SOV/149-58-4-9/26

AUTHORS: Sryvalin, I.T., Yesin, O.A., Nikitin, Yu.P.

TITLE: Thermodynamic Characteristics of Molten Copper-Nickel-Sulphur Alloys (Termodinamicheskiye svoystva rasplavov sistemy med'-nikel'-sera)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, 1958, Nr 4, pp 66-72 (USSR)

ABSTRACT: The object of the present investigation was to obtain data on deviation of the Cu-Ni-S melts from the ideal solutions. This was done by measuring the emf of the concentration cell formed by solid nickel (99.9% purity) on one side, and molten Ni-Cu or Ni-S alloy on the other. Molten acid slag containing 20% CaO, 30% $Na_2O$, 33% $SiO_2$, 15% $Al_2O_3$ and 2% NiO was used as the electrolyte. The experiments were carried out in a fused magnesia vessel shown on Fig.1. The metal electrodes were contained in two vertical channels connected at the top by a central compartment filled with the electrolyte. The lower ends of the vertical channels led to two inclined channels

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housing graphite leads and filled with a neutral slag protecting the metal electrodes from oxidation. The results of the measurements taken at 1340 - 1360°C are given in Table 1, for the Cu-Ni alloys and in Table 2 for the Ni-S alloys. From these data the activity of Ni-Cu and S in the Cu-Ni and Ni-S melts was calculated. The calculated activity values were in good agreement with those obtained by Vol'skiy (Ref.2) in his investigation of chemical equilibrium and with the published data on the equilibrium diagrams of the Cu-Ni and Ni-S systems. It is shown that the equations of the ideal solutions are not applicable to the Ni-S melts which however can be adequately described by the expressions derived by the Authors (equations 10 and 11) in which non-additive character of the bond between dissimilar atoms had been taken into account. It is shown by comparison with literary data that the activity values of Ni, Cu and S, determined by the emf method, are in good agreement with those determined by

SRYVALIN, I.T.; YESIN, O.A.

O ipimenenii prosteyshikh popravok k formulam regulyarnykh rastvorov dlya metallurgicheskikh shlakov.

report submitted for the 5th Physical Chemical Conference on Steel Production.

MOSCOW 30 JUN 1959

SOV/163-58-1-8/53

AUTHORS: Nikitin, Yu. P., Yesin, O. A., Sryvalin, I. T.

TITLE: The Capacity of the Double Layer at the Boundary Between the Aluminum and the Cryolite-Alumina Melt (Yemkost' dvoynogo sloya na granitse alyuminiya s kriolito-glinozemnym rasplavom)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 1, pp 37-39 (USSR)

ABSTRACT: The capacity of the double layer at the boundary between the aluminum and the cryolite-alumina melt was determined by direct measurements at different composition of the alumina melt. From the result may be seen that a decrease of the cryolite ratio to 6 - 1,9 does not at all influence the capacity, whereas an increase of the aluminum oxide content considerably increases the capacity of the boundary layer. The dielectric constant $\varepsilon$ of the boundary layer was measured (see Table). In addition to the capacity the resistance and the diffusion were also measured.
When the cryolite content is changed no considerable change of the diffusion coefficient takes place; a change in the

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The Capacity of the Double Layer at the Boundary Between the Aluminum and the Cryolite-Alumina Melt

$Al_2O_3$ content, however, increases the diffusion coefficient. There are 2 figures, 1 table, and 12 references, 12 of which are Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute)

SUBMITTED: October 4, 1957

SRYVALIN, I.T.

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: M. G. Yegorova; 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: dielectric electrolytic solutions, ultrasonic measurement, spectro- and thermodynamic properties of various mixtures, spectro-scopic analysis, etc. References accompany individual articles.

18(6)
AUTHORS: Sryvalin, I. T., Yesin, O. A. SOV/163-59-1-2/50

TITLE: On the Most Simple Corrections to the Equations for Regular Solutions (O prosteyshikh popravkakh k formulam regulyarnykh rastvorov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 1, pp 5-10 (USSR)

ABSTRACT: In this paper an attempt is made to find simple extensions of the formulas from the theory of regular solutions, which would permit to extend the range of applicability of these formulas considerably. At first the influence of temperature is investigated. Formulas (2,1), (3,1), (4,1), and (5,1) are obtained for the heat of mixture $\Delta H$, for the excess entropy $\Delta S'$, and the excess isobaric potential $\Delta z'$. From these formulas it can be seen that $\Delta z'$ is linearly dependent upon temperature, and that the relationship between $\Delta H$, $\Delta z'$, $\Delta S'$ and the composition of the solution is also linear. Subsequently the consideration of the deviation from the additivity of the bindings is investigated. Formula (1,2) for the energy of mixture $\Delta E$ is written down for one mole of solution according to the theory of regular solutions. In this instance

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it is assumed that the atoms interact by means of short range order forces. It is further assumed that the atoms are in a state of statistical disorder and that in the calculation of the energy of mixture the rule concerning the additivity of bonds is applicable. Attempts are made to estimate the influence of small deviations from the rule of mixture for individual bonds. Formula (4,2) is derived. In this formula, Q denotes similar as for regular solutions the "energy of mutual exchange", whereas q denotes the deviation from the additivity of the binding energy between different atoms. Assuming that the entropy of mixture is identical with that of an ideal solution, formula (5,2) for $\Delta z'$ is written down. This formula specifies satisfactorily the thermodynamic characteristics of the isothermal lines of a number of silicate melts and of sulfide and metallic solutions (Ref 10), which are characterized not only by asymmetric curves for $\Delta z'$, but also by deviations with change of sign. This formula does, however, not express the dependence of $\Delta z'$ upon temperature. It is assumed that temperature takes a linear course and thus formulas (6,2), (7,2), (8,2), (9,2), and (10,2)

are obtained. In order to elucidate the practical use of these formulas, the three systems tin-thallium, tin-zinc, and sodium-cadmium are investigated. The excess isobaric potential for the first system follows a linear relationship, that of the second is described by an asymmetric curve, the last system is characterized by deviations from the ideal solution with change of sign. Q and q were determined with the help of activities of one component of two mixtures found experimentally, whereas for the coefficient k (a constant which depends upon the nature of the constituents of the mixture) the experimental data for $\Delta z'$ at different temperatures were used. From a comparison of the experimental and the theoretical data follows that the system tin-thallium is an example of a solution, for which $\Delta S'$ differs noticeably from zero, although the isothermal lines of the activities follow the rules of regular solutions. The system tin-zinc exhibits a close agreement between the activities of the components and those of the enthalpy of mixture, which were computed according to the formulas (4,3) and (8,3), presented in this paper, and the experimental data. For the system sodium-cadmium the

computed values for $\Delta z'$ coincide with the experimental values, whereas considerable deviations in the values appear for $\Delta H$. There are 3 figures, 2 tables, and 13 references, 7 of which are Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute)

SUBMITTED: May 15, 1958

SOV/78-4-4-28/44

5(2)
AUTHORS: Sryvalin, I. T., Yesin, O. A., Khlynov, V. V.

TITLE: On the Deviations of Molten Silicates From Ideal Solutions (Ob otkloneniyakh rasplavlennykh silikatov ot ideal'nykh rastvorov)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 4, pp 877-883 (USSR)

ABSTRACT: The deviations of molten silicates from ideal solutions as well as the activity coefficients were computed by the following semi-empirical equations:

$RT \ln \gamma_1 = (2Q-q)N_2^2 + (2q-2Q)N_2^3$, and

$RT \ln \gamma_2 = (2q-Q)N_1^2 - (2q-2Q)N_1^3$,

where T denotes the absolute temperature, R = gas constant, $\gamma_1, \gamma_2$ = mole fractions, Q,q = coefficients of certain physical importance and $N_1, N_2$ = number of the atoms A and B. The silicate melts of the systems $FeO-SiO_2$, $PbO-SiO_2$, $CaO-SiO_2$ and

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On the Deviations of Molten Silicates From Ideal Solutions

$MgO-SiO_2$ were investigated by means of these equations. The activity of $SiO_2$ and FeO at 1600° was calculated and is listed in table 1. The values agree well with publications. In the system $PbO-SiO_2$ the activity at 900° was calculated and is represented in figure 3. In this system the authors observed positive and negative deviations from the ideal solution with PbO, while they found only positive deviations in the case of $SiO_2$. The systems $CaO-SiO_2$ and $MgO-SiO_2$ were thermodynamically characterized by determinations of the activity of CaO and MgO at 1600° and 1700°. Figure 4 shows the negative deviation of the melt $CaO-SiO_2$ from the ideal solution at 1600°. For the system $MgO-SiO_2$ the authors computed Q and q according to the composition of the corresponding liquid phases at 1700°. The measurement results applied and the results of the computation of Q and q are contained in a table. There are 4 figures, 2 tables, and 14 references, 11 of which are Soviet.

SUBMITTED: January 17, 1958

Card 2/2

5 (2)

AUTHORS: Bratchikov, S. G., Yesin, O. A., Sryvalin, I. T.

SOV/163-59-2-6/48

TITLE: The Thermochemistry of Melted Lead Silicates (K termokhimii rasplavlennykh silikatov svintsa)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 2, pp 32-37 (USSR)

ABSTRACT: The specific heat in the $PbO-SiO_2$ melts was measured in the temperature interval of $550^{\circ}$-$960^{\circ}$ in solid and liquid state. The average molar specific heat and enthalpy for melts of different compositions are given in tables 1 and 2. The dependence of the melting heat (L) and enthalpy ($\Delta H_{298}^{T}$) on the composition of the samples of the system was investigated and is given in figure 1. It is concluded from the results that stable compounds with the group Pb-O-Si exist in the melts. The experimentally measured $c_p$-values are higher than the additively detected ones. The results concerning the enthalpy, of the specific- and melting heats confirm the fact that the melts represent compounds with the structures

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$PbSiO_3$ and $Pb_2SiO_4$. Several thermodynamic parameters (characteristic values) for the melts $PbO-SiO_2$, as e. g. the heat ($\Delta H_x$), entropy ($\Delta S_x$), and the isobaric potential ($\Delta Z_x$) were computed (Table 3). The dependence of heat ($\Delta H_x$) and entropy ($\Delta S_x$) on the isobaric potential ($\Delta Z_x$) of the composition of the melt $PbO-SiO_2$ was investigated at 1223° K and the results are given in table 3. Stable asymmetrical groups like Pb-O-Si exist in the melt. The Laboratory Assistant B. T. Kadnikov and the Students S. I. Andrianov and V. I. Sokolov assisted in the measurements. There are 3 figures, 3 tables, and 10 references, 7 of which are Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

SUBMITTED: July 4, 1958

SRYVALIN, I.T., kand.tekhn.nauk, dots.; YESIN, O.A., dokt.tekhn. nauk, prof.

Component activity of molten CaO - $Al_2O_3$ - $SiO_2$ systems.

Izv.vys.ucheb.zav.; chern.met. 2 no.8:9-16 Ag '59. (MIRA 13:4)

1. Ural'skiy politekhnicheskiy institut. Rekomendovano kafedroy teorii metallurgicheskikh protsessov Ural'skogo politekhnicheskogo instituta.
(Chemistry, Physical and theoretical)

SRYVALIN, I.T.; YESIN, O.A.; KHLYNOV, V.V.

Deviation of fused silicates from ideal solutions. Zhur. neorg. khim. 4 no.4:877-883 Ap '59. (MIRA 12:5)
(Silicates) (Solution (Chemistry))

PHASE I BOOK EXPLOITATION SOV/5035

Vsesoyuznoye soveshchaniye po steklokhimii 3rd, Leningrad, 1959.

Steklokhimiya; trudy Tretyego vsesoyuznogo soveshchaniya (Leningrad, 16-20 noyabrya 1959) (Vitreous State; Transactions of the Third All-Union Conference on the Vitreous State, Held in Leningrad on November 16-20, 1959) Moscow, Izd-vo AN SSSR, 1960. 534 p. Errata slip inserted. 3,000 copies printed. (Series: Its: Trudy)

Sponsoring Agencies: Institut khimii silikatov Akademii nauk SSSR. Vsesoyuznoye khimicheskoye obshchestvo imeni D.I. Mendeleyeva and Gosudarstvennyy ordena Lenina opticheskiy institut imeni S.I. Vavilova.

Editorial Board: A.I. Avgustinik, V.P. Barmakovskiy, M.A. Bezborodov, O.K. Botvinkin, V.V.Vargin, A.G. Vlasov, K.S. Yevstropyev, A.A. Lebedev, M.A. Matveyev, V.S. Molchanov, R.L. Myuller, Ye.A. Poray-Koshits, Chairman, M.A. Toropov, V.A. Florinskaya, A.K. Yakhkind; Ed. of Publishing House: I.V. Suvorov; Tech. Ed.: V.T. Bochever.

PURPOSE: This book is intended for researchers in the science and technology of glasses.

COVERAGE: The book contains the reports and discussions of the Third All-Union Conference on the Vitreous State, held in Leningrad on November 16-19, 1959. They deal with the methods and results of studying the structure of glasses, the relation between the structure and properties of glasses, the nature of the chemical bond and glass structure, optical properties and glass structure, and silica, mechanism of vitrification, optical properties and glass structure, and the electrical properties of glasses are also discussed. A number of the reports deal with the dependence of glass properties on composition, the kinetics of glasses and radiation effects, and mechanical, technical, and chemical properties of glasses. Other papers treat glass semiconductors and oxide borosilicate glasses. The Conference was attended by more than 300 delegates from Soviet and East German scientific organizations. Among the participants in the discussions were M.V. Solntsin, Ye. V. Kuvshinskiy, Yu.A. Gaatev, V.P. Pryanishnikov, Yu. Ya. Gotlib, O.P. Mchedlov-Petrosyan, G.P. Mikhaylov, S.M. Petrov, A.N. Lazarev, D.I. Levin, A.V. Shatilov, N.F. Ploshchinskiy, A.Ya. Kuznetsov, E.V. Degtyarev, G.V. Byurgmonskaya, A.A. Kalenov, N.M. Stomyakov, F.Ya. Bokiy, and O.S. Polchanova. Kuznetsov, V.P. Pozdnev, R.S. Shevelevich, Z.G. Pinaev, and O.K. Botvinkin. The final session of the Conference was addressed by Professor I.I. Kitaygorodskiy, Honored Scientist and Engineer, Doctor of Technical Sciences. The following institutes were cited for their contribution to the development of glass science and technology: Gosudarstvennyy opticheskiy institut (State Optical Institute); Institut khimii silikatov AN SSSR (Institute of Silicate Chemistry, AS USSR); Fizicheskiy institut AN SSSR (Physics Institute AS USSR), Fiziko-tekhnicheskiy institut AN SSSR (Physicotechnical Institute, AS USSR), Institut fiziki AN BSSR, Minsk (Institute of Physics, Academy of Sciences, Belorusskaya SSR, Minsk), Laboratory of Physical Chemistry of Silicates of the Institut obshchey i neorganicheskoy khimii AN SSSR, Minsk (Institute of General and Inorganic Chemistry, Academy of Sciences, Belorusskaya SSR, Minsk), Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High Molecular Compounds, AS USSR), Gosudarstvennyy institut steklyannoy promyshlennosti (State Institute for Glass Fibers), Gosudarstvennyy institut elektrotekhnicheskogo stekla (State Institute for Electrical Glass), Sibirskiy fiziko-tekhnicheskiy institut, Tomsk (Siberian Physicotechnical Institute, Tomsk), Leningradskiy gosudarstvennyy universitet (Leningrad State University), Moskovskiy khimiko-tekhnologicheskiy institut (Moscow Institute of Chemical Technology), Leningradskiy tekhnologicheskiy institut im. Lensoveta (Leningrad Technological Institut imeni Lensoveta), Belorusskiy politekhnicheskiy institut (Belorussian Polytechnic Institute, Minsk), Novocherkasskiy politekhnicheskiy institut (Novocherkask Polytechnic Institute), and Sverdlovskiy politekhnicheskiy institut (Sverdlovsk Polytechnic Institute). The Conference was sponsored by the Institute of Silicate Chemistry AS USSR (Acting Director - A.S. Jokilb), the Vsesoyuznoye Khimicheskoye obshchestvo im. D.I. Mendeleyeva (All-Union Chemical Society imeni D.I. Mendeleyev), and the Gosudarstvennyy ordena Lenina opticheskiy institut imeni S.I. Vavilova (State "Order of Lenin" Optical Institute imeni S.I. Vavilov). The 15 resolutions of the Conference include recommendations to organize a Center for the purpose of coordinating the research on glass, to publish a new periodical under the title "Fizika i khimiya stekla" (Physics and Chemistry of Glass), and to join the International Committee on Glass. The Conference thanks A.A. Lebedev, Academician, Professor, and Chairman of the Organization of Committees; Ye.A. Poray-Koshits, Doctor of Physics and Mathematics, Member of the Organizational Committee; and R.L. Myuller, Doctor of Chemical Sciences, Member of the Organizational Committee. The editorial board thanks G.M. Bartenev, M.V. Vol'kenshteyn, L.I. Demkina, D.P. Dobychin, S.K. Dubrovo, V.A. Ioffe, and R.T. Kolontayeva. References accompany individual reports.

85454

S/149/60/000/005/002/015
A006/A001

18 7520

AUTHORS: Nikitin, Yu.P. and Sryvalin, I.T.

TITLE: Investigation of Properties of Ni-Cu-Sb, Ni-Cu-S and Ni-Fe-S Melted Systems by the Method of Electromotive Forces

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Tsvetnaya metallurgiya, 1960, No. 5, pp. 43-48

TEXT: A study was made in order to complete existing data on the deviation from ideal solutions of melts of the Ni-Cu-Sb, Ni-Cu-S and Ni-Fe-S ternary systems using the emf method. Moreover, an attempt was made to apply formulae describing the behavior of binary systems to the investigated ternary systems. The experiments were made at 1,340-1,360°C and show noticeable deviations of the systems from the Raoult's law. Relatively low negative deviations of Ni in the Ni-Cu-S melts are explained by the existance in the liquid of cybotaxis groupings of copper and sulfur in concentrations exceeding mean statistical values. Thermodynamical data of binary systems are used to derive formulae for the analytical description of properties of the described ternary systems. 1) Based on Ya.I. Gerasimov's data, nickel activity at 1,350°C in the Ni-Cu-Sb system is expressed

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S/149/60/000/005/002/015
A006/A001

Investigation of Properties of Ni-Cu-Sb, Ni-Cu-S and Ni-Fe-S Melted Systems by the Method of Electromotive Forces

by formula (8):
$\lg f_{Ni} = -0.12\,x_{Cu}(1 - x_{Ni}) - 3x_{Sb}(1 - x_{Ni}) + 3x^2_{Sb}(1 - 2x_{Ni}) + 2.4x_{Cu}x_{Sb} - 4.8x_{Cu}x^2_{Sb}$.

2) Thermodynamical data given by A.N. Vol'skiy serve to derive the following equation for Ni activity in the Ni-Cu-S systems (13)
$\lg f_{Ni} = -0.12x_{Cu}(1 - x_{Ni}) - 4x_S(1 - x_{Ni}) + 3.05x_{Cu} + 6.88x_{Cu}x^2_S$.

3) Formula (15) $\lg f_{Ni} = -4x_S(1 - x_{Ni}) + 2x_{Fe}x_S$, based on Chipman's data, describes the coefficient of nickel activity in the Ni-Fe-S system. Experimental values of activities are in a satisfactory agreement with data calculated according to the given formulae, reflecting in the first approximation the effect of the melt structure on the heat of mixing. There are 3 tables and 7 references: 6 Soviet and 1 English.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)
Kafedra teorii metallurgicheskikh protsessov (Department of the Theory of Metallurgical Processes)

SUBMITTED: March 8, 1960

Card 2/2

S/180/60/000/006/021/030
E111/E335

AUTHORS: Yesin, O.A. and Sryvalin, I.T. (Sverdlovsk)

TITLE: Thermodynamic Properties of Metallic Alloys and Phase Diagrams

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, No. 6, pp. 116 - 118

TEXT: The authors give a critical survey of investigations of thermodynamic properties of alloys (mainly binary metallic) in relation to the corresponding phase diagrams. Deviations of solution from ideality form the major part of the survey. For systems with continuous solid solution deviations are usually slightly negative or zero. An example of the rare system where positive deviation in the liquid accompanies complete miscibility in the solid could be Au-Ni but the authors doubt the evidence (Refs. 2, 3). Most such systems obey regular-solution laws. Simple eutectic alloys generally show positive deviation; those that show a negative deviation, such as Bi-Pb, are specially interesting. Negative deviations

Card 1/3

Thermodynamic Properties of Metallic Alloys and Phase Diagrams

also occur when unstable compounds, decomposing below the melting point, are formed. Especially large negative deviations occur in alloys of iron with nonmetallics. E.m.f. measurements (Ref. 5) indicate the existence of stable FeSi. These results are in line with those of other methods (Refs. 6, 7, 8, 9). The e.m.f. method has also been used (Ref. 10) for carbon-saturated ferro-alloys: $Fe_2P$ was detected in Fe-P-C (Ref. 12). Positive deviations are suggested if there is an immiscibility "dome" on the phase diagram; other links between e.m.f. results and phase diagrams have been reported (Refs. 16, 17). The submicro heterogeneity of eutectoid liquid alloys is suggested by X-ray (Ref. 18), centrifuging (Ref. 19) and thermal (Refs. 20-22) experiments. The authors doubt the validity of Bartenev's views (Ref. 23)

S/180/60/000/006/021/030
E111/E335

Thermodynamic Properties of Metallic Alloys and Phase Diagrams

on liquid-solid relationships. Of the authors, Yesin has cooperated in many contributions in this field, e.g. Refs. 5, 10, 11, 12, 13, 16, 17, 24.
There are 24 references: 18 Soviet and 6 non-Soviet.

SUBMITTED: August 26, 1960

Card 3/3

SYAO CHZHI-TSAYN [Hsiao Chih-tsang]; SMIRNOV, V.I.; SRYVALIN, I.T.

Thermodynamics of the sulfatizing roast processes of converter slags in a fluidized bed. Trudy Ural.politekh. inst. no.98:67-71 '60. (MIRA 14:3)

(Nonferrous metals—Metallurgy) (Slag)
(Fluidization)

SRYVALIN, I.T.; YESIN, O.A.

Thermodynamic properties of silicate melts in the system FeO - CaO - $SiO_2$. Izv.vys.ucheb.zav; khim.i khim.tekh. 4 no.5: 825-831 '61. (MIRA 14:11)

1. Ural'skiy politekhnicheskiy institut, kafedra teorii metallurgicheskikh protsessov.

(Silicates)

SRYVALIN, I.T.; YESIN, O.A.

Dependence of the heat of mixing on composition. Izv.vys.ucheb. zav.; chern.met. 4 no.9:13-20 '61. (MIRA 14:10)

1. Ural'skiy politekhnicheskiy institut.
(Liquid metals--Thermal properties)
(Heat of mixing)

SRYVALIN, I.T.; YESIN, O.A.

Using quasi-chemical methods for metallurgical systems with ternary compounds. Izv.vys. ucheb. zav.; chern.met. 5:10-16 '62. (MIRA 15:10)

1. Ural'skiy politekhnicheskiy institut.
(Systems (Chemistry))

S/149/62/000/006/001/008
A006/A101

AUTHORS: Sryvalin, I. T., Yesin, O. A.

TITLE: On the temperature dependence of thermodynamical properties of metal solutions

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Tsvetnaya metallurgiya, no. 6, 1962, 41 - 49

TEXT: In the theory of regular solutions and in the quasi-chemical method, the interchange energy W is usually considered to be independent of temperature. As a result, the excess isobaric potential of mixing $\Delta F'$, does not depend at all or very slightly upon the temperature. In fact, according to Soviet, American, and English data, W is a complicated function of temperature. The simplest way of improving the theory is to consider W as a linear function of temperature:

$$W = W_o + T \frac{dW}{dT}.$$

Card 1/2

On the temperature dependece of...

Several examples are given for binary metallic alloys which show the adequacy of this function to describe quantitatively the experimental data on heats and free energies of mixing. Variants of the existing theory are proposed which show the effect of local surrounding and the composition upon the energy of the interaction between particles. The correlations derived show well the behavior of various metal solutions with both low and high energy effects. A quantitative description is given of the thermodynamics of metal melts of Sn-Tl, Fe-Sn, Na-Sn, Na-Pb and Ni-Si systems. System Sn-Tl is related to the type of regular systems; the isobaric potential of Fe-Sn is described by an asymmetric curve; systems Na-Pb, Na-Sn and Ni-Si obey the quasichemical formulae where ternary compounds are taken into account. In all the systems a noticeable temperature dependence of the excess isobaric potential of mixing $\Delta F'$ is observed; it can be well considered by the linear course of the interchange energy W with temperature. The predicted thermodynamical properties of the systems investigated are in a satisfactory agreement with experimental data. There are 5 tables.

ASSOCIATION: Permskiy politekhnicheskiy institut (Perm' Polytechnic Institute). Kafedra fizicheskoy i analiticheskoy khimii (Department of Physical and Analytical Chemistry)

SUBMITTED: March 17, 1962

Card 2/2

SRYVALIN, I.T.; YESIN, O.A.

Using the quasi-chemical method for liquid iron-silicon alloys.
Izv. vys. ucheb. zav.; chern. met. 6 no.5:5-9 '63. (MIRA 16:7)

1. Permskiy politekhnicheskiy institut.
(Iron-silicon alloys—Thermal properties)

SRYVALIN, I.T.; YESIN, O.A.; LEPINSKIKH, B.M.

Thermodynamic properties of magnesium solutions in nickel, lead, and silicon. Zhur. fiz. khim. 38 no.5:1166-1172 My '64. (MIRA 18:12)

1. Institut metallurgii Ural'skogo filiala AN SSSR, Uralskiy politekhnicheskiy institut i Permskiy politekhnicheskiy institut. Submitted May 23, 1963.

SRYVALIN, I.T., YESIN, O.A.

Application of the quasichemical theory to calculate the activity of silicate melt components. Izv. vys. ucheb. zav.; chern. met. 8 no.10:14-21 '65. (MIRA 18:9)

1. Permskiy politekhnicheskiy institut i Ural'skiy politekhnicheskiy institut.

SRYVALIN, I.T.; YESIN, O.A.; KORPACHEV, V.G.

Calculating the heat of oxide mixing by the properties of ions composing them. Izv. vys. ucheb. zav.; chern. met. 8 no.11:9-13 '65. (MIRA 18:11)

1. Ural'skiy politekhnicheskiy institut i Permskiy politekhnicheskiy institut.

SRYVALIN, I.T.; YESIN, O.A.; KORPACHEV, V.G.

Evaluation of the heats of mixing of salt solutions according to ionic characteristics. Usp. khim. 35 no.1:3-20 Ja '66. (MIRA 19:1)

1. Ural'skiy politekhnicheskiy institut imeni S.M. Kirova i Permskiy politekhnicheskiy institut.

L 08191-67 EWT(m)/EWP(t)/ETI IJP(c) JD/WW/JW/JG/JH

ACC NR: AP6030498 (A) SOURCE CODE: UR/0149/66/000/004/0022/0027

AUTHOR: Tikhomirov, A. A.; Sryvalin, I. T.; Yesin, O. A.; Lepinskikh, B. M. 43 B

ORG: Perm Polytechnic Institute, Department of Physical Chemistry (Permskiy politekhnicheskiy institut, Kafedra fizicheskoy khimii)

TITLE: Thermodynamic properties of liquid solutions of the aluminum-tin system

SOURCE: IVUZ. Tsvetnaya metallurgiya, no. 4, 1966, 22-27

TOPIC TAGS: solution property, aluminum, tin, thermodynamic property

ABSTRACT: The investigation was made by the method of electromotive force. One of the electrodes was liquid aluminum, and the other a liquid alloy of Al-Sn of varying composition. The electrolyte was a mixture of anhydrous sodium and potassium chlorides in equimolar proportion, with an addition of $AlCl_3$. The electrolytic cell was made of a lump of magnesite brick with blind openings for the electrodes and the thermocouple. The current carriers were tungsten wires protected by alundum jackets. The cell was placed at the bottom of a quartz test tube with a diameter of 50-60 mm. The experiments were carried out in an electric resistance furnace. The experimental results are given in tabular form. The following conlusions were drawn:
1) Measurement of the electromotive force was made at temperatures from 700 to 850°;
2) the system studied exhibited measurable positive deviations from Raoult's law.

Card 1/2 UDC: 669.715+669.65

L 08191-67

ACC NR: AP6030498

evidently due to the presence of large deviations of the heat capacity from Kopp's law; 3) the dependence of the activities of the components on the composition, to a known approximation, can be described by the formulas for regular solutions; 4) the thermodynamic data obtained agree satisfactorily with the results of calorimetric and electronographic investigations. Orig. art. has: 5 formulas, 5 figures and 3 tables.

SUB CODE: 07, 20/ SUBM DATE: 27Mar65/ ORIG REF: 008/ OTH REF: 001

Card 2/2 dda

POLYAKOV, A. I., inzh.; SRYVKOV, S. V., inzh.

Adjustment of boilers operating on Nazarovo coal. Energetik 12 no.4:2-4 Ap '64. (MIRA 17:7)

NEMCHENKO, V.V., inzh.; SRYVKOV, S.V., inzh.; AKIMENKO, [illegible], inzh.

Burning of Nazarov coals in boiler systems with small evaporative capacity. Prom. energ. 19 no.12:22-23 D '64. (MIRA 18:3)

GERLIKH, Ye. [Gorlich, E.]; SZHEDNITSKIY, Zh. [Srzednicki, J.]; KOVAL'SKIY, Z. [Kowalski, Z.]

Multicycle oscillographic polarography with two streaming mercury electrodes in differential circuit. Zhur. fiz. khim. 36 no.3:449-454 Mr '62. (MIRA 17:8)

1. Gornaya Akademiya, Krakov.

THOM, R.; GLOWACKI, J.; SRZEDNICKA, W.

Purification of dairy sewage by means of the active precipitation method. Acta Microb.polon. 8:175-179 1959.

1. Z Instytutu Przemyslu Mleczarskiego w Warszawie.
(DAIRYING)
(SEWAGE)

SRZEDNICKA-CHRZANOWSKA K.

EXCERPTA MEDICA Sec 12 Vol 13/4 Ophthalmology Apr 59

561. A CASE OF EYE INJURY WITH METHYL VIOLET - Przypadek uszkodzenia oka fioletem metylowym - Srzednicka-Chrzanowska K. Klin. Chor. Oczu A.M., Kraków - KLIN.OCZNA 1958, 28/2 (165-168) Illus. 1

A case is described which showed conjunctival symptoms only, but later a necrotic focus appeared in the cornea. It is interesting that the necrotic ulcer appeared in an other place not injured previously. The solid leucoma arose with applanation of the cornea and diminution of eyesight to 0.01.

Szmyt - Warsaw

SRZEDNICKA-CHRZANOWSKA, Krystyna

Radiotherapy of retinal glioma. Klin.oczna 30 no.4:397-401 '60.

1. Z Kliniki Chorob Oczu A.M. w Krakowie, Kierownik: prof.dr. med. M.Wilczek.
(NEUROEPITHELIOMA radiother)
(RETINA neopl)

SRZEDNICKI, J.

4989. A PHASE DETECTOR AS BALANCE INDICATOR IN ALTERNATING-CURRENT BRIDGE MEASUREMENTS.
J Srzednicki.
Rozprawy Elektrotech., Vol. 1, No. 1, 3-28 (1955). In Polish, with summary (2 pp.) in English.

The phase detector is mainly intended for use in deflection bridge measurements giving directly the percentage deviation from the standard value. A centre-zero meter is connected between the anodes of a pair of triodes; their grids are controlled by the output voltage of the bridge, and their cathodes are controlled by the bridge input voltage. The deflection of the meter depends on the amplitude and phase relationship of these two voltages. The theory of operation of the phase detector is derived, and formulae are presented for direct comparison measurements. Sensitivity and indication errors are discussed for capacitor measurements. Loading of the bridge by the detector is taken into account. Other factors affecting the accuracy are indicated. A bridge comparator built for factory testing of capacitors and resistors is described in detail, and a full schematic diagram is given.

I.M.Silberstein

2

87
MT

G-2

POLAND/Electricity - Dielectrics

Abs Jour : Ref Zhur - Fizika, No 4, 1959, No 8473

Author : Srzednicki Jan
Inst :
Title : Measurements of the Coefficient of Losses of Capacitors by Means of Pointer Instruments Using a Bridge Method

Orig Pub : Rozpr. elektrotechn., 1958, 4, No 1, 29-52

Abstract : No abstract

Card : 1/1

KOWALSKI, Zygmunt; SRZEDNICKI, Jan

A new method for speedy measurement and recording of the double layer capacity as function of the mercury electrode potential. Rocz chemii 36 no.3:564-568 '62.

1. Department of Chemistry of Silicates, Institute of Mining and Metallurgy, Krakow.

SMY[illegible]CKI, Z.

TSC[illegible]

Periodicals: GAZETA CUKROWNICZA. Vol. 60, No. 10, Oct. 1958.

SMYCZYNSKI, Z. The control of aphids. P. 325.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, No. 2,
February 1959, Unclass.

H

COUNTRY : POLAND
CATEGORY : Chemical Technology. Chemical Products and Their Applications. Carbohydrates and Their Processing.
ABS. JOUR. : RZhKhim., No 17, 1959, No. 62441

AUTHOR : Srzednicki, Z.
INSTITUTE : -
TITLE : Storage of Sugar Beets at the Refineries of GDR.

ORIG. PUB. : Gaz. cukrown., 1958, 60, 12, 388-389

ABSTRACT : Described are methods and the results of prolonged sugar beet storage. Methods of combatting microbiological infections in the packing of beets for prolonged storage are presented.
-- D. Bronshteyn.

Card: 1/1

H

COUNTRY : POLAND
CATEGORY : Chemical Technology. Chemical Products and Their Applications. Carbohydrates and Their*
ABS. JOUR. : RZKhim., No. 23 1959, No. 83739

AUTHOR : Srzednicki, Z.
INST. : -
TITLE : Institutes of Beet Culture and Sugar Manufature in the GDR

ORIG. PUB. : Gaz. cukrown., 1959, 61, No 1, 31-32

ABSTRACT : The Educational Technological Institute of sugar industry affiliated with the Gumboldt University trains personnel for sugar refineries. The institute operates with full coonération of sugar refineries. In recent years a number of research projects have been comnleted (investigations covered organic acids, contained in the diffused and purified juices, physical and chemical properties of sugar solutions encountered in the manufacture of

*Processing.

CARD: 1/3

SRZENTIC, S.

"United leadership and civic-political education."
Vojni Glasnik, Beograd, Vol 7, No 12, Dec 1953, p. 3

SO: Eastern European Accessions List, Vol 3, No 10, Oct 1954, Lib. of Congress

SSORIN, V.A.; MISHIN, P.A.

Prospects for the development of the wood resin industry in Eastern Siberia. Gidroliz.i lesokhim.prom. 12 no.6:19-20 '59. (MIRA 13:2)

1. Giprolestrans.
(Siberia, Eastern--Gums and resins)

GUR'YEV, Viktor Vasil'yevich [deceased]; MAKHNOVETSKIY, Solom[illegible] Iosifovich; OSORIN, Vladimir Aleksandrovich; POGHI', D.N., red.

[Principles and methods of the organization of permanent lumbering enterprises] Osnovy i puti organizatsii postoianno deistvuiushchikh lesozagotovitel'nykh predpriiatii. Moskva, Lesnaia promyshlennost', 1964. 287 p. (MIRA 18:3)

RUTKOVSKIY, V.Yu. (Moskva); SSORIN-CHAYKOV, V.N. (Moskva)

Study of the dynamics of one class of adaptive control systems with test signals. Izv. AN SSSR. Tekh. kib. no.5:130-143 S-O '64. (MIRA 17:12)

RUTKOVSKIY, V.Yu. (Moskva); SSORIN-CHAYKOV, V.N. (Moskva)

Use of a harmonic linearization technique in studying systems containing executive mechanisms with two limitations. Izv. AN SSSR. Tekh. kib. no.6:33-45 N-D '63. (MIRA 17:4)

L 19827-65 ASD(a)-5/AEMD(p)/ESD(dp)

ACCESSION NR: AP4048832 S/0280/64/000/005/0130/0143

AUTHOR: Rutkovskiy, V. Yu. (Moscow); Ssorin-Chaykov, V. N. (Moscow) 13

TITLE: Investigation of the dynamic properties of one class of self-adjusting systems with a pilot signal

SOURCE: AN SSSR. Izv. Tekhnicheskaya kibernetika, no. 5, 1964, 130-143

TOPIC TAGS: automation, self adjusting system, pilot signal, regulating loop

ABSTRACT: A class of systems is investigated whose main loop is described by the equations

$$D(p)\,\psi = -a(t)M(p)\,\mu + f; \text{ object}$$
$$N(p)\,\mu = kW_{cd}(p)\,(\psi - g); \text{ regulator}$$
$$p \equiv d/dt$$

where $\psi$ is the controlled coordinate, $\mu$ is the regulator coordinate, f and g are the perturbing and regulating signals, D(p) and M(p) are polynomials in p, $W_{cd}(p)$ is the operator of the correcting device and k is the regulator gain. The gain of the object $a(t)>0$, changes between certain limits $a_{min}$ and $a_{max}$ with a bounded velocity $|\dot{a}(t)| \leq \dot{a}_{max}$. It is assumed

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ACCESSION NR: AP4048832

that the change in a is sufficiently slow to allow the use of "frozen coefficients" approximation. For a given $\varphi$ (t) the regulation algorithm reduces to

$$a(t)k = \rho_0 = \text{const.}$$

A sinusoidal pilot signal is used to induce oscillations in the system and the amplitude of these oscillations serves as a signal which maintains the amplitude -frequency characteristic of the closed loop system constant. The system is shown in Figure 1 of the Enclosure. The optimum conditions for selection of the frequency of the pilot signal require that it be outside of the band of frequencies of g and f, as well as of the characteristic frequencies of the main loop, and that the induced oscillations be stable with small changes in the coefficients of the polynomials M(p) and D(p). It is shown that for all practical purposes the regulating loop can be analyzed as a separate entity and simplified equations for this loop are derived. A detailed investigation of system dynamics is considered when the gain of the object a(t) is a step function. It is stipulated that this solution can be applied to a step function approximation of any arbitrary a(t). "The authors are grateful to B.N. Petrov who supervised this project." Orig. art. has: 31 equations and 10 figures.

ASSOCIATION: none

Card 2/4

L 19627-65

ACCESSION NR: AP4048832

SUBMITTED: 14Feb64

NO REF SOV: 003

ENCL: 01

OTHER: 001

SUB CODE: IE, DP

0

Card 3/4

L 46027-66 EWP(k)/EWT(d)/EWP(h)/EWP(l)/EWP(v) BC/GD

ACC NR: AT6017611 (N) SOURCE CODE: UR/0000/65/000/000/0093/0111

AUTHOR: Rutkovskiy, V. Yu. (Candidate of technical sciences); Ssorin-Chaykov, V. N.

43

B+1

ORG: none

14

TITLE: Self-adaptive systems with a test signal

SOURCE: Vsesoyuznaya konferentsiya po teorii i praktike samonastraivayushchikhsya sistem. 1st, 1963. Samonastraivayushchiyesya sistemy (Adaptive control systems); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 93-111

TOPIC TAGS: self adaptive control, automatic control circuit

ABSTRACT: A class of adaptive control systems controlled by a sinusoidal test signal is considered. The test signal is fed into the input of the system. The overall transfer function depends on the amplitude and frequency of this test signal. A general expression for the transfer function is developed and it is shown that for a certain test signal it may be kept constant. A detailed dynamic analysis, and methods of synthesis of a control system, working on this principle together with some calculated results are presented. In the analysis of the system, the methods of Ye. P. Popov and L. A. Zadeh are used and recommended by the authors. Orig. art. has: 41 formulas, 14 figures.

SUB CODE: 13/ SUBM DATE: 22Nov65/ ORIG REF: 008/ OTH REF: 003

Card 1/1 Gd

STAAL', M.B.; ROZENKRANTS, A.A.; KOVALEVA, V.V.

Stratigraphy of upper Carboniferous deposits in the northeastern Balkhash region. Sov. geol. no.52:128-134 '56. (MLRA 10:4)
(Balkhash region--Geology, Stratigraphic)

BANKETOV, A.K., gornyy inzh.; LUKICHEV, V.F., gornyy inzh.;
STABAKOV, B.A., gornyy inzh.

Review of the book "Upraising" by S.G. Borisenko and others.
Reviewed by A.K. Banketov, V.F. Lukichev, B.A. Stebakov.
Gor. zhur. no.7:78-79 Jl '63. (MIRA 16:8)

1. Gosudarstvennyy vsesoyuznyy institut po proyektirovaniyu i nauchno-issledovatel'skim rabotam tsementnoy promyshlennosti, Moskva.

STABEL, GY

SCIENCE

PERIODICALS: ~~ACTA GEOPHYSICA. Vol. 62, No. 3, May/June 1958~~

IDOJ RAS. Vol. 62, No. 2, May/June 1958

Stabel, Gy. Effect of the release of hidden heat on atmospheric movements. p. 178.

Monthly list of East European Accessions (EEAI) LC, Vol. 8, No. 2, February 1959, Unclass.

STABEL, Gyorgy

Formation of the big temperature difference in Hungary on 24 January, 1963. Idojaras 67 no.2:100-103 Mr-Ap '63.

STABEL, Gyorgy

Waterspout on Lake Balaton on July 11, 1963. Idojaras 67 no.4: 238-241 Jl-Ag '63.

STABEL, Gyorgy

Forecasting diurnal maximum temperatures. Orsz meteor int besz tud kut 26:102-112 '62(publ.'63).

3

26366
S/089/61/011/002/002/015
B102/B201

21.2200

AUTHORS: Smirnov-Averin, A. P., Galkov, V. I., Ivanov, V. I., Meshcheryakov, V. P., Sheynker, I. G., Stabenova, L. A., Krot, N. N., Kozlov, A. G.

TITLE: Study of a used fuel rod from the First Nuclear Power Station

PERIODICAL: Atomnaya energiya, v. 11, no. 2, 1961, 122-125

TEXT: This is the second part of a paper, the first having been published in "Atomnaya energiya" v. 8, no. 5, 1960, 446. Results of studies of used fuel rods from the Pervaya atomnaya elektrostantsiya (First Nuclear Power Station) are presented. The element jackets displayed no changes apart from some oxide stains. A comparison between the diameters of a new fuel rod with one after 104 and another after 445 effective burning hours showed that while the diameter had not increased at the upper and lower rod ends, it had grown by less than 0.2 mm in the middle. In order to measure the total α-, β-, and γ-activity, the used fuel rod was divided lengthwise into 10 sections, and each of these parts was dissolved in nitric acid. The α-activity was determined by a Да-49 (Da-49) standard device and an ionization chamber, the

Card 1/3

3 4

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B102/B201

Study of a used fuel rod from the ...

β-activity by a 4π-counter, the γ-activity by an ionization chamber as compared to a radium standard. The activity of the inner and outer tubes bounding the fuel element was also measured; these tubes were made of stainless steel. In the middle, the activity of the outer tube was 30% higher than that of the inner tube. This effect can be explained by the change of the neutron spectrum along the diameter of the fuel element. The burn-up in the used fuel elements was determined on the strength of the absolute activity of cesium which was separated by an ion exchanger. The results of a radiometric determination of the burn-up were compared with mass-spectrometric results, and agreement was found to be good. The mean burn-up of the entire element was found to be equal to 53%. Finally, the isotopic composition of transuranic elements was also determined in the used-up fuel. The first part of the present paper has supplied the results of a radiometric determination of the isotopic composition in case of a 12.5% burn-up of the element. The results of a mass-spectrometric analysis are now given. The substance under investigation was to the emitter (tungsten foil, 40 μ) in the form of an aqueous nitrate solution. A thermal ion source served for the purpose. Results are presented in Fig. 5. They were used to calculate the mean values of isotopic composition. The

Card 2/3

S/089/61/011/005/012/017
B102/B104

26.2230

AUTHORS: Smirnov-Averin, A. P., Galkov, V. I., Sheynker, I. G., Meshcheryakov, V. P., Stabenova, L. A., Kir'yanov, B. S.

TITLE: Determination of burnup in spent fuel elements

PERIODICAL: Atomnaya energiya, v. 11, no. 5, 1961, 454 - 456

TEXT: The burnup of spent fuel elements was determined by determining the $Cs^{134}$ accumulated as a result of an $(n,\gamma)$ reaction with the stable isotope $Cs^{133}$, and $Cs^{137}$. The activity of the mixture $Cs^{134}$ + $Cs^{137}$ was measured by scintillation gamma and beta spectrometers and a $\gamma$-$\beta$ coincidence circuit. The apparatus gamma spectrum of the mixture had two photopeaks, the first was caused by the gamma radiation of $Cs^{134}$ ($\bar{E}_\gamma$ = 0.80 Mev), the second by a superposition of the photopeaks of $Cs^{137}$ ($E_\gamma$ = 0.66 Mev) and $Cs^{134}$ ($\bar{E}_\gamma$ = 0.59 Mev). The internal conversion coefficient was determined from the beta spectrum of $Cs^{137}$ to be 0.119

Card 1/2

Determination of burnup...

in accordance with the tabulated value. β-γ coincidences of the isotope mixture were only due to $Cs^{134}$ radiation. From intensity and coincidence counting rate measurements the relative $Cs^{137}$ content in the mixture was determined. The distribution of both the single isotopes and the mixture along the fuel rod had broad maxima in the middle of the rod. The burnup distribution was calculated from the $Cs^{137}$ content. It was found to be in good agreement with mass-spectrometric measurements. The burnup may also be determined from the content of the $Tc^{99}$ fission fragment ($2.2 \cdot 10^5$ years) which is produced in a yield of 6.02%. This isotope, which is the only long-lived one of this element, is extracted by methyl ethyl ketone after dissolving the material and centrifuging the precipitate. For final purification the cationite KY-2 (KU-2) is used. Activity is determined with a 4π counter. The burnup determined from $Tc^{99}$ was 67%, from the cesium mixture 68%, and from mass-spectrometric measurements 66.2%. There are 5 figures and 2 references: 1 Soviet and 1 non-Soviet. The latter reads as follows: Progress in Nuclear Energy, Ser. III, Process Chemistry, V. I, Appendix III. London, 1956.

SUBMITTED: September 13, 1960

Card 2/2

HUBICKI, Waclaw, mgr. inz.; STABIK, Jan mgr. inz.

Power tunnel driving for the water dam in Tresna near Zywiec.
Przegl gorn 19 no.5:207-212 My '63.

MELIK-STEPANOV, Yu.G.; SOKHIN, Yu.M.; STABIN, I.P.; ROZHKOV, I.S., otv.red.; MAKARENKO, M.G., red.izd-va; KARPOV, V., tekhn.red.

[New methods of heavy fluid separation and use of magnetic separation in flowsheets for dressing complex ores and placers] O novykh raznovidnostiakh metoda razdeleniia v tiazhelykh sredakh i primenenii magnitnoi separatsii v skhemakh obogashcheniia kompleksnykh rud i rossypei. Moskva, Izd-vo Akad.nauk SSSR, 1960. 35 p. (MIRA 13:8)
(Ore dressing)

STABIN, I. P.; SHIRMAN, V. G.

Problems of dressing rock, gravel and sand in heavy mediums.
Biul. tekh. inform. Inst. "Proektgidromekh." no.1:52-58 '62.
(MIRA 16:1)

(Aggregates(Building materials))

SHIRMAN, V.G., inzh.; STABIN, I.P., inzh.

Drum separators for dressing crushed stone in heavy mediums.
Stroi. mat. 8 no.4:11-15 Ap 62. (MIRA 15:8)
(Stone, Crushed) (Separators (Machines))

STABIN, I.P., inzh.; SHIRMAN, V.G., inzh.

Dressing fine aggregates in a hydroseparator. Stroi. mat. 9 no.2:10-13 F '63. (MIRA 16:2)
(Aggregates (Building materials)) (Separators (Machines))

SHIRMAN, V.G., inzh.; STABIN, I.P., inzh.

Industrial practice of enriching rubble in heavy media.
Stroi. mat. 10 no.5:22-26 My '64. (MIRA 17:9)

STABIN, I.F., inzh.

High-strength fillers from local raw materials. Stroi. mat. 11 no.8:36-38 Ag '65. (MIRA 18:9)

STABINA, S.

USSR/Farm Animals - Large Horned Cattle. Q-2

Abs Jour : Ref Zhur - Biol., No 18, 1958, 83335

Author : Dzelde, J., Lusenevska, O., Miermane, A., Zalitis, L., Antsenko, A., Stabina, S.

Inst : Latvian Academy of Agriculture.

Title : Effects of Corn Silage upon the State of Health of Milch Cows.

Orig Pub : Tr. Latv. s.-kh. akad., 1957, vyp. 6, 267-272.

Abstract : Disturbances of the organism's physiological functions were found to exist in cows which were fed increased amounts of corn silage (40-50 kg). These disturbances were expressed in changes of alkalinity reserves and appearance of acetone in the urine of the cows.

Card 1/1

STABINIS, J.; RAMANUSKAS, A.; OBELIENIAUS, J.; MEDONIS, A., red.; VYSOMIRSKIS, C., tekhn. red.

[Along the Viliya River; with a supplement on the J.Obelienius' itinerary on Lake Naroch] Nerimi. Priede: J.Obelieniaus marsrutas Naruciu. Vilnius, Valstybine politines ir mokslines literaturos leidykla, 1961. 101 p. illus. (MIRA 15:5)
(Marsrutas, no.2)
(Valiya River--Description and travel)
(Naroch, Lake--Description and travel)

STABINSKAYA, S.P., inzh.

Lighting equipment section of the Leningrad department of the State Design and Planning Institute "Design of electrical equipment for heavy industry." Svetotekhnika 6 no. 12:22 D '60. (MIRA 14:1)

(Leningrad--Electric light fixtures)

USSR / Farm Animals. Cattle.

Abs Jour : Ref Zhur - Biol., No 14, 1958, No 64437

Author : Timukas, L. I.; Stabinskene, U. I.
Inst : Lithuanian Scientific Research Institute of Animal Husbandry and Veterinary Medicine

Title : Effect of the Frequency of Milking on Milk Production in Cows

Orig Pub : Byul. nauchno-tekhn. inform. Lit. n.-i. in-t zhivotnovodstva i veterinarii, 1957, No 1, 45-48

Abstract : When shifted to two-fold milking and feeding, the cows of the Lithuanian Black-Spotted breed, with a daily milk yield of 10-17 kg., decreased the production of milk by 4.5% as compared with four-fold milking and three-fold feeding, but the amount of work decreased by 22%. In the high-producing cows (milk yield from 20 to 26 kg.), which were shifted from four-fold to two-fold milking, the milk yield decreased, on.

Card 1/2

85357

S/120/60/000/005/030/051
E032/E314

21.5200

AUTHORS: Vovenko, A.S., Lyubimov, A.L., Savin, I.A., Stabinskiy, Y.S. and Stoychev, T.T.

TITLE: A Cherenkov Counter Using Total Internal Reflection

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No. 5, pp. 119 - 121.

TEXT: The counter is shown schematically in Fig. 1. The Cherenkov radiation produced by a charged particle passing through the radiator strikes the front end at various angles, depending on the velocity of the particle. For particles with a velocity $\beta_o = (n_1^2 - n_2^2)^{-1/2}$ the angle of incidence is equal to the angle of total internal reflection. The Cherenkov radiation due to particles with velocities greater than $\beta_o$ experiences total internal reflection and is absorbed by the rear wall of the container which is covered by black velvet. In the case of particles having a velocity smaller than $\beta_o$, the radiation leaves the radiator and strikes two photomultipliers placed below the particle beam.

Card 1/2

85357

S/120/60/000/005/030/051
E032/E314

A Cherenkov Counter Using Total Internal Reflection

Each photomultiplier has a separate output and a special mirror is used to improve the light collection. The characteristics of the counter were investigated in the $\pi^+$ beam of the synchrocyclotron of the Laboratoriya yadernykh problem OIYaI (Laboratory for Nuclear Problems of the Joint Institute for Nuclear Studies). In the case of 2.8 GeV/C $\pi^+$ mesons the efficiency of the counter was found to be between 0.01 and 0.03, depending on the type of photomultiplier employed. A similar device has been described by Agnew et al in Ref. 2. However, the efficiency in the latter work was 0.1. Acknowledgments are expressed to V.I. Veksler for valuable advice. There are 2 figures and 3 references: 1 Soviet and 2 English.

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy (Joint Institute for Nuclear Studies)

SUBMITTED: September 2, 1959

Card 2/2

STABNIKOV, M. V.

11383
LOW PRESSURE DIFFUSION CHAMBER. A. P. Komar, M. V. Stabnikov, and D. A. Yashin (Leningrad Physico-Technical Inst.). Doklady Akad. Nauk S.S.S.R. 108, 64-5 (1958) May 1. (In Russian)

Descriptions are given of a diffusion chamber, 30 cm in diameter, in which by selection of vapor and air pressures, and by regulation of vapor supply to the sensitive areas in the chamber, it was possible to identify particles of various ionization capacities. Under 30 mm Hg pressure of methyl alcohol and air, 40° temperature difference was found between the bottom (-4°) and top (-50°) of the chamber. By observing the areas around the tracks (which are shown as black bands near the light tracks) it is possible to identify particles by ionization. Results showed the effectiveness of the apparatus in identification of small-energy charged particles resulting from photonuclear reactions and for determination of their impulses when the apparatus is placed in a magnetic field. At low pressures the tracks spread very quickly which enables one to increase the number of pictures (pictures can be taken in less than 1-sec. intervals). Working depth for optimum cases with 30 mm Hg pressure is 20 mm with atm. pressure up to 10 mm. (R.V.J.)

120-3-2/49

AUTHOR: Stabnikov, M.V.

TITLE: A Diffusion Chamber with a Metallic Target (Diffuzionnaya kamera s metallicheskoy mishen'yu)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, Nr 3, p.102 and 1 plate (USSR)

ABSTRACT: The diffusion chamber is widely used in nuclear studies at the present time. In order to extend its range it is important to be able to introduce into the chamber partitions of different metals. The insertion of a partition into the chamber has a deleterious effect on the work of the chamber, since after a time the sensitive layer disappears, particularly in the vicinity of the partition. A solution of this problem is proposed. The chamber used was similar to that described in (Ref.2). It was used in conjunction with the 100 MeV synchrotron of the Physico-Technical Institute. The chamber is shown diagrammatically in Fig.1. A special mechanism,(a), is attached to the upper lid of the chamber. This mechanism periodically introduces into the chamber a bent stainless steel lever to which the target, (b), is attached. The mechanism is synchronised with the work of the synchrotron and the photographic setup. Fig.2 shows a photograph of the target introduced into the chamber for

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A Diffusion Chamber with a Metallic Target.

0.5 sec. An α-active layer was placed on the target. As can be seen, α-particle tracks start at the surface of the target. Fig.3 shows a stereographic photograph taken with the synchrotron beam passing through a 0.2 mm metallic target. There are 1 figure, no tables and 2 references, 1 of which is Russian and 1 English.

ASSOCIATION: Physico-Technical Institute of the Academy of Sciences of the USSR (Fiziko-tekhnicheskiy institut AN SSSR)

SUBMITTED: October 29, 1956.

AVAILABLE: Library of Congress.

Card 2/2 **1. Diffusion chambers-Operation 2. Synchrotrons 3. Photography**

SOV/120-58-5-3/32

AUTHORS: Komar, A. P. and Stabnikov, M. V.

TITLE: An Investigation of the Effect of Plates on the Sensitive Layer of a Diffusion Chamber (Issledovaniye vliyaniya plastin na chuvstvitel'nyy sloy diffuzionnoy kamery)

PERIODICAL: Pribory i tekhnika eksperimenta, 1958, Nr 5, pp 21-25 (USSR)

ABSTRACT: To study nuclear reactions in diffusion chambers it is necessary to insert into them partitions of different materials. When these partitions are introduced into the sensitive layer of a diffusion chamber, intensive condensation takes place on them. This reduces supersaturation and leads to the formation of a non-sensitive gap near the partitions. At the same time the temperature difference between the plate and the surrounding gas leads to the appearance of convective currents. All this leads to a distortion of the sensitive layer so that the chamber cannot be used successfully. Regozinski (Ref.3) has reported an attempt at the solution of this problem but his method cannot be considered successful. In the present paper a new method

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is described whereby lead plates have a negligible effect upon the sensitive layer. It was found that if a lead plate is covered with a metal jacket which is thermally insulated from the plate, then the work of a diffusion chamber is unaffected and the sensitive layer in its upper part approaches the plate (Fig.6a). A similar picture is obtained if the lead plate is cut in two, as was suggested in Ref.3. In this case the non-sensitive zone covers only the lower part of the plate (up to 3 cm). However, the authors have found that the most successful form of a partition wall is the one shown in Fig.3c. Here, 1 is the lead plate, 2 is a textolite screen on either side of the plate with 5 mm holes drilled in it. The two plates are thermally insulated from the lead plate by means of separators, 3. Fig.8 shows the distribution of the sensitive layer near such a plate. As can be seen, in spite of the

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presence of condensation the non-sensitive gap is very small. V. N. Dyn'kov is thanked for valuable advice. There are 10 figures, and 7 references of which 4 are Soviet, 1 French, 1 Italian and 1 English.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Physico-Technical Institute of the Academy of Sciences USSR)

SUBMITTED: July 27, 1957.

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SOV/120-59-5-7/46

21,5300

AUTHORS: Komar, A.P., Stabnikov, M. V. and Yashin, D. A.

TITLE: A Controlled Diffusion Chamber

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 5, pp 36-40 + 1 plate (USSR)

ABSTRACT: A description is given of the construction and the working properties of a diffusion chamber controlled by an ionization chamber. The ionization chamber is placed in the sensitive layer of the diffusion chamber and its action depends on the collection of electronic charges. A similar chamber has been briefly described by Block et al. (Ref 3). The diffusion chamber may be used in cosmic ray studies and in accelerator work. When ionizing particles pass through the ionization chamber and the sensitive layer of the diffusion chamber, electrical pulses appear at the output of the amplifier connected to the ionization chamber. The magnitude of each pulse depends on the energy lost by the particle in the gas and also on the working conditions and the construction of the ionization chamber. It is possible to choose pulses of given amplitude and use them to

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trigger off the photographic camera. This means that it is possible to choose special cases of nuclear interactions. The construction of the diffusion chamber is illustrated by Fig 1. The ionization chamber 1 is cylindrical in form and consists of two electrodes 1 and 10. The outer electrode is in the form of a glass ring 1 with a layer of stannic chloride on its inner surface. A negative voltage of about 1.5 kV is applied to the electrode 1. The inner electrode 10 is in the form of a quartz tube 4 mm in diameter and its lower part is coated with a semi-transparent layer of silver. A typical stereo-photograph of an α-particle track is shown in Fig 5. The working gas is argon with 0.03% of oxygen, 0.19% nitrogen and 0.004% carbon dioxide.
There are 6 figures and 9 references, 5 of which are Soviet (1 a translation from English) and 4 English.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Physico-technical Institute, Ac.Sc., USSR)

SUBMITTED: July 29, 1958

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AUTHORS: Komar, A. P., Academician of the Academy of Sciences, Ukrainskaya SSR, Stabnikov, N. V. SOV/20-129-4-21/68

TITLE: The Variation of Pressure in a Diffusion Chamber Due to the Occurrence of Tracks, and the Possibilities of Its Utilization

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 4, pp 793 - 794 (USSR)

ABSTRACT: The sensitive volume of a diffusion chamber is usually filled with an oversaturated mixture of oversaturated vapors of the operational liquids and a gas. The operational liquids used are, above all, ethyl- or methyl alcohol, and according to the purpose for which the experiment is carried out any type of gas may be used. The partial gas pressure in the chamber is considerably higher than the partial pressure of the vapors of the operational liquid. In the course of the condensation of part of the vapor during production of the track in the sensitive layer, the latent condensation heat is emitted, the gas will become heated and pressure will increase. The "lifetime" of the increased pressure depends upon the rate of heat emission from the interior of the chamber. When using a microphone transmitter,

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The Variation of Pressure in a Diffusion Chamber Due to the Occurrence of Tracks, and the Possibilities of Its Utilization

SOV/20-129-4-21/68

the variation of pressure with respect to time may be recorded. The corresponding curve is illustrated in a diagram. Pressure variation in the chamber during production of a track of α-particles with an energy of 8 Mev is of the order of $10^{-6}$ mm Hg. This pressure variation may serve for the control of photographing the tracks with a previously determined ionization. The corresponding wiring diagram is shown in a figure. The position of the drop was recorded by means of a photoelectric resistor of the type FS-K1. The variations of temperature and gas pressure in the chamber are proportional to the particle energy if the entire track is located within the chamber. Thus, the particle tracks of a certain energy or nature, stars etc., may be selectively photographed by means of a device shown in a figure even in the presence of a background of α-radiation or of electrons. As the primary element for the pressure pulse is considerably more simple than e.g. an ionization chamber, the method suggested in this paper may be employed for the discrimination of

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tracks in any laboratory. There are 2 figures and 1 Soviet reference.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk SSSR (Institute of Physics and Technology of the Academy of Sciences, USSR)

SUBMITTED: July 16, 1959

Card 3/3

STABNIKOV, M. V., Cand Phys-Math Sci (diss) -- "Some problems of the use of the diffusion chamber in nuclear physics". Leningrad, 1960. 15 pp (Acad Sci USSR, Phys-Tech Inst), 250 copies (KL, No 14, 1960, 126)

BAKANOV, L.V.; GRAYEVSKIY, A.P.; LEBEDEV, V.D.; STABNIKOV, M.V.

Determining the composition of matter filling the sensitive layer of a diffusion chamber. Prib. i tekh. eksp. 9 no.1:197-198 Ja-F '64. (MIRA 17:4)

1. Fiziko-tekhnicheskiy institut AN SSSR.

STAVNIKOV, M.V.; TURUKHANO, B.G.; DOBYRN, V.V.; MISHCHENKO, I.S.; LUKASHUNAS, N.I.

Semiautomatic unit for measuring photographs of charged particle tracks. Prib. i tekh.eksp. 10 no.5:63-66 S-O '65. (MIRA 19:1)

1. Fiziko-tekhnicheskiy institut AN SSSR, Leningrad. Submitted Aug.6, 1964.

L 30976-66 EWT(m) IJP(c)

ACC NR: AP6002448 SOURCE CODE: UR/0057/65/012/2227/2227

035/ 24 B

AUTHOR: Ostroumov, V.I.; Stabnikov, M.V.

ORG: Physico-technical Institute im. A.F.Ioffe, AN SSSR, Leningrad (Fiziko-tekhnicheskiy institut AN SSSR)

TITLE: Use of nuclear emulsions together with bubble chambers 19

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 12, 1965, 2227

TOPIC TAGS: nuclear emulsion, bubble chamber, inelastic scattering, nuclear reaction

ABSTRACT: Advantages are pointed out of locating nuclear emulsion targets within bubble chambers. High energy particles that leave the emulsion and therefore cannot be well identified by nuclear emulsion techniques will be recorded in the bubble chamber, and low energy particles that would not be recorded in the bubble chamber owing to their short ranges will be recorded in the emulsion. Moreover, the tracks in the chamber will serve to locate the event in the emulsion, thus saving much valuable scanning time. It is proposed that the bubble chamber be designed with a central channel for the beam, as described by L.Guettigo and H. Mark (RSI, 31,1040, 1960) and by P. Vatset and V.Voloshchik (Ukr. fiz. zhurn. 6, No.2., 181, 1961), and that the nuclear emulsion be located within this channel. The proposed technique should be useful for investigating absorption of mesons by nuclei and quasielastic scattering of high energy protons and mesons with emission of low energy particles.

SUB CODE: 20/8 SUBM DATE: 19May65 ORIG.REF: 000 OTH REF: 001

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L 43026-66 EWT(1)

ACC NR: AP6030012 SOURCE CODE: UR/0020/66/169/005/1052/1053

AUTHOR: Komar, A. P. (Academician AN UkrSSR); Stabnikov, M. V.; Turukhano, B. G.

ORG: Physicotechnical institute im. A. F. Ioffe, Academy of Sciences SSSR (Fiziko-tekhnicheskiy institut Akademii nauk SSSR)

49
B

TITLE: Image reconstruction of transparent and refractive objects by means of phase holograms 75

SOURCE: AN SSSR. Doklady, v. 169, no. 5, 1966, 1052-1053

amplification

TOPIC TAGS: laser photography, holography, image ~~reconstruction, hologram~~ photographic image

ABSTRACT: Holograms of transparent and refractive objects (snapshots, bubbles in liquids or glasses, and water droplets) were obtained by means of a setup using a single-mode He-Ne laser operating at 6328 A (see Fig. 1). To avoid loss of image quality

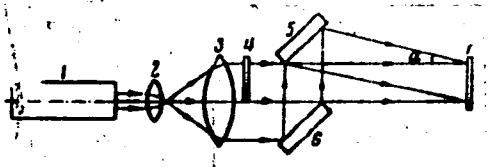


Fig. 1. Setup for obtaining holograms

1 - He-Ne laser; 2 and 3 - diverging lenses; 4 - object; 5 and 6 - beam splitter mirrors; 7 - film; α - angle subtended on a mirror by the image.

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UDC: 621.375.8:539.1.073

L 43026-66

ACC NR: AP6030012 O

due to vibrations, the equipment was supported on automobile tires. The system makes it possible to reduce the angle α to a minimum. The experimental data point to the possibility of obtaining holograms of bubbles and droplets in a volume with a comparatively large viewing length. Orig. art. has: 3 figures. [YK]

SUB CODE: 20/ SUBM DATE: 06May66/ ORIG REF: 001/ OTH REF: 003/ ATD PRESS: 5065

Card 2/2

ACC NR: AP6012869 SOURCE CODE: UR/0118/66/000/004/0019/0019

AUTHOR: Dobyrn, V. V. (Engineer); Stabnikov, M. V. (Engineer); Turukhano, B. G. (Engineer)

ORG: none

TITLE: Automatic and inertia-free measurement of the geometric characteristics of objects

SOURCE: Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 4, 1966, 19

TOPIC TAGS: quality control, measuring instrument, industrial automation

ABSTRACT: For accurate, rapid, and objective measurements of lengths, a device has been developed in the Physics Engineering Institute im. A. O. Ioffe (fiziko-tekhnicheskiy institut), a block diagram of which is shown (Fig. 1). The basic components of the instrument are: an illumination device with its supply unit, a light sensor or receiver, and a device designed to analyze and process the light signal received by the sensor. The measurement process takes place as follows: the object is positioned so that its edge or a "pennant" attached to its edge interrupts a part of the light beam from the illuminator to the sensor. The sensor is designed so as to make it possible to determine, with whatever degree of accuracy may be required, the location of the boundary of the object or of the "pennant" fastened to it. This boundary obviously

UDC: 531.717.11

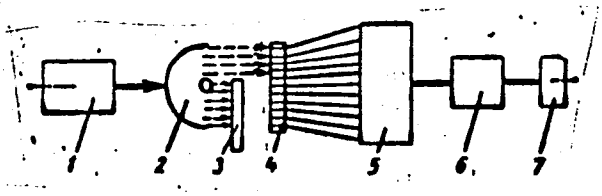


Figure 1. Diagram of the Instrument

1- power-supply unti for pulse lamp IFK; 2- pulse flash lamp IFK; 3- object to be measured; 4- band with attached light-guides; 5-photoconverter holder; 6- ratio circuit to count the number of light-guides illuminated by the flash; 7- light-up display board or some other kind of display unit to indicate the size of test object

determines the length of the object, its diameter, etc. The receiver (Fig. 2) consists of a frame, fastened to which is a band with the light-guides (thin glass fibers) and a base for the photoelectric converters. Each light-guide is connected to an FO-1 photoelectric converter. The guides, 30 microns in diameter, are placed flush against each other on the band. These light ducts are faced with a layer of epoxy, and their ends are polished. The IR pulse lamp IFK is employed as the illuminator, and it is flashed during the measurement. The light strikes the open part of the fibrous light-guides, while the photocells connected to these guides give off electrical pulses which reach the circuit, whose function it is to count the number of illuminated fibers, i.e., to determine the size of the object. The results of this test are flashed on the display board with a test time of about 0.1 sec. The test repetition frequency is 2/sec. The unit can be adapted to provide readouts of different geometric characteristics and their