ot vred. i bol. 6 no.12:45 D '61. (MIRA 16:5)

1. Moldavskiy institut oroshayemogo zemledeliya i ovoshchevodstva, Tiraspol'.

ACCESSION NR: AP4018073 S/0119/64/000/002/0012/0013

AUTHOR: Balashova, N. N.; Smagunova, N. A.; Tovpinets, Ye. I.

TITLE: Reducing porosity of nickel coating

SOURCE: Priborostroyeniye, no. 2, 1964, 12-13

TOPIC TAGS: nickel plating, nickel coating, nickel coating porosity, nickel electroplating, electroplating

ABSTRACT: An experimental investigation of the effect of additives to (a) nickel electrolytes or (b) cleaning liquors upon the porosity of nickel coating is described. Cation-active, anion-active, and nonionogen additives were tested; each test was conducted with power on and power off, and the results were evaluated by a microscopic count of visible pores per 1 cm^2. These results with additions to the electrolyte are reported:

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ACCESSION NR: AP4018073

Additive:	Pore Count: Power On	Off 10-15 sec
None	500	500
Sodium lauryl sulfate	500	120
French tipol	500	130

And with additions to cleaning liquors:

Class:	Additive:	Pore Count: Power On	Off
	None	500	500
Cation	Alkamon D	90	330
Anion	Sodium lauryl sulfate	500	390
Nonionogen	OP-7	28	23

Card 2/3

ACCESSION NR: AP4018073

It is recommended that the parts to be nickel-plated be washed in a water bath to which 1-1.5 g/lit of OP-7 or OP-10 has been added. Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: NIIChasprom (Scientific Research Institute of Clock Industry)

SUBMITTED: 00 DATE ACQ: 18Mar64 ENCL: 00

SUB CODE: ML NO REF SOV: 004 OTHER: 004

Card 3/3

[illegible]

ASSOCIATION: [illegible]

SUBMITTED: ENCL: SUB CODE: EC

2/2

BALASHOVA, N.N.; YEFIMOV, I.A.

Improvement of the method for determining the surface tension at the solution - air interface. Zav. lab. 30 no.11:1367-1368 '64 (MIRA 18:1)

1. Opytno-konstruktorskoye byuro avtomatiki.

[illegible]ASHOVA, N.I.

Effect of surface-active agents on the porosity of electrolytic zinc coatings. Zhur. fiz. khim. 38 no.7:1830-1833 Jl '64.

(MIRA 18:3)

1. Vsesoyuznyy zaochnyy politekhnicheskiy institut.

BALASHOVA, N.N., kand. khim. nauk; YEFIMOV, I.A., inzh.

Obtaining bright electrolytic depositions from cobalt-nickel-phosphor alloy. Priborostroenie no.2:16-17 F '65.

(MIRA 18:3)