SUMAROKOV, V.P.; VOLODUTSKAYA, Z.M.

Complex esterification of tall oil acids with isoamyl alcohol.
Gidroliz. i lesokhim. prom. 17 no.3:11-13 '64.
(MIRA 17:9)

1. NITKhIB.

SUMAROKOV, V.P.; VOLODUTSKAYA, Z.M.

Production of high-quality methylacetate. Gidroliz. i lesokhim. prom. 17 no.7:16-17 '64. (MIRA 17:11)

1. NITKhIB.

SUMAROKOV, Viktor Pavlovich; VAN'YAN, Mariya L'vovna; ASKINAZI, Anna Il'inichna; TULIAKOV, B.V., red.

[Tall oil] Tallovoe maslo. Moskva, Lesnaia promyshlennost', 1965. 146 p. (MIRA 18:3)

SUMAROKOV, V.P.

New standard for wood alcohol solvents. Gidroliz. i lesokhim. prom. 18 no.3:6-7 '65. (MIRA 18:5)

KONDRAT'YEVA, Ye.N.; TARANENKO, L.I.; SUMARUKOVA, R.S.

Requirement of some microelements by purple and green sulfur bacteria. Nauch. dokl. vys. shkoly; biol. nauki no.2:176-180 '65. (MIRA 18:5)

1. Rekomendovana kafedroy mikrobiologii Moskovskogo gousdarstvennogo universiteta im. M.V. Lomonosova.

LITVYAK, I.G.; SUMAROKOVA, T.N.

Solvolysis of tin tetrahalides. Zhur. ob. khim. 34 no.11:
3677-3682 N '64 (MIRA 18:1)

SUMAROKOV, V. S.

Hydrology

DECEASED

c. '62

1767

SUMAROKOVA, M.

191T18

USSR/Chemistry - Antimony Compounds Jul 51

"Binary Systems Formed by $SnCl_4$, $SbCl_3$, and $AsCl_3$. V. The System $SbCl_3$-CCl_3COOH," T. Sumarokova, M. Usanovich, Lab Phys Chem, Inst Chem, Acad Sci Kazakh SSR

"Zhur Obshch Khim" Vol XXI, No 7, 1219-1222

Studied elec cond, viscosity, density of system $SbCl_3$-CCl_3COOH at 50, 60, 70°C. Elec cond and viscosity diagrams showed presence of acid-base interaction between components and of compds $SbCl_3 \cdot CCl_3COOH$ and $2SbCl_3 \cdot CCl_3COOH$.

191T18

USSR/Chemistry - Antimony Compounds Jul 51
(Contd)

Dystectic max on fusibility diagram of system represented compd $SbCl_3 \cdot CCl_3COOH$ (mp 56°). This is 1st established case of CCl_3COOH acting as additive or oxonium base.

191T18

SUMAROKOVA, M.Ya., dotsent.

Work of the scientific student circle attached to the chair of pharmacognosy of the Chervenkov Academy of Medicine in the academic year 1951-52 (Bulgaria). Apt.delo 2 no.5:51-52 S-O '53. (MLRA 6:10)
(Bulgaria--Pharmacognosy--Study and teaching)
(Study and teaching--Pharmacognosy--Bulgaria)

SUMAROKOVA, M.Ya., dotsent; GAVRILYUK, Ye.Ya.

From the pages of the foreign pharmaceutical press (Czechoslovakia). Apt. delo no.4:74-79 Jl-Ag '53. (MLRA 6:8)
(Czechoslovakia--Pharmacy) (Pharmacy--Bibliography)
(Bibliography--Pharmacy)

SUMAROKOVA, M. Ya., dotsent

Fifth edition of the Hungarian Pharmacopeia, 1954. Apt. delo 3 no.5:54-57 S-O '54. (MIRA 7:12)
(PHARMACOPEIA,
Hungar, 5th edition)

SUMAROKOVA, M.Ya., dotsent.

Pharmaceutical education in Czechoslovakia. Apt.delo 4
no.5:59-64 S-O '55. (MLRA 8:12)
(PHARMACY, education,
in Czech.)

SUMAROKOVA, M.Ya., dotsent.

First supplement to the seventh edition of the French Pharmacopoeia. M.Ia. Sumarokova. Apt. delo. 4 no.6:50-52 N-D '55. (MLRA 9:1)

(FRANCE-PHARMACOPOEIAS)

SUMAROKOVA, M.Ya.,dotsent

"Parmacy." Reviewed by M.IA.Sumarokova. Apt.delo 5 no.2:57-59
Mr-Ap '56. (MIRA 9:7)
(CZECHOSLOVAKIA--PHARMACY--PERIODICALS)

GOLOSOV, A.V.; SOKOLOV, I.I.; USPENSKAYA, A.N.; TSVETKOV, N.G.; SUMAROKOVA, M.Ya., redaktor; CHERNYAVSKIY, M.N., redaktor; LYUDKOVSKAYA, N.I., tekhnicheskiy redaktor.

[Textbook of the Latin language for secondary medical schools] Uchebnik latinskogo iazyka dlia srednikh meditsinskikh uchebnykh zavedenii. Pod obshchei red. M.IA.Sumarokovoi. Moskva, Gos.izd-vo med.lit-ry, 1957. 157 p. (MIRA 10:11)

(Latin language)

SUMAROKOVA, M.Ya., dotsent

Pharmaceutical education in various countries. Apt.delo 6 no.1: 80-83 Ja-F '57. (MIRA 10:3)
(PHARMACY--STUDY AND TEACHING)

SUMAROKOVA, M.Ya., dotsent

The United States Pharmacopoeia. Fifteenth Revision, 1955; brief survey. Apt.delo 6 no.2:87-89 Mr-Ap '57. (MIRA 10:6)
(UNITED STATES--PHARMACOPOEIAS)

Sumarokova, M. Ya.

SUMARCKOVA, M.Ya., dots.

Finnish pharmacopoeias, seventh edition, 1956. Apt.delo 6 no.3:
77-80 My-Je '57. (MIRA 11:1)
(FINLAND--PHARMACOPOEIAS)

SUMAROKOVA, M.Ye., dotsent

"For health protection" ["Au service de votre santé." Reviewed by M.Ye. Sumarokova]. Apt.delo 6 no.4:69-72 Jl-Ag '57. (MIRA 10:9)
(FRANCE--PHARMACY)

SUMAROKOVA, M.Ya., dotsent

Material on the training of pharmacists in a number of countries.
Apt.delo 6 no.6:78-80 N-D '57. (MIRA 10:12)
(PHARMACY--STUDY AND TEACHING)

SUHAROKOVA, M.Ya., dotsent

Some problems of pharmacy in the United States; from material published in the Journal of the American Pharmaceutical Association, February 1958. Apt.delo no.4:83-85 Jl-Ag '58 (MIRA 11:8)
(UNITED STATES--PHARMACY)

SUMAROKOVA, M.Ya., dots.

Some information on the preparation of the new DAB-7 edition. of the German pharmacopoeia. Apt.delo 7 no.5:88-89 S-O '58 (MIRA 11:10)
(GERMANY--PHARMACOPEIAS)

SUMAROKOVA, M.Ya., dots.

Pharmacopoeia of the Netherlands for 1958. Apt.delo 8
no.2:88-89 Mr-Ap '59. (MIRA 12:5)
(NETHERLANDS--PHARMACOPOEIAS)

AUTHORS: Kolchin, O.P., Sumarokova, N. V., Chuveleva, N. P., 89-12-5/29

TITLE: Production of Plastic Niobium (Polucheniye plastichnogo niobiya)

PERIODICAL: Atomnaya Energiya, 1957, Vol. 3, Nr 12, pp. 515-524 (USSR)

ABSTRACT: First the properties of niobium are written down. The process necessary for obtaining niobic powder with 98,9 - 99,2% content of niobium is described in detail. This powder is obtained by reduction of the K_2NbF_7 with sodium. If from thepowder obtained pressed bars are manufactured and sintered in the vacuum, plastic niobium is obtained. The investigation of thephase condition of this not entirely reduced mixture of niobic oxide and niobic carbide shows that the main reaction in the reduction in the vacuum can be understood as a summation reaction of successively occurring reactions in the following form:

$$Nb_2O_5 + 5\ NbC \xrightarrow{<1200^{\circ}C} 2\ NbO_2 + 5\text{"}NbC\text{"}\ (NbC_{0,8}) + CO$$

where "NbC" is the phase with variable composition:

$$2\ NbO_2 + 5\text{"}NbC\text{"}\ (NbC_{0,8}) \xrightarrow{\sim 1200^{\circ}C} 0,5\ NbO_2 + 1,5\ NbO + 2,5\ Nb_2C + 1,5\ CO$$

$$0,5\ NbO_2 + 1,5\ NbO + 2,5\ Nb_2C \xrightarrow{\sim 1400^{\circ}C} 2NbO + 2Nb_2C + Nb + 0,5\ CO$$

$$2\ NbO + 2\ Nb_2C + Nb \xrightarrow{\geq 1400^{\circ}C} 7\ Nb + 2\ CO$$

Special investigations gave evidence that in the choice of the reduction regimen the interaction between the vapours of the infer-

Card 1/2

S/180/61/000/006/002/020
E021/E135

AUTHORS: Sazhin, N.P., Kolchin, O.P., and Sumarokova, N.V.
(Moscow)

TITLE: The processes of reduction of niobium oxides by carbon

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo, no.6, 1961, 8-24

TEXT: The chemical and physical processes occurring during high temperature reduction of oxides of niobium by carbon were studied with the aim of explaining the mechanism of reduction. Niobium pentoxide powder (0.15 mm particles) containing 0.01% TiO_2, 0.06% Fe_2O_3 and 0.01% SiO_2 was used with lamp-black or niobium-carbide as reducing agents. The niobium carbide was prepared by heating a mixture of niobium carbide with lamp black at 1800 °C in a current of hydrogen; it contained 10.2% carbon. The phase composition of the products of incomplete reduction were studied, a thermodynamic analysis of the Nb-O-C system was made and the properties of the oxides of niobium were investigated. The rates

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The processes of reduction of ...

S/180/61/000/006/002/020
E021/E135

of diffusion of oxygen and carbon in niobium and the rates of evaporation of the lower oxides of niobium were compared semi-quantitatively. From the results of the experiments and from a critical examination of other literature it is shown that the reduction is a multi-stage process, and a mechanism for reduction at temperatures used in practice is proposed. Reduction by niobium carbide at 1100-1300 °C of the pentoxide to the dioxide and partially to the oxide occurs in the main by the generally accepted two-stage scheme with the formation of carbon monoxide. Reduction may also occur at the beginning of the process by interaction in the solid phase between niobium pentoxide and carbon formed by dissociation of the carbide. The second stage of the process is the reduction of the lower oxides of niobium at temperatures above 1500 °C. This takes place in the gaseous phase and depends on the evaporation of the lower oxides which is the reaction limiting the rate of the process. In the last stage of the process, oxygen and carbon diffuse to the surface of the pores in the metal and are evolved as carbon monoxide. The reaction limiting the purification of the metal from dissolved

Card 2/4

The processes of reduction of ... S/180/61/000/006/002/020
E021/E135

oxygen and carbon is the desorption of the carbon monoxide. The reduction of the pentoxide to the dioxide and the dioxide to the oxide can be carried out in a relatively low vacuum or in a current of hydrogen or inert gas. The reduction of the oxide and the removal of the carbon monoxide at temperatures used in practice require a high vacuum. The rate of reduction can be increased by increasing the temperature and rate of carbon monoxide removal. The maximum temperature possible for each stage is determined by the melting point of the phase most easily melted. The proposed mechanism for the reduction process of niobium can be extended without any radical changes to the reduction process of tantalum and vanadium from their oxides and from mixtures of their oxides and carbides.
There are 6 figures, 4 tables and 33 references: 19 Soviet-bloc, 6 Russian translations from non-Soviet publications, and 8 non-Soviet-bloc. The four English language references read as follows:

✓

Card 3/4

The processes of reduction of ... S/180/61/000/006/002/020
E021/E135

Ref. 15: G.L. Miller. Tantalum and Niobium, London, 1959, pp 181-187, 283-291.
Ref. 17: High Temperature Technology. N.Y.-London, 1956, ed. J.E. Campbell.
Ref. 24: F. Holtsberg, A. Reisman, M. Bewry, M. Berkonbilt. The polymorphism of Nb_2O_5. J. Amer. Chem. Soc., 1957, 79, 2039.
Ref. 26: R. Orr. High temperature heat contents of tantalum and niobium oxides. J. Amer. Chem. Soc., 1955, 75, 2808-09.

SUBMITTED: March 21, 1961

Card 4/4

S/089/61/010/002/012/018
B102/B209

AUTHORS: Kolchin, O. P., Sumarokova, N. V.

TITLE: Melting point and other properties of lower niobium oxides

PERIODICAL: Atomnaya energiya, v. 10, no. 2, 1961, 168-170

TEXT: The present paper is a report on investigations made on NbO and NbO_2. NbO_2 was produced by reduction of the pentoxide in vacuo at 1300 and 1700°C, NbO by reduction of NbO_2. The impurities in the pentoxide (tantalum-silicon-, titanium-, and iron oxides) were removed for the major part during reduction in vacuo. The three obtained niobium dioxide samples still contained 0.02 - 0.04% by weight of C, 0.006% by weight of N and had the composition $NbO_{1.942}$, $NbO_{1.956}$ and $NbO_{1.986}$. Radiographic structural analysis showed that the product consisted of one phase only with the following lattice parameters: $a = 4.82 \pm 0.02$ kX, $c = 2.99 \pm 0.02$ kX. The three monoxide samples contained 0.04 - 0.06% by weight C and 0.03% by weight N and exhibited the composition $NbO_{0.95}$, $NbO_{1.01}$, and $NbO_{1.02}$. Melting point determination: Briquets

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S/089/61/010/002/012/018
B102/B209

Melting point and other ...

(1.5 - 2.0 t/cm^2, 10 x 10 mm cross section) were pressed from NbO and NbO_2 powder and electrically heated in containers made of niobium sheet by a graphite heater in vacuo. The melting point of NbO was found to be at 1935°C, that of NbO_2 at 2080°C, allowing for an error of ± 15°C. Micro- and radiographic structural analysis was employed on re-molten NbO for checking the single-phase consistency and to determine the parameter a (4.201 kX). The results concerning NbO_2 do not agree with those form Ref. 9 which is said to be due to the fact that in that case NbO_2 contained NbO impurities. Determination of volatility and composition of the gaseous phase: Investigations in vacuo (0.5 - 1.10^{-6}mm Hg) at various temperature showed that both oxides start evaporating at a considerable rate at 1700°C. At 1850°C, all of the monoxide and 45% by weight of the dioxide were evaporated after 4 hours, and after 8 hours also the dioxide was entirely evaporated. It was proved mass-spectroscopically that the gaseous phase above NbO_2 contains NbO_2 molecules only, i. e. that neither dissociation nor association take place. Investigation of the micro-hardness: Re-molten homogeneous niobium oxide samples had a micro-hardness of

Card 2/3

Melting point and other ...

S/089/61/010/002/012/018
B102/B209

1930 kg/mm^2, the eutectic in the average one of 794 kg/mm^2 (load of 50 g), the dioxide 1720 kg/mm^2; the latter value is inaccurate. Character of electric conductivity: NbO turned out to have metallic conductivity, NbO_2 to be a semiconductor. Oxidation in air: Dioxides ($NbO_{2.00}$ and $NbO_{1.92}$) produced at 1300 and 1700°C, respectively, and a monoxide ($NbO_{0.914}$) produced at 1700°C were powdered (grain size 0.15mm) and heated in air at 100 - 300°C; oxygen content was determined. After 6 hours of heating at 100, 150, 200, 225, 250, and 275°C the oxygen content was unchanged in the monoxide and was a little raised in the dioxide at 275°C. However, the surface of the powder particles of both oxides became yellowish already at 150°C and bronze-colored at 200°C. Only after 6 hours at 300°C, both oxides were completely oxidized to the pentoxide. In conclusion, the authors thank L. V. Mel'nikova for having made the metallographic analysis. There are 2 figures and 11 references: 5 Soviet-bloc and 2 non-Soviet-bloc.

SUBMITTED: October 4, 1960

Card 3/3

ACCESSION NR: AP4042350

were sintered at a temperature varying from 1700 to 2100C; compacts 20 x 20 mm were sintered at 1900C or at 2100C in a vacuum of 0.001 mm Hg. In the preparation of alloys, Al, Ti, Zr, V, Ta, Mo, and W were used as the alloying elements; for more complete removal of carbon during reduction, the oxides were added in an amount 2—5% higher than the stoichiometric. The experiments showed that binary Nb—(4.8—6.2)%Mo, Nb—(5.7—24.6)% W, Nb—(4.3—5.8)% V, Nb—2.2% Ti alloys, ternary Nb—(4.25—4.9)% Mo—(0.87—1.85)% Zr, Nb—(17.0—26.4)% W—(2.07—4.5)% Ti, Nb—5.0% W—2.0% Ta, Nb—(3.0—3.5)% V—(0.4—0.5)% Al alloys, and quaternary Nb—14.1% W—5.0% Mo—(0.93—1.1)% Zr alloys can be prepared by one or both processes. Attempts to obtain binary Nb—Al alloys were unsuccessful. Better quality alloys with a consistently lower content of O, N, and C are obtained by reduction at 2100C. The alloys have a porosity of 40—50%. Subsequent electron beam melting substantially lowers the content of O, N, and C, in some cases without affecting the content of W and Mo, or Zr when its content is about 1%. When necessary, the alloys can be reprocessed by any conventional method used for unalloyed niobium. Experiments on electron beam melting of the alloys were conducted by A. V. Yelyutin. Orig. art. has: 3 tables.

Card 2/3

ACCESSION NR: AP4042350

ASSOCIATION: none

SUBMITTED: 00 ATD PRESS: 3069 ENCL: 00

SUB CODE: MM NO REF SOV: 004 OTHER: 002

Card 3/3

L 32686-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6012727 SOURCE CODE: UR/0136/66/000/004/0067/0070

48
47
B

AUTHOR: Kolchin, O. P.; Sumarokova, N. V.; Vol'dman, M. A.

ORG: none

18 27 27

TITLE: Kinetics of the combined carbothermic reduction of niobium and tungsten

SOURCE: Tsvetnyye metally, no 4, 1966, pp 67-70

TOPIC TAGS: vacuum furnace, chemical reduction, niobium, tungsten, niobium compound/ /VVPS-10A type vacuum furnace

ABSTRACT: This is a continuation of a previous investigation (O. P. Kolchin et al. Tsvetnyye metally, 1964, no 7) with the difference that it deals with a detailed investigation of the kinetics of the combined carbothermic reduction of Nb and W from the mixtures of the oxides and carbides of Nb and alloy elements at various temperatures, the degree of reduction being determined according to the change in the C content of specimens following their heating in a VVPS-10A type vacuum furnace. In the reduction products the W content was determined by the photocolorimetric thiocyanate method, correct to 3-5% (rel.); the Nb content, according to weight gain when heating the specimen in air; and the C content, by the volumetric method. It was found that in the presence of W the degree of the reduction of Nb_2O_5+5NbC at 1200 and

Card 1/2 UDC: 669.293'27.094.2

L 32686-66

ACC NR: AP6012727

1400°C is greater, particularly so when the raw charge contains 30% W in the form of an oxide rather than a carbide. X-ray structural phase analysis showed that W is the first to get reduced and subsequently, at higher temperatures, it forms an alloy with Nb, which is accompanied by the reduction of Nb. It is best to start with the temperature of 1400°C and regularly increase it until at most 1900°C. These findings confirm the earlier observation that W oxides during the reduction virtually do not get sublimated from the burden and that even alloys with a high W content have a close-to-theoretical composition. Orig. art. has: 1 figure, 1 table.

SUB CODE: 11, 13 SUBM DATE: none/ ORIG REF: 004

Card 2/2 BLG

L 40919-66 EWP(e)/EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD/JG

ACC NR: AP6020738 SOURCE CODE: UR/0136/66/000/006/0065/0067 67

AUTHOR: Kolchin, O. P.; Chuveleva, N. P.; Sumarokova, N. V.; Filipenko, V. V.; Men'shchikov, V. A.; Kadyshevskiy, V. S.; Belimov, N. I.; Abramovich, E. B. B

ORG: none

TITLE: Manufacture of powdered niobium and its alloys by hydrogenating compacted metals and alloys

SOURCE: Tsvetnyye metally, no. 6, 1966, 65-67

TOPIC TAGS: metal powder, powder metal production, niobium, powder metallurgy, hydrogenation, niobium alloy

ABSTRACT: The report presents a method for manufacturing high purity powders by hydrogenating niobium or its alloys at lower temperatures (360 to 400C) and lesser excess hydrogen pressures (up to 0.7 atm) than those commonly required. The process is even faster at the reduced temperature levels. Hydrogenation and milling techniques are given in detail for source materials derived by electron beam smelting or carbide heating processes. For the latter, direct yield of dehydrogenated powder was 91.4%, total yield 98.3%, unaccountable losses 1.1%. The impurity content in niobium powders obtained from different compacted metals is

UDC: 669.293-492.2

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given in Table 1.

Table 1. Impurity content (% by man) in niobium powders obtained from different compacted metals.

Initial material			Powder (−0.147 mm)		
N	O	C	N	O	C
Reduced Metal					
0.04	0.27	0.15	0.04	0.24	—
0.05	0.27	0.03	0.05	—	—
0.05	0.20	0.09	0.05	—	0.11
0.05	0.20	0.10	0.03	—	—
0.04	0.23	0.07	0.06	—	—
0.04	0.13	0.06	0.09	—	—
0.07	0.24	0.05	0.05	0.32	—
0.05	0.20	0.07	0.04	0.30	—
0.05	0.15	0.06	0.05	—	—
Ends of rods of a sintered Metal*					
0.05	—	0.12	0.08	0.16	0.15
0.04	0.45	0.20	0.02	0.46	0.26
0.05	0.25	0.12	0.05	—	0.11
0.04	0.27	0.08	0.05	0.30	0.11
—	—	—	0.05	0.35	0.06
0.05	—	—	0.06	0.40	0.20

*The sintered rods contain 0,01—0,03% C; 0,02% N; 0,02% O; <0,01% Ti и Si; 0,01—0,03% Fe; 0,15—0,25% Ta; ~ 99,9% Nb (+Ta).

L 40919-66
ACC NR: AP6020738

Orig. art. has: 2 figures and 1 table.

SUB CODE: 11,13/ SUBM DATE: 00/ ORIG REF: 001/ OTH REF: 002

Card 3/3 11b

L 2427-67 EWT(m)/T/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6031728 SOURCE CODE: UR/0136/66/000/009/0072/0074

AUTHOR: Kolchin, O. P.; Filipenko, V. V.; Nizharadze, K. S.; Abramovich, E. B.; Sumarokova, N. V.; Men'shchikov, V. A.

36
35
B

ORG: none

TITLE: Synthesis of niobium carbide with a low nitrogen content

27 27

SOURCE: Tsvetnyye metally, no. 9, 1966, 72-74

TOPIC TAGS: niobium carbide, high purity carbide, ~~low nitrogen niobium carbide,~~ niobium carbide synthesis, NIOBIUM COMPOUND, CARBIDE, NITROGEN, OXYGEN, CHEMICAL SYNTHESIS

ABSTRACT: An investigation has been made of the various factors which contribute to the contamination with nitrogen and oxygen of niobium carbide produced by a continuous process in the Tamman furnace. The investigation results showed that the only significant source of contamination was the inflow of air into the reaction chamber when the furnace was opened every 30 min for charging and removing the final product. Modification of the charge chamber decreased the cross section of the charging shute from 1000 to 160 cm^2, cut in three the number of openings required to charge the chamber, and sharply reduced the amount of the air flowing in through a narrowed charge shute. A hydraulic lock was also installed for combustion gases, which made it possible to increase the pressure of gases in the furnace to 100—200 mm Hg and thus practically eliminate the inflow of air into the furnace.

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ACC NR: AP6031728

1

The resulting improvements in the process substantially improved the quality of niobium carbide produced. The niobium carbide produced in the modernized furnace contained 89.32—89.63% Nb(+Ta), 0.03—0.14% Fe, 10.0—10.4% C, and only 0.028—0.059% N and 0.14—0.52% O, instead of the previous 0.3% N and 2—3% O. Tantalum carbide with a low content of nitrogen and oxygen was also produced in the modernized furnace, and it is believed that pure carbides of other refractory metals can be produced in it. Orig. art. has: 2 figures.

27

SUB CODE: 07 / SUBM DATE: none/ ORIG REF: 005/ OTH REF: 001

Card 2/2

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Bc

7-1

Conductivity, viscosity, and surface tension in the system H_2SO_4–$HClO_4$. M. Usanovitsch, T. Sumarokova, and V. Udovenko (J. Gen. Chem. Russ., 1939, 9, 1967—1975).—Conductivity, η, and surface tension data for the system at 0°, 10°, and 25° do not suggest compound formation. The max. on the conductivity–composition curve is ascribed to lowering of the η of the system with increasing [$HClO_4$].

R. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

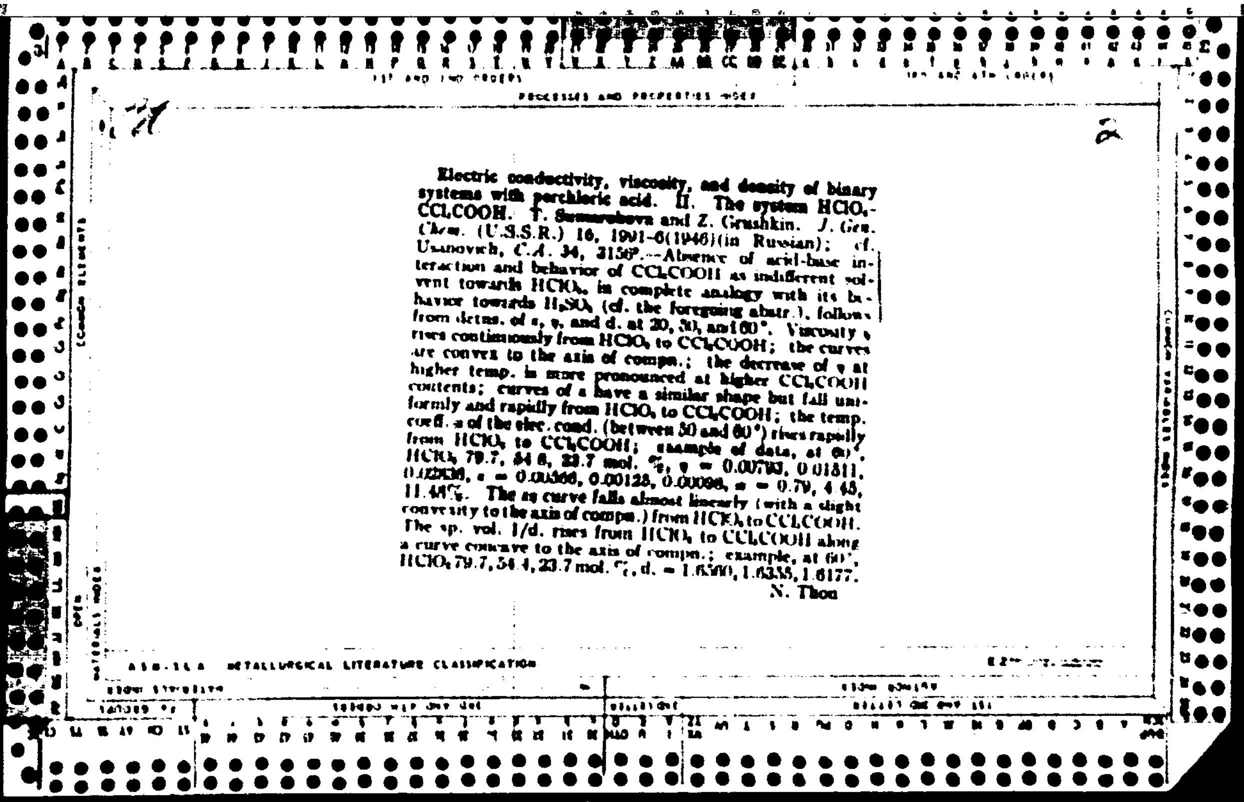
CA

2

The electric conductivity, viscosity and surface tension of the system H_2SO_4-$HClO_4$. M. Usanovich, T. Sumarokova and V. Udovenko. *Acta Physicochim. U. R. S. S.* 11, 505-20(1939)(in German); *J. Gen. Chem.* (U. S. S. R.) 9, 1967-73(1939).—An app. for the simultaneous detn. of the elec. cond. κ, viscosity η and surface tension σ is described. *Pure* $HClO_4$ was prepd. by distn. of 70% acid with 96% H_2SO_4. The phys. consts. were detd. at 0°, 10° and 25°, resp.: $\kappa \times 10^4$, 3.619, 3.886, 4.083; σ, 33.90, 32.41, 31.26; $\eta \times 10^4$, 11.89, 9.46, 7.95; d., 1.8129, 1.7915, 1.7722. Data are given on the κ, η, σ, and d. values of various $HClO_4$-H_2SO_4 solns. The $\kappa = f$ (mol. % H_2SO_4) curves rise slowly up to 80 mol. % H_2SO_4, then rapidly to 100% H_2SO_4; $\eta \times 10^4$ for 37.6% H_2SO_4 = 4.82, 3.84 and 1.86 at 0°, 10° and 25°, resp.; for 86.70% H_2SO_4, 10.83, 7.60, 8.31. The $\eta = f$ (mol. % H_2SO_4) curves pass through a max. at about 33% H_2SO_4, $\eta \times 10^4$ = 14.3, 15.5, 18.6. The $\kappa\eta$ curves are convex to the mol. % axis. The σ curves are almost linear but slightly concave, and obey fairly well the Whatmough equation $\sigma_{calc} = [\sigma_1 X + (1 - X)\sigma_2]R$, where X is the mol. fraction of H_2SO_4 and R is the correction factor calcd. from the d. curve (R is a min. at 80 mol. % = 0.9804). It is concluded that the 2 components of the system do not interact with one another.

F. H. Rathmann

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



2

Electric conductivity, viscosity, and density of binary systems with perchloric acid. II. The system $HClO_4$-CCl_3COOH. T. Sumarokova and Z. Grushkin. *J. Gen. Chem.* (U.S.S.R.) 16, 1991-6(1946)(in Russian); cf. Usanovich, *C.A.* 34, 3156^9.—Absence of acid-base interaction and behavior of CCl_3COOH as indifferent solvent towards $HClO_4$, in complete analogy with its behavior towards H_2SO_4 (cf. the foregoing abstr.), follows from detns. of κ, η, and d. at 20, 30, and 60°. Viscosity η rises continuously from $HClO_4$ to CCl_3COOH; the curves are convex to the axis of compn.; the decrease of η at higher temp. is more pronounced at higher CCl_3COOH contents; curves of κ have a similar shape but fall uniformly and rapidly from $HClO_4$ to CCl_3COOH; the temp. coeff. α of the elec. cond. (between 30 and 60°) rises rapidly from $HClO_4$ to CCl_3COOH; example of data, at 60°, $HClO_4$ 79.7, 54.6, 23.7 mol. %, η = 0.00793, 0.01811, 0.02036, κ = 0.00366, 0.00128, 0.00098, α = 0.79, 4.45, 11.48%. The αη curve falls almost linearly (with a slight convexity to the axis of compn.) from $HClO_4$ to CCl_3COOH. The sp. vol. 1/d. rises from $HClO_4$ to CCl_3COOH along a curve concave to the axis of compn.; example, at 60°, $HClO_4$ 79.7, 54.4, 23.7 mol. %, d. = 1.6500, 1.6355, 1.6177.

N. Thon

SUMAROKOVA, T.

Sep/Oct 46

USSR/Electricity
Conductivity
Conductance - Charts

"The Electrical Conductivity of the System $HClO_4$ H_2O," M. Usanovich, T. Sumarokova, Lab Phys Chem, Middle Asia State U, Tashkent, 5 pp

"Axta Physicochimica URSS" Vol XXI, No 5

Complete electrical conductance diagrams obtained at temperatures 20°, 50° , 60°; and the 50° isotherm investigated at great length. Data obtained indicates chemical interaction in system; hydrates of perchloric acid, $HClO_4 cH_2O$ appear to manifest themselves in liquid phase. Received, 1 Aug 1945.

PA 54T45

PA 54T38

USSR/Chemistry - Acetic Acid Sep/Oct 1946
Chemistry - Perchloric Acid

"The Systems Formed by Perchloric Acid With Acetic Acid and Its Chlorine Derivatives," T. Sumarobova, M. Usanovich, Lab Phys Chem, Middle Asia State U, Tashkent, 8 pp

"Acta Physicochimica URSS" Vol XXI, No 5

Experiment undertaken to display possible basic properties in CCl_3COOH. Electrical conductivity, viscosity and density of systems $HClO_4$-$CHCl_2COOH$, $HClO_4$-CCl_3COOH, $HCCl_4$-$ClCOOH$, $HClO_4$-CH_3COOH were studied, and it was established that $HClO_4$ does not form any complex compounds with CCl_3COOH. The compounds

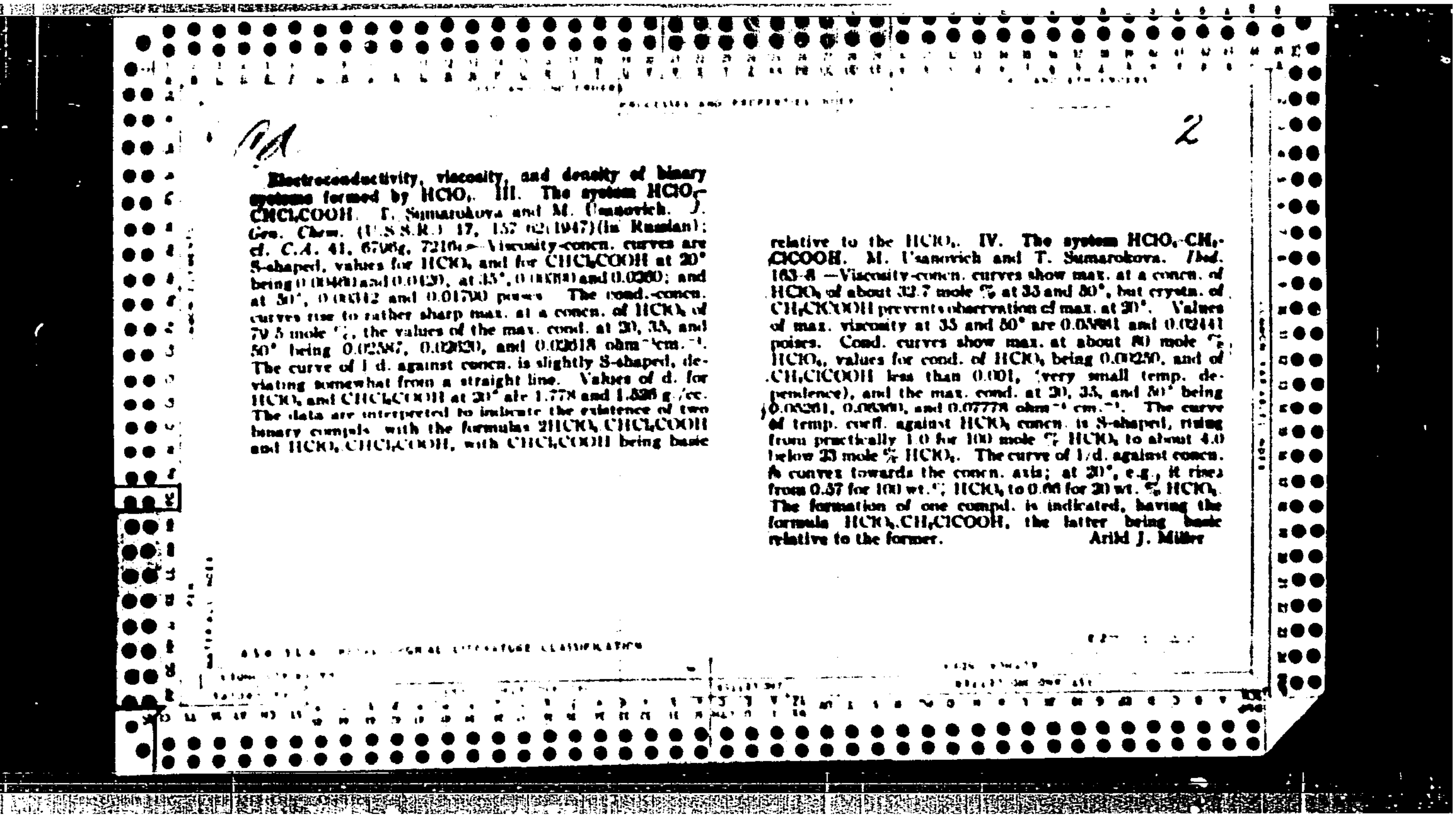
[illegible] 54T38

USSR/Chemistry - Acetic Acid (Contd) Sep/Oct 1946

$CHCl_2COOH.2HClO_4$, $CHCl_2COOH.HClO_4$, $CH_2ClCOOH$, $2CH_3COOH.HClO_4$ were detected; formation of these compounds is indicative of the basic properties of $CHCl_2COOH$, CH_2ClOOH, CH_3COOH. Received, 1 Aug 1945.

SUMAROBOVA, T.

[illegible] 54T38



CA

2

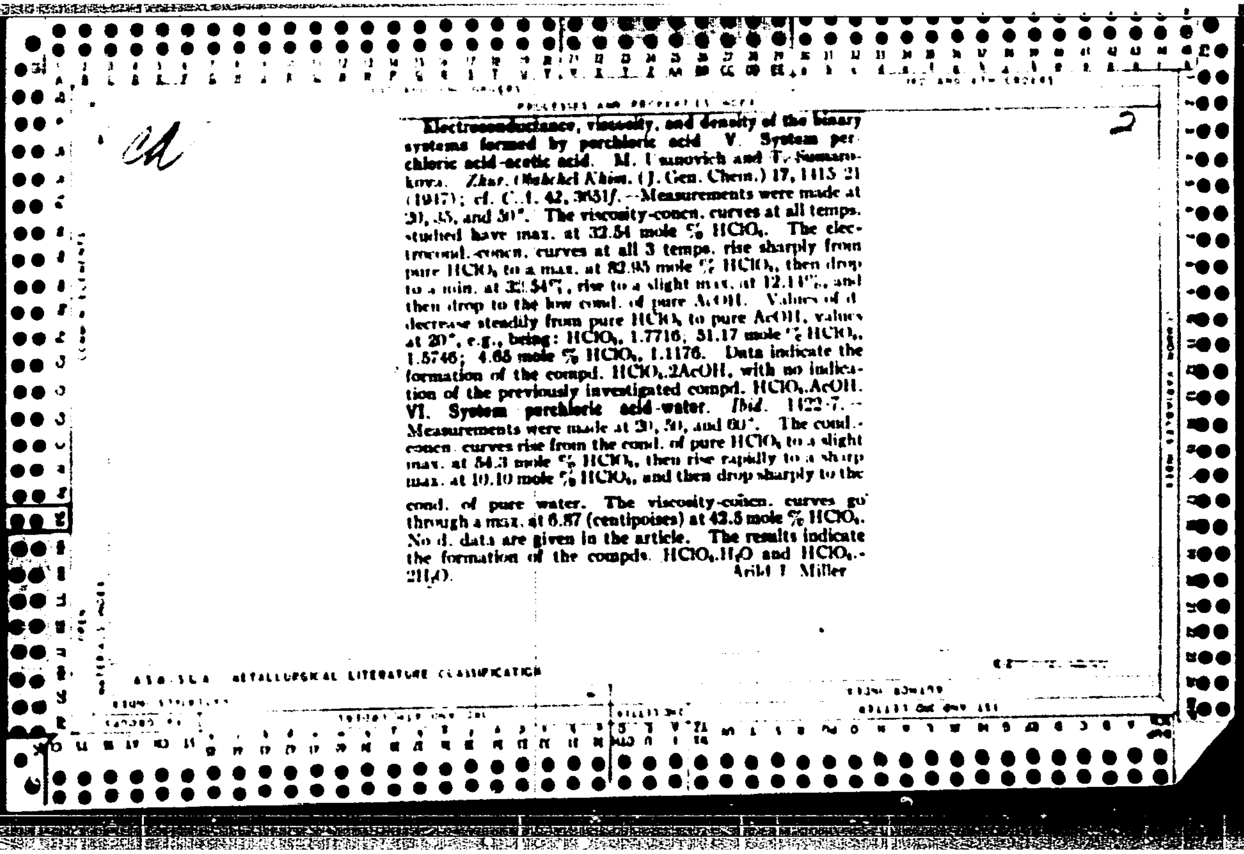
Electroconductivity, viscosity, and density of binary systems formed by $HClO_4$. III. The system $HClO_4$–$CHCl_2COOH$. T. Sumarokova and M. Usanovich. *J. Gen. Chem.* (U.S.S.R.) 17, 157-62(1947)(in Russian); cf. *C.A.* 41, 6796g, 7210e.—Viscosity-concn. curves are S-shaped, values for $HClO_4$ and for $CHCl_2COOH$ at 20° being 0.00408 and 0.0129, at 35°, 0.00358 and 0.0260; and at 50°, 0.00312 and 0.01700 poises. The cond.-concn. curves rise to rather sharp max. at a concn. of $HClO_4$ of 79.5 mole %, the values of the max. cond. at 20, 35, and 50° being 0.02587, 0.02820, and 0.02618 $ohm^{-1}cm.^{-1}$. The curve of 1/d. against concn. is slightly S-shaped, deviating somewhat from a straight line. Values of d. for $HClO_4$ and $CHCl_2COOH$ at 20° are 1.778 and 1.526 g./cc. The data are interpreted to indicate the existence of two binary compds. with the formulas $2HClO_4.CHCl_2COOH$ and $HClO_4.CHCl_2COOH$, with $CHCl_2COOH$ being basic relative to the $HClO_4$. **IV. The system $HClO_4$–$CH_2ClCOOH$.** M. Usanovich and T. Sumarokova. *Ibid.* 163-8.—Viscosity-concn. curves show max. at a concn. of $HClO_4$ of about 32.7 mole % at 35 and 50°, but crystn. of $CH_2ClCOOH$ prevents observation of max. at 20°. Values of max. viscosity at 35 and 50° are 0.05881 and 0.02441 poises. Cond. curves show max. at about 80 mole % $HClO_4$, values for cond. of $HClO_4$ being 0.00250, and of $CH_2ClCOOH$ less than 0.001, (very small temp. dependence), and the max. cond. at 20, 35, and 50° being 0.05261, 0.06500, and 0.07778 $ohm^{-1} cm.^{-1}$. The curve of temp. coeff. against $HClO_4$ concn. is S-shaped, rising from practically 1.0 for 100 mole % $HClO_4$ to about 4.0 below 23 mole % $HClO_4$. The curve of 1/d. against concn. is convex towards the concn. axis; at 20°, e.g., it rises from 0.57 for 100 wt. % $HClO_4$ to 0.66 for 20 wt. % $HClO_4$. The formation of one compd. is indicated, having the formula $HClO_4.CH_2ClCOOH$, the latter being basic relative to the former.

Arild J. Miller

SUMAROKOVA, T.

Usanovich, M., and Sumarokova, T. -"Electroconductivity, Viscosity and Density of Binary Systems of Binary Systems formed by $HClO_4$. IV. The System $HClO_4$—$CH_2ClCOOH$." (p. 168)

SO: Journal of General Chemistry, (Zhurnal Obshchei Khimii), 1947, Vol. 17. No. 2.



Cd

2

Electroconductance, viscosity, and density of the binary systems formed by perchloric acid. V. System perchloric acid-acetic acid. M. Usanovich and T. Sumarokova. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 17, 1415-21 (1947); cf. C.A. 42, 3651*f*.—Measurements were made at 20, 35, and 50°. The viscosity-concn. curves at all temps. studied have max. at 32.54 mole % $HClO_4$. The electrocond.-concn. curves at all 3 temps. rise sharply from pure $HClO_4$ to a max. at 82.95 mole % $HClO_4$, then drop to a min. at 32.54%, rise to a slight max. at 12.11%, and then drop to the low cond. of pure AcOH. Values of d decrease steadily from pure $HClO_4$ to pure AcOH, values at 20°, e.g., being: $HClO_4$, 1.7716; 31.17 mole % $HClO_4$, 1.5746; 4.66 mole % $HClO_4$, 1.1176. Data indicate the formation of the compd. $HClO_4.2AcOH$, with no indication of the previously investigated compd. $HClO_4.AcOH$. **VI. System perchloric acid-water.** *Ibid.* 1422-7.—Measurements were made at 20, 50, and 60°. The cond.-concn. curves rise from the cond. of pure $HClO_4$ to a slight max. at 84.3 mole % $HClO_4$, then rise rapidly to a sharp max. at 10.10 mole % $HClO_4$, and then drop sharply to the cond. of pure water. The viscosity-concn. curves go through a max. at 6.87 (centipoises) at 42.5 mole % $HClO_4$. No d. data are given in the article. The results indicate the formation of the compds. $HClO_4.H_2O$ and $HClO_4.2H_2O$.

Ariel I. Miller

SUMAROKOVA, T.

Usanovich, M., and Sumarokova, T.- "Electroconductivity, Viscosity and Density of the Binary Systems formed with $HClO_4$. VI. The System $HClO_4$—H_2O (p. 1427)

SO: Journal of General Chemistry, (Zhurnal Obshchei Khimii), 1947, Vol. 17, No. 8

SUMAROKOVA, T.N.

[redacted]

Binary systems containing perchloric acid. Izv.AN Kazakh.SSR Ser. khim. no.3:33-39 '49. (MLRA 9:8)

(Acids, Organic) (Perchloric acid)

[illegible]; [illegible]

Acids, Organic

Complex compounds $SnCl_4$, $SbCl_3$, and $AsCl_3$ with some organic acids, Izv. Sekt. plat. i blag. met. No. 25, 1950.

9. Monthly List of Russian Accessions, Library of Congress, April 1952, Uncl.

SUMAROKOVA, T.

"Binary systems containing $SnCl_4$, $SbCl_3$, and $AsCl_3$. I. The system $SnCl_4$-$Ch_2ClCOOH$."
by M. Usanovich, T. Sumarokova, and V. Glushchenko. (p.981)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1951, Voluem 21, No. 6

SUVAROKOVA, T.

"Binary systems containing $SnCl_4$, $SbCl_3$, and $AsCl_3$. II. The system $SnCl_4-CCl_3COOH$ and $SnCl_4-CHCl_2COOH$." by T. Suvarokova and M. Usanovich. (p.984)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1951, Volume 21, No. 6

SUMAROKOVA, T.

Chemical Abst.
Vol. 48 No. 4
Feb. 25, 1954
General and Physical Chemistry

Binary systems formed by $SnCl_4$, $SbCl_3$, and $AsCl_3$. I. The $SnCl_4$-$CH_2ClCOOH$ system. M. Usanovich, T. Sumarokova and V. Glushchenko (Kazakh Acad. Sci). *J. Gen. Chem. U.S.S.R.* 21, 1075-8(1951)(Engl. translation); *Zhur. Obshchei Khim.* 21, 981-4(1951); cf. *C.A.* 44, 9853*a*; 46, 9401*i*, 9402*b*.—From singular max. observed in viscosity and cond. isotherms, and shrinkage in sp. vol., evidence was obtained of chem. interaction in mixts. of $SnCl_4$ and $CH_2ClCOOH$. Detns. at 50, 60, and 70° gave no definite indications of the compn. of any compds. formed. II. The $SnCl_4$-CCl_3COOH and $SnCl_4$-$CHCl_2COOH$ systems. T. Sumarokova and M. Usanovich (Kazakh Acad. Sci.). *J. Gen. Chem. U.S.S.R.* 21, 1079-81(1951)(Engl. translation); *Zhur. Obshchei Khim.* 21, 984-7(1951).—Viscosity and d. isotherms were detd. for the system $SnCl_4$-CCl_3COOH at 50, 60, and 70°, and for the system $SnCl_4$-$CHCl_2COOH$ at 35, 50, 60, and 70°. Both systems are nonconductors. The absence of cond., the additivity of vols., and the smooth change of viscosity with compn. are taken as proof there is no chem. interaction in these systems. III. The $SbCl_3$-CH_3COOH system. M. Usanovich and T. Sumarokova (Kazakh Acad. Sci.). *J. Gen. Chem. U.S.S.R.* 21, 1083-6(1951)(Engl. translation); *Zhur. Obshchei Khim.* 21, 987-90(1951).—D., viscosity, and cond. values were detd. as functions of compn. in the $SbCl_3$-AcOH system at 20, 50, and 60°. D. data show a slight vol. shrinkage in mixts. of the components. The viscosity isotherms exhibit max. at 52-3 mole % $SbCl_3$ which shift toward higher $SbCl_3$ values at higher temps. A cond. max. at 70-80 mole % $SbCl_3$ shifts toward AcOH at higher temp. When cond. values are multiplied by the viscosity of the same solns., the cor. cond. isotherms all attain a max. at a compn. corresponding to $2SbCl_3.AcOH$. The temp. coeff. of cond. exhibits a max. at the compn. corresponding to $SbCl_3.AcOH$. The latter compd. was reported by B. N. Menshutkin (*C.A.* 6, 1280). The structures of the compds. found are given as $(SbCl_2.AcOH)^+ Cl^-$ and $(SbCl_2.AcOH)^+ SbCl_4^-$, the latter existing only in the liquid phase.

Bernard M. Zeffert

1-28-54

5

USS

Binary systems formed by $SnCl_4$, $SbCl_5$, and $AsCl_3$. IV. The system $SbCl_5$-$CH_2ClCOOH$. M. I. Usanovich and T. Sumarokova. *Zhur. Obshchei Khim.* 21, 1214-18(1951); cf. C.A. 46, 1787c.—The elec. cond., viscosity, and d. of the system $SbCl_5$-$CH_2ClCOOH$ were detd. at 50, 60, and 70° for changing values of the concns. of the components. Existence of the compds. $SbCl_5.CH_2ClCOOH$ and $2SbCl_5$.-$CH_2ClCOOH$ is indicated. The fusion diagram for the system shows the presence of a compd. of equimolar compn. V. The system $SbCl_5$-CCl_3COCH. T. Sumarokova and M. Usanovich. *Ibid.* 1219-22.—The elec. cond., viscosity, and d. of the system $SbCl_5$-CCl_3COOH were detd. at 50, 60, and 70° for different concns. of the components. The elec. cond.-compn. and viscosity-compn. diagrams show that an acid-base reaction occurs between the components. The presence of the compds. $SbCl_5.CCl_3COOH$ and $2SbCl_5$.-CCl_3COOH is also indicated. The fusion diagram exhibits a max. corresponding to the compd. $SbCl_5.CCl_3COOH$ with a m.p. of 56°. J. Rovtar Leach

BI

Lab. Phys. Chem., Inst. Chem. Sci., AS Kazakh SSR

SUMARKOVA, T.

"Binary systems containing $SnCl_4$. $SbCl_3$ and $AsCl_3$. V. The system $SbCl_3$ - CCl_3COOH."
T. Sumarkova and M. Usanovich. (p. 1219)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1951, Vol 21, No 7.

2

CA

The binary systems constituted by stannic chloride, antimony trichloride, and arsenic trichloride. VI. The arsenic trichloride trichloroacetic acid system. T. Sumarokova and A. Rabkov. *J. Gen. Chem. U.S.S.R.* 21, 1503-8(1951)(Engl. translation); *Zhur. Obshchei Khim.* 21, 1373(1951).—Measurement of the viscosity and d. at 20, 35, and 60° reveals no interaction in the system $AsCl_3$–CCl_3COOH. The components are mutually sol. at all compns. at 60°, from 100 to 22.1 mole % $AsCl_3$ at 35°, and from 100 to 39.2 mole % at 20°. Limiting viscosities and ds. are as follows:

Mole %	20°		35°		60°	
$AsCl_3$	$\eta \times 10^3$	d	$\eta \times 10^3$	d	$\eta \times 10^3$	d
100	12.29	2.1624	10.50	2.1231	8.05	2.0624
39.21	33.44	1.8279	25.92	1.8043	13.93	1.7710
22.11	crystals	crystals	40.39	1.7258	22.76	1.6872
0	"	"	crystals	crystals	38.65	1.6051

188T7

SUMAROKOVA, T.

USSR/Chemistry - Arsenic Compounds Aug 51

"Binary Systems Formed by $SnCl_4$, $SbCl_3$, and $AsCl_3$. VII. The Systems $AsCl_3$-$CH_2ClCOOH$ and $AsCl_3$-CH_3COOH," T. Sumarokova, V. Glushchenko, Student, Lab of Phys Chem, Inst of Chem, Acad Sci Kazakh SSR

"Zhur Obshch Khim" Vol XXI, No 8, pp 1376-1380

In system $AsCl_3$-$Ch_2ClCOOH$, form of isotherms of viscosity and density at temps 50, 60, 70°C and absence of elec cond showed that components do not interact. In system $AsCl_3$-CH_3COOH, study of elec cond at temps 50,60° and viscosity and density at 20,50,60,70° established that there is acid-base interaction.

188T7

SUMAROKOVA, T.N.

SUMAROKOVA, T.N.; LITVYAK, I.G.

Complex compounds $SnCl_4 \cdot 2A \cdot B$ and $SnCl_4 \cdot 2A \cdot 2B$. Report no.1. Izv.Sekt.plat.i blag.met. no.27:127-136 '52. (MLRA 7:5)

1. Institut khimicheskikh nauk Akademii nauk Kazakhskoy SSR, Alma-Ata. (Compounds, Complex) (Tin compounds)

SUMAROKOVA, T.N.

SUMAROKOVA, T.N.; MAKSAY, L.I.

Complex compounds $SnCl_4 \cdot 2A \cdot B$ and $SnCl_4 \cdot 2A \cdot 2B$. Report no.2.
Izv.Sekt.plat.i blag.met. no.27:137-151 '52. (MLRA 7:5)

1. Institut khimicheskikh nauk Akademii Kazakhskoy SSR, Alma-Ata.
(Compounds, Complex) (Tin compounds)

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

62

Binary systems formed by stannic chloride with fatty acids. I. A. E. Yakovleva and T. Sumarokova. *Izvest. Akad. Nauk Kazakh. S.S.R.* No. ~~118, Ser. Khim.~~ No. 6, 40-53(1953).—Binary mixts. of $SnCl_4$ with $EtCO_2H$, $PrCO_2H$, and $AmCO_2H$ were examd. by cond., d., and viscosity methods. The results, which are given graphically for 30°, 50°, and 70°, show the existence of complexes: $SnCl_4.2EtCO_2H$, $SnCl_4.3EtCO_2H$, $SnCl_4.2PrCO_2H$, $SnCl_4.3PrCO_2H$, $SnCl_4.2AmCO_2H$, and $SnCl_4.3AmCO_2H$. II. *Ibid.* 54-68.—The work is extended to $SnCl_4$ systems with $C_6H_{13}CO_2H$ and $C_7H_{15}CO_2H$. Evidence is found for formation of complexes with 2 and 3 moles of the org. acids per mole of $SnCl_4$. Previous work on complexes of substituted acids (cf. C.A. 48, 1787c) is summarized. AcOH and chloro derivs. behave similarly in respect to $SnCl_4$, $SbCl_5$, $AsCl_3$, $HClO_4$, H_2SO_4, and HNO_3; i.e., the action of protonic and aprotic acids is similar. Concepts of acids and bases are discussed. G. M. Kosolapoff

①

YAKOVLEVA, F.; SUHAROKOVA, T.

Binary systems formed by $SnCl_4$ with carboxylic acids of the aliphatic series. Report no.2. Izv.AN Kazakh.SSR no.118:54-68 '53. (MLRA 6:10)
(Systems (Chemistry)) (Stannic chloride) (Carboxylic acids)

SOMAROKOVA, T.N.

4

④

The existence of antimony tetrachloride. M. I. Usanovich, T. N. Sumarokova, and M. B. Beketov. *Izvest. Akad. Nauk Kazakh. S.S.R.* No. 123, *Ser. Khim.* No. 7, 3-8(1953).—Cond., viscosity, and d. of the system $SbCl_3$–$SbCl_5$ were examd. at 50°, 60°, 70°, and 80°. The viscosity-compn. diagram shows smooth isotherms, whereas the sp. cond.-compn. diagram shows a max. at about 15 mol. % $SbCl_5$; cor. sp. cond. declines with rise in temp. The results are best attributed to formation of the ion pair $(SbCl_4)^+(SbCl_6)^-$. Cf. Weinland and Schmid, *Ber.* 38, 1080 (1905); 36, 541(1903). G. M. Kosolapoff

SUMAROKOVA, T.; BOLYALOV, I.

Oxonium compounds of esters with organic acids. Part 2. System: cetyl acetate--acetic acid. Zhur.ob.khim. 25 no.3:477-479 Mr '55 (MLRA 8:6)

1. Institut khimicheskikh nauk Akademii nauk Kazakhskoy SSR
(Acetic acid)(Cetyl acetate)

[illegible]

Fusibility diagrams of systems containing hexachloroethane. III. T. Sumarokova and L. Shefer. *Zhur. Obshchei Khim.* 26, [illegible]; cf. *Tezisy Dokladov i Vystuplenii* [illegible] *Soveshchanii po Fiz.* [illegible] 1955 [illegible] The binary systems [illegible] C_6H_4, C_6Cl_6 [illegible] were [illegible] thermally. The [illegible] with anthra- [illegible] at 71° and [illegible] the C_6H_6 [illegible] system [illegible] along with a eutectic at 45 [illegible] 56.2°. The p-$Cl_2C_6H_4$ system shows the 2 [illegible] eutectics at 38° and 25.3 [illegible] the 3 transitions [illegible] but the detns. [illegible] owing to boiling [illegible] transitions and no detectable eutectic. The [illegible] heats of fusion of the 3 forms of C_2Cl_6 were: 1st 2.[illegible] kcal./mole, 2nd 3.845, 3rd 4.221. Cf. Lee, C.A. 29, 3115. G. M. Kosolapoff

Inst Chem Sci AS Kazakh SSR

SUHAROKOVA, T., YARMUKHAMEDOVA, E.

Complex compounds of tin chloride and tin bromide with glycine. Zhur.ob.khim. 26 no.12:3295-3301 D '56. (MIRA 10:7)

1. Institut khimicheskikh nauk Akademii nauk Kazakhskoy SSR.
(Tin chlorides) (Tin bromides) (Glycine)

SUMAROKOVA, T.N.

137-58-2-3907

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 233 (USSR)

AUTHOR: Sumarokova, T.N.

TITLE: Eutectic Diagrams of the Fusibility of Binary Systems. Communication Nr 1 (Ob evtekticheskikh diagrammakh plavkosti dvoynykh sistem. Soobsheniye 1)

PERIODICAL: Izv. AN KazSSR. Ser. khim., 1957, Nr 1, pp 3-11

ABSTRACT: A check was made of the applicability of the Schroeder equation to real systems (organic substances, metals, salts) on the basis of available experimental data from the literature. It is shown that the Schroeder equation is valid at the most varied concentrations in different systems, and that many real systems are subject to the laws of ideal solutions. In ideal binary systems containing a common component, the liquidus curve is the geometric locus of the eutectic points. It is shown that molecular weight may be determined from the data of thermal analysis and the Schroeder equation.

A. F.

Card 1/1

1. Molecular weight—Determination 2. Schroeder equation—Applications

SUMAROKOVA, T.N.; PERMINOVA, D.

Eutectic fusibility diagrams of binary systems. Report no.2.
Izv.AN Kazakh.S.S.R.Ser.khim. no.1:12-18 '57. (MLRA 10:5)
(Eutectics) (Systems (Chemistry))

Complex compounds of Sb III [illegible]
[illegible] Zhur. [illegible] Khim. 27 [illegible]
A 50, 18536e — The system [illegible] AcOH [illegible] was examd. with respect to cond., viscosity and [illegible] at [illegible] and 100°. Thermographic curves are reported. The data are tabulated and are shown graphically; they indicate the existence of a complex compound [illegible] m. 36° [illegible]

SUMAROKOVA, T.; LITVYAK, I.

Complex tin compounds. Part 4. Zhur.ob.khim. 27 no.5:1125-1130
Zhur.ob.khim. 27 no.5:1125-1130 My '57. (MLRA 10:8)

1. Institut khimii Akademii nauk Kazakhskoy SSR.
(Complex compounds)
(Tin organic compounds)

79-12-41/43

AUTHORS: Sumarokova, T., Nevskaya, Yu.

TITLE: Complex Compounds of $SnCl_4$, $Sn Br_4$ and $TiCl_4$ With Cineole (Kompleksnyye soyedineniya $Sn Cl_4$, $Sn Br_4$ i $TiCl_4$ s Tsineolom).

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 12, pp. 3375-3379 (USSR)

ABSTRACT: The complex compounds $SnCl_4$, $Sn Br_4$ and $TiCl_4$ with organic oxides have been little investigated. Compounds of $SnCl_4$ and $SnBr_4$ with dioxane, as well as of $SnCl_4$ with lactones (SnX^2 2 A) are described in publications. The authors were interested in the systematical investigation of the complex compounds Sn^{+4} and T^{+4} with such organic compounds, which possess in their molecule the group -COC-. They chose cineole, which is a constituent part of many etheric oils. The complex compounds of the tin- and titanium halides with cineole were of an extended interest, in as much they are connected with the research to find a method for the quantitative determination of cineole. Mixtures of $SnCl_4$, SnBr and $TiCl_4$ in an exact molecular ratio with

Card 1/3

cineole were prepared for the synthesis of these compounds. In the course of the reactions a considerable amount of heat was liberated. The components were mixed in indifferent solvents. The composition of the complex compounds was determined analytically and according to the crysoopic method of titration. The amount of tin and titanium was computed as SnO_2 and TiO_2 the halides were determined according to Vollhard and the Cryoscopic measurements were conducted according to Beckmann. The authors put up diagrams on the basis of the results, from which the dependence of the depression (or of the molecular weight) on the composition, expressed in molecular percent, may be read. The following complex compounds were synthesized: $SnCl_4 \cdot 2C_{10}H_{18}C$, $SnB_4 \cdot 2C_{10}H_{18}O$ and $TiCl_4 \cdot 2C_{10}H_{18}$ O. The compound $SnBr_4 \cdot 2C_{10}H_{18}O$ possesses quite extraordinary properties: It shows a molecular weight of 746'8 and destillates already at 35°C. There are 3 figures, and 7 references, 5 of which are Slavic.

Complex Compounds of $SnCl_4$, $SnBr_4$ and $TiCl_4$ With Cineole 79-12-41/43

ASSOCIATION: Institute of Chemistry AS Kazakh SSR
(Institut khimii Akademii nauk Kazakhskoy SSR).

SUBMITTED: October 31, 1956

AVAILABLE: Library of Congress

1. Complex compounds - Synthesis

Card 3/3

[redacted]
20-2-34/67

On the Electrolytic Dissociation of Tin and Antimony Complex Compounds.

acid and ethyl acetate, where the organic compound contained the isotope C^{14}. In each case $SnCl_4$ was carried to the anode as well as to the cathode. This harmonizes with the equations 1 and 2. While this paper was being written, two essays were published (Miskidzh'van; Kuz'mina and Vol'nov) in which the authors suggest own schemes of the electrolytic dissociation of complex compounds. These schemes have in common that the formation of complex compounds is meant to represent an incorporating reaction, i.e. the molecule of the organic matter is to be a component of the complex cation. The experiments of the authors of the present paper contradict these schemes. For only the complex compounds of the 3-halides of antimony (and arsenic) with organic oxigen containing substance are incorporation products. The conpounds of the same organic substances with the 4-halides of tin are not incorporation products. In the case of electrolysis according to the equation 3 the authors of the present paper have added methyl-red in addition to the acid marked with C^{14}. As expected, the pigment moved into the same direction as the acetic acid, that is towards the cathode.
(With 8 citations from publications).

Card 2/3

POLOSUKHIN, Porfiriy Porfir'yevich, zasluzhennyy master sporta. Prinimal
uchastiye: REVZIN, Sergey Vladimirovich, inzh.-vozdukhoplavatel'.
SUMAROKOVA, T.N., red.; MANINA, M.P., tekhn.red.

[Notes of an amateur navigator and parachutist; as told to Sergei
Revzin] Zapiski sportsmena-vozdukhoplavatelia i parashiutista.
Literaturnaia zapis' Sergeia Revzina. Izd.3., dop. i perer.
Moskva, Gos.izd-vo "Fizkul'tura i sport," 1958. 230 p.
(MIRA 12:12)

(Polosukhin, Porfirii Porfir'evich, 1910-)

SUMAROKOVA, T. N.

SUMAROKOVA T. N.

5(4)

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

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

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

ABSTRACT: From February 18 to 21, 1958 a conference discussion took place at the town of Ivanovo; it dealt with the subjects mentioned in the title. It was called on a decision of the VIIth All-Union Conference on the Chemistry of Complex Formations. More than 200 persons attended the conference, among them 103 delegates from various towns of the USSR. At the conference methods of determining the composition of the complexes in solutions were discussed, as well as the methods of calculating the instability constants according to experimental data and problems concerning the influence of the solvent upon the processes of complex formation.

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

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F. I. Alekseyeva and K. B. Yatsimirskiy in their lecture "Investigation of the Polymerization of Iso-Poly Acids in Solutions" mentioned experimental results of the investigation of the polymerization in solutions of molybdic acid. The authors proved that especially the molybdic acid within a certain range of the pH values and the concentrations exists as a number of compounds that can be expressed by an overall formula $MoO_4(HMoO_4)^{n-2}$. In the lecture by N. V. Aksel'rud and V. B.

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Spivakovskiy investigation results on basic salts taking into account the complex formation in solutions by means of the potentiometric method were mentioned for systems with zinc, cadmium and indium. In the evaluation of their results the authors employed the method of the table difference. The calculation of the consecutive constants was carried out according to the interpolation formula by Newton. M. A. Chepelevetskiy held a lecture on "pH Measurement Method of the Solutions in Combination With the System Analysis of the Solubility Diagram of the System Cu^{2+}-HCl - H_2O in Investigating Complex Copper Compounds in Saturated Solutions". It was found that the substance at the bottom of the liquid is more basic than the solution; furthermore, the increased acidity of the solution from the viewpoint of the formation of hydroxy-chloro complexes in the solution was explained. V. I. Kuznetsov opened the discussion with his lecture; he pointed out the necessity of utilizing the concepts worked out in the investigations of the polymerization in organic chemistry in the chemistry of polynuclear complexes. A. A. Grinberg thinks that the new approach of the hydrolysis

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

investigation as developed by the Scandinavian school is of high value. He also pointed to the necessity of studying the kinetics of the polymerization process and a quantitative determination of the strength of the polymers. A. K. Babko pointed out that the study of the polymer structure was necessary. N. P. Komar' mentioned in his lecture that the rather widely spread polymerization type according to the scheme "nucleus + chain members" is not obtained in all cases. The following scientists took part in the discussion: V. N. Tolmachev, A. V. Ablov, I. S. Mustafin, I. V. Tananayev and K. B. Yatsimirskiy. A. K. Babko then discussed in his lecture "Methods of Determining the Dissociation Constant of the Complex Groups in Solutions" the main principles of determining the instability constants. N. P. Komar' discussed in his lecture "Calculation Methods of the Instability Constants of the Complex Compounds According to Experimental Data" the possibilities of using the known calculation methods of the instability constants for various cases of the complex formation in solution. If several mononuclear complexes are formed the displacement method by Abegg and Bodlender (completed by

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A. K. Babko) cannot be recommended for the calculation of the instability constant. The lecturer discussed the dissolution methods of the polynomials proposed by B'yerrum, Leden, Rossotti, Scatchard, Edsolloy and other authors. The constants calculated in this way are not very accurate. It was proved that the method of successive approximations can lead to wrong conclusions as to the chemical processes taking place in the system investigated. The most probable value of the physical constants can be obtained by the method of the least squares. B. V. Ptitsyn, Ye. N. Tekster and L. I. Vinogradova described the determination methods of the instability constants of the oxalate complexes of niobium, uranium and iron which are based on the investigation of the equilibrium displacement of the complex formation by silver ions. N. K. Bol'shakova, I. V. Tananayev and G. S. Savchenko held a lecture on "The Role of the Time Factor in the Investigation of the Complex Formation". In the discussion on the lectures A. A. Grinberg mentioned that due to the slow adjustment of the equilibria the methods discussed of determining the instability constants (palladium and cobalt

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complexes) can often not be employed. A. V. Ablov pointed out the necessity of devising direct methods of proving the existence of intermediate forms in a step-wise complex formation. K. B. Yatsimirskiy mentioned that the instability constants of slowly dissociating complexes can be calculated from thermochemical data. L. P. Adamovich, A. M. Golub among others took part in the discussion on the lectures. A. K. Babko requested inclusion in the next conference on the chemistry of complex compounds a lecture in which various calculation methods of the instability constants should be discussed by the example of actual cases. This should clarify to which divergencies of the values of the constants different methods of evaluating the experimental data can lead. N. P. Komar' stressed that in the determination of the instability constants all chemical equilibria should be taken into account that render complex the complex formation process in the solution, especially the hydrolysis processes of the central ion and the addendum. In the lecture delivered by V. M. Peshkova and A. P. Zozulya "Application of the Distribution Method to the Investigation of the Stability Constants

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

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

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

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Conference Discussion on the Methods of
Investigating the Complex Formation in Solutions

SOV/153-58-3-30/30

plex compounds was stressed. In the lecture delivered by
I. A. Shek on "The Investigation of the Complex Formation
by the Method of the Dielectric Permeability and the Polariza-
tion" the principles of the methods mentioned were presented.
This method was employed for investigating the compounds of
the type of the "affiliation" products. The lecture delivered
by I. A. Shek and Ye. Ye. Kriss "Employing the Method of the
Dielectric Constant for Investigating Complex Compounds of
the Type of Crystal Solvates in Solutions" dealt with the
investigation of the solvates of lanthanum and cerium chlorides
with ketones, as well as with the study of the compounds
formed in heterogeneous systems with tributyl phosphate and
nitric acid. V. F. Toropova gave in her lecture "The Polaro-
graphic Method of Investigating the Complex Formation in
Solutions" a survey of the applications of the polarographic
method in the study of the complex compounds, and illustrated
several fine characteristic features of this method. In the
lecture delivered by T. N. Sumarokova "The Cryoscopic Method
of Investigating the Complex Formation Reactions" a survey of
Card 12/16 the possibilities of the cryoscopic method was given, and its
applicability in the study of several complex compounds of
stannic chloride with organic substances was proved. A. M.
Golub described the results of his investigations of thio-
cyanate complexes of several metals. A vivid discussion took
place on the lectures held. Ya. A. Fialkov and Yu. Ya.
Fialkov considered the cryoscopic method of investigating
complex compounds to be of considerable value. K. B.
Yatsimirskiy pointed out that the publication of the surveys
on individual methods of investigating the complex formation
reactions would be desired; this concerns especially the
polarographic method. The cryoscopic method should be brought
to a level that makes the calculation of the equilibrium
constants of the processes to be investigated possible. The
problem of the method of evaluating the experimental results
becomes more and more important. Many scientists use the
instability constants without taking into account the way
in which they had been obtained. The calculation methods
employed by A. M. Golub are one step back, as compared to
those employed at present. In his lecture N. P. Komar'
Card 13/16 pointed out the extremely great importance of the mathematical

evaluation of the results obtained, as well as of the plotting
of curves. A. K. Babko suggested selecting one or two systems
that are experimentally well investigated, and to evaluate
the results obtained according to different methods so that
it is possible to check and evaluate them. Ya. I. Tur'yan
took part in the discussion. Ya. A. Fialkov discussed in
his lecture "The Effect of the Solvent on the Complex Formation
Process as Well as on the State of Equilibrium in the Solutions
of Complex Compounds" the influence exerted by the solvents
upon the molecular state, upon the solvation of the system
components, upon the stabilization of the complexes formed
in the system, upon the step-wise dissociation of the complexes
and upon a number of other processes. The influence exercised
by the dielectric constant upon the complex formation process
was discussed. It was concluded that a direct relation does
not exist, and that the chemical nature of the solvent must
be taken into account. A. V. Ablov and L. V. Nazarova held
a lecture on "The Spectroscopic Investigation of Nickel Cobalt
'Pyridinates' in Various Solvents". The instability constants
Card 14/16 of the complexes were determined and it was proved that the

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

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

Card 16/16
[redacted]-60976

AUTHORS: Modestova, T., Sumarokova, T. SOV/ 78-3-7-33/44

TITLE: The Systems $PbCl_2$-$PbBr_2$ and $PbBr_2$-PbI_2 (Sistemy $PbCl_2$-$PbBr_2$ i $PbBr_2$-PbJ_2)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 7, pp 1655-1660 (USSR)

ABSTRACT: The systems $PbCl_2$-$PbBr_2$ and $PbBr_2$-PbI_2 were investigated by means of thermal analysis. The compound $PbBr_2$ was found to occur in form of two modifications. At 344° C a phase change $\alpha \rightleftarrows \beta$ occurs. The melting temperatures of the β-modifications of $PbCl_2$ - 480° C, $PbBr_2$ = 364° C and PbI_2 = 396° were determined. The solid solutions of $PbCl_2$ and $PbBr_2$ indicate the existence of the equimolar compound PbClBr. The phase transformation of liquid solutions into solid α-modification and the transformation of solid solutions of the α-modification into solid solutions of the β-modification characterize the melting diagram of the systems. In the system $PbBr_2$-PbI_2 there also exist α- and β phases. There are 2 figures, 2 tables and 11 references, 6 of which are Soviet.

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The Systems $PbCl_2$-$PbBr_2$ and $PbBr_2$-PbI_2 SOV/78-3-7-33/44

ASSOCIATION: Institut khimii AN Kazakhskoy SSR (Institute of Chemistry, AS Kazakhskaya SSR)

SUBMITTED: June 17, 1957

1. Lead bromide-lead iodide systems--Analysis 2. Lead bromide-lead chloride systems--Analysis

AUTHORS: Yarmukhamedova, E. Sh., Sumarokova, T. N. 79-28-5-67/69

TITLE: Complex Compounds of Tin Chloride and Tin Bromide With Urea (Kompleksnyye soyedineniya khlornogo i bromnogo olova s mochevinoy)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol 28, Nr 5, pp 1410 - 1412 (USSR)

ABSTRACT: In the systematic investigation of complex compounds of halides of tetravalent tin with organic compounds containing nitrogen and oxygen,the authors found that thiourea enters reaction with tin chloride and tin bromide with formation of a complex compound of the composition $SnX_4 \cdot 2(NH_2)_2CS$ (Reference 1). It was of interest for the authors to experience by investigations which way urea would react on the halides of tetravalent tin. Taking into account the similarity of urea with thiourea it was assumed that also the former had to form compounds of the same kind with tin chloride and tin bromide. Tin chloride was purified by repeated distillation and the fraction with the boiling temperature 109°C (690°mm) was stored in sealed ampoules. Tin bromide was treated the same way. The complex com-

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79-28-5-67/69

Complex Compounds of Tin Chloride and Tin Bromide With Urea

pound of tin chloride with urea was obtained by direct action of tin chloride on it without solvent - that of tin bromide the same way. Thus the complex compounds of tin chloride and tin bromide with urea of the following composition were synthetized: $SnCl_4.2(NH_2)_2CO$ and $SnBr_2.2(NH_2)_2CO$. These complex compounds are crystalline products, do not change in air or dissolve easily in organic media. There are 2 figures and 1 reference, 1 of which is Soviet.

ASSOCIATION: Institut khimicheskikh nauk Akademii nauk Kazakhskoy SSR (Institute for Chemical Sciences, AS Kazakh SSR)

SUBMITTED: April 19, 1957

Card 2/2

76-32-5-32/47

AUTHORS: Sumarokova, T. N., Arsenov, G. I.

TITLE: Methods of Cryoscopic Measurements (K metodike krioskopicheskikh izmereniy)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 5, pp.1153-1154 (USSR)

ABSTRACT: The usual method of determination based on the measurement of the maximum temperature rise gives wrong results, as can be seen from a given diagram, as the measuring values do not correspond to the real freezing point of the solutions. In determinations according to M. Bakeyev (Ref 2) which are based on the determination of the heating curves the error by undercooling is removed, however, errors due to insufficient mixing occur. An electromagnetic arrangement of mixing is described, using a multivibrator with two lamps L_1-6Zh8 and L_2-6P3 as well as a transformer ELS-2. In order to improve the distribution of the crystals the cryoscope has an elevated bottom. In order to determine the freezing temperature the heating curves are taken by plotting the temperature on the ordinate and the time on the abscissa. By

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76-32-5-32/47

Methods of Cryoscopic Measurements

means of an example, a solution of benzylalcohol in benzene, the obtained diagrams are represented, the melting temperatures (crystallization) being determined by the point of intersection of two straights. The described electromagnetic mixer can also be used for other purposes. There are 4 figures and 3 references, 3 of which are Soviet.

ASSOCIATION: Akademiya nauk Kazakhskoy SSR, Institut khimii, Insitut energetiki
(Institutesof Chemistry and Power Engineering, AS Kazakhskaya SSR)

SUBMITTED: May 3, 1957

1. Liquids--Freezing 2. Freezing points--Determination

Card 2/2

GUKOV, Valentin Ivanovich; SUMAROKOVA, T.N., red.; FEKLISOVA, T.D.,
tekhn.red.

[In the land of untouched treasures] V kraiu netronutykh
sokrovishch. Moskva, Gos.izd-vo "Fizkul'tura i sport,"
1959. 86 p. (MIRA 12:6)
(Altai Territory--Description and travel)

SOV/79-29-5-5/75

5(4)

AUTHORS: Sumarokova, T., Omarova, R.

TITLE: On the Interaction of Tin Chloride With Esters. 1. (O vzaimodeystvii khlornogo olova so slozhnymi efirami.1.)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 5, pp 1430 - 1437 (USSR)

ABSTRACT: In the present paper the systems $SnCl_4 - CCl_3COOC_2H_5$ and $SnCl_4 - CH_2ClCOOC_2H_5$ by means of physico-chemical analysis conductiometry, viscosimetry, volumetry and cryoscopy were investigated. The operational methods, the preparation and purification of tin chloride were described previously (Refs 12 and 16). The results obtained by determination of the viscosity and the values B calculated from the equation

$\eta = Ae^{\frac{B}{RT}}$ (Refs 17-19) are presented in table 1. Table 2 gives the determination results of the density. In figure 1 the diagrams property - composition of the system $SnCl_4 - CCl_3COOC_2H_5$ are shown. The determination results of viscosity, specific conducti-

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vity and density for the system $SnCl_4$ — $CH_2ClCOOC_2H_5$ are given in table 3 and 4, the calculated values of the corrected conductivity, temperature coefficient of the conductivity, and of the constant B are presented in table 5. Figure 2 gives the diagrams property - composition of this system. On investigating the behavior of tin chloride with respect to ethyl trichloro- and ethyl monochloro-acetate the following was found: In the system $SnCl_4$ — $CCl_3COOC_2H_5$ the components react with one another until the compound $SnCl_4.2CCl_3COOC_2H_5$ is formed. In this system the electric conductivity is practically not existing. In the system $SnCl_4$ — $CH_2ClCOOC_2H_5$ the reaction between the components is carried on up to the formation of the compounds $SnCl_4.2CH_2CClCOOC_2H_5$ and $SnCl_4.3CH_2ClCOOC_2H_5$. The latter determines the electric conductivity of the system. As can be seen from figures 4 and 5 the complex acids $SnCl_4.2RCOOH$ are considerably stronger than $SnCl_4.2RCOOR'$. From the comparison of

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On the Interaction of Tin Chloride With Esters. 1. SOV/79-29-5-5/75

the behavior of ethyl- and ethyl-monochloro-acetate with the behavior of ethyl-trichloro-acetate with respect to tin chloride it can be seen that the electric conductivity then appears in the systems formed from tin chloride and esters, if the compound $SnCl_4 \cdot 3RCOOR'$ is formed in the solution. There are 5 figures, 5 tables, and 24 references, 19 of which are Soviet.

ASSOCIATION: Institut khimicheskikh nauk Akademii nauk Kazakhskoy SSR (Institute of Chemical Sciences of the Academy of Sciences, Kazakhskaya SSR)

SUBMITTED: April 18, 1958

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SOV/79-29-5-6/75

5(4)

AUTHORS: Sumarokova, T., Omarova, R., Kuz'menko, N.

TITLE: On the Interaction of Tin Chloride With Esters. 2. (O vzaimodeystvii khlornogo olova so slozhnymi efirami. 2.)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 5, pp 1437 - 1442 (USSR)

ABSTRACT: In the present paper the influence exercised by the length of the aliphatic alcohol radical upon the acid-basic properties of esters was investigated. Viscosity, density and electric conductivity of the systems $SnCl_4$ — $CH_3COOC_8H_{17}$ and $SnCl_4$ — $CH_3COOC_{16}H_{33}$ were investigated. The results obtained on the determination of the properties as well as the calculated temperature coefficients of the electric conductivity, the corrected conductivity and the constant B for the system $SnCl_4$ — $CH_3COOC_8H_{17}$ which was investigated at 25 and 50°, are given in table 1. In figure 1 the diagrams property - composition are presented. By physico-chemical analysis it could be concluded that the components of the system react with one another, thus forming a complex compound $SnCl_4.2CH_3COOC_8H_{17}$. The system $SnCl_4$ — $CH_3COOC_{16}H_{33}$ was in-

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vestigated at 40, 50, 60 and 70°. The determination results are listed in tables 2 and 3, the calculated values of the corrected electric conductivity, the temperature coefficient of the conductivity and the constant B in table 4. The diagrams property - composition can be seen in figure 2. On the strength of the physico-chemical analysis it could be concluded that a complex compound $SnCl_4.2CH_3COOC_{16}H_{33}$ is formed in the system. It was separated in free state. Its melting point is 56°. The electric conductivity in the system indicates the existence of this compound. Figure 3 compares the values of the electric conductivity at 50° in the systems $SnCl_4 — CH_3COOC_2H_5$ (Ref 4), $SnCl_4 — CH_3COOC_8H_{17}$ and $SnCl_4 — CH_3COOC_{16}H_{33}$. The value of the corrected conductivity of cetyl acetate solutions is seen to be far smaller than in octyl acetate and especially ethyl acetate solutions. This can be explained by the fact that the formation of the complex compounds $SnCl_4.3RCOOR'$ is a secondary redox reaction. It proceeds via the stage of the formation of complex acids $SnCl_4.2RCOOR'$ which become weaker on lengthening

On the Interaction of Tin Chloride With Esters. 2. SOV/79-29-5-6/75

of the radical. A similar rule was found in the systems formed from tin chloride and carboxylic acids (Refs 16,17). There are 3 figures, 4 tables, and 17 references, 13 of which are Soviet.

ASSOCIATION: Institut khimicheskikh nauk Akademii nauk Kazakhskoy SSR (Institute of Chemical Sciences of the Academy of Sciences, Kazakhskaya SSR)

SUBMITTED: April 18, 1958

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5(4) SOV/76-33-1-31/45

AUTHORS: Sumarokova, T. N., Fialkov, Ya. A., (Alma-Ata), Deceased

TITLE: On the Cryoscopic Method of the Physico-Chemical Analysis (Classification of Diagrams)(O krioskopicheskom metode fiziko-khimicheskogo analiza (klassifikatsiya diagramm))

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 1, pp 184-191 (USSR)

ABSTRACT: The first method of this type has been worked out by V. V. Udovenko (Refs 1-7) and is based on the establishment of the function between the molecular weight of the components (and their mixtures) of the concentration in the cryoscopic solvent and the marking of the intersection points of the isoconcentration in the coordinates molecular weight-composition. For plotting the diagram composition-properties by the cryoscopic method of the physico-chemical analysis of the system A-B-solvent, N. A. Izmaylov (Refs 6-11)(and others (Refs 12, 13)) suggested the establishment of the deviation from the additive depression on the ordinate of properties. Ya. A. Fialkov and I. D. Muzyka (Ref 16) used the depression change as a property and based the determination on a

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On the Cryoscopic Method of the Physico-Chemical Analysis (Classification of Diagrams) SOV/76-33-1-31/45

measurement of the depression of the solutions which corresponds to the intersection point of a pencil of lines in the diagram depression change-composition (Fig 1). The use of precipitation reactions in cryoscopic investigations brought about a considerable increase in analytic possibilities (Ref 17). The amount of the depression is connected to the concentration by the equation according to Schröder (Shreder) (1). On account of (1) the diagram of the ideal case is established and the diagram types depression-composition of systems with a chemical reaction are investigated. It is stated that (in this case) there are three basic types of diagrams. The first type shows a decreasing depression value, the second type a constant value, and the third type a value increasing up to the end point of the depression. A number of examples is given illustrating the types mentioned

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On the Cryoscopic Method of the Physico-Chemical Analysis (Classification of Diagrams)

(e.g. $SnCl_4$-$C_6H_4O_2$ in n-dichlorobenzene, $TiCl_4$-$C_4H_8O_2$ in benzene (Ref 19), $NH(C_2H_5)_2$- C_3H_5NCS in benzene (Ref 16), NH_2CH_2COOH - CCl_3COOH in acetic acid, etc). Several deficiencies of a previous paper (Ref 8) are pointed out. There are 3 figures and 21 Soviet references.

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