

L 10895-67 EWT(1)/EWP(m)
ACC-NRT AR6033804 SOURCE CODE: UR/0124/66/000/007/B041/B041

23

AUTHOR: Usanov, V. V.

TITLE: Some problems of averaging gas flows

SOURCE: Ref. zh. Mekhanika, Abs. 7B317

REF SOURCE: Tr. Vses. n.-i. in-ta kriogen., kislородn. i kompressorn. mashinostr., vyp. 10, 1965, 96-104

TOPIC TAGS: gas flow, flow velocity, averaging

ABSTRACT: A theoretical study has been made of the problem of applying a one-dimensional model to various cases of gas flow. It is shown that any averaging of parameters inevitably leads to the loss of some of the properties of the gas flow. Therefore, it is necessary to make a thorough analysis of errors resulting from each specific method of averaging. It has been shown that at a great population of the velocity profile, the field coefficient exhibits a weak dependence on the law of averaging of velocities. The application of equations of a one-dimensional model, in this case, results in an insignificant error when determining the velocity. Bibliography of 4 titles. Yu. A. Lashkov. [Translation of abstract]

Card 1/1, 5pp

SUB CODE: 13/

GANDEL'SMAN, A.F., kund. tekhn. nauk; USANOV, V.V., inzh.; NAUPITS, L.N.,
inzh.

New data on heat exchange and hydrodynamic resistance in the
nearsonic region of a gas flow. Trudy VINKKIMASH no.10:105-
114 '65. (MIRA 18:9)

L 11011-66 SMT(R)/T/EMP(t)/MTI JSP(c) JB

ACC NR: AP6021708

(N)

SOURCE CODE: UR/0118/66/000/003/0136/0139

AUTHOR: Uganov, V. V.; Postnikov, V. S.; Burmistrov, V. N.ORG: Voronezh Polytechnic Institute (Voronezhskiy politekhnicheskiy institut)

48B

TITLE: Certain features of martensitic transformation in steels of the austenitic-martensitic class

SOURCE: IVUZ. Chernaya metallurgiya, no. 3, 1966, 136-139

TOPIC TAGS: martensitic transformation, austenite steel, martensite steel, torsional vibration, internal friction, metal grain structure

ABSTRACT: This is a continuation of previous investigations (V. S. Postnikov et al. Izv. VUZ, Chernaya metallurgiya, 1964, no. 11; V. S. Postnikov et al. Sb. Instituta metallurgii im. Baykova, "Issledovaniye staley i splavov," Izd-vo "Nauka," 1964, 367), with the difference that it deals with certain features of the course of $\gamma \rightarrow M$ transformation in austenitic steels of the transition class, as determined by tests of internal friction, resistivity, and magnetometry and dilatometry in the process of cooling. These steels, conditionally denoted 1 and 2, contain 0.07 and 0.08% C, 16.8 and 15.98% Cr, 5.35 and 5.35% Ni, and 1.85 and 3.08% Mo, respectively. In all tests the specimens were heated to temperatures T_{on} of the onset of martensitic

Cgrd 1/4

UDC: 669.26'24'28:669.011.7

L-11014-66

ACC NR: AP6021708

transformation (750-1000°C) for 20 min, after which the corresponding curves of cooling were plotted at ~6 deg/min. Findings: the peak of internal friction, as determined with the aid of a torsional pendulum, consists of a principal peak A and a secondary peak B, the latter detectable during careful measurements of internal friction in the process of cooling below the temperature of the principal peak (Fig. 1). Curve 3 (Fig. 1) shows a change in the height of peak A* on increase in frequency from 0.4 to 16 cps: the increase in frequency from 0.4 to 1 cps increases the height of the peaks but any further increase in frequency (to 16 cps) reduces this height sharply. With increase in oscillation amplitude the peaks A and B get displaced into the region of higher temperatures; then the height of the peaks (and particularly of A) sharply increases (Fig. 2). The sharp increase in the internal friction of austenitic steels in the temperature range of 120-160°C (Fig. 3) during their cooling from normalizing temperatures is due to $\gamma \rightarrow M$ transformation. Thus, the highly sensitive internal-friction tests reveal the existence of a double $\gamma \rightarrow M$ transformation due to the inhomogeneity of the grain composition of cold austenite; this could not be detected with the aid of the other physical tests used in this investigation. The nature of the peak B and the mechanism of $\gamma \rightarrow M$ transformation are as yet unclear.

Card 2/4

L 11014-06

ACC NR: AP6021708

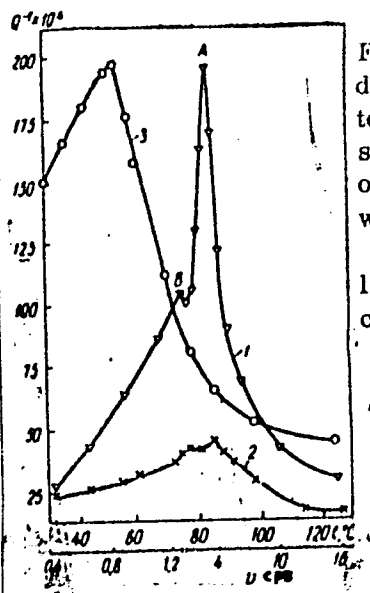


Fig. 1. Frequency dependence of the height of internal-friction peak for steel 2 (3) and its position on the temperature scale when:

1 - $\nu_1 = 1$ cps; 2 - $\nu_2 = 16$ cps; $T_{on} = 850^\circ\text{C}$

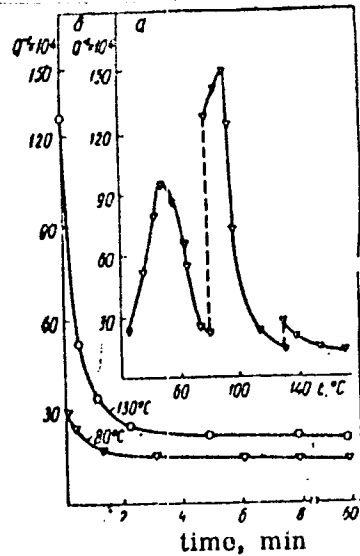


Fig. 2. Variation in the curve of internal-friction peak for steel 2 when $T_{on} = 850^\circ\text{C}$ and $\nu = 1$ cps, as a function of:

a - isothermal exposure; b - isothermal variation in internal friction

Card 3/4

L 41014-66

ACC NR: AP6021708

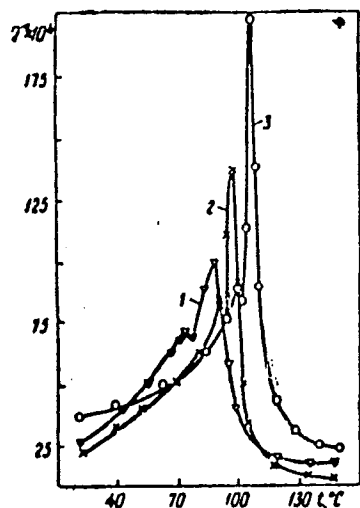


Fig. 3. Amplitude dependence of internal-friction peaks A and B for steel 1 when $T_{on} = 850^{\circ}C$ and $\nu = 1.2$ cps:

1 - $\tau_1 = 0.3$ kg/mm²; 2 - $\tau_2 = 2.5$ kg/mm²; 3 - $\tau_3 = 3.3$ kg/mm²

Orig. art. has: 4 figures.

SUB CODE: 11, 20, 13/ SUBM DATE: 18Jan65/ ORIG REF: 005/ OTH REF: 002

Card 4/4 hs

1. 10927-66 ENT(m)/T/ENT(t)/SI IUP(c) JD

ACC NR: AP6030180

SOURCE CODE: UR/0148/66/000/005/0144/0146

AUTHOR: Postnikov, V. S.; Sharshakov, I. M.; Usanov, V. V.

50
8

ORG: Voronezh Polytechnical Institute (Voronezhskiy politekhnicheskiy institut)

TITLE: Amplitude frequency dependence of the internal friction of certain steels

SOURCE: IVUZ. Chernaya metallurgiya, no. 5, 1966, 144-146

TOPIC TAGS: internal friction, austenite transformation, plastic deformation, carbon steel, chromium steel, nickel steel, torsional vibration/50 carbon steel, Kh17N5M3 chromium steel, Kh16N6 chromium steel, Kh16N11 chromium steel

ABSTRACT: Any measure of internal friction is understandably divided into two components: amplitude-independent and amplitude-dependent. This division is arbitrary since these forms of internal friction usually overlap one another and likewise can be interrelated.

In connection with contradictory experimental data relative to the frequency relationship of the contributions of both types of internal friction and the almost complete lack of these data for low-frequency torsion vibrations, the present research was undertaken. Carbon steel 50 and chromium-nickel steels Kh17N5M3, Kh16N6, and Kh16N11 were used.

The internal friction was measured on a torsion pendulum on specimens 1 mm in diameter and 100 mm long. The shear strain amplitude was measured between $3 \cdot 10^{-5}$ to $8 \cdot 10^{-4}$ and frequency from 0.4 to 18 cps. Recording of data at low frequencies was done visually but at the high frequencies with an N700 vibration oscilloscope.

Card 1/2

UDC: 669.15:539.67

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L 40927-66

ACC NR: AP6030180

Before measurement of internal friction all specimens were annealed in a closed quartz tube at 1050°C for 4 hours. The Cr-Ni-steel specimens were later subjected to normalization at 800-1100°C and the steel 50 specimens were quenched in water from 740°C.

Resulting data were in agreement with results obtained by others. The increase in shear strain amplitude to $1-2 \cdot 10^{-4}$ does not change the value of internal friction. Further increase in the shear strain amplitude leads to an increase in internal friction.

The increase in internal friction level with the normalizing temperature decrease is associated with the transformation of austenite into martensite and their different inclination to plastic microdeformation.

The increase in vibration frequency of the specimen from 0.4 to 2.5 cps for steel Kh17N5M3 (and Kh16N11) and to 4 cps for steel 50 does not have any noticeable effect on the internal friction components. Further increase in vibration frequency of the specimen increases the internal friction whereupon the greater the shear strain amplitude the sharper the increase in internal friction. Orig. art. has: 4 figures. [JPRS: 36,774]

SUB CODE: 11, 20 / SUBM DATE: 17Dec64 / ORIG REF: 006 / OTH REF: 006

me
Card 2/2

AZAROV, A.S., kand. tekhn.nauk, dots.; USANOV, Ye.A., inzh.,
retsenzent; KUREPINA, G.N., red.izd-va; DENINA, I.A.,
red.izd-va; LEYKINA, T.L., red.izd-va; SPERANSKAYA, G.V.,
tekhn. red.

[Mechanization and automation of technological processes
in the machinery industry] Mekhanizatsiia i avtomatiza-
tsiia tekhnologicheskikh protsessov v mashinostroeni. Mo-
skva, Mashgiz, 1963. 414 p. (MIRA 17:2)

SIMONOVA, N.I.; USANOV, Yu.Ye.

Synthesis of 4-methyl-1-phenyl-3-pyrazolidinone (phenidone "B").
Zhur.VKHO 7 no.2:239 '62. (MIRA 15:4)

1. Leningradskiy institut kinoinzhenerov.
(Pyrazolidinone)

BLYUMBERG, I.B.; DIMITROV, R.V.; USANOV, Yu.Ye.

Kinetics of the processes of high-speed developing of cinematographic materials. Zhur. nauch. i prikl. fot. i kin. 9 no.5:
336-341 S-0 '64. (MIRA 17:10)

1. Leningradskiy institut kinoinzhenerov (LIKI).

BLYUMBERG, I.B.; DIMITROV, R.V.; USANOV, Yu.Ye.

Investigating the temperature dependences in high-speed developing.
Zhur.nauch. i prikl.fot. i kin. 9 no.6:405-410 N-D '64. (MIRA 18:1)

1. Leningradskiy institut kinoinzhenerov.

POPELOVA, G.L., nauchn. red.; USANOVA, A., nauchn. red.

[New finishing materials and the mechanization of the processes of furniture finishing; materials] Novye otdelochnye materialy i mekhanizatsiia protsessov otdelki mebeli; materialy. Moskva, TSentr. in-t tekhn. informatsii i ekon. issl. po lesnoi, bumazhnoi i derevoobrabatyvaiushchei promyshl., 1963. 43 p. (MIRA 17:7)

1. Soveshchaniye rabotnikov mebel'noy promyshlennosti na temu "Novyye otdelochnyye materialy i mekhanizatsiya protsessov otdelki mebeli." Moscow, 1962.

KORSHUN, L.L.; NOTKIN, M.M.; STRADA, V.Yu.; TSVETKOVA, L.F.;
KIMRYAKOV, N.A.; USANOVA A.P., red.

[The "NK" nitrourea coating Nitrokarbanidnaia gruntovka
"NK" Moskva. TSentr. nauchno-issl. in-t informatsii i tekhniko-
ekon. issledovaniy po lesnoi, tselliulozno-bumazhnoi, derevo-
obrabatyvaiushchei promyshl. i lesnomu khoz., 1964. 15 p.

(MIRA 17:12)

1. Vsesoyuznyy proyektno-konstruktorskiy i tekhnologicheskii
institut mebeli (for Korshun, Notkin, Strada, TSvetkova).
1. Mebel'naya fabrika No.7 Soveta narodnogo khozyaystva Mo-
skovskogo gorodskogo ekonomicheskogo rayona (for Kimryakov).

BALASHOV, V.I., podpolkovnik meditsinskoy sluzhby; USANOVA, A.V.

Influenzalike form of food toxinfection. Voenn.-med. zhurn. No. 4:86
Ap '60. (MIRA 1r:1)

(FOOD POISONING)

BALASHOV, V.I.; ARGUNOV, R.S.; SOKOLOV, I.A.; ROGOZHIN, V.A.; USANOVA, A.V.

Outbreak of food toxicoinfection caused by two types of Salmonella.
Zhur.mikrobiol., epid.i immun. 32 no.12:114 D '61.

(FOOD POISONING) (SALMONELLA) (MIRA 15:11)

PA 00110

USANOVA, G.V.

USSR/Electricity - Conservation Dec 1947
Fuel - Conservation

"Rationalizing the Consumption of Fuel and Electrical Power," Y. G. Usanova, GlavVostokEnergo Hef't, 4th pp

"Energeticheskiy Byull" No 12

Rational use of fuel and electrical power most important for the national economy. Most interesting one-page table gives relative consumption and norms set for various enterprises. Table takes in fuel and electric power. Also gives table showing average expenditure of electric power during drilling operations. Author states that for most advanced

IC 50R18

USSR/Electricity - Conservation (Contd) Dec 1947
Rational use of electric power, equipment must perform at optimum, and new more efficient methods should be adopted as soon as possible. Figures in tables for 1945 through 1947.

IC

50R18

BOGDAN, N. T.

"Surgical Treatment of Fibromyomas." Thesis for
degree of Cand. Medical Sci. Sub 21 Feb 50,
Central Inst for the Advanced Training of
Physicians

Summary 71, 4 Sep 52. Dissertations

Presented for Degrees in Science and
Engineering in Moscow in 1950. From
Vechernyaya Moskva, Jan-Dec 1950

USSR/Medicine/Biochemistry - radiology

USANOVA, M. I.

FD-2947

Card 1/1 Pub. 17-11/23

Author : Usanova, M. I. and Shnol', S. E.

Title : Distribution of tagged coffeine in the animal organism and its transfer from mother to embryo

Periodical : Byul. eksp. biol. i med. 7, 41-44, July 1955

Abstract : Author investigated the progress of tagged coffeine in the animal organism, dynamics of its transmission from mother to embryo, and methods of its administration by experiments on rats. The rats were given 1 ml of an aqueous solution of coffeine with radioactive carbon C¹⁴ by subcutaneous injection. The coffeine was found in all organs and in the cerebrum - in pregnant rats also in the placenta and the tissues and organs of the embryo. One hour and 40 minutes after administration radioactivity can be observed simultaneously in all organs in the following order: kidneys, liver, lungs, cerebral hemispheres. (Distribution in the central nervous system will be taken up later in more detail.) 4 references, 2 USSR, 4 since 1940, graphs

Institution : Chair of Obstetrics and Gynecology (Head: Prof. F. A. Syrovatko) and Chair of Medical Radiology (Head: Prof. V. K. Modestov) Central Institute for the Advanced Training of Physicians, Moscow

Submitted : 24 May 1954

L 4482-66

ACC NR: AP5024651

muons and 10^{-15} muons/cm² sec sterad BeV for 10 BeV muons. Orig. art. has: 2 figures.

SUB CODE: NP/ SUBM DATE: 00/

ORIG REF: 001/ OTH REF: 000

BC

Card 2/2

CHERNOBEREZHSKIY, Yu.M.; ZUBKOVA, S.N.; USANOVA, S.D.; AFANAS'YEVA, L.V.

Study of the suspension effect. Koll. zhur. 27 no.5:780-783 S-0 '65.
(MIRA 18:10)

1. Leningradskiy universitet imeni Zhdanova.

KALYAYEV, A.; USANOVA, Ye.

"Laboratory Methods in Soviet Sanitation Practices," Meditsinskiy Rabotnik, Vol 17, No 96, 30 Nov 1954 p 2.

Physician at the laboratory of a hospital in Yeniseysk.

Translation W-31326, 28 June 54

1959 M

CULTIVATED PLANTS. Potatoes. Vegetables.
 ABS. SOUR. Cucurbits
 BIOLOGIYA, NO. 4, 1959, No. 15660

AUTHOR Usanova, Z.; Belyakova, G.
 INST. Moscow Agric. Acad.

TITLE . Certain Characteristics of the Growth and
 Development of American artichoke in the
 Moscow Oblast.

ORIG. PUB. : Sb. stud. nauchno-issled. rabot. Mosk. s.-kh.
 akad. im. K.A. Timiryazeva, 1958, vyp. 8, 89-95

ABSTRACT : The authors think it is inaccurate to divide
 the American artichoke sorts into the red-tuber
 and white-tuber varieties. According
 to bush type all sorts can be divided into:
 (1) low-growth, drooping, intensely branching
 (Kievskaya krasnaya, Belaya uro-
 zhaynaya, Vadim) does not flower near
 Moscow; (2) high-growth, with straight-stand-
 ing stalk, few branches (Tambovskaya
 : Krasnaya, Saratovskaya, Hybrids 15, 120, 177-88

CARD: 1/2

USANOVICH, M. I.

9124 AERE-Lib/Trans-611

THE ELECTRICAL CONDUCTIVITY OF THE SYSTEM:

ARSENIC TRIBROMIDE-ETHYL ETHER. M. Usanovich. Translated by R. J. Richardson from Z. physik. Chem. 181, 427-36 (1929). 8p.

The specific conductivity of the $AsBr_3-Et_2O$ system was measured for the entire range of $AsBr_3$ concentrations. The conductivity rises to a maximum value of $k = 4 \times 10^{-4}$ at a concentration ≈ 95 wt.% $AsBr_3$ and then falls quickly to the true conductivity of pure $AsBr_3$ ($k = 1.6 \times 10^{-4}$). (auth)

USANOVICH, M.I.

3000

✓ 6538 AENE-Lib/Trans-640
ELECTROCHEMICAL INVESTIGATIONS ON ETHEREAL
SOLUTIONS. II. THE SYSTEM: ARSENIC TRICHLORIDE-
DIETHYL ETHER. M. Usanowitsch. Translated by F.
Hudswell from Z. physik. Chem. 140A, 429-34(1929). 7p.
The molecular conductivity and decomposition potential
have been determined for solutions of $AsCl_3$ in Et_2O . (auth)

Chem

Handwritten initials

ca

g

System: potassium carbonate-calcium hydroxide potassium hydroxide calcium carbonate. M. I. UMANOVICH AND S. A. BOROVIK. *Izvestiya Khim. Zhur.* 4, No. 14, 479 (1929).—The yield of KOH obtained by the reaction between Ca(OH)₂ and K₂CO₃ declines from 98% when 0.92 M K₂CO₃ is used to 46% when 0.46 M solns. are used. The conditions of formation of the double compd. K₂CO₃·CaCO₃ is of the auto-catalytic type, as the addn. of the double compd. to its components greatly increases the velocity of its further production. The velocity of the above reaction in the presence of a no. of inad. catalysis is in the order K₂Mg(CO₃)₂ > MnCl₂ > HgO > Pr > Cs₂S > CuO > NiO > Nb₂O₅ > Cu₂O > Hg > BiO₂ > PbO > PbO₂ > Cu. The action of the first of these catalysts is similar to that of K₂CO₃·CaCO₃; the remaining substances up to and including Hg do not affect the order of the reaction, but affect only its velocity. silver has no catalytic effect, and the remaining substances exert an increasingly inhibitive action. The reaction takes place exclusively in soln.; its velocity agreeing with the Ostwald formula for autocatalyzed reactions, when the active mass of K₂CO₃ is taken to be that part of it which is present in excess of that required for equil. (37.21%). B. C. A.

ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION

2

Electrochemistry of other solutions. V. Electric conductivity of other solutions in relation to complex formation. M. USANOVICH, *J. Gen. Chem. (U. S. S. R.)* 2, 443 (1952); cf. C. A. 23, 3302 - The Nernst-Thomson rule for cond. of electrolytes in soln. does not hold in a no. of cases, particularly where the solute and the solvent form complexes. In continuation of the previous work on cond. of solns. of halogen salts in $Rt(O)Me$, and Rt_2O , tests were made on cond. of $AsBr_3$, $NbCl_5$ and $SbBr_5$ in anisole. The solns. were non-conducting, which is contrary to expectation, since $NbCl_5$ and $SbBr_5$ are known to form complexes with anisole. This is explained on the ground that in this case the presence of an aromatic radical, such as phenyl, prevents the formation of an oxonium salt, as in the case with aliphatic ether-halogen salt complexes. VI. System: Antimony trichloride ether. M. USANOVICH AND P. TRAPUNOV. *Ibid.* 447-54. The sp. elec. cond. of the system $SbCl_5-Rt_2O$ in various concns. up to 100% $SbCl_5$ was measured at 18°. A max. cond. 2.6×10^{-10} is obtained at a salt concn. of 95%. The cond. at various concns. changes considerably with temp. in the interval -20° to 70°. The decomposition voltage of the salt was found to be 0.07 v. It is assumed that the electrolyte in this case is an oxonium salt, $Rt_2O_2SbCl_5$. S. I. MATSONOV

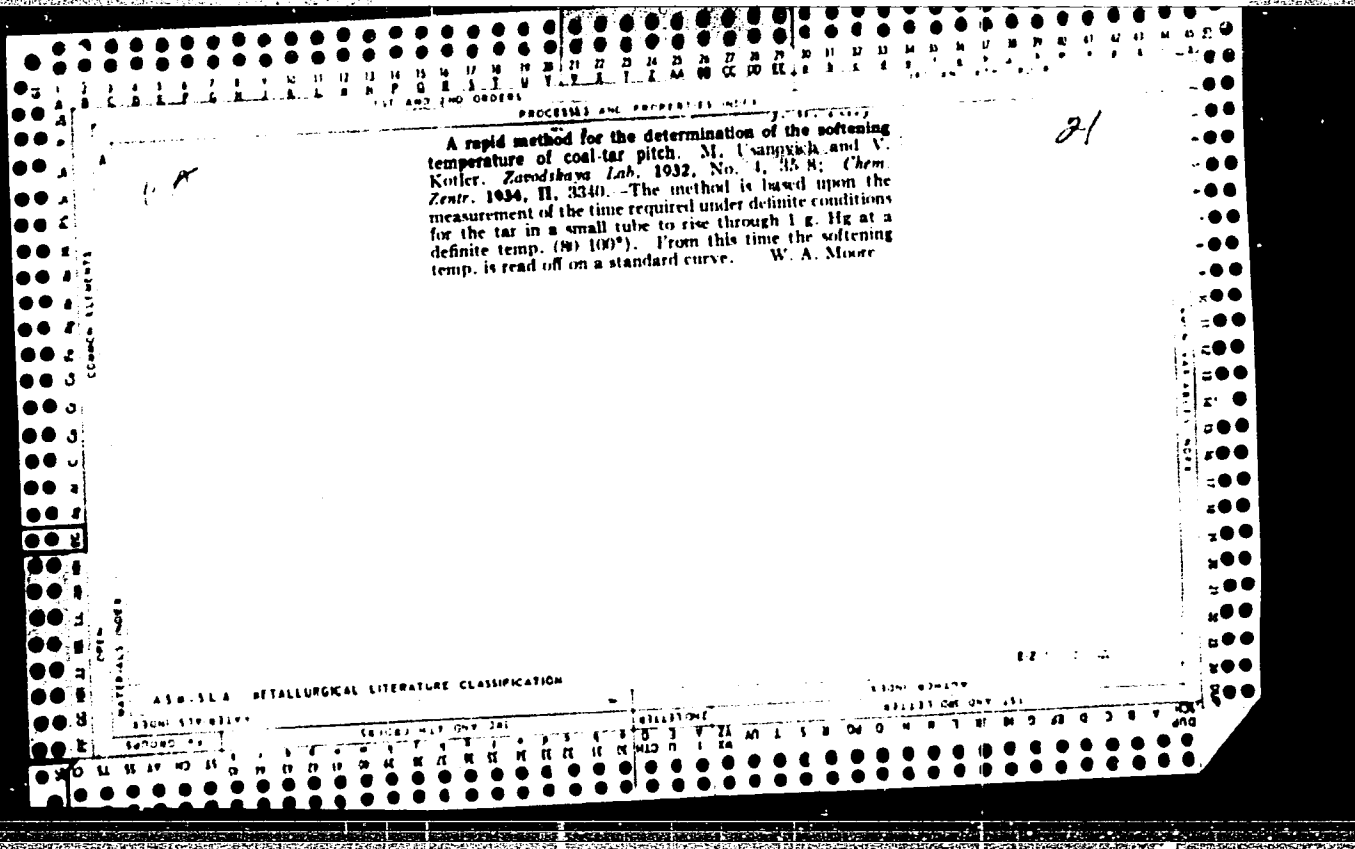
ASB-51A DETALLURGIKAL LITERATURE CLASSIFICATION

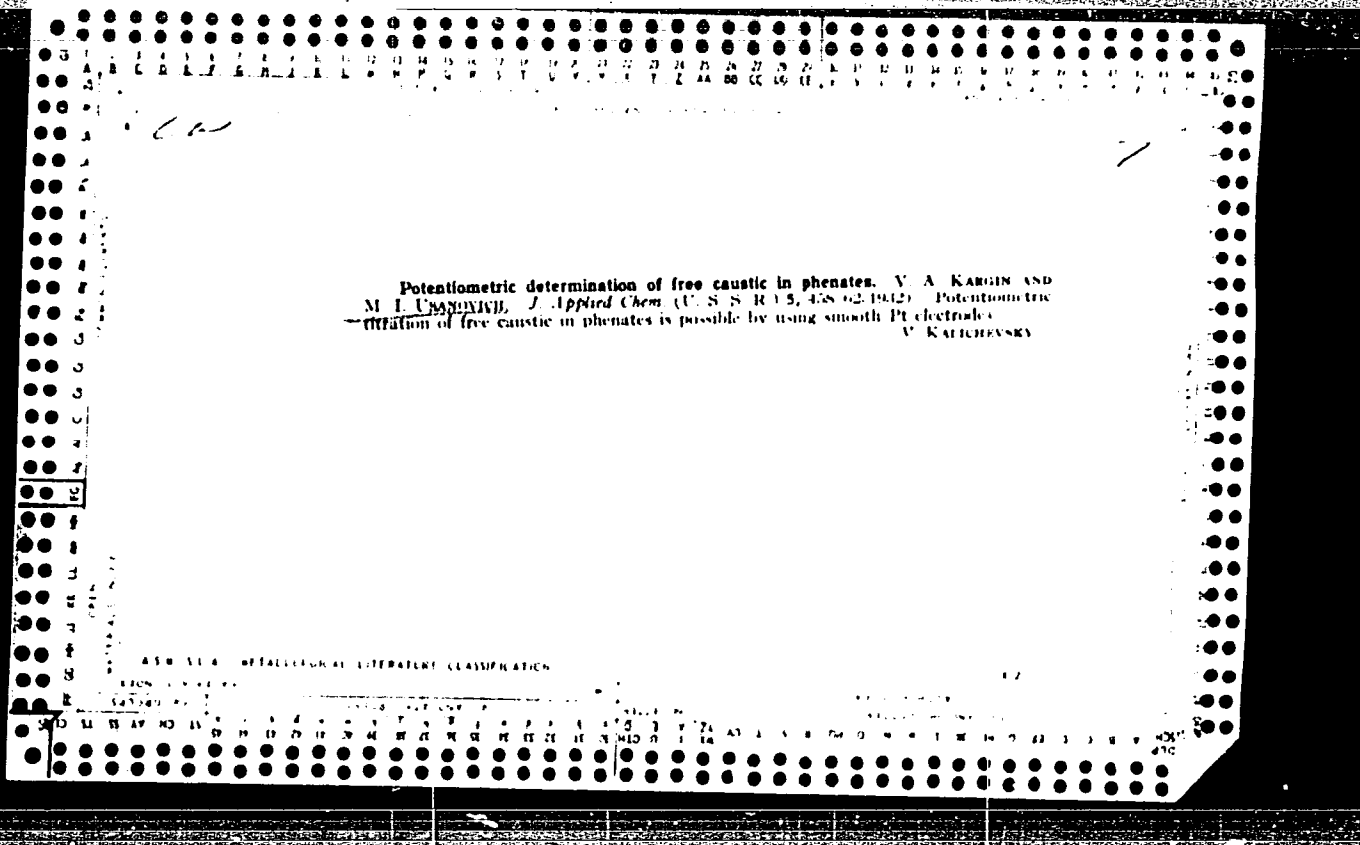
ca

2

Electrochemistry of other solutions. VII. Electric conductivity of the system: $AsBr_3-CM_2OC_2H_5$. M. LASHOVICH AND R. G. ROZENTRUK. *J. Gen. Chem. (U.S.S.R.)* 2, 864-7(1932); cf. *C. A.* 77, 1250.---Sp. cond. of $AsBr_3$ in CH_2Cl_2 , was detd. through the range of 22-92% concn. by wt. of $AsBr_3$, at 18° and 30°. The curves for both temps pass through a max at about 80% $AsBr_3$. There is indication of a compl. $AsBr_3 \cdot (C_2H_5)_2O$. VIII. Electric conductivity and viscosity of the system $AsCl_3 \cdot (C_2H_5)_2O$. F. I. TAPRUOV. *Ibid.* 810-74.---Viscosity, η , was measured through the whole range of concn. of $AsCl_3$ in $(C_2H_5)_2O$ at 0°, 10°, 18°, 30°, 40° and 50°. The relation between η and abs. temp. T is expressed by the formula $\eta = Ae^{B/T}$, where A and B are const. The diagram of viscosities shows that this system belongs to the "irregular" type. Elec. cond. of this system was studied through the concn. interval 20.17-100% by wt. of $AsCl_3$ at the same temps. as η . The existence of $AlCl_3 \cdot (C_2H_5)_2O$ as an electrolyte was established. IX. Electric conductivity and viscosity of the system $AsOBr \cdot (C_2H_5)_2O$. A. O. PIRANOV. *Ibid.* 875-7.---This system is nonconducting. Viscosity was measured through the whole range of concn. at 0°, 10°, 18°, 30°, 40° and 50°. The system belongs to the "ideal" type, showing no chem. reaction between the 2 components. X. Viscosity of the system $PbCl_2 \cdot (C_2H_5)_2O$. R. G. ROZENTRUK. *Ibid.* 878-9.---This system is nonconducting. Viscosity was measured through the whole range of concn. at 0°, 10° and 18°. The system belongs to the "ideal" type. S. I. MADONSKY

ASB. 51.4 METALLURGICAL LITERATURE CLASSIFICATION





2

CA

Electrical conductivities of binary systems with organic acid as a component.
 M. Ushevyich. *Physik Z. Sowjetunion* 4, 134-5(1933).—EtO, PhOMe, PhNC₆
 AcOH and HNO₃ form compds. with H₂SO₄. These compds. act as bases in the sense
 of the Brønsted theory. B. Bradford Stone

ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION

STANDARD LITERATURE CLASSIFICATION

Electrochemistry of other solutions.
 of the system sulfuric acid ethyl ether
J. Gen. Chem. (U. S. S. R.) 4, 215 (1934),
 28, 1803. --The cond. of the system
 concns. of 27.44-100% of H_2SO_4 was
 and 25°. The two isotherms for sp. and
 a max. at 90.92% H_2SO_4 . Here, as in
 other points of electrolytes, the cond. of
 in oxonium compds. $H_2SO_4 \cdot Et_2O$.

XIII. Viscosity of the system arsenic
 M. P. Shulgina. *Ibid.* 223-4. --Viscosity
 $AsCl_3 \cdot C_2H_5OCH_3$ in all concns. was measured
 at 0°, 20°, 40°, 60° and 80°. Maxima appearing
 at concn. of 50 mola. % indicate the
 $C_2H_5OCH_3$, but not the complex $2AsCl_3 \cdot C_2H_5OCH_3$.
 The system is nonconducting. XIV. Viscosity
 of the system arsenic-sulfuric acid. P. A. Zavarikhina.
 Viscosity of the system $C_2H_5OCH_3 \cdot H_2SO_4$
 measured at 20°, 30°, 40°, 50° and 60°. The
 isotherms pass through a sharp max. at about
 57 mola. % H_2SO_4 , indicating the complex compd. $C_2H_5OCH_3 \cdot 2H_2SO_4$. XV.
 System antimony tribromide ethyl ether. M. Usanovich.

II. Conductivity
 M. Usanovich. *Ibid.* 223-4. Elec. cond. of the system $SbBr_3 \cdot Et_2O$ in concns. of 2.97-100 mola. % of $SbBr_3$ was measured at 20°; also, of mists. contg. 14.13, 20.90, 23.31, 39.25, 47.41, 67.15, 71.15, 82.36 and 90.41 mola. % $SbBr_3$ in Et_2O measured in each case at 20°, 30° and 40°. The 20° isotherm rises sharply at 67.15 and at 82.3 mola. % $SbBr_3$. The compd. $Et_2O \cdot 2SbBr_3$ was established. This compd. is held responsible for the elec. cond. of the system. XVI. Electrical conductivity and viscosity of the system chloromethyl ether arsenic trichloride. V. I. Terpigunov. *Ibid.* 235-9. Viscosity of the system $CH_2ClOCH_3 \cdot AsCl_3$ in all concns. was measured at 0°, 10°, 20°, 30°, 40° and 50°. Isotherms indicate the compd. $CH_2ClOCH_3 \cdot AsCl_3$. Rec. cond. isotherms for the same system were detd. at 0°, 10°, 20°, 30° and 40°. Cond. curves confirm the above conclusion. Introduction of Cl into the ether mol. decreases the tendency for complex formation with chlorides of the elements of the 5th group of the periodic system. S. L. M.

ASB-55A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDER PROCESSES AND PROPERTIES INDEX 1ST AND 2ND ORDER

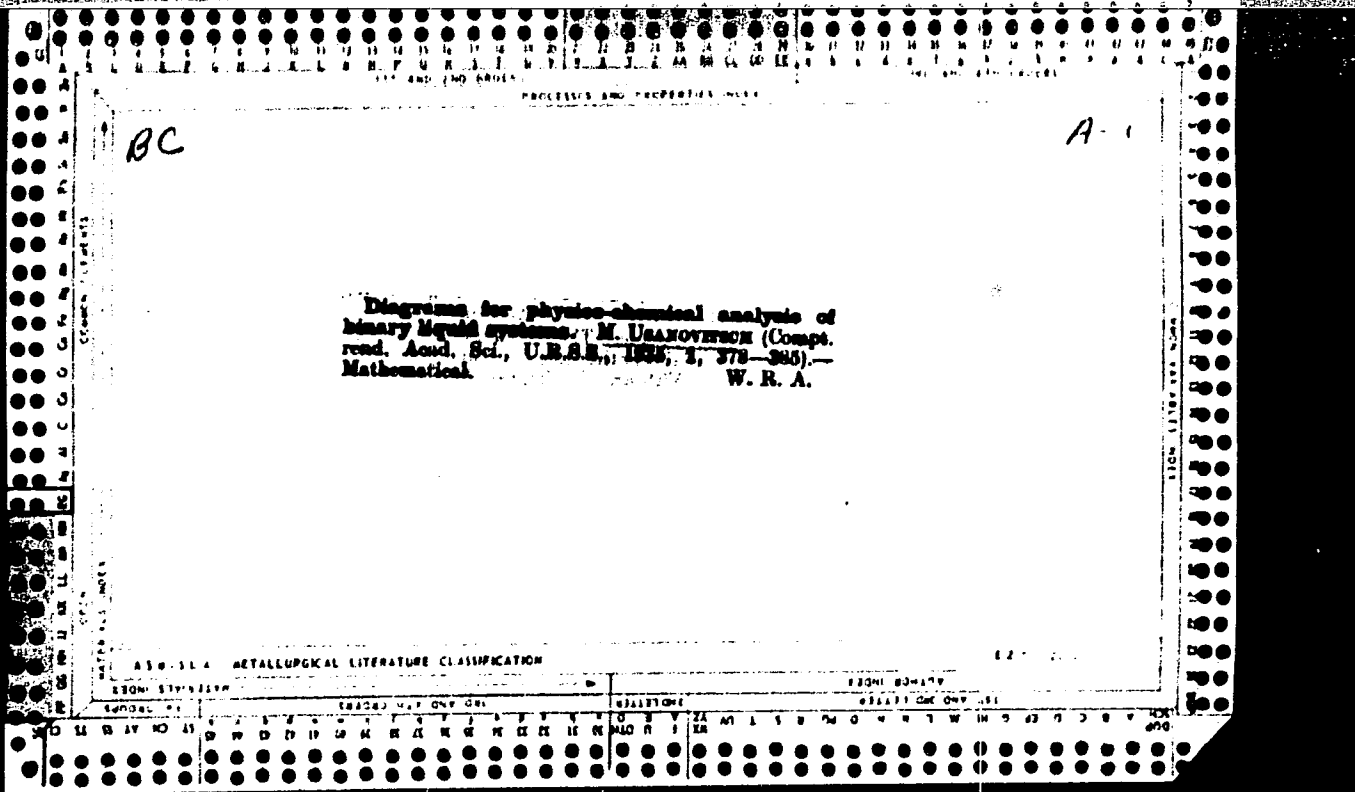
BC 2-1

Nature of electrolytes in non-aqueous solutions. M. I. Ushakovitch (Dokl. Trans. 1st U.S.S.R. Conf. Non-aq. Solutions, Kiev, 1965, 46-49). Conductivity is associated with compound formation. R. T.

A13-51A METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX OPEN COMMON ELEMENTS COMMON CHARACTERISTICS

SUBJECT INDEX INDICATED SUBJECT INDEX INDICATED



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

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES

CA 2

Complex (Elements)

Vertical Note

ANOMALOUS ELECTRIC CONDUCTIVITY. M. Usanovich. *Compt. rend. acad. sci. U. R. S. S. I.* 518-20 (in German 521-4) (1935).—Anomalous cond., defined as a decreasing equiv. or mol. cond. when the diln. is increased, is ascribed to the formation of complex compds. between the solvent and solute. R. R. Smith

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

REGION DIVISIONS

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

PROCESSING AND PROPERTIES INDEX

7-1

BC

Nature of conductivity of non-aqueous solutions.
M. URSANOVICH (Acta Physicochim. U.R.S.S., 1965,
2, 226-271).—The conductivity and temp. coeff. of conductivity of solutions of AsCl_3 , AsBr_3 , SbCl_3 , and SbBr_3 in Et_2O have been determined. The conductivity is attributed to the formation of $\text{Et}_2\text{O} \cdot \text{AsCl}_3$, $\text{Et}_2\text{O} \cdot \text{AsBr}_3$, $\text{Et}_2\text{O} \cdot \text{SbCl}_3$, and $\text{Et}_2\text{O} \cdot \text{SbBr}_3$. PCl_3 does not form a compound with Et_2O and the solution is non-conducting. The conductivity of solutions of AsCl_3 in PhNO_2 and $\text{C}_6\text{H}_5\text{N}$ is also due to compound formation. Data for $\text{AsOH} \cdot \text{H}_2\text{SO}_4$ and $\text{HNO}_3 \cdot \text{H}_2\text{SO}_4$ confirm the existence of $\text{H}_2\text{SO}_4 \cdot \text{HNO}_3$ and $\text{H}_2\text{SO}_4 \cdot \text{HNO}_3$. In the system $\text{HNO}_3 \cdot \text{H}_2\text{SO}_4$ the HNO_3 acts as a base. In the systems $\text{H}_2\text{SO}_4 \cdot \text{Me}_2\text{SO}$ and $\text{H}_2\text{SO}_4 \cdot \text{CCl}_4 \cdot \text{CO}_2\text{H}_2$ in which there is no compound formation, a new type of dependence of conductivity on concentration is found. When corr. for viscosity, the conductivities of both systems are identical, although the dielectric constants are widely different. A. J. M.

METALLURGICAL LITERATURE CLASSIFICATION

METALS

NON-METALS

CERAMICS

POLYMERS

COMPOUNDS

SOLUBLE

INSOLUBLE

GASES

LIQUIDS

SOLIDS

METALS

NON-METALS

CERAMICS

POLYMERS

COMPOUNDS

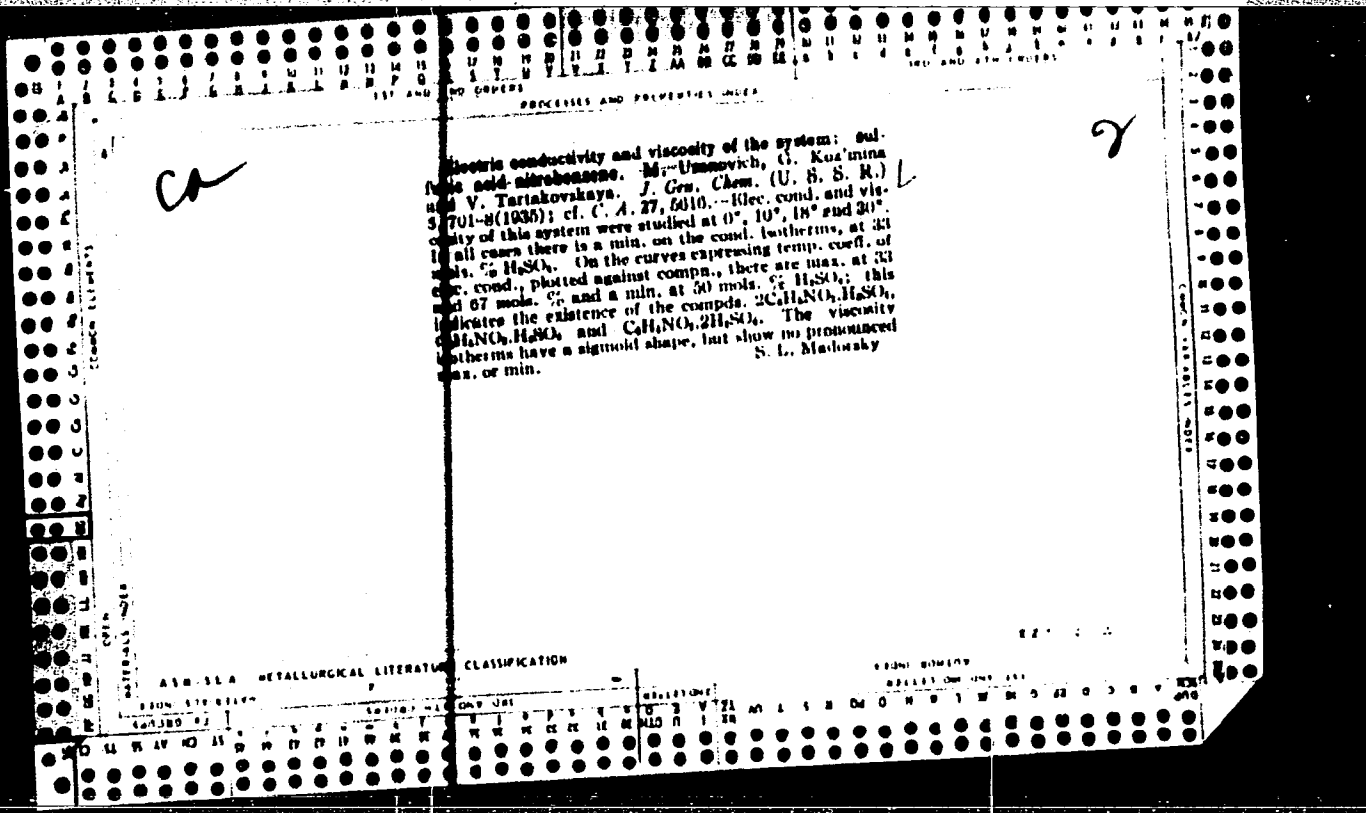
SOLUBLE

INSOLUBLE

GASES

LIQUIDS

SOLIDS



117 AND NO ORDERS PROCESSES AND PROPERTIES INDEX

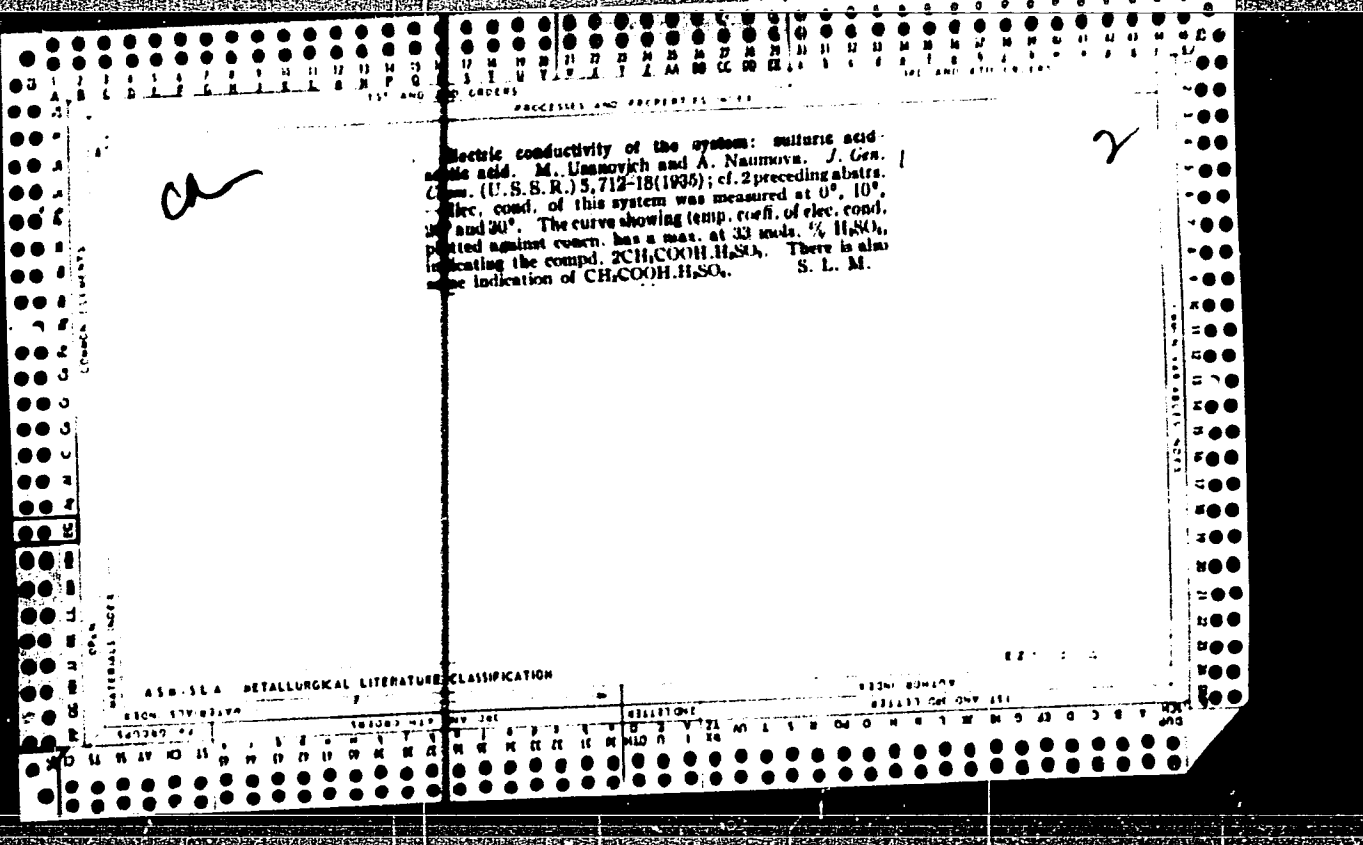
ca

viscosity of the system: acetic acid-nitrobenzene.
 M. Ussanovich and A. Tenenbaum. *J. Gen. Chem.*
 (U.S.S.R.) 8, 709-11(1935); cf. preceding abstr.—Vis-
 cosity of this system was studied at 20°, 40°, 60° and 80°.
 The isotherms show absence of chem. reaction between the
 2 compds. The system is nonconducting; this confirms
 the rule that a system of 2 nonconducting compds. is
 conducting only when they enter into chem. reaction.
 S. L. Madorsky

2

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

117 AND NO ORDERS PROCESSES AND PROPERTIES INDEX



PROCESSES AND PROPERTIES INDEX

2

Ch

Slipped curves of internal friction. M. Usanovich. *J. Gen. Chem. (U. S. S. R.)* 5, 990-1001(1935).—The existence of a new type of viscosity diagram for a binary system is characterized by the fact that the curves do not pass through a maximum with lowering of temp., is established. Such a diagram is obtained in those cases where the components react to form a compd. with a lower viscosity than that of one of the components. This happens when one of the components is an assoc. liquid and the product of reaction is a normal liquid, e. g., $H_2SO_4-C_6H_5NO_2$; $AsCl_3-(C_2H_5)_2O$. The inflection points on these types of isotherms shift with rising temp. toward the liquid with the higher viscosity when η_{AB} is less than $(\eta_A + \eta_B)/2$, where η_A , η_B and η_{AB} are viscosity coeffs. of the components A and B and of the product of reaction AB, resp., or toward the liquid with the lower viscosity when η_{AB} is greater than $(\eta_A + \eta_B)/2$. S. L. Madorsky

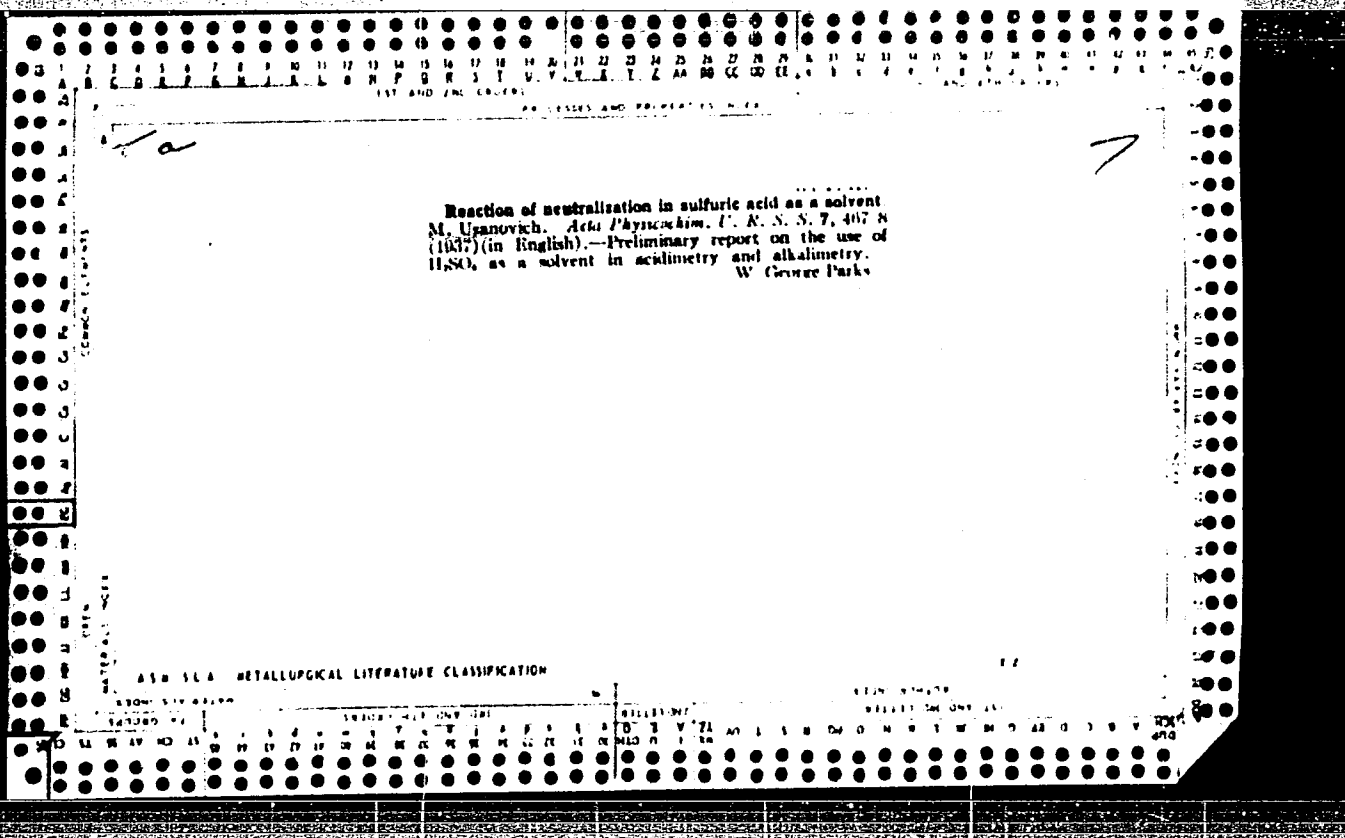
METALLURGICAL LITERATURE CLASSIFICATION

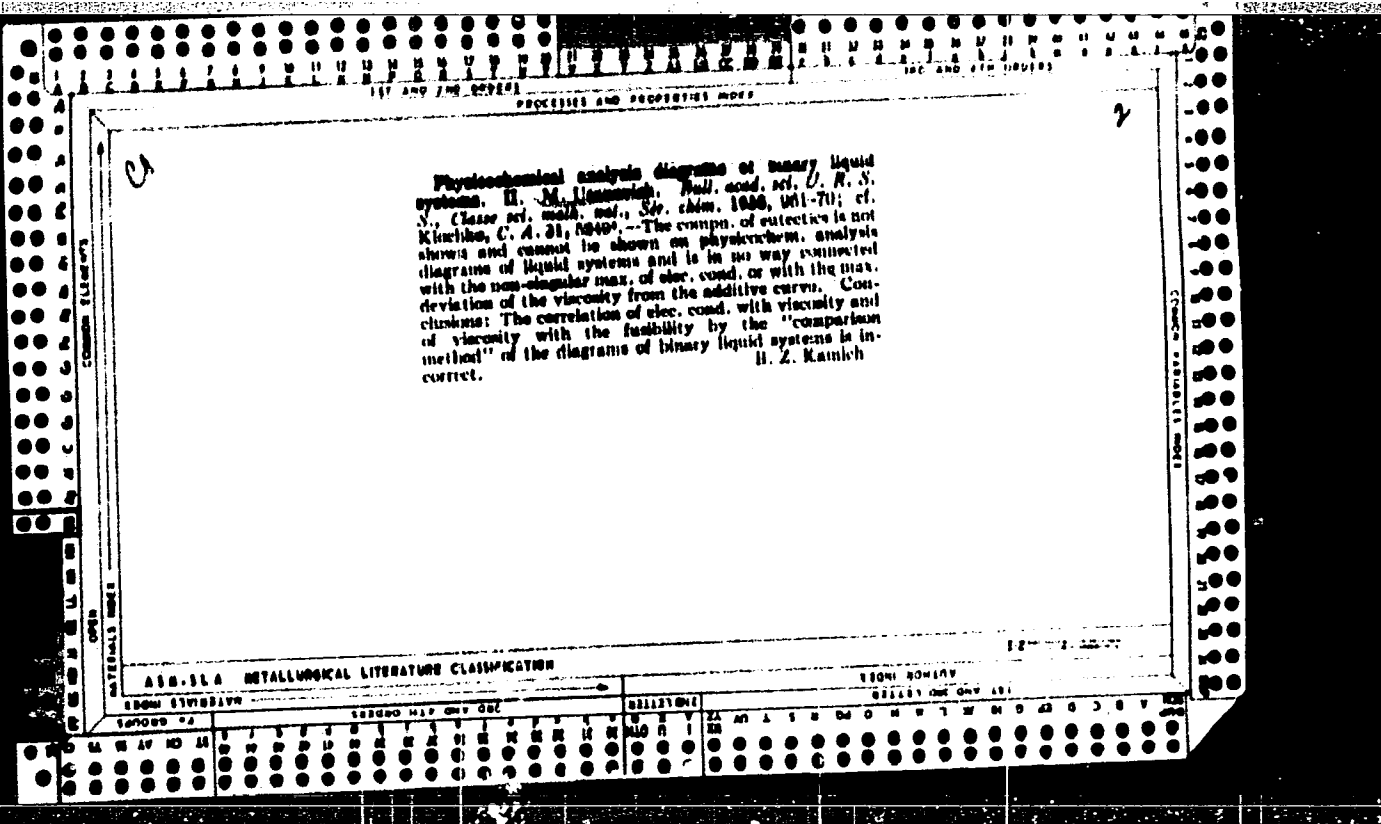
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Diagram of physicochemical analysis of irrational systems. M. Usanovich. *J. Gen. Chem. (U. S. S. R.)* 5, 1767 (1935); cf. *C. A.* 20, 4220^b. - Polemical. A reply to some remarks on U.'s work in a paper by Vst. Kachintsev [*J. Gen. Chem. (U. S. S. R.)* 5, 102 (1935)]. Sixteen references. S. L. Maslovsky

ABSTRACT METALLURGICAL LITERATURE CLASSIFICATION

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





111 422 152 221213 PROCEEDINGS AND DISCUSSIONS

A

2

*Lab. Phys. Chem.,
Central Asian State
U. - Lab. Gen.
Chem., Committee
on Science, Council
of People's Commissars
Uzbek SSR*

Theory of acids and bases. M. Umanovich, *J. Gen. Chem. (U. S. S. R.)* **9**, 123-22 (1930). — A discussion of various theories of the functions of acids and bases and the reactions of neutralization and salt formation based on the literature and the numerous publications of U. Proceeding from the observation that the acid-base reactions take place not only by the exchange of protons and that there is known to exist also the aprotic acid-base equil., the views of Brønsted (*C. A.* **22**, 4323) and Klages (*J. A.* **27**, 3019) are modified to cover all possible cases. Acidity is defined as the ability to split off cations or add anions and basicity the ability to add cations or split off anions. The acidic and basic functions depend on the coordinated unsatd. state of atoms (ions) present in the compn. of a given compd. The presence of coordination-unatd. electropos. atoms in the compn. of a substance imparts to it the acidic character and that of electroneg. atoms the basic character. Since the majority of chem. compds. contain simultaneously coordinated unsatd. atoms of both signs, the amphoteric state is a general property of polar compds. However, the amphoteric condition does not exclude the predominance of acid or basic properties. The development of either function depends also on the nature of the 2nd component. 23 references. Chas. Blanc

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

EDOH BOH10V

EDOH BOH10V

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PROCEDURES AND PROPERTIES INDEX

7-1

Ac

Conductivity, viscosity, and surface tension in the system $H_2SO_4-HClO_4$. M. UMANOVICH, T. SUMAROKOVA, and V. UDOVENKO (J. Gen. Chem. Russ., 1939, 8, 1987—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.

Lob. Phys Chem., Central Asiatic State U.

A.S.S.S.R. METALLURGICAL LITERATURE CLASSIFICATION

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

2

CP

The negative temperature coefficient of electrical conductivity of solutions. M. Usanovich. *Compt. rend. acad. sci. U. R. S. S.* 25, 908-9(1939)(in German).— From the assumption of Arrhenius that cond. of a soln. is inversely proportional to η , the following equation is obtained: $(1/\kappa)(d\kappa/dT) = (1/\sigma)(d\sigma/dT) - (1/\eta)(d\eta/dT)$ where κ = sp. cond., η = viscosity and σ = the so-called "corrected" cond. Neg. coeffs. of cond. (at ordinary temp.) are observed in solns. having low vis. G. A.

ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

1939 STUDY DIV 100000 MAT DIV 102

SUBJECTS

CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

2

Cryogenic study of the systems phenol-aniline, phenol-
 dimethylaniline and phenol-diethylamine. V. V. Udo-
 vich and M. I. Lompanich. *J. Gen. Chem. (U. S. S. R.)*
 10, 17-20 (1960); cf. preceding abstr.—The mol. wts.
 were detd. from the changes in the *f. pa.* of PhNH₂, Ph-
 NMe₂, and PhNEt₂, and their mixts. with PhOH in C₆H₆ by
 the method previously described. Similar procedure was
 used in the detn. of mol. wts. of PhNH₂ and its alkyl de-
 riva. in PhOH. The inconclusive results indicate that the
 mol. wts. of the mixts. with PhOH in C₆H₆ are higher than
 the calcd. values; this can be explained by the formation
 of chem. compds. in the systems. The mol. wts. of anilines
 in PhOH decrease with increasing concn., approaching the
 normal values
 Chas. Blanc

ASM-51A METALLURGICAL LITERATURE CLASSIFICATION

100000 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

CA

Lab. Phys. Chem., Central Asia State U.

The nature of nitrating mixtures. I. M. Usanovich. *J. Gen. Chem. (U. S. S. R.)*, 10, 219-22 (1940).—The action of mixts. of HNO_3 with other substances in the nitration of org. compds. is discussed in the light of the previous theory of the acid-base functions of HNO_3 and the coordinated unsatd. state of atoms (ions) of the reacting compds. (cf. *C. A.* 33, 6288). The function of H_2SO_4 in a nitrating acid as a water-binding agent is refuted, because the reaction: $C_6H_6 + HNO_3 \rightarrow PhNO_2 + H_2O$ is not reversible. Chuchibabin, believing that the nitrating agent is the HNO_3 mol. and not its ions, assumed that the function of H_2SO_4 is to inhibit the disson. of HNO_3 by the H_2O formed in the reaction. This is equally untenable since the dielec. const. of H_2SO_4 is greater than that of H_2O and the disson. of HNO_3 in H_2SO_4 ($HNO_3 \cdot H^+ + NO_3^-$) will not be lower than in H_2O (cf. Hantzsch, *C. A.* 2, 939). Studies of the elec. cond. of HNO_3 binary mixts. (unpublished) revealed the amphoteric nature of HNO_3 . It acts as an acid toward H_2O and as a base toward H_2SO_4 and H_2PO_4 . The acid-base function of HNO_3 is shown in its reaction with $AcOH$ and CCl_3CO_2H , acting as an acid and base, resp., and in its failure to form compds. with CH_2ClCO_2H and $CHCl_2CO_2H$ (cf. Kolthoff and Willman, *C. A.* 28, 3644). Preliminary tests indicate that in aq. H_2SO_4 or in the presence of basic compds. the nitration of aliphatic compds. is due to the anion NO_3^- , but in concd. H_2SO_4 the active agents of nitration of aromatic compds. are the cations $[NO(OH)_2]$ and $[N(OH)_2]^+$ (cf. Lauer and Oda, *C. A.* 30, 3791).

II. Nitration of toluene in the presence of acetic acid and nitrobenzene. M. Usanovich and Sh. Abdoy. *Ibid.* 223-6.—To study the effect of diluents, which are basic to HNO_3 , on the nitration of alkylated C_6H_5 , 20 ml. $PhMe$ was treated on a water bath at 40-2° for 3-5 hrs. with HNO_3 (d. 1.52) dild. with various proportions of $AcOH$, m. 10°, and $PhNO_2$. The graphic results show that with increasing concn. of the solvent in the nitrating mixt. the relative yields of $PhCH_2NO_2$ increase and those of $MeC_6H_4NO_2$ decrease. The max. yield (4.3 g.) was with a mixt. of 20% HNO_3 and 80% $AcOH$ and 40% HNO_3 and 60% $PhNO_2$. Practically no $PhCH_2NO_2$ is formed at concns. of 5-10% HNO_3 . At concns. of 5-10% HNO_3 $PhMe$ is substituted only in the nucleus $C_6H_5NO_2$ were formed. The nitration is accompanied by oxidation of $PhMe$ to $PhCO_2H$, the yields of which increase with greater diln. of HNO_3 . The results show that in the nitration of org. compds. $AcOH$, $PhNO_2$, and H_2O act as bases and not as inert solvents. III. Nitration of toluene in the presence of sulfuric acid and trichloroacetic acid. M. Usanovich and I. Glukhov. *Ibid.* 227-9.—Proceeding as above, $PhMe$ was treated with HNO_3 in the presence of various proportions of H_2SO_4 (d. 1.84) and recrystd. CCl_3CO_2H . The substitution takes place in the ring with only traces, if any, of $PhCH_2NO_2$ formed.

AS 31.1 A METALLURGICAL LITERATURE CLASSIFICATION

With increasing relative concn. of H_2SO_4 in the mixt. the yields of $MeC_6H_4NO_2$ and $MeC_6H_3(NO_2)_2$ increase (no $MeC_6H_2(NO_2)_3$ is formed). The max. yield of about 80% $MeC_6H_4NO_2$ is obtained with a mixt. contg. 40-60% HNO_3 . With further diln. the yield of $MeC_6H_4NO_2$ decreases sharply and none is formed with 15% HNO_3 . The yield of $MeC_6H_3(NO_2)_2$ increases with HNO_3 concn. to a max. of 80% with 85-90% HNO_3 . CCl_3CO_2H acts analogously, but forms only $MeC_6H_4NO_2$ and no di- NO_2 deriv. Thus, in the presence of a diluent, which is acid to HNO_3 , the nitration is directed toward the ring. IV. Nitration of toluene in the presence of monochloroacetic acid and ethyl nitrate. M. Usanovich and T. Sushkevich. *Ibid.* 230-2. It is shown that the elec. cond. of HNO_3 decreases with increasing diln. with the inert solvents of CH_2ClCO_2H and $EtNO_2$. As a result of the decreasing concn. of HNO_3 cations and anions the nitration of the ring and the side chain progressively decreases. The yields of 79.0% $MeC_6H_4NO_2$ and 53% $PhC_6H_4NO_2$ at a concn. of 80% HNO_3 decreased to 10 and 5%, resp. with 10-15% HNO_3 . The formation of $BrOH$ decreased similarly with diln. of HNO_3 . Chas. Blanc

ea

Lab. Phys. Chem, Central
Asian States U.

Maximum specific electric conductivity. M. Usanovich, *J. Gen. Chem.* (U. S. S. R.) 10, 959-61(1947).—It is math. proved that the universally accepted explanation of a max. sp. cond. (an increase in concn. decreasing dissociation) is contrary to the Ostwald's diln. law, which requires an increase in sp. cond. with increase in concn. A max. sp. cond. in systems in which the electrolyte is neither of the components of the system but the product formed, appears because of increase in the concn. of this electrolyte according to the mass-action law. In systems that form no compds. and the cond. of which depends upon the concn. of one of the components, a max. appears as a function of the relation of viscosities of the components. Previously published expts. (*J. Phys. Chem.* (U. S. S. R.) 6, 928 (1938)) agree with the following deduction: in sp. cond. corrected for viscosity there is a max. cond. in those cases in which the components of the system form compds. that are conductors; there is no max. in those cases in which the components of the system do not form definite chem. compds. A. A. Podgorov

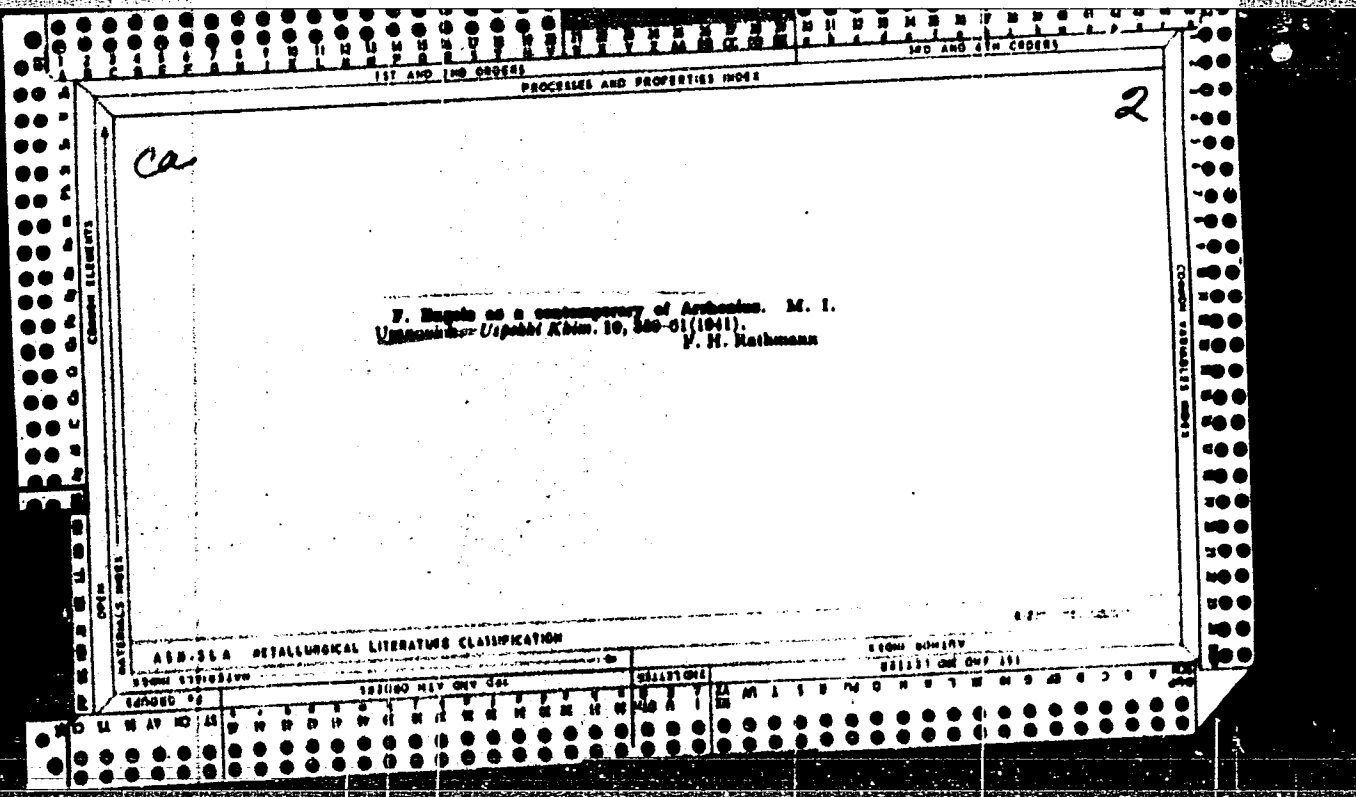
ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

FROM DIVISION

SELECT ONE OR MORE

FROM DIVISION

SELECT ONE OR MORE



117 APP AND COVER PROCESSES AND PROPERTIES INDEX

2

The temperature dependence of low current conductivity of molten Mg (Dunlop, *J. Gen. Chem. (U. S. S. R.)* 11, 772 (1961))—the dependence of σ on T is inversely proportional to its viscosity, i. e., $\sigma = c/\eta$, where c is the corrected elec. cond. Hence $(1/\sigma)(d\sigma/dT) = (1/c)(d\sigma/dT) - (1/\sigma)(d\eta/dT)$ (1). Thus the temp. coeff. of the specific elec. cond. is the difference between the temp. coeff. of the conductivity and the temp. coeff. of viscosity. Since the temp. coeff. of viscosity is always neg. from (1) it appears that the temp. coeff. of the elec. cond. may be neg. even when $(1/\sigma)(d\sigma/dT)$ in its abs. value is less than $(1/\eta)(d\eta/dT)$, in which case the last expression is neg. so reference to A. A. Bockling

ADR-55A METALLURGICAL LITERATURE CLASSIFICATION

ROOM BOWERY

ROOM DIVISION

ROOM DIVISION

157 2ND 2ND SERIES

PROCESSES AND PROPERTIES INDEX

2

CA

Acid-base reactions in acetic anhydride. I. Acid-base properties of acetic anhydride. M. Usatovych and K. Vaisimirkhil. *J. Gen. Chem. (U.S.S.R.)* 11, 951-8(1941); cf. *C.A.* 36, 6444. —Thymol blue, methyl orange, methyl yellow, methyl red, and neutral red give their acid colors in pure Ac_2O ; tropaeolin OO gives its transition color, and methyl violet its alk. color. Thus Ac_2O has a pH between 1 and 2. Bromothymol blue, bromophenol blue, and bromocresol purple give colors differing from those found in H_2O . Salts of $AcCl$, $BaCl$, and CCl_3CO_2H in Ac_2O are more acid than Ac_2O , and salts of $NaOAc$ are much more alk. (pH 4.4-6.8). Pyridine is also a base in Ac_2O . III. Solvolysis of salts in acetic anhydride. *Ibid.* 959-62.— Ac_2O behaves as if it splits into Ac and AcO ions. When salts are dissolved in Ac_2O , solvolysis occurs. Sulfates and carbonates give weakly acid $AcSO_4^-$ and $AcCO_3^-$, and chlorides and nitrates give $AcCl$ and $AcNO_3$. The order of decreasing basicity for anions is AcO^- , CO_3^{2-} , SO_4^{2-} , CNS^- , Cl^- , NO_3^- , Br^- , I^- , and the order of rising acidity for cations is K , Na , Ba , Sr , NH_4^+ , Pb , Li , Mn , Ca , V , Cr , Cu , Mg , Ni , Zn , Al , Be . H. M. Leicester

COMMON ELEMENTS

MATERIALS MODE

OPEN

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

FROM SOURCE

SEARCHED

INDEXED

REF

ABSTRACTED

FILED

SEP 1961

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ANN ARBOR, MICH.

PROCESSING AND PROPERTIES INDEX

C A

COMMON ELEMENTS

COMMON VARIETY INDEX

S-shaped viscosity diagrams. M. I. Usimovich, *Ibid. Nauk S.S.S.R., Otdel. Tekh. Nauk, Inst. Mashinostroyeniya, Soveshchaniya po Vysshim Zhidkostei i Kolloid. Rasstrovam (Conf. on Viscosity of Liquids and Colloidal Solns.)* 2, 85 4(1944).—Several binary systems were analyzed to ascertain whether S-shaped η (viscosity)—compn. curves actually are the result of a disappearance of the max. at a sufficiently high temp., as was claimed by N. B. Kurnakov (cf. C.A. 33, 8485) for the system CdI_2-SbCl_3 . To this end, the temp. deriv. $d\eta/dt$ was plotted against compn. for the system $CdI_2-NO_2-H_2SO_4$, above and below the m.p. of the compd. (11.6°). The values of $d\eta/dt$ increase with rising temp. and show no tendency to pass through zero. Consequently, there is a hint of a max. of η at a lower temp. The same was found for the systems $H_2O-AsCl_3$ and $CHCl_3-COOH-HClO_4$. The correct interpretation of S-shaped curves is that one of the components is assoc. to a higher degree than the compd. the formation of which results in a simplification of the compn. of the system. Such systems cannot have a max. no matter how much the temp. is lowered. As a rule, the curvature tends to become less with rising temp. In some cases, however, the inflection is absent at low temp. and appears only at some higher temp., becoming more pronounced with further rise of the temp. This is observed in the system *m*-cresol-dimethylaniline, where at 9° the η isotherm is convex to the axis of compn., has an inflection at 55° and becomes distinctly S-shaped at 111°. In the system phenol-pyridine, the 25° and 40° isotherms are S-shaped; from 50° up, a max. appears, which on further rising temp. shifts towards the phenol. This is a case where a max., absent at lower temp., appears at higher temp., and it runs counter to Kurnakov's postulated appearance of a max. of η on lowering the temp. The last 2 systems have this in common that the temp. coeff. of η of either phenol or *m*-cresol is greater than that of the stable compd. formed. Change of temp. changes the ratio of η of one of the components and the compd.; with rising temp., η of the compd. grows faster than η of the more viscous component and this, combined with the stability of the compd., leads to the appearance of a max. The underlying fact is the considerable assoc. of phenols at low temp. and its rapid drop at higher temp. Conclusion: S-shaped η curves cannot be interpreted by a disappearance of a max. due to raised temp. N. Thon

METALLURGICAL LITERATURE CLASSIFICATION

EIGHT DIGIT

FROM SYNOPTIC

SYNOPTIC ONE ONLY

SYNOPTIC ONE ONLY

PROCESSES AND PROPERTIES INDEX

2

Handwritten initials: M

Electroconductivity and viscosity of the system $\text{CH}_3\text{CO}_2\text{H}-\text{CH}_2\text{COCl}$. M. Usanovich and L. N. Vasil'eva. *J. Gen. Chem. (U.S.S.R.)* 18, 1202-3 (1946) (in Russian).— The cond. and viscosity of the system $\text{AcOH}-\text{AcCl}$ at 25° and 35° were detd. and the results are presented graphically. The presence of a cond. max. indicates the existence of interaction between the components on an acid-base basis, with formation of a complex $(\text{Ac}_2\text{OH})\text{Cl}$, in which AcCl acts as the acid and AcOH as the base. Green color of methyl violet in AcCl and violet color in AcOH show the former to be the stronger acid. G. M. Kosolapoff

A S B - S L A METALLURGICAL LITERATURE CLASSIFICATION

E-217-102-10000

MATERIALS INDEX

COMMON ELEMENTS

COMMON VARIABLES

100 AND 0TH (2018)

PROCESSING AND PROPERTY INFO

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ca

Acid-base properties of acetonitrile. I. Interaction between acetonitrile and acids. M. Usanovich and V. Dulova. *J. Gen. Chem. (U.S.S.R.)* 16, 1975-80 (1940) (in Russian); cf. *C.A.* 39, 4540⁺.—The basic behavior of CH_3CN towards CH_3COOH , CH_3COCl , $C_6H_5(NO_2)_2OH$, $CH_3CICOOH$, CCl_3COOH (the acid character increasing

in that order) is demonstrated by detns. of viscosity η and sp. elec. cond. κ of the corresponding binary systems. In CH_3CN-CH_3COOH , the 0° and 25° η isotherms are concave to the axis of compn., the latter somewhat less than the former; in the other 4 remaining systems, the η isotherms are convex. In all 5 systems, the κ isotherms (at 0, 25, 50°; 0, 25°; 25, 50°; 25, 50°; 25, 50°, resp., in the order given above) have a distinct max.; CH_3CN-CH_3COOH shows two max. (at about 20 and 40 mol. % CH_3COOH), sep'd. by a min. The max. is preserved on the corresponding κ curves; $CH_3CN-CH_3CICOOH$ again shows two max. sep'd. by a min.; $CH_3CN-CH_3CICOOH$ and $CH_3CN-C_6H_5(NO_2)_2OH$ show an inflection but the max. expected beyond it cannot be attained owing to limited soly. The special case of CH_3COOH (two max. of κ and η) is also reflected in the curves of the temp. coeff. of elec. cond. which show inflections. On the basis of the κ curves, the acid character towards CH_3CN increases in the order CH_3COOH , CH_3COCl , $[C_6H_5(NO_2)_2OH]$, $CH_3CICOOH$, CCl_3COOH ; indicators (picric acid, malachite green, methyl violet, tropaeolin OO, dimethyl yellow, α -dinitrophenyl, Congo red, methyl orange, benzene- α -naphthylamine, chrysoidin, methyl red, β -nitrophenol, neutral red) gave the order CH_3COOH , $[CH_3COCl, C_6H_5(NO_2)_2OH]$, $CH_3CICOOH$, CCl_3COOH . The basic properties of CH_3CN may be linked with the structure $CH_3\overset{\ominus}{C}:\overset{\oplus}{N}$, i.e. be det'd. by the presence of the neg. unbind. N.

N. Thom
E. J. J. J. J.

METALLURGICAL LITERATURE CLASSIFICATION

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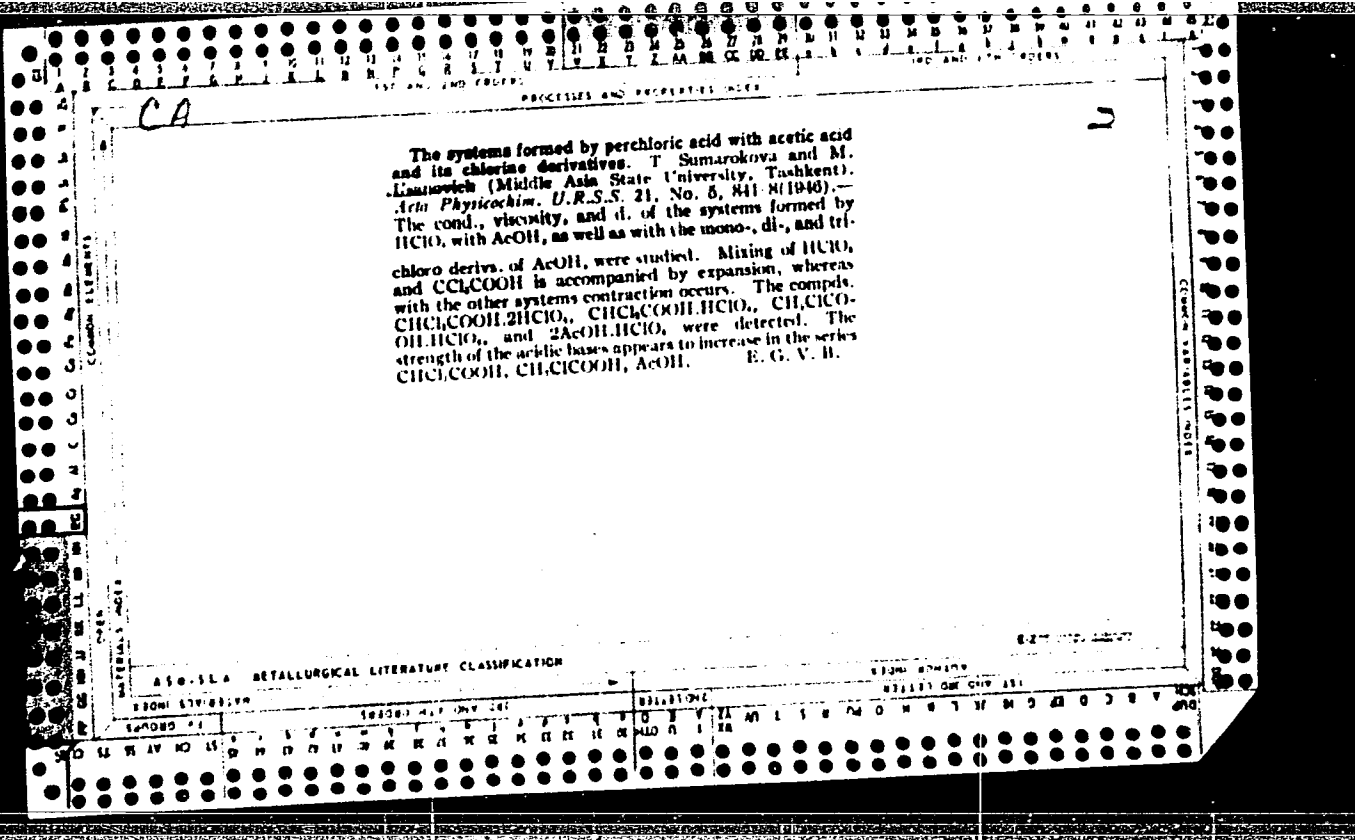
ll

Electrical conductivity and viscosity of the system H₂SO₄-CCLCOOH. M. D. Uspenskiy and V. V. Tsvetkovskaya (Siberian Phys. Tech. Inst. and Kazan State Univ.). J. Gen. Chem. (U.S.S.R.) 16, 1047-50 (1945) (in Russian). Elec. cond. κ was measured at 20° from 100 to 71.8 mol. % H₂SO₄, at 40° from 100 to 27.8 mol. %, at 60° from 100 to 0.78 mol. %; κ falls continuously and rapidly from 0.033 ohm.⁻¹ cm.⁻¹ for pure H₂SO₄ (at 60°) to practically zero for pure CCLCOOH; the curves for 20° and 40° are parallel to that for 60°, κ falling to very nearly zero at the compo. given above. The curve of elec. cond. A for H₂SO₄ falls abruptly to nearly zero at a diln. of about 100:1 and remains fairly const. on further diln. The av. temp. coeff. of κ between 40 and 60° is about 3%. The viscosity η falls uniformly from pure H₂SO₄ ($\eta = 0.105$ at 60°) to pure CCLCOOH ($\eta = 0.028$); the curve is convex to the axis of compo. and is characteristic of a system of noninteracting assoc. components. The abnormal shape of the κ and η curves can be interpreted by ascribing the elec. cond. to ionization of sulfonium sulfate (Hantsch) formed through assoc. of H₂SO₄ due to its amphoteric nature; diln. with the indifferent solvent CCLCOOH results in decompn. into the simple H₂SO₄ mole., not susceptible of ionization in that medium. N. Thon

ASAC-A METALLURGICAL LITERATURE CLASSIFICATION

FROM SOURCE

1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000



2

PA

Electroconductivity, viscosity, and density of binary systems formed by HClO₄. III. The system HClO₄-CHCl₂COOH. F. Sumarokova and M. Usanovich. *J. Gen. Chem.* (U.S.S.R.) 17, 157-62 (1947) (in Russian); *cf. C.A.* 41, 6786g, 7216i. —Viscosity-concn. curves are S-shaped, values for HClO₄ and for CHCl₂COOH at 20° being 0.10466 and 0.0420; at 35°, 0.08880 and 0.0200; and at 50°, 0.08342 and 0.01700 poises. The cond.-concn. curves rise to rather sharp max. at a concn. of HClO₄ of 79.5 mole %, the values of the max. cond. at 20, 35, and 50° being 0.02587, 0.02020, and 0.02018 ohm⁻¹cm⁻¹. The curve of l/d. against concn. is slightly S-shaped, deviating somewhat from a straight line. Values of d. for HClO₄ and CHCl₂COOH 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 2HClO₄·CHCl₂COOH and HClO₄·CHCl₂COOH, with CHCl₂COOH being basic

relative to the HClO₄. IV. The system HClO₄-CH₂-CICOOH. M. Usanovich and T. Sumarokova. *Ibid.* 163-8. —Viscosity-concn. curves show max. at a concn. of HClO₄ of about 32.7 mole % at 35 and 50°, but crystn. of CH₂CICOOH prevents observation of max. at 20°. Values of max. viscosity at 35 and 50° are 0.05981 and 0.02441 poises. Cond. curves show max. at about 80 mole % HClO₄, values for cond. of HClO₄ being 0.02250, and of CH₂CICOOH less than 0.001. (very small temp. dependence), and the max. cond. at 20, 35, and 50° being 0.05261, 0.06300, and 0.07778 ohm⁻¹cm⁻¹. The curve of temp. coeff. against HClO₄ concn. is S-shaped, rising from practically 1.0 for 100 mole % HClO₄ to about 4.0 below 23 mole % HClO₄. The curve of l/d. against concn. is convex towards the concn. axis; at 20°, e.g., it rises from 0.57 for 100 wt. % HClO₄ to 0.66 for 20 wt. % HClO₄. The formation of one compd. is indicated, having the formula HClO₄·CH₂CICOOH, the latter being basic relative to the former. Arild J. Miller

ASB 514 METALLURGICAL LITERATURE CLASSIFICATION

USANOVICH, M.

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.

10

CA

Processes and Properties Index

Acid-base properties of acetonitrile. II. Interaction of acetonitrile with bases. M. Usanovich and V. Dujova. *J. Gen. Chem. (U.S.S.R.)* 17, 609-72(1917)(in Russian); cf. *C.A.* 41, 6793i. —(1) In the system MeCN-picoline (mixt. of isomers), the viscosity (η) isotherms at 0° and 25° are slightly convex to the axis of compn., the 50° isotherm is a straight line. The curves of elec. cond. (κ), at 0°, 25°, and 50°, have a high max. at about 80 mol.-% MeCN; the κ plot shows a sharp max. (at about 85 mol.-% MeCN), indicating acid-base interaction. In the electrolysis of mixts. of the compn. corresponding to the max. of κ , the Ag anode was dissolved and C_2H_2 was evolved on the platinumized Pt cathode. On the assumption of a complex $B \cdot MeCN$ ($B = \text{base}$), ionized into $B \cdot Me^+$ and CN^- , the discharged cation disoc. into $B + Me$ with subsequent recombination of 2 Me. Indicators with transition above pH 5 show acid reaction in MeCN and basic reaction on addn. of picoline. (2) The η isotherms of MeCN- Me_2CO , concave to the axis of compn., indicate some degree of interaction. Its real η , in contrast to the explanation by detas. of the apparent mol. wt. giving curves concave to the axis of abscissas except at extreme dilas. On the other hand, indicators show no change of reaction on admixing Me_2CO to MeCN. Consequently, Me_2CO and MeCN have approx. the same acid-base character and their interaction is merely dipole assocn. N. Thon

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

REGION LITERATURE

REGION NUMBER

COMMON ELEMENTS

MATERIALS INDEX

SECTION NUMBER

6

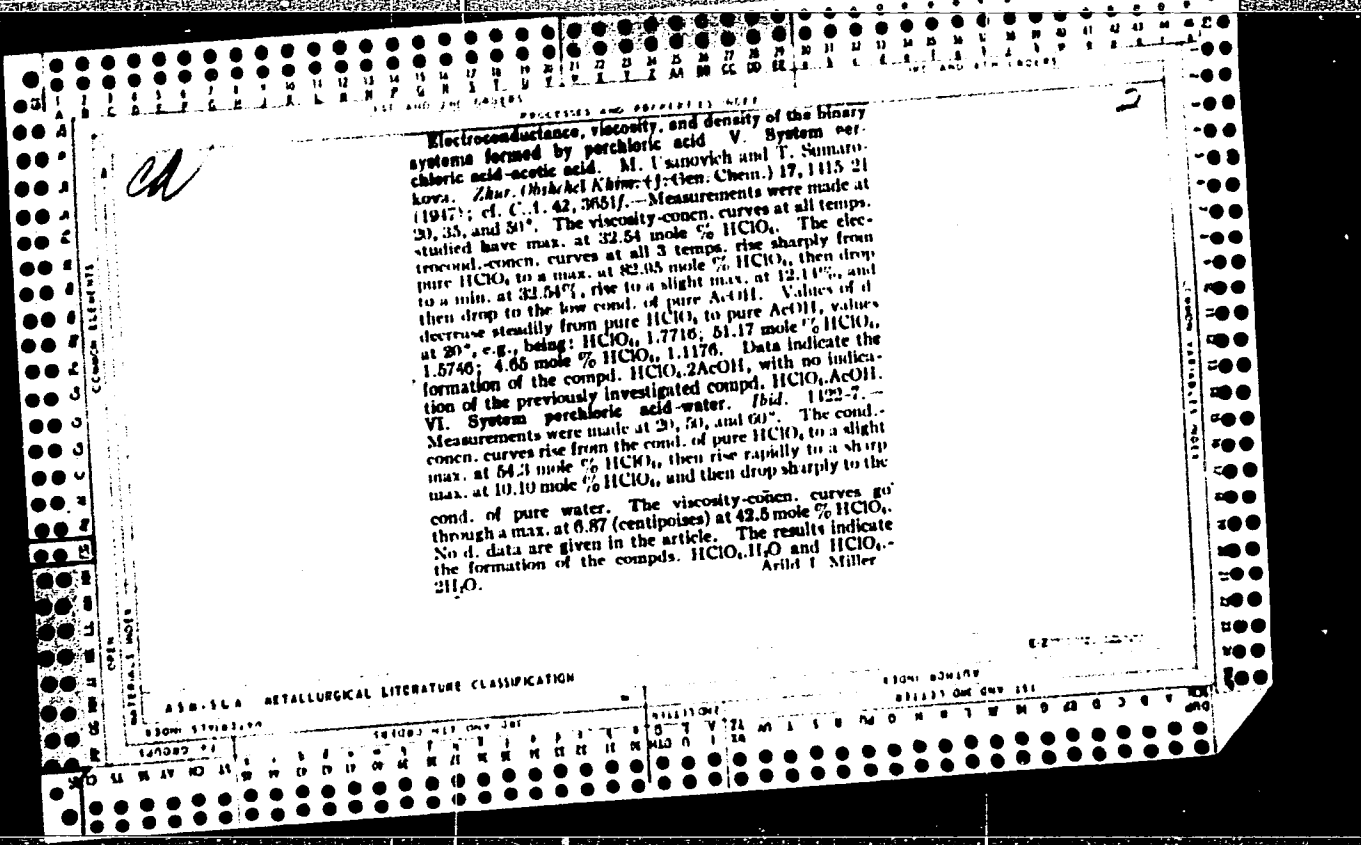
The systems stannic chloride-acetic acid and stannic acid-formic acid. M. Usanovich and E. Kalabanovskaya (Phys. Chem. Lab., M.I.T.S.M.I.E. State Univ., Tashkent). Zh. Obshch. Khimii 17, 1235-40(1947)(in Russian).—

(1) In the system SnCl₄ + AcOH, the viscosity η isotherms at 0°, 25°, and 50° have a sharp max. at 25 mole % SnCl₄, with η (max.) = 72.93, 2.7453, and 0.3980 poise, resp., very considerably above η of the components. The elec. cond. κ isotherms pass through a max. at about 5-10 mole % SnCl₄, κ (max.) = 20×10^{-4} and 57.30×10^{-4} at 25° and 50°, resp., then through a shallow min., at 30 mole % SnCl₄, shifting to 25% with falling temp. Isotherms of α and β have a single sharp max. between 22 and 21 mole % SnCl₄ at 0°, 25°, and 50°. The change of α with temp. is unusually high, 180% per 1°. Plots of $\alpha = d\kappa/d\eta$ against compn. have sharp max. at 25 mole % SnCl₄, higher between 0° and 25° than between 25° and 50°. All these plots point to only one compd., SnCl₄·3-HCOOH. However, the compd., SnCl₄·2AcOH, not indicated in the η and κ diagrams, and undetectable by the melting diagram owing to the tendency of the system towards undercooling (Stranathan and Strong, C.A. 21, 3520) could be crystd. by alternating freezing and thawing in a sealed tube; the crystals had the const.: m. 19.2-19.5°, d^{20}_4 1.9090, d^{20}_6 1.8614, d^{20}_{10} 1.8131, ρ^{20}_{10} 1.1943, η^{20} 0.2080, α^{20} 0.25×10^{-4} , β^{20} 3.33×10^{-4} , κ^{20}

14.51×10^{-4} . SnCl₄·2AcOH is a stronger acid than AcOH, with which, through acid-base interaction, it forms [SnCl₄·2AcOH]AcOH (analogous to H₂SO₄·AcOH) identical with the known SnCl₄·3AcOH. (2) In SnCl₄·HCOOH, sepa. into 2 liquid layers occurs from 25 mole % SnCl₄ upwards and persists even at 70°. One layer is highly viscous, the other is a very fluid, fuming liquid. The amt. of the viscous liquid increases with increasing SnCl₄ and is predominant at the compn. SnCl₄·3-HCOOH and is predominant at the compn. SnCl₄·3-HCOOH. This compd. can be crystd. in red needles, m. 30°. It can also be crystd. by cooling the two-layer liquid, the fluid layer undergoing no change. The homo-
geneous solns. with less than 25 mole % SnCl₄ evolve CO₂.
N. Thum

ASB-35A METALLURGICAL LITERATURE CLASSIFICATION

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C A

The complex compound $\text{SnCl}_4 \cdot 2\text{AcOH}$. M. I. Usanov,
 vich and E. I. Kalabanovskaya. *Izvest. Sibskoi Khim. Akad.*
Dvig. Blagovod. Met., Inst. Obshchei Neorg. Khim., Akad.
Nauk S.S.S.R. No. 21, 228-30 (1948); cf. Stranathan and
Strong, C.A. 21, 3520. -- Cryst. $\text{SnCl}_4 \cdot 2\text{AcOH}$, prepd. by
 alternately immersing a sealed tube contg. SnCl_4 and
 AcOH in a mixt. of solid CO_2 and alc., and in melting ice
 until crystals appeared, using these crystals to seed large
 vols. of soln., and purifying by fractional freezing, m.
 $19.2-19.5^\circ$, $d_4 1.9080$, $d_{20} 1.8814$, $d_{25} 1.8131$, $n_D^{20} 1.24$,
 $n_D^{25} 1.124$, $n_D^{30} 0.2092$, sp. cond. at $0^\circ 0.25 \times 10^{-4}$, at 25°
 3.33×10^{-4} , at $50^\circ 14.51 \times 10^{-4}$. It forms $\text{SnCl}_4 \cdot 2\text{Ac}$
 $\text{OH} \cdot \text{H}_2\text{O}$ and $\text{SnCl}_4 \cdot 2\text{AcOH} \cdot \text{Et}_2\text{O}$. Pyridine displaces
 AcOH to form $\text{SnCl}_4 \cdot 2\text{py}$. M. Hosen

USANOVICH, M.I.

Complexing as acid-base interaction. Izv. AN Kazakh. SSR Ser. khim.
no.3:3-5 '49. (MLRA 9:8)
(Compounds, Complex)

USANOVICH, M.I.

Viscosimetry of binary liquid systems. Izv. Sekt. fiz. khim. anal.
18:128-138 '49. (MIRA 11:4)
(Systems (Chemistry)) (Viscosity--Measurement)

USANOVICH, M. I., SHIKHANOVA, N.

Chlorides.

Compound SnCl_4 with $\text{C}_6\text{H}_5\text{COOH}$., Izv. Sekt. plat. i blag. met. no. 25, 1950.

9. Monthly List of Russian Accessions, Library of Congress, April 1953/2 Unclassified.

USANOVICH, M. I.

~~The G. N. Lewis theory of acids and bases. M. I. Usanovich (S. M. Etkin, transl.). Russ. Chem. Rev. 1950, 19, 103-104. Obschchee Neorg. Khim., Akad. Nauk S.S.S.R. 25, 70-81 (1950). Many examples are advanced in the literature of the Lewis acid theory, and in the light of Lewis' original position regarding...~~
W. M. Sternberg

MM

USANOVICH, M.I.

Acid-base theories. Izv.AN Kazakh.SSR.Ser.khim. no.4:97-105 '51.
(MIRA 9:5)

(Acids) (Bases (Chemistry))

USANOVICH, M.

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

Binary systems formed by SnCl₄, SbCl₅, and AsCl₃. I. The SnCl₄-CH₃COOH system. M. Usanovich, T. Sumarokova, and V. Glushchenko (Kazakh Acad. Sci.). *J. Gen. Chem. U.S.S.R.* 21, 1076-8(1951)(Engl. translation); *Zhur. Obshchei Khim.* 21, 981-4(1951); *cf. C.A.* 44, 9853a; 46, 9401i, 9402b.—From singular max. observed in viscosity and cond. isotherms, and shrinkage in sp. vol., evidence was obtained of chem. interaction in mixts. of SnCl₄ and CH₃COOH. Detns. at 50, 60, and 70° gave no definite indications of the compn. of any compds. formed. II. The SnCl₄-CCl₃COOH and SnCl₄-CHCl₂COOH 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 SnCl₄-CCl₃COOH at 50, 60, and 70°, and for the system SnCl₄-CHCl₂COOH 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 SbCl₅-CH₃COOH 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 SbCl₅-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 % SbCl₅, which shift toward higher SbCl₅ values at higher temps. A cond. max. at 70-80 mole % SbCl₅ 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 2SbCl₅.AcOH. The temp. coeff. of cond. exhibits a max. at the compn. corresponding to SbCl₅.AcOH. The latter compd. was reported by B. N. Menshutkin (*C.A.* 6, 1280). The structures of the compds. found are given as (SbCl₅.AcOH)⁺Cl⁻ and (SbCl₅.AcOH)⁺SbCl₅⁻, the latter existing only in the liquid phase.
Bernard M. Zeffert

7-24-54

USANOVICH, M.

"Binary systems containing SnCl_4 , SbCl_3 , and AsCl_3 . II. The system SnCl_4 - CCl_3COOH and SnCl_4 - CHCl_2COOH ." by T. Sufarokhod and M. Usanovich. (p.994)

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

USANOVICH, M.

"Binary systems containing SnCl_4 , SbCl_3 , and AsCl_3 . III. The system $\text{SbCl}_3\text{-CH}_3\text{COOH}$." by Usanovich and T. Smarokova. (p.987)

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

USANOVICH, M I.

USSR

Binary systems formed by SnCl_4 , SbCl_5 , and AsCl_3 . IV. The system $\text{SbCl}_5\text{-CH}_2\text{ClCOOH}$. M. I. Usanovich and T. Sumarokova. *Zhur. Obshchei Khim.* 21, 1213-18 (1951); cf. C.A. 48, 1787c.—The elec. cond., viscosity, and d. of the system $\text{SbCl}_5\text{-CH}_2\text{ClCOOH}$ were detd. at 50, 60, and 70° for changing values of the concn. of the components. Existence of the compds. $\text{SbCl}_5\text{CH}_2\text{ClCOOH}$ and $2\text{SbCl}_5\text{-CH}_2\text{ClCOOH}$ is indicated. The fusion diagram for the system shows the presence of a compd. of equimolar compn. V. The system $\text{SbCl}_5\text{-CCl}_3\text{COOH}$. T. Sumarokova and M. Usanovich. *Ibid.* 1219-23.—The elec. cond., viscosity, and d. of the system $\text{SbCl}_5\text{-CCl}_3\text{COOH}$ 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. $\text{SbCl}_5\text{CCl}_3\text{COOH}$ and $2\text{SbCl}_5\text{-CCl}_3\text{COOH}$ is also indicated. The fusion diagram exhibits a max. corresponding to the compd. $\text{SbCl}_5\text{CCl}_3\text{COOH}$ with a m.p. of 58°.

MI BI

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

191T18

USANOVICH, M.

USSR/Chemistry - Antimony Compounds Jul 51

"Binary Systems Formed by SbCl₄, SbCl₃, and AsCl₃
V. The System SbCl₃-CCl₃COOH," 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
SbCl₃-CCl₃COOH at 50, 60, 70°C. Elec cond and
viscosity diagrams showed presence of acid-base
interaction between components and of compps
SbCl₃ · CCl₃COOH and 2SbCl₃ · CCl₃COOH.

191T18

USSR/Chemistry - Antimony Compounds Jul 51
(Contd)

Dyatectic max on fusibility diagram of system
represented compd SbCl₃ · CCl₃COOH (mp 56°).
This is 1st established case of CCl₃COOH acting
as additive or oxonium base.

191T18

USANOVICH, M.

"On the acidic properties of MnO_4 ." (p. 1964)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1951, Vol 21, No 11.

USANOVICH, M. I.

183T46

USSR/Chemistry - Electrolysis of Water Jun 51

"Electrical Conductivity and Viscosity of System
KOH - K_2CO_3 - H_2O ," M. I. Usanovich, T. I. Sushkevich

"Zhur Prik Khim" Vol XXIV, No 6, pp 590-592

Detd elec cond of 18.86-41.59% KOH solns contg 1-31%
 K_2CO_3 at 25, 50, and 97°C. Sp cond of KOH decreases
with addn of K_2CO_3 . Detd viscosity of 2 concns of
KOH with different K_2CO_3 content at 25 and 50°C.
It increases with addn of K_2CO_3 . Sp cond is lowered
at expense of increased viscosity. KOH solns of
these concns are used in industrial electrolysis of
water.

183T46

Chemical Abst.
Vol. 48 No. 6
Mar. 25, 1954
General and Physical Chemistry

3
②
Theories of acids and bases. M. I. Usanovich, *Izvest.*
Akad. Nauk Kazakh. S.S.R. No. 101, Ser. Khim. No. 4,
97-106(1061).—Review with 32 references. O. M. K.

MF
11-5-54

USANOVICH, M.I.

TIKHOV, G.A., redaktor; USANOVICH, M.I.; SUVOROV, N.I., kandidat biologicheskikh nauk, zamestitel' redaktora; KARIMOV, M.G., kandidat fiziko-matematicheskikh nauk; KUCHEROV, N.I., kandidat fiziko-matematicheskikh nauk; GORSHENIN, D.S.; FEDOROV, N.N., sekretar' redkollegii; ROROKINA, Z.P., tekhnicheskii redaktor; RZHONDKOVSKAYA, L.S., redaktor.

[Discussion on the topic: Principal achievements of the astrobotany sector and the problem of the possibility of life on other planets (September 25-27, 1952)] Diskussiiia na temu: osnovnye dostizheniia sektora astrobotaniki i vopros o vozmozhnosti zhizni na drugikh planetakh (25-27 sentiabria 1952 g.) Alma-Ata, Izd-vo Akademii nauk Kazakh.SSR. 1953. 167 p. (Akademiia nauk Kazakhskoi SSR, Alma-Ata, Sektor astrobotaniki. Trudy v.2) (MLRA 10:1)

1. Deystvitel'nyy chlen Akademii nauk Kazakhskoy SSR (for Tikhov).
 2. Chlen-korrespondent Akademii nauk Kazakhskoy SSR (for Usanovich).
 3. Otvetstvennyy sekretar' redaksii zhurnala "Vestnik Akademii nauk Kazakhskoy SSR" (for Gorshenin).
 4. Referent fiziko-matematicheskogo otdeleniya Akademii nauk Kazakhskoy SSR (for Fedorov).
- (Life on other planets)

USANOVICH, M.I.

(4)
 The existence of antimony tetrachloride. M. I. Usanovich,
 M. N. Suvorova, and M. H. Bobalov

TIKHOV, Gavriil Adrianovich, astronom; USANOVICH, M.I., otvetstvennyy redaktor; RZHONDKOVSKAYA, L.S., redaktor; KORUKINA, Z.P., tekhnicheskiy redaktor

[Principal works; in five volumes] Osnovnye trudy; v piati tomakh. Alma-Ata, Izd-vo Akademii nauk Kazakhskoi SSR, Vol.1. [Astrophysics (1897-1919)] Astrofizika (1897-1919). 1954. 334 p. (MLRA 10:3)

1. Chlen-korrespondent Akademii nauk SSSR, deystvitel'nyy chlen Akademii nauk KazSSR (for Tikhov) 2. Chlen-korrespondent Akademii nauk KazSSR (for Usanovich)
(Astrophysics)

USANOVICH, M.

USSR/Chemistry - Quantitative analysis

Card 1/1 : Pub. 22 - 29/49

Authors : Usanovich, M.; Sumarokova, T.; and Nevskaya, Yu.

Title : Cryoscopic titration

Periodical : Dok. AN SSSR 98/4, 617-618, Oct. 1, 1954

Abstract : The application of cryoscopy for quantitative analysis and for studying reactions of formation of complex compounds, soluble and insoluble in any given cryoscopic solvent, was investigated. The results obtained through cryoscopic titration of complex compounds appear to satisfy all requirements of analytical accuracy. In addition, cryoscopic titration reveals new very-broad possibilities for quantitative analysis of organic substances. Two USSR references (1941 & 1949). Graphs.

Institution : ...

Presented by: Academician A. P. Vinogradov, May 6, 1954

U.S. AIR FORCE

TIKHOV, Gavriil Adrianovich; USANOVICH, M.I.; VOZHEYKO, I.V., redaktor;
BOROKINA, Z.P., tekhnicheskiy redaktor.

[Principal works; in five volumes] Osnovnye trudy; v piati tomakh.
Alma-Ata Izd-vo Akademii nauk Kazahskoi SSR. Vol.2 [Astrophysics
and atmospheric optics (1940-1945)] Astrofizika i atmosfernaya
optika (1910-1945). 1955. 381 p. (MLRA 9:4)

1.Chlen-korrespondent Akademii nauk SSSR, deystvitel'nyy chlen AN
KazSSR (for Tikhov).2.Chlen-korrespondent AN KazSSR (for Usanovich).
(Astrophysics) (Astronomical photography)

4

✓ The determination of the composition of ternary systems from the data of physicochemical analysis. M. I. Usanovich and A. L. Mun. Zhurn. Akad. Nauk Kazakh. S.S.R. 1955, No. 8, 44-9 (in Russian).—At 25° the sp. gr. and the os of the following ternary systems were measured: $\text{Na}_2\text{SO}_4\text{-NaCl-H}_2\text{O}$; $\text{Na}_2\text{SO}_4\text{-Na}_2\text{S-H}_2\text{O}$; $\text{MgCl}_2\text{-NaCl-H}_2\text{O}$; $\text{MgCl}_2\text{-KCl-H}_2\text{O}$; $\text{MgSO}_4\text{-Na}_2\text{SO}_4\text{-H}_2\text{O}$. From the sp. gr. and the os the compn. of the ternary system can be found as well as from the other properties heretofore used for this purpose (chem. analysis, etc.). This method has the advantage of being much more rapid. Werner Jacobson

(1)

A
MST

MI, USAHOVICH

The question of decomposition voltage of aqueous solutions. M. I. Usanovich. *Izv. Akad. Nauk Kazakh. S.S.R., Ser. Chem.* 196, 8, 166-72 (1955) (in Russian).
LeBlanc's views on the electrolytic reaction process in the presence of many ions (M. LeBlanc, *Z. physik. chem.* 3, 209 (1891); M. LeBlanc, *Textbook of Electrochem.*, Moscow-Leningrad 1930) (translation) is criticized as erroneous. On the contrary, in reversible processes the electrode potential is considered to be detd. by the final result, and not by the primary stage of the process. The mechanism of the electrode process cannot be judged on the basis of the electrode potential, the latter being a macroscopic quantity. In particular, thermodynamics does not exclude the possibility of secondary evolution of H₂ at a cathode at a reversible H₂ potential. In cases, where the discharged ions yield different final products, the discharge of a given ion may take place at different potentials. E. M. Elkin

✓ Oxonium compounds of esters with organic acids. I. M. Usanovych, K. Bilyalov, and L. Krasnoukhova. *Zhur. Obshchei Khim.* 25, 471-7(1955); *J. Gen. Chem. U.S.S.R.* 25, 439-44(1955)(Engl. translation).—The values of d , and viscosity at 25°, 40°, and 60° were detd. for the binary systems AcOH-EtOAc, BuOAc-AcOH, AmOAc-AcOH and AmO₂CPr-AcOH, and the vapor pressures of the binary systems BuOAc-AcOH, AmOAc-AcOH, and EtOAc-AcOH were detd. The results, shown graphically, are summarized as follows: In EtOAc-AcOH system only the assocn. of AcOH is evident, the phys. properties of the system not showing any definite component interaction. In BuOAc-AcOH system there is an indication of mutual interaction, although the AcOH assocn. is still the predominant factor; the vapor pressure of the system shows neg. deviation from Raoult's law, and has an inflection point at near 60% molar compn. The system AmO₂CPr-AcOH shows a min. in viscosity at 20-30 mole-% ester and an ill-defined max., indicating mutual component interaction, but the absence of electrical cond. indicates that this is not of acid-base type. The AmOAc-AcOH system shows a max. and a

min. in the viscosity, which are unstable with respect to elevated temp.; vapor pressure shows neg. deviation from Raoult's law; the system is again nonconducting, indicating that the interaction of components is not of the acid-base type. Thus, the interaction between the ester and the acid tends to increase in importance with an increase of the size of the radicals of the ester. II. The system acetic acid-cetyl acetate. T. Samarokova and K. Bilyalov. *Zhur. Obshchei Khim.* 25, 477-9(1955); *J. Gen. Chem. U.S.S.R.* 25, 445-6(1955)(Engl. translation).—Viscosity and d , of C₁₆H₃₃OAc-AcOH system were detd. at 40°, 50°, 60°, and 70°. The results, shown graphically, indicate that the 40° viscosity isotherm has an S-form, changing its shape at higher temps. with elimination of assocn. of AcOH; the convex shape of the viscosity curves indicates fairly strong component interaction, greater than that in EtOAc-AcOH system. G. K. Kosolapov

Inst. Chem. Sci., AS Kazakh SSR

US # NOVICH, M.

4

Electrical conductivity, viscosity, and density of the system $\text{SnBr}_4\text{-HOAc}$. M. Usanovich and E. Yakovleva. *Zhur. Obshch. Khim.* 25, 1111-1115 (1952). The isotherms of viscosity and of elec. cond. indicate the formation of a thermally-unstable complex compd. of unident. compn. The interaction is apparently of an acid-base character, as evidenced by the elec. cond. E. M. Elkin

(1)

7/1/57

USANOVICH, M. I.

4

✓ Vapor pressure of the systems: water-ethanol-benzo-phenone and water-ethanol-triphenylcarbinol. M. I. Usanovich, N. P. Sergeeva, and K. K. Khalulina. *Zhur. Obshch. Khim.* 25, 2427-30(1955). The effect was studied of adding a 3rd component, which is sol. in EtOH but not in H₂O, on the vapor pressure of the EtOH-H₂O system. Benzophenone (I) and triphenylcarbinol (II) were used as the 3rd component. The vapor pressure was measured at 20, 40, 55, and 75°, and the values were plotted vs. compn. of the binary mixt. The addn. of I and II decreased the partial pressure of the EtOH and increased that of the H₂O. These effects became more pronounced as the concn. of I and II were increased. J. Rovtar Leach.

(2)

MA
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USAID/VO/113

AID P - 2786

Subject : USSR/Chemistry
Card 1/1 Pub. 152 - 14/19
Authors : Usanovich, M. I. and A. I. Mun
Title : Determination of the composition of the system
NaCl-Na₂SO₄-H₂O by specific gravity and refractive
index
Periodical : Zhur. prikl. khim. 28, 4, 436-440, 1955
Abstract : A description of the method is given. The composition
of the solutions can be determined very rapidly and
with great accuracy (error: $\pm 0.5\%$). One table, 3
diagrams, 4 Russian references: 1930-1947).
Institution : Institute of Chemical Sciences of the Academy of
Sciences of the Kazakh SSR
Submitted : My 3, 1954

KOZLOVSKIY, Mikhail Tikhonovich; GLAZYRINA, D.M., redaktor; USANOVICH,
M.I., redaktor; FEDOROV, N.V., tekhnicheskiy redaktor.

[Mercury and amalgams in electro-chemical methods of analysis]
Rtut' i anal'gamy v elektrokhimicheskikh metodakh analiza. Alma-
Ata, Izd-vo Akademii nauk Kazakhskoi SSR, 1956. 185 p. (MLBA 9:4)
(Mercury) (Amalgams) (Electrochemistry)

USANOVICH, M.I.

USSR/Atomic and Molecular Physics - Liquids

D-8

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 825

Author : Usanovich, M.I.

Inat : -

Title : On the Viscosity of Liquid Mixtures.

Orig Pub : Izv. AN KazSSR, ser. Khim., 1956, vyp. 10, 30-39

Abstract : The following empirical equation is proposed for the isotherm of the viscosity of an ideal multi-component mixture:

$$\eta = x_A \eta_A + x_B \eta_B + \dots \quad (1)$$

where x_A and x_B are the molar fractions of the components. This leads to a general equation for ideal binary systems, $(\ln \eta - \ln \eta_B) / (\ln \eta_A - \ln \eta_B) = x_A$. The formula (1) is based on the assumption that the activation energies

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USANOVICH, M

USSR/Thermodynamics. Thermochemistry. Equilibria. Physico-Chemical B-8
Analysis. Phase Transitions

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26169

Author : M. Usanovich, Ye. Pichugina
Inst : Academy of Sciences of Kazakh SSR
Title : System Stannic Chloride - Phenol

Orig Pub : Zh. obshch, khimii, 1956, 26, No 8, 2125-2130

Abstract : The viscosity η , the density d , and the specific electrical conductivity κ of the system C_6H_5OH (I) - $SnCl_4$ at 20, 40, 60 and 80°, as well as the vapor pressure p at 40, 60 and 80° were measured. The isotherms of η pass through a maximum, the position of which changes from 90 mol.% of I at 80° to 85 - 87 mol.% of I at 20°. The isotherms of κ adjusted for η have a maximum at 84 to 85 mol.% of I at all temperatures under study. The magnitudes of η and the adjusted κ drop sharply with the temperature rise. On the basis of the obtained data, considerations in favor of the

Card : 1/2

USSR/Thermodynamics. Thermochemistry. Equilibria. Physico-Chemical B-8
Analysis. Phase Transitions.

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26169

formation of the compound $\text{SnCl}_4 \cdot 4\text{C}_6\text{H}_5\text{OH}$ (II) in the system are expressed. The results of measurement of d and p confirm the presence of a compound. The structure $[\text{SnCl}_4 \cdot (\text{C}_6\text{H}_5\text{O})_2] \cdot 2\text{C}_6\text{H}_5\text{OH}^+$ is ascribed to II in the light of the earlier developed views on the nature of complex formation (Usanovich M.I., Izv. AN Kaz SSR. Ser. khim., 1949, 3, 3). The thermal instability of II is noted. The thesis of an anomalously high mobility of $\text{C}_6\text{H}_5\text{OH}^-$ in I is expressed.

Card : 2/2

Usanovich, M.

USSR/Thermodynamics. Thermochemistry. Equilibria. Physico-Chemical B-8
Analysis. Phase Transitions.

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26168

Author : M. Usanovich, Ye. Pichugina

Title : Systems Produced by Tin with Nitrobenzene and m-Dinitrobenzene.

Orig Pub : Zh. Obshch. khimii, 1956, 26, No 8, 2130-2134

Abstract : The viscosity and density of the system $\text{SnCl}_4 - \text{C}_6\text{H}_5\text{NO}_2$ (1) at 20, 40, 60 and 80° and of the system $\text{SnCl}_4 - m\text{-C}_6\text{H}_4(\text{NO}_2)_2$ (2) at 80 and 100°, as well as the fusibility of the latter were studied. The formation of the compound $\text{SnCl}_4 \cdot 2\text{C}_6\text{H}_5\text{NO}_2$ in the system (1) was confirmed; the data (Reihler H., Hake A., Zbl., 1927, 1, 1808) about the existence of a compound of the composition 1 : 1 were not confirmed. The presence of interaction between the components in the system (2) was established by the viscosity and the density methods. No information concerning the composition of the forming compound was obtained. The interaction of components is not indicated on the fusibility diagram.

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Usanovich, M. I.

(Complex formation of stannic chloride with some derivatives of phenol. M. I. Usanovich and E. Pichanus. Zhur. Obshchei Khim. 26, 2410-15 (1952). Viscosity and d. were detd. at 25°, 40°, and 60° for the system SnCl₄-o-
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O₂NC₆H₄OH; the viscosity isotherms are convex toward the concn. axis (at 25° the detns. were made only to 50 mole % nitrophenol, owing to solidification at higher concn.). The curves of sp. vol. are rectilinear, and the system lacks cond., indicating no chem. interaction. The system SnCl₄-p-O₂NC₆H₄OH was studied only as to m.p., because the liquid phase showed layering and could not be studied; the phase diagram is reproduced, showing a eutectic very close to SnCl₄ and a min. at 89° at 59.6 mole % nitrophenol and a complex indicated by a strongly convex boundary with max. at about 115° and 33 mole % nitrophenol. The system SnCl₄-2,4-(O₂N)₂C₆H₃OH, also studied only as to m.p., shows a simple behavior with a single eutectic very close to SnCl₄; no component interaction could be deduced from it. The system SnCl₄-p-H₂NC₆H₄OH was prepd. in hot xylene, yielding ppts. composed invariably of SnCl₄·2-(p-H₂NC₆H₄OH), the compd. is a lilac solid, decomp. 224-5°. G. M. Escalantoff.

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U.S. VOYICH, M. I.

✓ Viscosity and density of the system arsenic chloride-
anisole. M. I. U. VOYICH and E. PRIZHINA (State Univ.
Alma-Ata). ~~Chem. Zhurn. Akad. 26, 2415-17 (1958).~~ *Chem 2/*
Dens. of d. and viscosity of system SnCl_4 -MeOPH at 20°,
40°, 60°, and 80° shows a max. of viscosity at 60 mole%
PhOMe at 21°; at higher temp. this is displaced toward
SnCl₄, with appearance of a min. that moves toward
MeOPH comon. Curves of d. are rectilinear. Thus the
complex $\text{SnCl}_4 \cdot 2\text{MeOPH}$ apparently exists. G. M. I.

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Oxonium compounds of ethers with organic acids. IV.
 System of triethylacetate with butyric acid, ethyl ace-
 tate and ethyl propionate. M. I. Usanovich, K.
 I. G. Gerasimov, and L. A. St. Denis. *Journal of Polymer Science* 26.
 (1958) 419-430; cf. L. A. St. Denis, *ibid.* 25.
 619, 620, and 76^o of viscosity and d_4^{20} in the binary sys-
 tems, which yield slightly curved comp. isotherms, showed
 that AcOH-C₂H₅CO₂H and AcOAc-C₂H₅CO₂H systems
 show a maximum in the temperature dependence of d_4^{20} and
 η_{sp}/c at 60^o and 76^o, respectively. The maximum in d_4^{20}
 H is found at 60^o and 76^o, respectively. The maximum in η_{sp}/c
 C₂H₅-C₂H₅CO₂H does not show a maximum. The authors
 isotherms definitely, but such is observed in the case of
 the authors.

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USANOVICH, M. I.

V

TIKHOV, G.A., akademik; USANOVICH, M.I., otvetstvenny red.; RZHONDKOVSKAYA, L.S., red.; ROBOKINA, Z.P., tekhn.red.

[Principal works: in five volumes] Osnovnye trudy; v piati tomakh. Alma-Ata, Izd-vo Akad.nauk Kazakhskoi SSR. Vol.3. [Astrophysics (1912-1956)]. Astrofizika (1912-1956). 1957. 233 p. (MIRA 11:1)

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(Astrophysics)