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

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. Chepelevtskiy 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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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, Rossoti, Sketchard, 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 phthalocyanine 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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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 Polarization" 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 Polarographic 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 the possibilities of the cryoscopic method was given, and its

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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 thiocyanate 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' pointed out the extremely great importance of the mathematical

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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 of the complexes were determined and it was proved that the

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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. N. 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
USCOMM-DC-60976

VASIL'YEV, V.P.; KORABLEVA, V.D.; YATSIMIRSKIY, K.B.

Discussion conference on methods for study of complex formation in solutions. Zhur. neorg. khim. 3 no.8:1891-1986 Ag '58. (MIRA 11:9)
(Complex compounds--Congresses)

SOV/78-3-8-46/48

AUTHORS: Vasil'yev, V. P., Korableva, V. D., Yatsimirskiy, K. B.

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

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol. 3, Nr 8, pp. 1982-1986 (USSR)

ABSTRACT: From February 18 - 21, 1958 a conference with discussions took place at Ivanovo, which dealt with the methods of investigating the complex formations in solutions.
At this conference the methods of determining the composition of the complexes in solutions, the methods of calculating the stability constants on the basis of experimental data, as well as the influence exerted by the solvents on the process of complex formation were discussed. Numerous experimental and theoretical papers were submitted to the conference, which dealt with the process of complex formation in aqueous and non-aqueous solutions. Especially methods concerning the composition of the complexes as well as methods of investigating step-wise complex formations were dealt with in detail.

~~Card 1/2~~

VASIL'YEV, V.P.; MUKHINA, P.S.

Equilibria in aqueous solutions of thiocyanate complexes of iron. Zhur. neorg. khim. 9 no.5:1134-1140 My '64.

1. Ivanovskiy khimiko-tekhnologicheskiy institut.

ABRAMOVA, N.A., nauchn. sotr.; BEL'CHENKO, G.V., kand. tekhn. nauk;
BERENBLIT, V.V., nauchn.sotr.; VASIL'YEV, V.P., kand.khim.
nauk; DOBYCHIN, D.P., doktor khim. nauk; IOFFE, B.V., dokt.
khim.nauk; KAMINSKIY, Yu.L., nauchn.sotr.; KARPOVA, I.F.,
kand. khim. nauk; KOPYLEV, B.A., doktor khim. nauk;
LUTUGINA, N.V., kand. khim. nauk; MATEROVA, Ye.A., kand.
khim. nauk; MORACHEVSKIY, Al.G., kand. khim. nauk;
MORACHEVSKIY, An.G., kand. khim. nauk; NIKEROV, A.E., kand.
khim. nauk; PAL'M, V.A., kand. khim. nauk; RABINOVICH, V.A.,
kand. khim. nauk; SOKOLOV, P.N., kand. khim. nauk;
FRIDRIKHSBERG, D.A., kand. khim. nauk; TSYGIR, Ye.N., nauchn.
sotr.; SHAGITSULTANOVA, G.A., kand. khim. nauk; SHKODIN, A.M.,
doktor khim. nauk; YATSIMIRSKIY, K.B.; GRIGOROV, O.N., doktor khim.
nauk, red.; ZASLAVSKIY, A.I., kand. khim. nauk, red.; MORACHEVSKIY,
Yu.V., prof., red.; RACHINSKIY, F.Yu., kand. khim. nauk, red.;
POZIN, M.Ye., doktor tekhn. nauk, red.; PORAY-KOSHITS, B.A., doktor
khim. nauk, red.; PROTASOV, A.M., kand. fiz.-mat. nauk, red.;
ROMANKOV, P.G., red.

[Handbook for the chemist] Spravochnik khimika, 2. izd., perer. i
dop. Moskva, Khimiia. Vol.3. 1964. 1004 p. (MIRA 18:1)

1. Chlen-korrespondent AN SSSR (for Romankov). 2. Deystvitel'nyy
chlen AN Ukr.SSR (for Yatsimirskiy).

SOV/78-3-9-9/38

AUTHOR: Vasil'yev, V. P.

TITLE: The Problem of the Ion Compound Solubility (K voprosu o rastvorimosti ionnykh soyedineniy)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 9, pp 2053-2059 (USSR)

ABSTRACT: In the present paper the solubility of ion compounds as dependent on the radius of the ions was investigated. Mg^{2+}, Ca^{2+}, Sr^{2+} and Ba^{2+} were used as ion compounds. These compounds in aqueous solution are completely dissociated

$$MX_{solid} \rightleftharpoons M^{2+} + X^{2-}$$

The heat of hydration of the ions is calculated by the equation 6a

$$-\Delta H^{liqu.}_{M^{2+}} = \frac{662,0}{r_{M^{2+}} + 0,62}$$

The lattice energy of these ion compounds is calculated according to the equation of Kapustinskiy (7).

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The Problem of the Ion Compound Solubility

$$U = 287{,}2 \frac{\Sigma n Z_M Z_X}{r_M + r_X} \left(1 - \frac{0{,}345}{r_M + r_X}\right) + B \qquad (7)$$

The dependence of the solubility of these salts on the cation radius was investigated and the solubility product SP was calculated according to the following equation

$$\frac{\partial \lg SP}{\partial r_M} = \frac{1684{,}4}{(r_M+r_X)^2} - \frac{1162{,}2}{(r_M+r_X)^2} - \frac{470{,}7}{(r_M+0{,}62)^2} \qquad (15)$$

The results show that the solubility product increases as the cation radius becomes longer, and that the decrease of the solubility product passes a minimum value. From this formula it becomes evident that the solubility product of the sulfates of Mg^{2+}, Ca^{2+}, Sr^{2+} and Ba^{2+} decreases from $MgSO_4$ to $BaSO_4$. The solubility products of the selenates, tungstates, molybdates, and other bivalent anions show the same order. Also the cation radius can be calculated according to formula (15). For the determination of the solubility product of the above mentioned cations with monovalent anions, that is with salts of the type

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The Problem of the Ion Compound Solubility

MX, where X denotes the monovalent anion, also equation (15) was applied. The solubility product of radium salts was discussed, and the solubility product of radium chromate SP_{RaCrO_4} with $\sim 10^{-13}$, of radium fluoride SP_{RaF_2} with $\sim 10^{-4}$, and of SP_{RaCO_3} with $\sim 2.10^{-8}$ was calculated by extrapolation. There are 1 figure, 4 tables, and 8 references, 6 of which are Soviet.

ASSOCIATION: Ivanovskiy khimiko-tekhnicheskiy institut (Ivanovo Chemical and Technical Institute)

SUBMITTED: July 8, 1957

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3

SOV/78-3-9-10/38

AUTHOR: Vasil'yev, ~~V. P.~~

TITLE: The Stability of the Complexes of Magnesium, Calcium, Strontium, and Barium in Aqueous Solution (Ustoychivost' kompleksov magniya, kal'tsiya, strontsiya i bariya v vodnom rastvore)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 9, pp 2060-2066 (USSR)

ABSTRACT: In the present paper the quantitative dependence between the stability of the complexes and the radii of the ions of magnesium, calcium, strontium and barium was investigated. It was ascertained that according to the length of the radius of the addenda the stability of the complexes in magnesium, calcium, strontium and barium decreases, increases, or reaches a maximum in connection with an increasing length of the radius of the central ions. If the charge of the addenda is increased, the stability maximum of the complexes can be determined more distinctly. In the complex compounds with monovalent anion the stability maximum of calcium changes to 11,3, that of magnesium to 5,1, and that of strontium with bivalent anion from 14,7 to 6,3. The stability maximum of calcium is more distinctly marked than that of strontium. The dependence of the stability of the complexes

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The Stability of the Complexes of Magnesium, Calcium, Strontium, and Barium in Aqueous Solution

with mono-, bi- and trivalent addenda on the radius of the central ion was investigated. The following facts were concluded from the results: If the radius of the monovalent addendum is smaller than 1,9 Å, the stability of the complex decreases as the radius of the central ion becomes longer. In numerous complexes with polyvalent addenda the stability shows a maximum which especially in the case of tri- and tetravalent anions is distinctly marked. The process of complex formation in aqueous solution can be considered a peculiar competition between the water molecules and the ions of the addenda or the molecules of the addenda, respectively for the central ion. If the radius of the addendum becomes longer, the energy of the interaction ion-ion is lowered. There are 4 figures, 3 tables, and 13 references, 10 of which are Soviet.

ASSOCIATION: Ivanovskiy khimiko-tekhnicheskiy institut (Ivanovo Chemical and Technical Institute)

SUBMITTED: July 8, 1957

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VASIL'YEV, V.P.

5(3) PHASE I BOOK EXPLOITATION SOV/2032

Yatsimirskiy, Konstantin Borisovich, and Vladimir Pavlovich Vasil'yev

Konstanty nestoykosti kompleksnykh soyedineniy (Instability Constants of Complex Compounds) Moscow, Izd-vo AN SSSR, 1959. 205 p. 4,500 copies printed. Errata slip inserted.

Sponsoring Agency: Akademiya nauk SSSR. Institut obshchey i neorganicheskoy khimii.

Resp. Ed.: I.I. Chernyayev, Academician; Ed. of Publishing House: D.N. Trifonov; Tech. Ed.: S.G. Markovich.

PURPOSE: The book is intended for chemists, engineers, and technicians concerned with analytical chemistry, electrochemistry, technology of nonferrous and rare metals, and related fields.

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Instability Constants (Cont.) SOV/2032

COVERAGE: The authors claim that this book is the first attempt to make a complete compilation of the instability constants of complex compounds. Instability constants of 1,381 complex compounds are given. Methods of calculating instability constants are described in an introductory chapter. The book was compiled chiefly on the basis of literature published up to 1954. No personalities are mentioned. There are 79 references, of which 35 are Soviet, 28 English, 6 German, 4 French, and 6 Swedish.

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THEORETICAL PART

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VASIL'YEV, V.P.

24(8) PHASE I BOOK EXPLOITATION SOV/2809

Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk

Termodinamika i stroyeniye rastvorov; trudy soveshchaniya... (Thermodynamics and Structure of Solutions; Transactions of the Conference Held January 27-30, 1958) Moscow, Izd-vo AN SSSR, 1959. 295 p. 3,000 copies printed.

Ed.: M. I. Shakhparonov, Doctor of Chemical Sciences; Ed. of Publishing House: N. G. Yegorov; Tech. Ed.: T. V. Polyakova.

PURPOSE: This book is intended for physicists, chemists, and chemical engineers.

COVERAGE: This collection of papers was originally presented at the Conference on Thermodynamics and Structure of Solutions sponsored by the Section of Chemical Sciences of the Academy of Sciences, USSR, and the Department of Chemistry of Moscow State University, and held in Moscow on January 27-30, 1958. Officers of the conference are listed in the Foreword. A list of other reports also read at the conference, but not included in this book, are given. Among the problems treated in this work are: electrolytic solutions, ultrasonic measurement, dielectric and thermodynamic properties of various mixtures, spectroscopic analysis, etc. References accompany individual articles.

5(4) SOV/153-2-2-30/31

AUTHOR: Vasil'yev, V. P.

TITLE: On the Dissociation of the Aquo-complexes and on the Study of the Ions in Mixed Solvents (O dissotsiatsii akvokompleksov i izuchenii ionov v smeshannykh rastvoritelyakh)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 2, pp 301-303 (USSR)

ABSTRACT: The publication of the discussion-paper by Ya. I. Tur'yan proves once more the great interest taken in the problem in question. In this connection it is necessary to explain the fundamental theorems by Tur'yan and to discuss his remarks. The author is against neglecting the three factors which influence the displacement of the half-wave potential, except the change of the dielectric constant of the solvent, as is the case with Tur'yan (Ref 1). Tur'yan's statement that the influence of the persolvation-processes on the aforesaid potential-displacement is irrelevant, remains unproved. The data submitted on the solvation-heat of some alkali-halides prove with complete certainty that the solvation-heat of the salts in methanol and ethanol is definitely greater than in water. There is no reason for

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On the Dissociation of the Aquo-complexes and on the Study of the Ions in Mixed Solvents SOV/153-2-2-30/31

the statement that the heat or the free solvation-energies of the cadmium- or zinc-ions are the same in water and in alcohol. Consequently, the effect of the dehydration- and persolvation-processes must not be neglected as "insignificant". Furthermore, Tur'yan attributes to the author first of all the neglect of the dielectricity-constant and then proves, that one must not do this. If one argues the way Tur'yan does, then obviously one ought to revise all equilibrium-calculations in solutions, under consideration of the influence of this constant. According to Tur'yan, the instability-constants of the complexes in aqueous solutions would only have to decrease with the increase of temperature. Of course, the instability constants can in reality increase as well as decrease with increasing temperature, that is in accordance with the sign of the heat-effect of the reaction. The author maintains he has not neglected the dielectricity-constant. There would be no need to argue this any more, but for the fact that Tur'yan stubbornly underlines the extremely important role of the dielectricity-constant and sets it against other 3 factors.

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As may be seen from the examples quoted by the author that the consideration of this characteristic of the solvent alone may lead to the most improbable results. In the case of Tur'yan it is not clear what he actually understands by the conception of the effective ion-radius. It follows from all this that the method of determining the ion-radii from polarographic knowledge, is too crude and does not even allow estimating one tenth of an Angström unit. Consequently, the conclusion by Tur'yan concerning the constancy of the radii of aquo-ions, the immutability of their composition and nature of the transition from water to the mixed solvent, is proved neither theoretically nor experimentally. The measurements of the dilution-heat of the alcoholic-aqueous solutions of $Cd(NO_3)_2$, which were carried out by the author, obviously show that the composition of the aquo-complexes in a mixed water-ethanol-solvent undergoes considerable changes, compared with the composition in water. The polarographing of solutions with a very high content of non-aqueous solvents, proposed by Tur'yan, is apparently

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On the Dissociation of the Aquo-complexes and on the Study of the Ions in Mixed Solvents SOV/153-2-2-30/31

impracticable, as the potential jump at the phase-transition cannot be comprehended with sufficient accuracy. In conclusion, the suitable methods are discussed. There are 9 references, 7 of which are Soviet.

ASSOCIATION: Ivanovskiy khimiko-tekhnologicheskiy institut; Kafedra analiticheskoy khimii (Ivanovo Chemical-technological Institute; Chair of Analytical Chemistry)

SUBMITTED: January 16, 1959

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SOV/153-2-4-10/32

AUTHORS: Vasil'yev, V. P., Vasil'yeva, V. M.

TITLE: On the Variation of Entropy in the Dissolution of Salts

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 4, pp 522 - 527 (USSR)

ABSTRACT: The possibility of determining certain dependences in the entropy variation in the dissolution of salts is very tempting. Thus it would be possible to determine the entropy variation even of empirical or semi-empirical dependences if no experimental value is known. The entropy variation upon transition of a solid salt into aqueous solution under general standard conditions is understood by the variation (dissolution entropy) mentioned in the title. If the well-known thermodynamic interrelation is applied to this process, the equation $nRT\ln^{a} = \Delta H - T\Delta S$ (1) is obtained which connects the ionic activity in a saturated salt solution (a), the solution heat (ΔH) and -entropy (ΔS). The dissolution entropy can be computed by means of equation (1) using data from reference works regarding solubility and dissolution heats. At present, the entropies of many solid salts, and salts in solution, are more or less

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well-known (Refs 1-3). This opens a new way of computing the dissolution entropy. If the salt in aqueous solution is practically entirely dissociated, its entropy in this solution can be equated to the sum of entropies of the constituent ions, i.e. $S_{aq} = nS_M + pS_X$ (3), S_M and S_X being the entropies of the salt cation and salt anion, respectively, and n and p the stoichiometric coefficients in the formula for the salt. It was interesting to determine the dependence of the dissolution entropy on any thoroughly investigated function. This dependence was supposed to include salts of various types, i.e. it should be usable for ions of varying charge. From this point of view, the hydration heat of the ion was very interesting since the dissolution process of the salt is extensively related to the hydration effect of the ions upon transition from crystal into solution. The paper under discussion aims at explaining the relation between dissolution entropy and hydration heat of the cation for a greater number of salts. In this case, only salts formed by the cations of the most important subgroups of the I and II groups of the periodic system are concerned. A quantitative expression of the dependence in question can be determined from

On the Variation of Entropy in the Dissolution of Salts SOV/153-2-4-10/32

the diagram: hydration heat - entropy variation. Figure 1 shows the values discussed of the salts of alkali metals with monovalent anions. The entropy variation was computed according to equation (2) considering equation (3). As can be seen from figure 1, the entropy variation depends linearly on the hydration heat of the cation. Table 1 shows that the constant of the equation: $\Delta S = 0.30 \Delta H_{hydr} + const$ (5) remains satisfactorily stable. Thus it can be maintained that equation (5) expresses the relation of the dissolution entropy of salts of type (1-1) with the hydration heat of the cation in a rather satisfactory way. Figure 2 shows the relationship between the entropy variation in the dissolution of salts of alkali metals of type M_2X and the hydration heat of the cation. Here, too, a distinct linear dependence can be seen. Thus, the entropy variation mentioned will be expressed by the equation $\Delta S = 0.60 \Delta H_{hydr} + const$ (6). Table 2 shows the above constant for salts of alkali metals with 2-charge ions. The constant remains practically stable (with the exception of rubidium carbonate). Figure 3 shows the diagram: entropy variation - hydration heat of the cation for the salt sequence: magnesium, calcium, strontium, and barium.

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On the Variation of Entropy in the Dissolution of Salts SOV/153-2-4-10/32

Equation (7) holds in this case. All three equations (5), (6), and (7), are special cases of a more general equation:

$\Delta S = 0.30 \frac{n}{z} \Delta H_{hydr}$ + const (8); z = the charge of the salt cation. The equation also expresses a linear dependence, and renders possible the estimation of the entropy of solid salts (Table 4). Professor K. B. Yatsimirskiy participated in the discussion. There are 3 figures, 4 tables, and 8 references, 7 of which are Soviet.

ASSOCIATION: Ivanovskiy khimiko-tekhnologicheskiy institut, Kafedra analiticheskoy i fizicheskoy khimii (Ivanovo Institute of Chemical Technology, Chair of Analytical and Physical Chemistry)

SUBMITTED: January 28, 1958

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5(4)

SOV/76-33-2-14/45

AUTHORS: Vasil'yev, V. P., Zolotarev, Ye. K., Yatsimirskiy, K. B.

TITLE: The Entropy of Gaseous Monatomic Ions (Entropii gazoobraznykh odnoatomnykh ionov)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 2, pp 328 - 330 (USSR)

ABSTRACT: Values of the entropy of gaseous ions are often needed for calculating the entropy of hydration of ions for the quantitative calculation of a series of cycles in which gaseous ions appear in intermediate stages. The calculation of the entropy of gaseous monatomic particles is carried out using a well-known equation of statistical thermodynamics (1) (Ref 2) in which the entropy of the rotation of the monatomic gases is neglected. In chemical equilibrium at medium and high temperatures the entropy of the nuclear spin can also be neglected (Ref 2). Thus in the calculation of the entropy of a monatomic ion at standard conditions only the atomic weight of the particle and the statistical weight of the electronic ground level must be known. A table is given (Table 1) showing entropy values for 66

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gaseous monatomic ions at standard conditions. The majority of the data on the electronic configuration and the terms of the ground state were taken from the publications (Refs 3,5). In the cases where no data were given in the publications the most probable electronic structure was assigned and the terms were derived according to Gregory (Gregori) (Ref 4). There are 1 table and 5 references, 2 of which are Soviet.

ASSOCIATION: Ivanovskiy khimiko-tekhnologicheskiy institut (Ivanovo Chemical Technological Institute)

SUBMITTED: July 5, 1957

VASIL'YEV, V.P.

Instability Constants of Complex Compounds, by K.B. Yatsimirskiy and V.P. Vasil'yev. New York, Pergamon Press, 1960.

VIII, 218 p. graphs, tables.

Translated from the original Russian: Konstanty nestoykosti kompleksnykh soyedineniy, Moscow, 1959.

Includes references.

VASIL'YEV, V.P.; VASIL'YEVA, V.N.

Entropy of solution and heats of hydration of ions. Izv. vys. ucheb. zav; khim. i khim. tekh. 3 no. 5:826-828 '60. (MIRA 13:12)

1. Ivanovskiy khimiko-tekhnologicheskiy institut. Kafedra analiticheskoy i Kafedra fizicheskoy khimii.
(Ions) (Entropy) (Heat of hydration)

S/153/60/003/006/009/009
B103/B206

AUTHORS: Vasil'yev, V. P., Korableva, V. D., Yatsimirskiy, K. B.

TITLE: Conference on kinetic analysis methods

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, v. 3, no. 6, 1960, 1113-1116

TEXT: In the introduction the authors state that coordination and discussion of kinetic analysis methods have been deficient thus far, although they are successfully studied in the USSR and abroad. They are of special importance for the determination of minute amounts of admixtures and concentrations of elements. In this connection the Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya SSSR (Ministry of Higher and Intermediate Special Educations, USSR) convened a Conference on Kinetic Analysis Methods, which was held at the Ivanovskiy khimiko tekhnologicheskiy institut (Ivanovo Institute of Chemical Technology) from June 14 to 16, 1960. 16 lectures were delivered by collaborators of the Institut geokhimii i analiticheskoy khimii AN SSSR (Institute of Geochemistry and Analytical

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Conference on kinetic analysis...

Chemistry AS USSR), Institut obshchey i neorganicheskoy khimii AN USSR (Institute of General and Inorganic Chemistry AS UkrSSR), the Universities of Moscow, Kiyev and Dnepropetrovsk, the Ivanovo Institute of Chemical Technology and IREA (Institut khimicheskikh reaktivov, Institute of Chemical Reagents). The conference was also attended by representatives of several colleges, scientific research institutes and works laboratories as well as chemists from Ivanovo. The following subjects were dealt with in the lectures: I. P. Alimarin and Yu. V. Yakovlev; "The possibilities of modern determination methods of "ultrasmall" admixtures in "superpure" substances"; K. B. Yatsimirskiy, "The present state and development prospects of kinetic analysis methods". A. K. Babko, B. Ye. Reznik, V. I. Kuznetsov and I. G. Shafran participated in the discussion. Further lectures dealt with the following subjects: A. K. Babko and L. V. Markova: "The photometric determination of microamounts of sulfides and sulfur in metals on the basis of the catalytic effect on the iodine-azide reaction"; B. Ye. Reznik and N. V. Pchelkina, "The photometric determination of copper and molybdenum on the basis of their catalytic effect"; B. Ye. Reznik, G. M. Ganzburg and N. A. Bednyak, "Study of the catalytic effect of some transition elements

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S/153/60/003/006/009/009
B103/B206

Conference on kinetic analysis...

on molybdenum reduction by means of thiocyanate"; R. P. Pantaler, "A new kinetic determination method of tungsten- and molybdenum traces". L. T. Bugayenko reported on the use of kinetic analysis methods in radiation-chemical studies. S. I. Sinyakova gave a review on the use of kinetic catalytic currents in polarography for the determination of very small concentrations of several elements. K. B. Yatsimirskiy and L. I. Budarin, "Determination of the equilibrium constants in systems with complex formation on the basis of the study of catalytic polarographic currents"; V. I. Kuznetsov and Ye. S. Ul'yanova, "Radiation-kinetic determination of polonium". L. I. Budarin and K. Ye. Prik showed and discussed new types of instruments for the kinetic analysis. M. N. Orlova reported on "Kinetic determination methods of silver in solutions". Apart from those already mentioned, G. A. Pevtsov participated in the discussion. Further lectures: A. K. Babko and N. M. Lukovskaya, "The effect of complex-forming substances on the catalysis of the chemiluminescence reactions". L. P. Rayzman reported on the results of the study of complex formation of zirconium with anions of organic acids by the kinetic method. K. Ye. Prik, "Application of the kinetic method for studying the complex formation of tungsten (VI)

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Conference on kinetic analysis...

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in solutions"; M. B. Shustova, "Vanadium determination in metallic titanium". M. L. Chepelevetskiy pointed out the necessity of studying the kinetics of heterogeneous processes, especially the formation of crystalline precipitates, for the purpose of using these data in the analysis. V. M. Peshkova pointed out the possibilities of combining the kinetic methods with extraction methods for the determination of several elements. Some results of the conference were summarized in the closing address by K. B. Yatsimirskiy and A. K. Babko. The authors are of the opinion that the conference was useful and showed that the kinetic analysis methods are being successfully developed in Moscow, Kiyev, Ivanovo, Dnepropetrovsk, Khar'kov and Odessa. The delegates had the opportunity of informing one another on the results and of indicating future research trends. The authors propose to elaborate concrete methods for practical use in the analysis of industrial objects. New types of instruments are to be elaborated and manufactured in series. Standards with fixed content of microadmixtures should be prepared and corresponding data should be published.

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VASIL'YEV, V.P.

Some comments on the article by IA.I. Tur'ian, "Instability constants of complex ions as a function of the dielectric constant of the solvent." Zhur. neorg. khim. 5 no. 12:2851-2852 D '60. (MIRA 13:12)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.
(Complex ions) (Tur'ian, IA.I.)

S/076/60/034/008/023/039/XX
B015/B063

AUTHORS: Vasil'yev, V. P., Zolotarev, Ye. K., Kapustinskiy, A. F., Mishchenko, K. P., Podgornaya, Ye. A., and Yatsimirskiy, K.B.

TITLE: The Most Probable Values of Chemical Heats, Energies, and Entropies of the Hydration of Various Ions at Infinite Dilution and 25°C

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 8, pp. 1763 - 1767

TEXT: In the last 11 years three of the present authors have published values of the chemical heats ΔH_h^i and energies Z_h^i of hydration and of the entropy S_i^o of various ions in aqueous solutions (Refs.1-3). As these values disagree and since many topochemical characteristics have been improved during the last few years, the most probable values of the above-mentioned quantities have been thoroughly checked. Results are given in a table; two methods were used to calculate the values for ΔH_h^i as from the

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The Most Probable Values of Chemical Heats, Energies, and Entropies of the Hydration of Various Ions at Infinite Dilution and 25°C

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B015/B063

equation $\Delta H_h^i = (-\Delta H_{aq}^i + \Delta H_{gas}^i - 102.5 \cdot n)$ kcal/g·ion (1) (ΔH_{aq}^i and ΔH_{gas}^i = standard variations of the enthalpy of the ion during its formation in solution or gaseous state; - 102.5 kcal/g·ion = standard variation of enthalpy during the production of a hydrated proton in an aqueous solution of infinite dilution; n = ion charge). b) The table also contains the average values of the simultaneous calculation of ΔH_h^i from the total chemical heat of hydration $\Delta H_h^{\pm}$ of the electrolyte at infinite dilution, from the energy ΔH_{lat} of the crystal lattice, from the integral heat of solution ΔH_o, and from the values of the thermochemical cycle. The initial values for the calculation of S_h^i are given in columns 3 and 4; S_{aq}^o = standard entropy of water ions referred to the entropy of the proton in the aqueous solution $S_{H+}^o = 0$; S_{gas}^o = standard entropy of gaseous ions; ΔS_h^i = chemical entropy of ion hydration; and

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The Most Probable Values of Chemical Heats, Energies, and Entropies of the Hydration of Various Ions at Infinite Dilution and 25°C

S/076/60/034/008/023/039/XX
B015/B063

$\Delta S^i_h = (S^o_{aq} - S^o_{gas} + 6.35)$ e.u. (5). There are 1 table and 19 references: 13 Soviet and 6 US.

SUBMITTED: November 15, 1958

Text to the table: The Most Probable Values of Chemical Heats, Entropies, and Energies of Hydration of Various Ions at Infinite Dilution and 25°C; Column 1: ion; 2: $-\Delta H^i_h$, kcal/g·ion; 3: .... e.u.; 4: S^o_{gas}, e.u.; 5: .... e.u.; 6: .... kcal/g·ion.

Card 3/3

VASIL'YEV, V.P.

Thermochemistry of alcohol and alcohol-water solutions of cadmium nitrate. Izv.vys.ucheb.zav; khim.i khim.tekh. 4 no.5: 743-746 '61. (MIRA 14:11)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra analiticheskoy khimii.
(Cadmium nitrate) (Heat of solution)

VASIL'YEV, V.P.

State of cadmium nitrate in aqueous solution. Izv.vys.ucheb.zav.; khim.i khim.tekh. 4 no.6:936-940 '61. (MIRA 15:3)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra analiticheskoy khimii.

(Cadmium nitrate)

VASIL'YEV, V.P.

Heats of dilution in mixed solvents. Zhur. neorg. khim. 6 no.3:664-673 Mr '61. (MIRA 14:3)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.
(Heat dilution)

VASIL'YEV, V.P.; KORABLEVA, V.D.; YATSIMIRSKIY, K.B.

Conference on kinetic methods of analysis. Zhur. anal. khim.
16 no. 1:118 Ja-F '61. (MIRA 14:2)
(Chemical reaction, Rate of) (Chemistry, Analytical--Congresses)

VASIL'YEV, V.P.; VASIL'YEVA, V.N.

Change of solubility in the series of alkali metal salts. Izv. vys.ucheb.zav.; khim.i khim.tekh. 5 no.1:12-16 '62. (MIRA 15:4)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedry analiticheskoy i fizicheskoy khimii.
(Alkali metal salts) (Solubility)

VASIL'YEV, V.P.; VASIL'YEVA, V.N.

Entropy of the crystal lattice of salts with monoatomic ions.
Izv.vys.ucheb.zav.;khim.i khim.tekh. 5 no.2:243-248 '62.
(MIRA 15:8)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra analiticheskoy i fizicheskoy khimii.
(Crystal lattices) (Salts) (Entropy)

VASIL'YEV, V. P.

Heats of solution in mixed solvents. Izv. vys. ucheb. zav.; khim. i khim. tekh. 5 no.5:731-733 '62. (MIRA 16:1)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra analiticheskoy khimii.

(Heat of solvation)

VASIL'YEV, V.P.

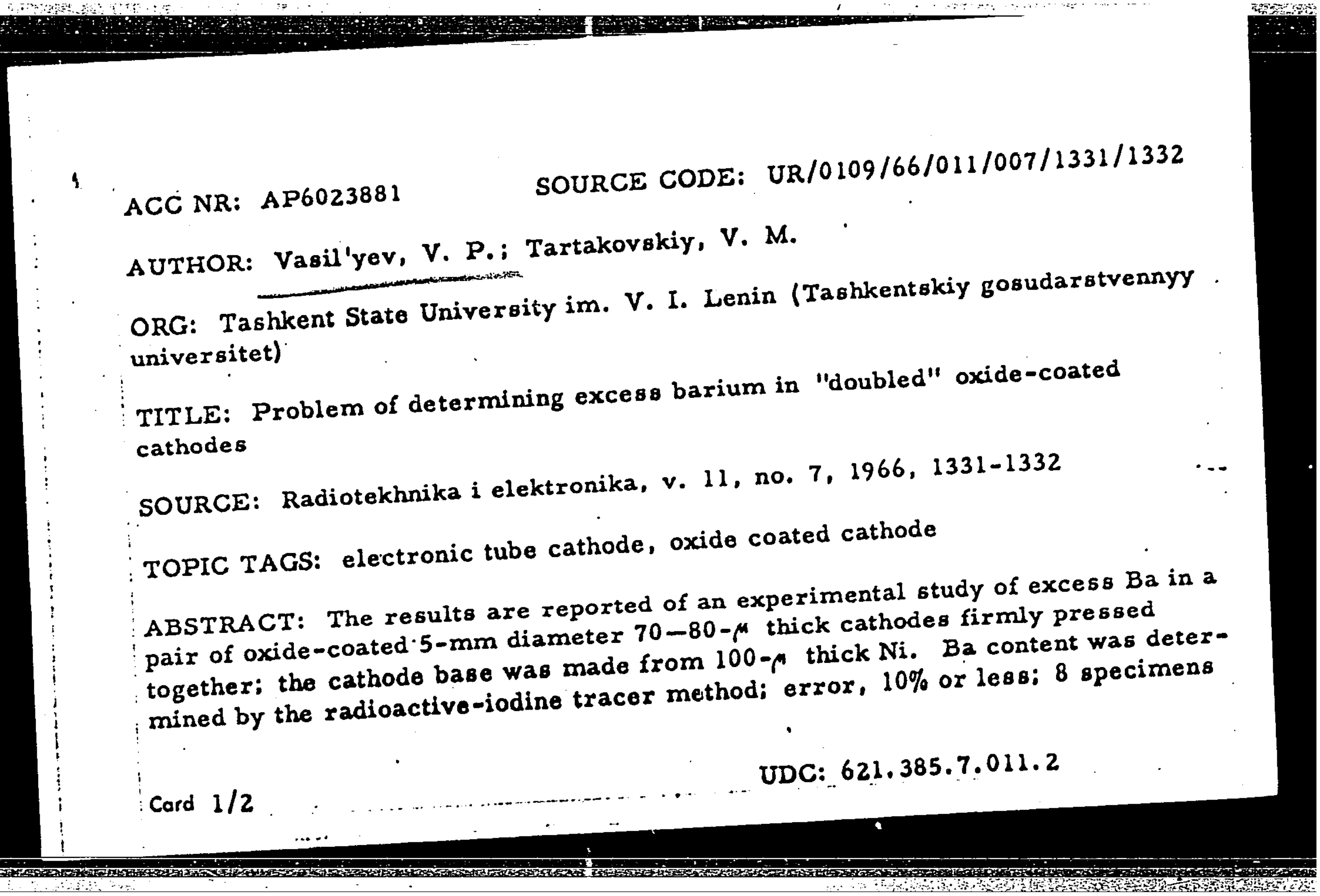
Thermochemical characteristics of cadmium nitrate complexes in aqueous solution. Zhur.neorg.khim. 7 no.3:555-561 Mr '62. (MIRA 15:3)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.
(Cadmium nitrate) (Heat of solution)

VASIL'YEV, V.P.

Effect of the ionic force on the instability constants of complex compounds. Zhur. neorg. khim. 7 no.8:1788-1794 Ag '62. (MIRA 16:6)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.
(Complex compounds) (Ionization)



ACC NR: AP6023881 SOURCE CODE: UR/0109/66/011/007/1331/1332

AUTHOR: Vasil'yev, V. P.; Tartakovskiy, V. M.

ORG: Tashkent State University im. V. I. Lenin (Tashkentskiy gosudarstvennyy universitet)

TITLE: Problem of determining excess barium in "doubled" oxide-coated cathodes

SOURCE: Radiotekhnika i elektronika, v. 11, no. 7, 1966, 1331-1332

TOPIC TAGS: electronic tube cathode, oxide coated cathode

ABSTRACT: The results are reported of an experimental study of excess Ba in a pair of oxide-coated 5-mm diameter 70—80-μ thick cathodes firmly pressed together; the cathode base was made from 100-μ thick Ni. Ba content was determined by the radioactive-iodine tracer method; error, 10% or less; 8 specimens

UDC: 621.385.7.011.2

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ACC NR: AP6023881

were tested. It was found that: (1) The evaporation of excess Ba from "doubled" cathodes is more difficult than that from single conventional cathodes; the "doubled" set may sometimes contain much more excess Ba; hence, the results of electric-conductance and heat-conductance measurements in a "doubled" cathode cannot be directly applied to real cathodes; (2) The rate of excess-Ba formation increases when a current is passed through the coating. "V. N. Chernenko, a 5th-year student of Physics School, Tashkent University, took part in the work." Orig. art. has: 1 table.

SUB CODE: 09 / SUBM DATE: 13Sept65 / ORIG REF: 005 / OTH REF: 001

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LOBANOV, G.A.; VASIL'YEV, V.P.

Lowering the measurement limits of automatic electronic potentiometers. Zhur. fiz. khim. 39 no.9:2317-2318 S '65. (MIRA 18:10)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.

VASIL'YEV, V.P.; VASIL'YEVA, V.N.; IVANOVA, F.I.; MOROZOVA, O.N.

Configuration equilibrium in solutions of chloride and thiocyanate complexes of cobalt. Izv.vys.ucheb.zav.;khim.i khim.tekh. 6 no.5:712-716 '63. (MIRA 16:12)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra analiticheskoy i fizicheskoy khimii.

POMAZKOV, V.P.; VASIL'YEV, V.P.

Determination of a free alkaline earth metal in oxide cathodes with the aid of radioactive iodine. Izv. AN SSSR. Ser. fiz. 28 no.8:1354-1359 Ag '64 (MIRA 17:8)

ABBASOV, A.S.; NIKOL'SKAYA, A.V.; GERASIMOV, Ya.I.; VASIL'YEV, V.P.

Thermodynamic properties of gallium antimonide studied by the electromotive force method. Dokl. AN SSSR 156 no.6:1399-1401 Je '64. (MIRA 17:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova. 2. Chlen-korrespondent AN SSSR (for Gerasimov).

VASIL'YEV, Vadim Petrovich [Vasyl'iev, V.P.], prof.; BELOUSOVA,
O.M., red.

[Chemical control of pests] Khimichni zasoby borot'by z shkidnykamy. Kyiv, Derzhsil'hospvydav URSR, 1964. 38 p.
(MIRA 17:4)

VASIL'YEV, V.P.; VASIL'YEVA, V.N.

Isobaric potential of the lattice of compounds formed by monoatomic ions with an octaelectronic outer shell. Zhur.fiz.khim. 36 no.10: 2238-2241 O '62. (MIRA 17:4)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.

VASIL'YEV, V.P.

Thermochemical study of the nitrate complexes of strontium and barium in an aqueous solution. Zhur. neorg. khim. 9 no.3:641-646 Mr '64. (MIRA 17:3)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.

VASIL'YEV, V.P.; VASIL'YEVA, V.N.

Stability in certain halides in the gaseous phase. Izv.vys.ucheb.zav.; khim.i khim.tekh. 6 no.4:693-695 '63. (MIRA 17:2)

1. Ivanovskiy khimiko-tekhnologicheskiy institut. Kafedra analiticheskoy i fizicheskoy khimii.

ABBASOV, A. S.; NIKOL'SKAYA, A. V.; GERASIMOV, Ya. I.; VASIL'YEV, V. P.

Thermodynamic properties of indium arsenide studied by the electromotive force method. Dokl. AN SSSR 156 no. 1:118-120 My '64.
(MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova.
2. Chlen-korrespondent AN SSSR (for Gerasimov).

VASIL'YEV, V. P.

"successes of the chemical method of combatting pests and the prospects for the introduction of chemical means of plant protection into agricultural production."

Report presented at the 2nd All-Union Scientific Conference on the Hygiene and Toxicology of Pesticides, Ministry of Health USSR Committee on the Study and Regulation of New Poisonous Chemicals of the Main State Sanitary Inspection USSR and Kiev Institute of Labor Hygiene and Occupational Diseases, Kiev 17-19 Oct 1962.
(Gigiyena i Sanitariya, No. 3, 1963 p. 104-105.)

Kiev Institute of Labor Hygiene and Occupational Diseases.

VASIL'YEV, V.P.; VASIL'YEVA, V.N.; KLINDUKHOVA, N.A.; PARFENOVA, A.N.

Equilibria in aqueous solutions of calcium, strontium, and barium nitrates. Izv.vys.ucheb.zav.;khim. i khim.tekh. 6 no.2:339-341 '63. (MIRA 16:9)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra analiticheskoy i fizicheskoy khimii.
(Alkaline earth nitrates) (Complex compounds)

VASIL'YEV, V.P.; MUKHINA, P.S.

Making allowance for the salt effect in the reactions of a complex formation. Zhur. neorg. khim. 8 no.8:1895-1899 Ag '63.
(MIRA 16:8)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.

VASIL'YEV, V.P., starshiy nauchnyy sotrudnik

Present state of optical range-finding techniques abroad. Izv. vys. ucheb. zav.; geod. i aerof. no. 2:73-81 '57. (MIRA 11:7)
(Range finding)

[illegible]

AUTHOR: Vasil'yev, V.P. 115-5-5/44

TITLE: Device for Checking the Pitch of Bushing-Roller Chains (Pribor dlya kontrolya shaga vtulochno-rolikovykh tsepey)

PERIODICAL: "Izmeritel'naya Tekhnika", No 5, Sep-Oct 1957, pp 14-15 (USSR)

ABSTRACT:

The article proposes design of a device for measuring the pitch of bushing roller chains under varying loads. Practical experience shows, that chains do not break because they lose strength, but because they reach prematurely the maximum allowable pitch limit. Further it is said that chains are being delivered by factories with "worn" pitch, which is caused by ungrounded tolerance specifications and inaccurate pitch measurements. The proposed design of the measuring instrument is claimed to be simple and convenient, and applicable for automatic inspection of chain links.
The article contains 1 drawing.

AVAILABLE: Library of Congress

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VASIL'YEV, V.P. Col. Med. Service

"The Responsible Task of the Military Medical Service," Voyenno-medits. zhur., No.2, pp 16-19, 1955

Translation D 311966, 16 Aug 65

VASIL'YEV, V.P., doktor biolog.nauk; KITITSYN, Ye.N., kand.sel'skokhoz. nauk

Effectiveness of phosphamide in the poisoning of plants. Zashch. rast.ot vred.i bol. 7 no.5:34-35 My '62. (MIRA 15:11)
(Insecticides)

NAZARYAN, Ye.A.; LOBANOV, G.A.; TRUSEVICH, G.V.; STEPANOV, S.N.; DUSHUTINA, K.K.; RYBAKOV, A.A.; KARANYAN, P.G.; UL'YANISHCHEVA, A.M.; TIKHONOV, N.N.; KAZIZADE, F.N.; SIDORENKO, I.I.; SMIRNOV, V.P.; SHIDENKO, I.Kh.; VASIL'YEV, V.P.; SHISHKOVA, M.I.; SERGEYEV, V.I., red.; GOR'KOVA, Z.D., tekhn.red.

[Grusha] Pear. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1960. 534 p.
(MIRA 13:12)

(Pear)

VASIL'YEV, V.R.

Liquid fuel heater for warming up bitumastics. Na stroi. Mosk. 1 no.3:22 Mr '58. (MIRA 11:8)

(Bitumen)

VASIL'YEV, V.S.

Analysis of alveolar air from patients with bronchiectasis [with summary in English]. Eksper.khir. 3 no.1:12-14 Ja-F '58.
(MIRA 11:2)

1. Iz kafedry obshchey khirurgii (zav. - prof. V.I. Struchkov) Lechebnogo fakul'teta I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M.Sechenova.
(BRONCHIECTASIS, physiol.
alveolar air sampling, preop. & postop. (Rus))
(RESPIRATION, funct. tests
alveolar air sampling in bronchiectasis, preop.
& postop. (Rus))

VASIL'EV, Vasilii Silant'evich, 1896-

Instructions on the field analysis of water. Saratov. Tip. N. V. Kraipoligrafgresta. 1930. 33 p.

VASIL'YEV, V.S.

Agricultural accidents in Ust'-Pristan' District (Altai Territory)
Sov.med.19 no.8:62-64 Ag '55. (MLRA 8:10)

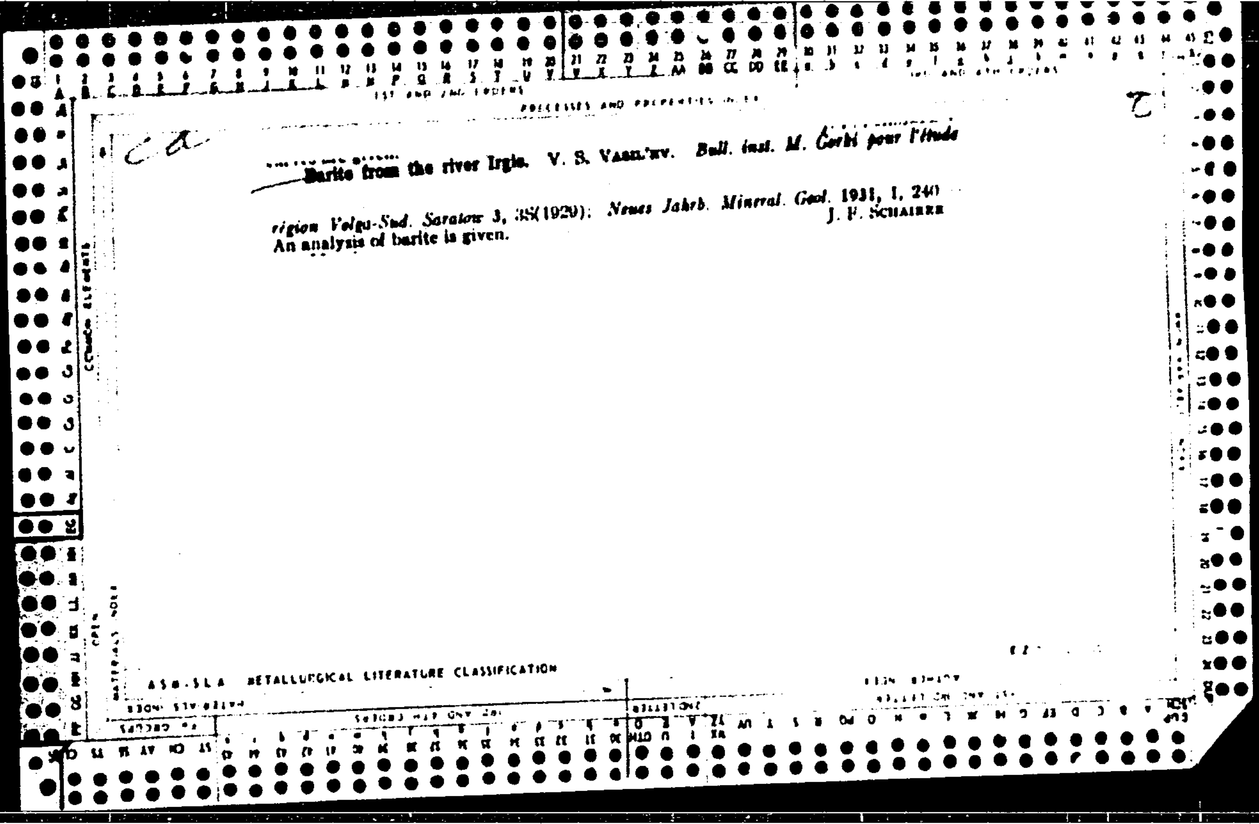
1. Khirurg Ust'-Pristanskoy rayonnoy bol'nitsy.
(OCCUPATIONAL DISEASES
in Russia, agricultural traumatism in Altai region)
(WOUNDS AND INJURIES,
agricultural traumatism ih Altai region in Russia)

VASIL'YEV, V.S.; FRIDMAN, M.I.

In the Engineering Center. Avtom., telem. i sviaz' no.4:45-47 Ap '57. (MIRA 11:4)

1. Nachal'nik otdela massovykh meropriyatiy tekhnicheskoy propagandy TSentral'nogo doma tekhniki (for Vasil'yev). 2. Starshiy redaktor metodicheskogo otdela TSentral'nogo doma tekhniki (for Fridman).

(Railroads--Equipment and supplies--Exhibitions)



1ST AND 2ND LETTERS

PROCESSES AND PROPERTIES INDEX

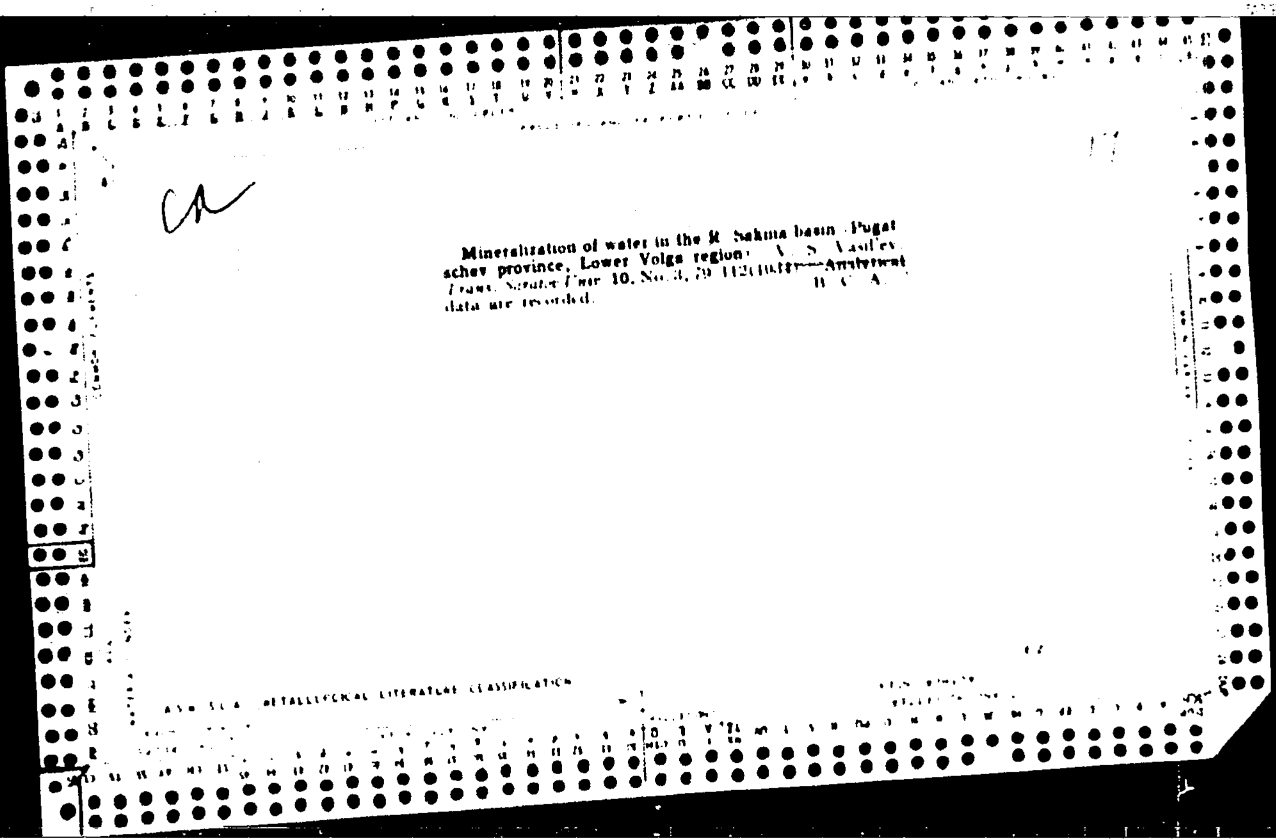
C a

T

Barite from the river Irgis. V. S. Vasil'ev. *Bull. inst. M. Gorki pour l'étude région Volga-Sud. Saratow* 3, 38(1929); *Neues Jahrb. Mineral. Geol.* 1931, I, 240
J. F. Schairer

An analysis of barite is given.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

Mineralization of water in the R. Sakma basin (Pugachev province, Lower Volga region). V. S. Vasil'ev. Trans. Saratov Univ. 10, No. 3, 79-112[illegible].—Analytical data are recorded. B. C. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

The mineral springs of the Chapaev resort region. V. S. Vasil'ev. *Uchenye Zapiski Saratov. Gosudarst. Univ. N. G. Chernyshevskogo* 15, No. 1 (Miscellaneous), 106-21 (1940). The well waters of the Upper-Tertiary horizons of the Chapaev region are similar to those of the corresponding horizons near the Bol'shaya Sakma River and to those of the ground waters of the Transvolga region. The well waters from the Atel horizon, the Khvalyn horizon and the Syrta clays near the Bol'shaya Sakma River contain, resp., in mg. per l., Cl^- 501, 261 and 572; SO_4^{--} 134, 290 and 322; HCO_3^- 384, 374 and 403; Ca^{++} 180, 165.7 and 204.1; Mg^{++} 67.8, 61.6 and 108.1. The Atel and Khvalyn horizon well waters near the Bol'shaya Kushuma River contain in mg. per l. Cl^- 301, SO_4^{--} 191, HCO_3^- 374, Ca^{++} 178.4 and Mg^{++} 50.1. The mineralized springs near the Bol'shaya Kushuma region represent a special group for this region by their compn. and the localization of their source. In their high salt content and in the predominance of chlorides and H_2S the springs are similar to the waters of petroleum-bearing regions. Although the presence of sulfates in amts. of 4504 mg./l. is unusual for most petroleum-bearing regions, the possibility of the presence of petroleum in this region is not excluded. The spring waters of the Karagungul salt dome, of the Novobogatinsk petroleum wells and of the Gor'kaya River contain, resp., in mg./l. HCO_3^- 80-220, 50 and 100; Cl^- 97,000-82,000, 135,000 and 30,000; SO_4^{--} 270-600, 0 and 2400; Br^- 0-130, 100 and 40; Ca^{++} 10-3300, 150 and 2800; Mg^{++} 40-400, 2800 and 1400; K^+ 200-310, 650 and 120. Besides these components the springs are also rich in H_2S. As a result of the investigations it is presumed that deposits of petroleum in the Chapaev region are possible. Eight references. W. R. Henn

ASM-SLA METALLURGICAL LITERATURE

VASIL'YEV, V. S.

Vasil'yev, V. S. "Meteorites from the collection of the Mineralogical Museum of Saratov University", Meteoritika, Issue 5, 1949, p. 63-67.

So: U-3261, 10 April 53, (Letopis 'Zhurnal 'nykh State , No. 12, 1949).

[illegible] and gypsum. Mo[illegible]

stan contain [illegible] usually an incrustation on the wall of cavities of radiolaria, and [illegible] Mordenite is [illegible] clayey sediments the [illegible] mineral although [illegible] with glau[illegible]

1 472 to 1 475

VASIL'YEV, V.S.

The mineralogical characteristics of authigenic silica in sedimentary rocks of the Mesozoic and Paleogene in the lower regions of the Volga. Vop.min.osad.obr. 3/4:292-298 '56.
(MLRA 9:11)

1. Gosuniversitet imeni N.G.Chernyshevskogo, Saratov.
(Volga Valley--Silica)

VASIL'YEV, V.S.; ZABELIN, V.A.; KLYAYEV, V.I.; SLISARENKO, F.A.

Mineral composition of the lower part of Maastricht sediments in the Saratov region. Dokl. AN SSSR 158 no.5:1096-1098 O '64. (MIRA 17:10)

1. Saratovskiy gosudarstvennyy universitet im. N.G.Chernyshevskogo i Saratovskiy gosudarstvennyy pedagogicheskiy institut. Predstavleno akademikom N.M.Strakhovym.

S/191/63/000/003/002/022 /033
B101/B186

AUTHORS: Sorokin, M. F., Lyalyushko, K. A., Dudakova, R. A., Vasil"yev, V. S., Shuvalova, A. N.

TITLE: Copolymers of unsaturated glycidol esters. Copolymerization of glycidyl methacrylate with methyl methacrylate in solvents

PERIODICAL: Plasticheskiye massy, no. 3, 1963, 3 - 7

TEXT: The copolymerization of glycidyl methacrylate (GMA) with methyl methacrylate (MMA) was conducted in a solution of toluene, dioxane, or cyclohexanone under an atmosphere of nitrogen with 0.1 mole% benzoyl peroxide as initiator, the purpose of this study being to produce polymers containing epoxy groups. GMA was synthesized from epichlorohydrine and sodium methacrylate. Optimum reaction was reached at 90°C and 30% concentration of components. At higher concentrations, the reaction went too fast and the mass became too viscous, making it very difficult to take samples. Lower concentration decelerated the reaction considerably. Copolymerization did not occur at 60°C and 30% concentration. At 50% it was too slow but could be accelerated by increasing the benzoyl peroxide addition to 1%. The re-

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Copolymers of unsaturated ...

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action was slowest in toluene yielding 77-89%; in dioxane and cyclohexanone it was equally slow yielding 83 - 96%. Reduced viscosity in dioxane was 3.55 - 3.79, in toluene 2.48 - 2.64. The ratio GMA : MMA was varied between 1 : 4 and 4 : 1. The resulting copolymers were white, solid substances soluble in acetone, acetates, dioxane, dichloro ethane, and cyclohexanone. The polydispersion of the copolymers was determined by turbidimetric titration. Pure polyglycidyl methacrylate had the lowest polydispersion, whereas pure polymethyl methacrylate had the highest. The values for the copolymers ranged in between, depending on the molar ratio of components and on the amount of initiator added. Fractionate precipitation showed all fractions to contain equal amounts of glycide groups: approximately 23% at a ratio GMA : MMA = 1 : 1, ~18% at 1 : 2, ~11% at 1 : 4, ~29% at 2 : 1, and ~33% at 4 : 1. The copolymers were somewhat enriched with GMA and their fractional composition differed from that of a mechanical mixture of components. The copolymerization constants were determined by M. Fineman's and S. D. Ross' method (J. Polymer Sci., 5, 259 (1950)): $r_{GMA} = 0.94$; $r_{MMA} = 0.75$. There are 6 figures and 3 tables.

Card 2/2

KLEMENTOV, A.V., dotsent; VASIL'YEV, V.S.

Elimination of lower porgnathism combined with a nonequalized bite by means of Kostecka's operation. Stomatologiia 43 no.1: 91-93 Ja-F'64 (MIRA 17:4)

1. Kafedra chelyustno-litsevoy khirurgii i stomatologii (nachal'nik - prof. V.M. Mukhin) Voyenno-meditsinskoy ordena Lenina akademii imeni S.M. Kirova.

VASIL'YEV, V.S.

Method of conversion of the mineralogical composition of friable sedimentary rocks. Uch.zap.SGU 65:107-114 '59. (MIRA 16:1)
(Rocks, Sedimentary)

VASIL'YEV V. S.

PHASE I BOOK EXPLOITATION SOV/5291

Soveshchaniye po kompleksnoy mekhanizatsii i avtomatizatsii tekhnologicheskikh protsessov v mashinostroyenii. 2d, Moscow, 1956

Avtomatizatsiya mashinostroitel'nykh protsessov. t. III: Obrabotka rezaniyem i obshchiye voprosy avtomatizatsii (Automation of Machine-Building Processes. v. 3: Metal Cutting and General Automation Problems) Moscow, Izd-vo AN SSSR, 1960. 296 p. (Series: Its: Trudy, t. 3) 4,700 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: V. I. Dikushin, Academician; Ed. of Publishing House: V. A. Kotov; Tech. Ed.: I. F. Kuz'min.

PURPOSE: This collection of articles is intended for technical personnel concerned with the automation of the machine industry.

COVERAGE: This is Volume III of the transactions of the Second Conference on the Full Mechanization and Automation of Manufacturing Processes in the Machine Industry, held September 25-29, 1956. The transactions have been published in three volumes. Volume I deals with the hot pressworking of metals, and volume II, with the actuation and control of machines. The present volume deals with the automation of metal machining and work-hardening, and with general problems encountered in automation. The transactions on the automation of metal-machining processes were published under the supervision of P. S. Dem'yanok and A. M. Karatygin, and those on the automation of work hardening processes, under the supervision of E. A. Satel' and M. O. Yakobson. No personalities are mentioned. There are no references.

Automation of Machine-Building Processes (Cont.) SOV/5291

Card 4/7

VASIL'YEV, V. S. Doc Tech Sci -- (diss) "Study of the measuring devices of modern balance machine tools and instruments." Mos, 1959. 20 pp (Min of Higher Education USSR. Mos Machine Tool and Instrument Inst im I. V. Stalin), 150 copies (KL, 48-59, 114)

25(2) PHASE I BOOK EXPLOITATION SOV/3092

Vasil'yev, Vladimir Sergeyevich, and Petr Stanislavovich Kutko

Stanki i pribory dlya dinamicheskoy balansirovki (Machines and Instruments for Dynamic Balancing) Moscow, Mashgiz, 1959. 166 p. Errata slip inserted. 5,500 copies printed

Reviewer: B.L. Boguslavskiy, Professor; Ed.: Sh. Ya. Livshits, Engineer; Ed. of Publishing House: N.A. Ivanova; Tech. Ed.: V.D. El'kind; Managing Ed. for Literature on Metalworking and Instrument Making (Mashgiz): R.D. Leyzel'man, Engineer.

PURPOSE: This book is intended for operators of balancing machines and designers.

COVERAGE: The book deals with the construction, operating principles, and sequence of operations of modern balancing machines and instruments. The design of the more important elements of balancing equipment is discussed. No personalities are mentioned. There are 16 references, all Soviet.

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Machines and Instruments for Dynamic Balancing SOV/3092

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Machines and Instruments for Dynamic Balancing SOV/3092

AVAILABLE: Library of Congress

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VASIL'YEV, Vladimir Sergeyevich; KUTKO, Petr Stanislavovich;
BOGUSLAVSKIY, B.L., prof., retsenzent; LIVSHITS, Sh.Ya.,
inzh., red.; IVANOVA, N.A., red.izd-va; EL'KIND, V.D.,
tekhn.red.

[Machines and instruments for dynamic balancing] Stanki i pribory dlia dinamicheskoi balansirovki. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 166 p. (MIRA 12:8)

(Balancing of machinery)

VASIL'YEV, V.S.

EXCERPTA MEDICA Sec 9 Vol 13/6 Surgery June 59

3203. ALVEOLAR AIR SAMPLING IN BRONCHIECTATIC DISEASE (Russian text) - Vasiliev V. S. - EKSPER. KHIR. 1958, 1 (12-14)

The apparatus recommended for taking samples of alveolar air consists of a 4-way stopcock, a rubber bag of 800-1000 ml., 2 rubber bags of 75-100 ml. for alveolar air sampling and a respiration tube with a mouthpiece. During expiration, after the large bag had been filled with the exhaled air, the small bags were filled with the last portions of the expired air by manipulating the stopcock accordingly. The air samples in the small rubber bags are then analysed in the Douglas-Haldane apparatus. Twenty-five patients suffering from varying degrees of bronchiectasis and 22 cases after radical operations for these conditions (lobectomy 8 cases, pulmonectomy 14 cases) were studied with the aid of this apparatus. Analysis of data obtained shows that in advanced cases of bronchiectasis increased pulmonary ventilation is unable to prevent alveolar hypoxia which, other factors contributing, leads to arterial hypoxaemia. After radical surgery the composition of alveolar air returns to normal.

VASIL'YEV, V.S.

Concentration and specialization of local and cooperative industry.
Sbor. st. CHPI no.15:28-34 '58. (MIRA 12:3)
(Industrial management)

VASIL'YEV, V.S.

Development of certain branches of local and cooperative industries.
Sbor. st. CHPI no.15:42-47 '58. (MIRA 12:3)
(Industrial management)