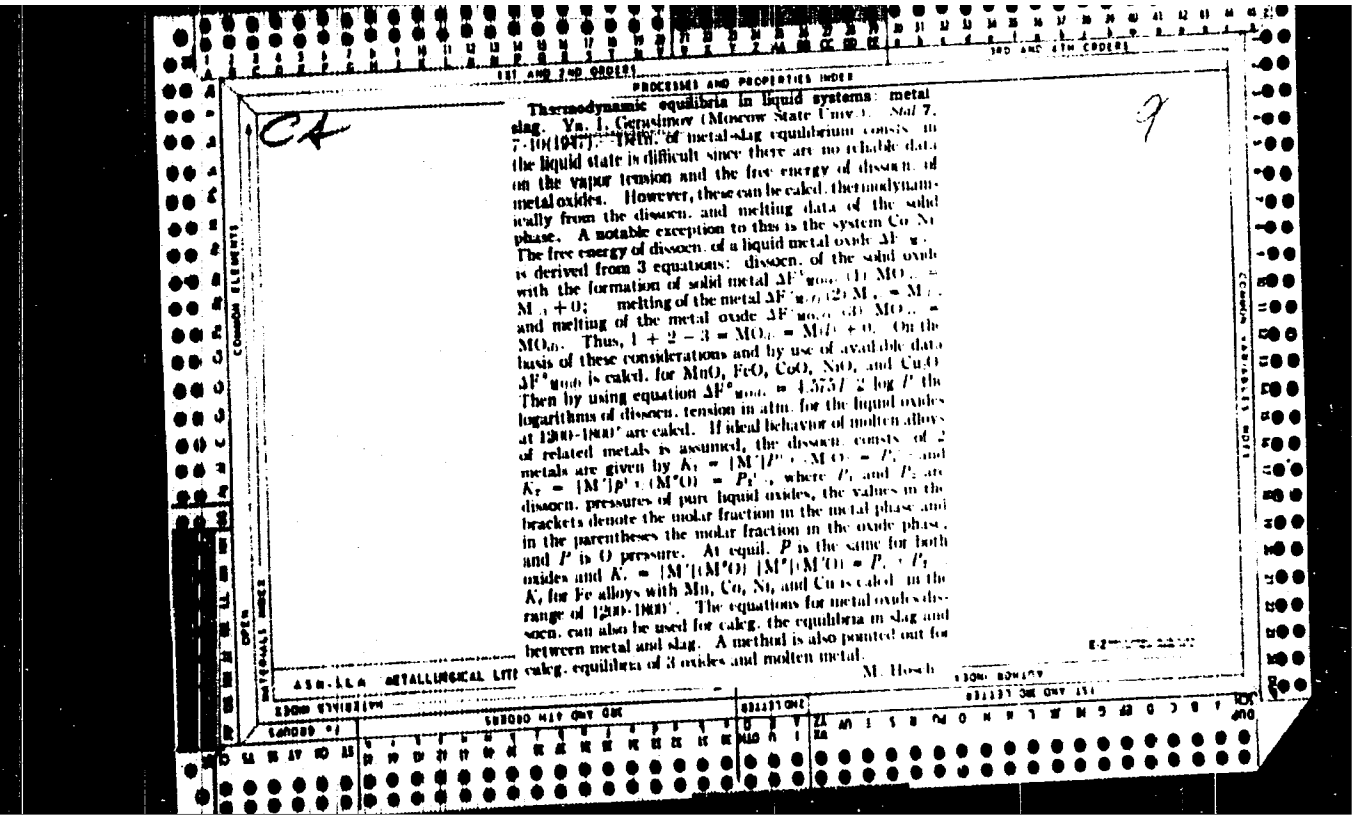
fuels and natural combustible gases; therefore $X_V = X_o$ and $N_o = 1$. The physicochemical properties of these fuels are determined solely by u_o. From these 2 basic concepts are derived expressions for the assumed molecular weight of the organic matter, specific gravity of fuels, volatile matter, and calorific value. The "degree of carbonization" is the ratio of the "limiting density" to the density of the actual combustible mass. The "limiting density" is the density a solid fuel would have if it were completely carbonized, i.e., it would consist of CH or KH (K is defined above). "Calorific density" is calorific value of 1 cc. of solid fuel.



PROCESSES AND PROPERTIES INDEX

Thermodynamic equilibria in liquid systems: metal slag. Ya. I. Gerasimov (Moscow State Univ.). *Stal* 7, 7-10(1947). Data of metal-slag equilibrium consis. in the liquid state is difficult since there are no reliable data on the vapor tension and the free energy of dissocn. of metal oxides. However, these can be calcd. thermodynamically from the dissocn. and melting data of the solid phase. A notable exception to this is the system Co Ni. The free energy of dissocn. of a liquid metal oxide ΔF is derived from 3 equations: dissocn. of the solid oxide with the formation of solid metal $\Delta F°_{1000}$ (1) $MO_{(s)} = M_{(s)} + O$; melting of the metal $\Delta F°_{1000}$ (2) $M_{(s)} = M_{(l)}$; and melting of the metal oxide $\Delta F°_{1000}$ (3) $MO_{(s)} = MO_{(l)}$. Thus, $1 + 2 - 3 = MO_{(s)} = M_{(l)} + O$. On the basis of these considerations and by use of available data $\Delta F°_{1000}$ is calcd. for MnO, FeO, CoO, NiO, and Cu_2O. Then by using equation $\Delta F°_{1000} = 4.575T \log P$ the logarithms of dissocn. tension in atm. for the liquid oxides at 1200-1800° are calcd. If ideal behavior of molten alloys of related metals is assumed, the dissocn. consts. of 2 metals are given by $K_1 = [M'][P'_1 \cdot (M'O) = P_1$, and $K_2 = [M'][P'_2 \cdot (M'O) = P_2$, where P_1 and P_2 are dissocn. pressures of pure liquid oxides, the values in the brackets denote the molar fraction in the metal phase and in the parentheses the molar fraction in the oxide phase, and P is O pressure. At equil. P is the same for both oxides and $K_1 = [M'][M'O]$ $[M'][M'O] = P_1 \cdot P_2$. K_1 for Fe alloys with Mn, Co, Ni, and Cu is calcd. in the range of 1200-1800°. The equations for metal oxides dissocn. can also be used for calcg. the equilibria in slag and between metal and slag. A method is also pointed out for calcg. equilibria of 3 oxides and molten metal.

M. Hoch

PA 18T39

GERASIMOV, Ya. I.

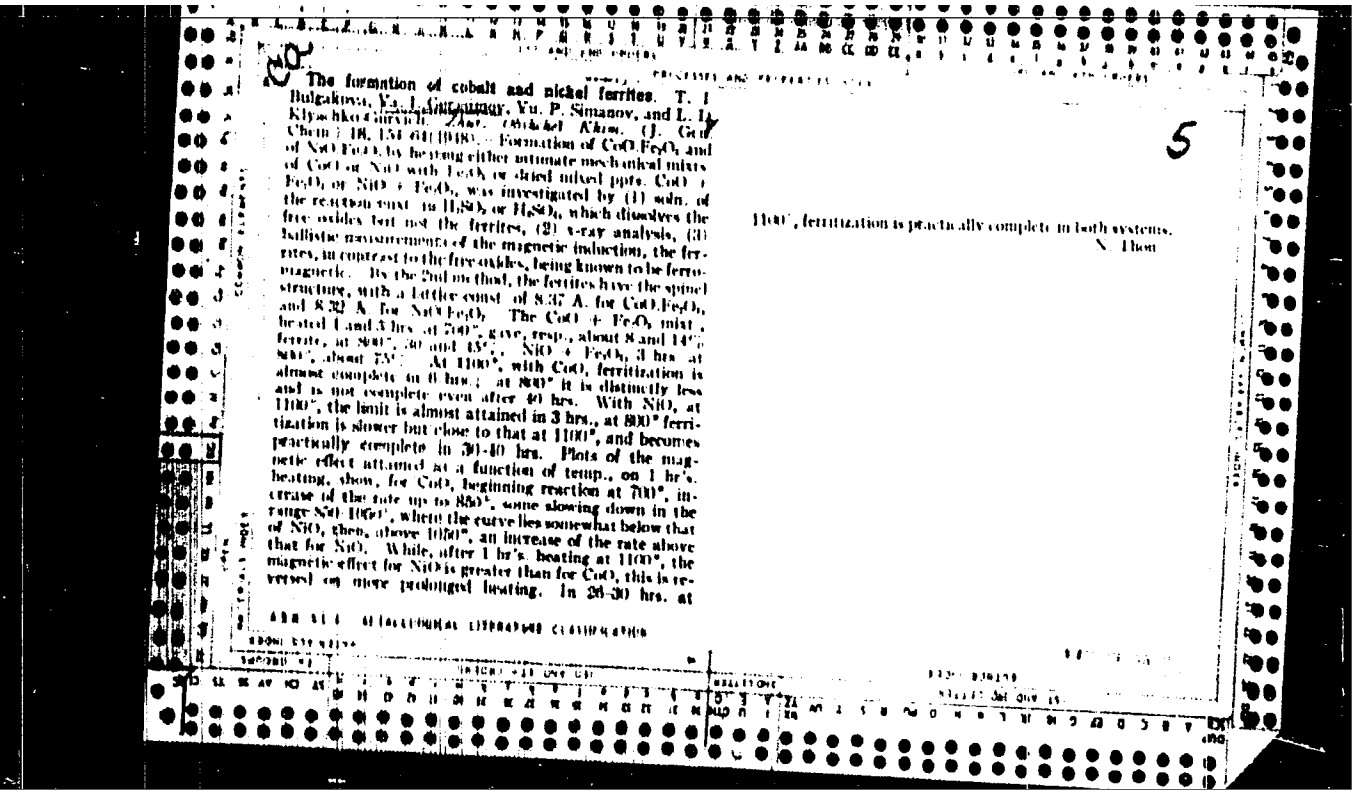
USSR/Slag May 1947
Steel - Metallurgy

"Activity of Metal Oxides in Fluxes with Silicon Dioxide and Calcium Oxide," Ya. I. Gerasimov (MGU), 6 pp

"Stal'" Vol VII, No 5

In calculating the components of slag in equilibrium with binary and ternary metal systems, use is made of tentative formulae primarily based on scanty data and analogies. More work is required in this field. Experiments were conducted on fluxes of MeO-SiO_2, NiO - SiO_2, CoO - CaO, and others.

18T39



The formation of cobalt and nickel ferrites. T. I Bulgakova, Ya. I. Gerasimov, Yu. P. Simanov, and L. I. Klyachko (Moscow). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 18, 151-61 (1948). — Formation of $CoO.Fe_2O_3$ and of $NiO.Fe_2O_3$ by heating either intimate mechanical mixts. of CoO or NiO with Fe_2O_3 or dried mixed ppts. $CoO + Fe_2O_3$ or $NiO + Fe_2O_3$, was investigated by (1) soln. of the reaction prod. in H_2SO_4 or H_2SO_3, which dissolves the free oxides but not the ferrites, (2) x-ray analysis, (3) ballistic measurements of the magnetic induction, the ferrites, in contrast to the free oxides, being known to be ferromagnetic. By the 2nd method, the ferrites have the spinel structure, with a lattice const. of 8.37 A. for $CoO.Fe_2O_3$ and 8.32 A. for $NiO.Fe_2O_3$. The CoO + Fe_2O_3 mixt., heated 1 and 3 hrs. at 700°, gave, resp., about 8 and 14% ferrite, at 800°, 50 and 45%; NiO + Fe_2O_3, 3 hrs. at 800°, about 75%. At 1100°, with CoO, ferritization is almost complete in 6 hrs.; at 800° it is distinctly less and is not complete even after 40 hrs. With NiO, at 1100°, the limit is almost attained in 3 hrs., at 800° ferritization is slower but close to that at 1100°, and becomes practically complete in 30-40 hrs. Plots of the magnetic effect attained as a function of temp., on 1 hr's. heating, show, for CoO, beginning reaction at 700°, increase of the rate up to 850°, some slowing down in the range 850-1050°, where the curve lies somewhat below that of NiO, then, above 1050°, an increase of the rate above that for NiO. While, after 1 hr's. heating at 1100°, the magnetic effect for NiO is greater than for CoO, this is reversed on more prolonged heating. In 26-30 hrs. at 1100°, ferritization is practically complete in both systems.

N. Thon

[illegible], [illegible]

L. L. [illegible]-Gurvich, T. I. [illegible] and [illegible], [illegible] of cobalt with the oxides of sulfur. [illegible]

In this [illegible] mixtures of [illegible] and air [illegible]. Attention was paid to the character of [illegible], to the [illegible] of the [illegible] gas and also [illegible], including [illegible] various additions to the [illegible].

Lab. of Chem. Thermodynamics Moscow State University
[illegible] 20, 19[illegible]

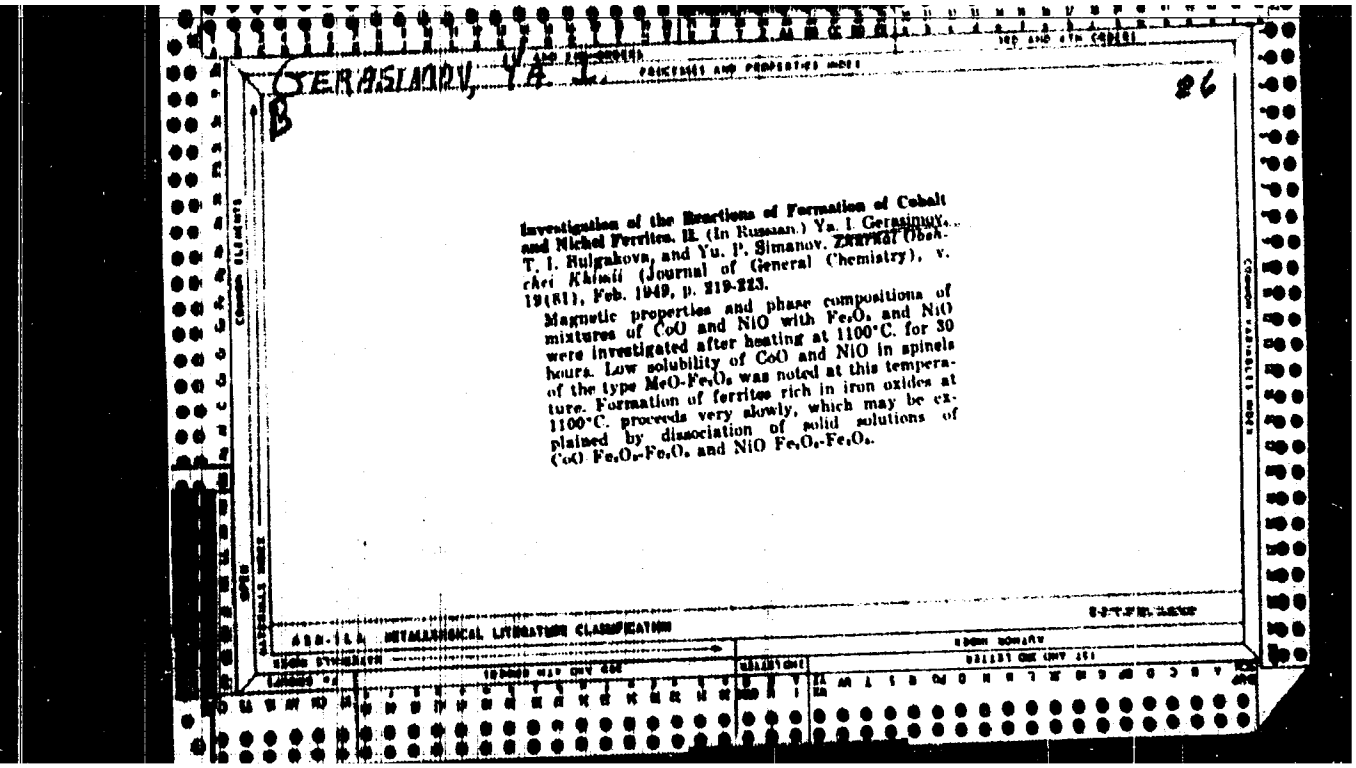
[illegible]: Journal of General Chemistry, [illegible]

GERASIMOV, YA. I.

CA

9

Study of the reactions involved in the formation of cobalt and nickel ferrites. II. Ya. I. Gerasimov, I. I. Bulgakova, and U. P. Smanov (Moscow State Univ.). *J. Gen. Chem. U.S.S.R.* 19, 181-5 (1949) (Engl. translation). —See C.A. 43, 5354i.



GERASIMOV, YA. I.

B

26

Investigation of the Reactions of Formation of Cobalt and Nickel Ferrites. II. (In Russian.) Ya. I. Gerasimov, T. I. Rulgakova, and Yu. P. Simanov. Zhurnal Obshchei Khimii (Journal of General Chemistry), v. 19(81), Feb. 1949, p. 219-223.

Magnetic properties and phase compositions of mixtures of CoO and NiO with Fe_2O_3 and NiO were investigated after heating at 1100°C. for 30 hours. Low solubility of CoO and NiO in spinels of the type $MeO \cdot Fe_2O_3$ was noted at this temperature. Formation of ferrites rich in iron oxides at 1100°C. proceeds very slowly, which may be explained by dissociation of solid solutions of $CoO \cdot Fe_2O_3$-Fe_2O_3 and $NiO \cdot Fe_2O_3$-Fe_2O_3.

METALLURGICAL LITERATURE CLASSIFICATION

GERASIMOV, Ya. I.

12 to 15 May 1948, Moscow, first conference was held on history of Soviet chemistry, convened by Commission on the History of Chemistry, Acad Sci USSR. Many papers were presented by (ostensibly) members of this Commission.

"Work of V.F.Alekseyev on the Dependent Solubility of Liquids." (Moscow State U imeni M.V.Lomonosov)

"Materials on the History of Soviet Chemical Science," published by Acad Sci USSR in Moscow-Leningrad 1950. #283498

SIMANOV, YU. P., KLYACHKO*GURVICH, L. L., CHERASIMOV, YA. I.

Iron-Cobalt Alloys

Deoxidation of cobalt ferrite by hydrogen. Vest. Mosk. un. 5 no. 10,1950.

9. Monthly List of Russian Accessions, Library of Congress, November, 1952 1953, Uncl.

GERASIMOV, Ya. I.

USSR/Chemistry - Wolframates Jan 51

"Thermodynamics of Rare Metals. II. Equilibrium of Manganese Wolframate With Hydrogen," T. N. Rezukhina, Ya. I. Gerasimov, V. A. Morosova, Moscow State U imeni M. V. Lomonosov

"Zhur Fiz Khim" Vol XXV, No 1, pp 93-99

Measured equil const of reduction of manganese wolframate with H at temp 950-1,100°C. Calcd free energy and heat of formation of wolframate both at above temp and under std conditions. Data for high temp were quite accurate (±1%), but data for std temp were only approx due to absence of data for heat capacity of manganese wolframate.

18OT18

GERASIMOV, Ya. I.

USSR/Chemistry - Wolfram Mar 51

"Thermodynamics of Rare Metals: III. Equilibrium of Iron Wolframate With Hydrogen," T.N. Nezukhina, Yu. P. Sumanov, Ya. I. Gerasimov, Inst Chem, Moscow State U imeni M. V. Lomonosov

"Zhur Fiz Khim" Vol XXV, No 3, pp 305-311

X-ray anal of products of reduction with H_2 of Fe_2O_3 + WO_2 mixts with different Fe:W ratios showed at 350-1, 100°C only one intermetallic compd, Fe_7W_6, is formed. Measured consts of reduction of $FeWO_4$ with H_2 and set up eq for equil const. Calcd free energy at 850-1150° and heat effect of reaction $1/7Fe_7W_6 + 1/7W + 2O_2 \rightarrow FeWO_4$.

18527

ZERASHKV, Ya. I.

USSR/Chemistry - Wolfram and Cobalt Mar 51

"Thermodynamics of Rare Metals: VI. Equilibrium of Cobalt Wolframate With Hydrogen," Yu. P. Simanov, T. N. Nazarkina, V.A. Morozova, Ya. I. Gerasimov, Moscow State U imeni M.V. Lomonosov

"Zhur Fiz Khim" Vol XXV, No 3, pp 357-361

X-ray anal of products of reduction with H_2 of CoO + WO_3 mixts with different Co:W ratios showed at 900-1, 100°C 2 intermetallic compds Co_7W_6 (with at excess of W) and Co_3W (with at excess of Co) are formed. Measured reduction consts of $CoWO_4$ with H_2 at 900-1, 100° and set up eq for equil const. Calcd free energy at 900-1,100° and heat effect of reaction: $1/7Co_7W_6 + 1/7W + 2O_2 \rightarrow CoWO_4$.

GERASIMOV, Ya.I.

I.M.Sechenov's works on the solubility of carbonic anhydride in salt solutions. Trudy Inst.ist.est. 4:277-296 '52. (MLRA 6:7)
(Carbon dioxide)

GERASIMOV, Ya. I.

2
Pers (2)

Chem Abs v48
1-25-54
general & Physical
Chemistry

Andrei Vladimirovich Frost. Ya. I. Gerasimov. *Uspekhi Khim.* 21, 1272-8(1952).—Obituary (1906–1952) with portrait and bibliography of 141 references. G. M. K.

6/2/54 LM

ANTIPINA, T.V.; FROST, A.V., professor, radaktor [deceased]; GERASIMOV, Ya.I., professor, redaktor.

[Kinetics of chemical reactions; practical studies in physical chemistry] Khimicheskaia kinetika; prakticheskie raboty po fizicheskoi khimii. Pod. red. A.V.Frosta i IA.I.Gerasimova. [Moskva] Izd-vo Moskovskogo universiteta, 1953. 42 p. (MLRA 7:6)
(Chemical reaction--Velocity)

GERASIMOV, Ya. I.

chem 4

(1)

Thermodynamic properties of tungstates of bivalent metals (and of calcium molybdate). Ya. I. Gerasimov, *Doklady Mezhdunarod. Kongr. Teoret. i Prikl. Khim. XIII Kongr., Stockholm* 1953, 77–104(in Russian)(in French, 104–31).—Equil. consts. were obtained near 1000° for reactions of the type $\frac{1}{2}MWO_4 + H_2 = \frac{1}{2}MO + \frac{1}{2}W + H_2O$. The values of A and B in the equation $RT \ln K = -A + BT$, with $K = p_{H_2O}/p_{H_2}$, are 20,680 cal. and 1.645 cal./degree for M = Ca, 17,100 and 2.016 for Mg, 12,845 and 1.250 for Mn. For the reaction $MnO + H_2 = Mn + H_2O$, $A = 38{,}105$ and $B = 2.030$. For reactions of the type $\frac{1}{4}MWO_4 + H_2 = \frac{1}{28}Fe_2W_4 + \frac{1}{28}W + H_2O$ the A and B values are 9214 and 1.041 for M = Fe (cf. *C.A.* 45, 6005h), 7740 and 1.321 for Co (cf. *C.A.* 45, 6006b). In the case of Ni the equil. const. of the reaction $\frac{1}{4}NiWO_4 + H_2 = \frac{1}{16}Ni_4W + \frac{1}{16}W + H_2O$ (1) is obtained through equil. studies of 3 successive decompns.: $NiWO_4 = Ni + \frac{1}{2}W_2O_5 + \frac{1}{2}O_2$, $Ni + \frac{1}{2}W_2O_5 = \frac{1}{4}Ni_4W + \frac{1}{4}WO_2 + \frac{1}{16}O_2$, $\frac{1}{4}WO_2 = \frac{1}{4}W + \frac{1}{4}O_2$ for which consts. are given at 850° and 1000° leading to log $K = 1.043$ for reaction (1) at 1000°. For the reaction of *C.A.* 45, 5005a, $CaMoO_4 + H_2 = CaMoO_3 + H_2O$, the consts. A and B are 14,770 and 1.566. For the reaction $\frac{1}{2}CaMoO_3 + H_2 = \frac{1}{2}CaO + \frac{1}{2}Mo + H_2O$ they are 12,500 and 0.838. Free energies are given at several temps. for the dissocns. $MWO_4 = MO + W + \frac{1}{2}O_2$, $MWO_4 = \frac{1}{2}M_2W_4 + \frac{1}{2}W + 2O_2$. Enthalpies and entropies for the dissocns. into gaseous atoms are given for 1000°. They are discussed on the basis of available data on crystal lattices. P. Van Rysselberghe

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

GERASIMOV, Ya. I. Prof., REZUKHINA, T. N. Docent, and SIMANOV, Yu. P. Docent

"The Equilibrium of Tungstates of Bivalent Metals with Hydrogen," a paper given at the All-University Scientific Conference "Lomonosov Lectures", Vest. Mosk. Un., No.8, 1953.

Translation U07895, 1 Mar 56

DREVING, V.P.; GERASIMOV, Ya.I., professor, redaktor; KISELEV, V.F., redaktor; ORLOVA, N.S., tekhnicheskiy redaktor.

[Phase rule] Pravilo faz. Pod red. IA.I.Gerasimova. [Moskva] Izd-vo Moskovskogo universiteta, 1954. 172 p. (MLRA 7:8)
(Phase rule and equilibrium)

SHEKHORALOVA, V.I.; GERASIMOV, Ya.I.; ORLOVA, N.S., tekhnicheskiy redaktor

[Refractometry; practical work in physical chemistry] Refraktometriia; prakticheskie raboty po fizicheskoi khimii. Pod red. IA.I.Gerasimova. [Moskva] Izd-vo Moskovskogo universiteta, 1954. 22 p. (MIRA 8:3)
(Refractometry)

GERASIMOV, YA. I.

USSR/Chemistry

Card 1/1

Authors : Nikol'skaya, A. V., and Gerasimov, Ya. I.

Title : Study of the Thermodynamic Characteristics of Bi-Metallic Systems by Means of an Electromotive Force. Cadmium - Bismutite System.

Periodical : Zhur. Fiz. Khim. Vol. 28, Ed. 4, 713-728, Apr 1954

Abstract : Study of the characteristics of liquid metal smeltings (Cd-Bi) by means of an electromagnetic force. The studies are performed by concentration of 10-90% of the atoms of cadmium in a temperature interval of 400 to 600°. Eighteen references; tables; graphs.

Institution : M. V. Lomonosov's Moscow State Institute.

Submitted : July 25, 1953

KLYACHKO-GURVICH, Lippa L'vovich; GERASIMOV, Ya.I., professor, redaktor; GARANINA, N.S, redaktor; MIKHAYLOVA, T.A., tekhnicheskiy redaktor.

[Cryoscopy; laboratory work in physical chemistry] Krioskopiia; prakticheskie raboty po fizicheskoy khimii. Pod red. IA.I. Gerasimova. [Moskva] Izd-vo Moskovskogo univ., 1955. 21 p. (MLRA 8:12)

1. Chlen-korrespondent AN SSSR (for Gerasimov).
(Cryoscopy)

NOVOSELOVA, A.V., otv.red.; VOL'FKOVICH, S.I., red.; GERASIMOV, Ya.I., red.; YUR'YEV, Yu.K., red.; YUR'YEVA, L.P., red.

[Department of Chemistry of Moscow State University] Khimicheskii fakul'tet Moskovskogo ordena Lenina i ordena Trudovogo Krasnogo Znameni gosudarstvennogo universiteta imeni M.V.Lomonosova. Moskva, 1955. 59 p. (MIRA 13:6)

1. Moscow. Universitet.
(Moscow University) (Moscow--Chemistry--Study and teaching)

GERASIMOV, Ya.I., prof.; NOVOSELOVA, A.V., prof., otv.red.

[redacted]
[Program in physical chemistry; for the Chemistry Faculty] Programma po fizicheskoi khimii (dlia khimicheskogo fakul'teta). 1956. 7 p.
(MIRA 11:3)

1. Moscow. Universitet. 2. Chlen-korrespondent AN SSSR (for Novoselova)
(Chemistry, Physical and theoretical--Study and teaching)

FROST, Andrey Vladimirovich, professor; DOLGOPOLOV, N.N., sostavitel'
TOPCHIYEVA, K.V., doktor khimicheskikh nauk, otvetstvennyy redaktor;
GERASIMOV, Ya.I., redaktor; KOROBOV, V.V., kandidat khimicheskikh
nauk, redaktor; SMIRNOVA, I.V., kandidat khimicheskikh nauk, redaktor;
TITLEVSKIY, V.M., doktor khimicheskikh nauk, redaktor; TILICHEYEV, M.D.
doktor tekhnicheskikh nauk, redaktor; SHCHEKIN, V.V., redaktor izda-
tel'stva; ZHLENKOVA, Ye.V., tekhnicheskiy redaktor

[Papers on kinetics and catalysis] Trudy po kinetike i kataliza.
Moskva, Izd-vo Akademii nauk SSSR, 1956. 538 p. (MLRA 9:7)

1. Chlen-korrespondent AN SSSR (for Gerasimov)
(Catalysis) (Hydrocarbons) (Chemical reaction)

GERASIMOV, YA I.

USSR/Physical Chemistry - General Questions, B-1

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 60659

Author: Gerasimov, Ya. I.

Institution: None

Title: Subject and Limits of Physical Chemistry

Original Periodical: Vestn. Mosk. un-ta, 1956, No 2, 133-142

Abstract: Paper based on address delivered at the meeting of scientific council of Physical Chemistry Division of the Department of Chemistry, Moscow State University.

Card 1/1

GERASIMOV Ya. I.

TOPCHIYEVA, K.V.; PESHKOVA, V.M.; SHAKHOVA, Z.F.; ALIMARIN, I.P.; NOVOSELOVA, A.V.; SPITSYN, V.I.; LUTSENKO, I.F.; GERASIMOV, Ya.I.; NESMEYANOV, A.N.; TERENT'YEV, A.P.; POTAPOV, V.M.; GIBALO, I.M.

R.S. Pzheval'skii; obituary. Vest. Mosk. un. Ser. mat. mekh., astron., fiz., khim. 11 no.2:205-207 '56. (MIRA 10:12)
(Pzheval'skii, Evgenii Stepanovich, 1879-1956)

GERASIMOV, Ya.

"La Reduction Parbima Hydrogene des Tungstates de Metaux Transtoires et Autres Proprietes Thermodynamiques de ces Sels," paper presented at the 16th International Congress of Pure and Applied Chemistry, Paris, 18-24 Jul 1957

GERASIMOV, Ya. I.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 358

Author : I.A. Vasil'yeva, Ya.I. Gerasimov, Yu.P. Simanov.
Inst : -
Title : Equilibrium of Tungsten Oxides and Hydrogen.

Orig Pub : Zh. fiz. khimii, 1957, 31, No 3, 682-691

Abstract : The bibliographical data concerning the existence of two temperature modifications of WO_3 were confirmed experimentally. It was noted that the structure of intermediate W oxides forming at the reduction of WO_3 was determined by the structure of the initial preparation. A list of interplanar distances of $WO_{2.90}$, $WO_{2.72}$ and WO_2 produced at the reduction of the high-temperature modification of WO_3 II is given. It was made clear that the reduction of WO_3 II in the temperature range from 600 to 791° proceeded in four stages and that at temperatures below 584° it

Card 1/2

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, B-8
Equilibria, Physical-Chemical Analysis, Phase Transitions.

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 358

proceeded in three stages, the intermediate oxide $WO_{2.72}$ disappearing. Based on the obtained experimental data, the following standard thermodynamical properties of WO_3 II were computed: $\Delta H^0_{298} = -205.3$ kcal per mole, $\Delta Z^0_{298} = -186.2$ kcal per mole, $\Delta S^0_{298} = -63.90$ kcal per mole and $S^0_{298} = -17.4$ kcal per degree and mole.

Card 2/2

GERASIMOV, YA.I.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7119.

Author : I.A. Vasil'yeva, Ya.I. Gerasimov, Yu.P. Simanov, T.N. Rezukhina.

Inst :

Title : Copper Tungstate - Hydrogen Equilibrium and Thermodynamic Characteristics of $CuWO_4$.

Orig Pub: Zh. fiz. khimii, 1957, 31, No 4, 825-831.

Abstract: The pressure of saturated $CuWO_4$ (I) vapors was measured by Knudsen effusion method (with a tantalum ampoule) in the range from 1098 to 1181°K. The obtained data comply with the equation log p (mm of merc. col.) = -2714.1/T + 0.2474. The evaporation heat of I is 12416 cal per mole. The I - hydrogen equilibrium was investigated by the circulation method in the

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USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

GERASIMOV, Ya.I.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7120.

Author : R.D. Kurshakova, Ya.I. Gerasimov.
Inst :
Title : Equilibrium of Solid Solutions of $(Fe_xMn_{1-x})WO_4$ with Hydrogen.

Orig Pub: Zh. fiz. khimii, 1957, 31, No 5, 996-1001.

Abstract: The equilibrium of the tungstate (I) of the composition (Fe $_{0.66}Mn_{0.34})WO_4$ with the gas mixture $H_2 + H_2O$ was studied by the circulation method at 902 to 1050° and the equilibrium of I of the composition $(Fe_{0.41}Mn_{0.59})WO_4$ was studied by the same method at 971°. It was found roentganographically that metallic W, Fe_7W_6 and MnO appear at the initial reduc ion stages. The same phases appear also as final reduction products. The constants of the I lattice increase with the reduction. At 967 to 1050°, log K_p = -10060/4.575T + 1.144. The course

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Card : 1/2

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7120.

of curves of the K_p dependence on the oxygen content in I confirms that the composition of the initial mixed I changes in consequence of a secondary reaction between I and MnO liberated at the reduction: $(Fe_xMn_{1-x})WO_4 + MnO = (Fe_{x-y}Mn_{1-x+y})O$. The changes of isobar potentials of I reduction reaction and of the production reaction of I solid solution from pure salts were computed. The formation of the solid solution is accompanied by a noticeable postive divergence from the laws of ideal solutions.

Card : 2/2

-9-

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7118.

Author : A.V. Nikol'skaya, P.P. Otopkov, Ya. I. Gerasimov,
Inst :
Title : Study of Thermodynamic Properties of Binary Metallic Systems by E.M.F. Method. II. System Cadmium - Copper.

Orig Pub: Zh. fiz. khimii, 1957, 31, No 5, 1007-1012.

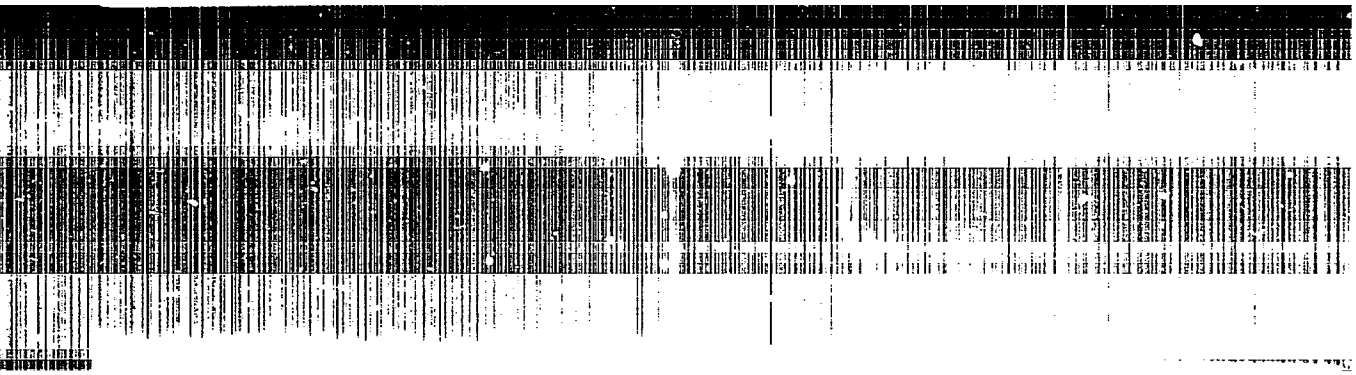
Abstract: The system Cd - Co was investigated by the e.m.f. method (report I, RZhKhim, 1955, 23245). The electromotive forces of concentration chains $Cd/CdCl_2/(Cd_xCu_{1-x})^+$ of 20 liquid alloys of various composition in the range from 0.948 to 0.460 atomic parts of Cd(N_{Cd}) were measured from 575 to 650°, the results having been reproducible with + 0.1 v. The values of the logarithm of the activity factor Cd($\log \gamma_{Cd}$) were computed from the e.m.f. and N_{Cd}. The partial heats ($\bar{L}_{Cd}$) and the

Card : 1/2 -4-

VECHER, A.A.; NIKOL'SKAYA, A.V.; GERASIMOV, Ya. I.

Studying the thermodynamic properties of binary metallic systems by the electromotive force method. Part 3: The copper-antimony system (with summary in English). Zhur. fiz. khim. 31 no.6:1395-1400 Je '57. (MIRA 10:12)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Thermochemistry) (Copper) (Antimony)



APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514820003-8"

AUTHOR: Gerasimov, Ya. I. 153-58-1-27/29

TITLE: Correlation Between the Law of Mass Conservation and the Thermodynamic Condition of Chemical Equilibrium (Svyaz' mezhdu zakonom sokhraneniya massy i termodinamicheskim usloviyem khimicheskogo ravnovesiya)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 1, pp. 183-184 (USSR)

ABSTRACT: The aforesaid law for a chemical reaction the stoichiometric equation of which is written in a general form $\nu_1 A_1 + \nu_2 A_2 + \ldots = \nu_1' A_1' + \nu_2' A_2' + \ldots$ may be written as algebraical sum of the products of the molar-number ν_1 multiplied by the molecular weight M_1: $\sum \nu_1 M_1 = 0$ (1). It is interesting to compare the term (1) of the fundamental condition of thermodynamic equilibrium for a chemical reaction. It is favorable, in view of such a comparison, to apply the values $\bar{\mu}_1$, viz. the

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chemical potentials, not with respect to mol, but with respect to 1 gramm of the substance. In other words, the specific values $\bar{\mu} = \frac{\mu_1}{M_1}$ are applied instead of the molar-magnitudes. Then the condition of the chemical equilibrium assumes the following form: $\sum_i \mu_i \nu_i = \sum_i \bar{\mu}_i \nu_i M_i = 0$ (2). The conditions (1) and (2) are observed: the former in any chemical systems, the latter with an equilibrium. The author combines both of them for the latter case and multiplies (1) with a random constant K and adds (1) and (2): $\sum_i (\bar{\mu}_1 + K) \nu_1 M_1 = 0$ (3). The condition of chemical equilibrium is thus maintained if and when all specific chemical potentials are increased for a random term K of a sum which is common to all components, whereas the molar-magnitudes are increased for an amount proportional to the mass of the substance. The values $\bar{\mu}_1$ (or μ_1) cannot be calculated by means of the thermodynamical methods since these values comprise the specific inner zero energy

$\bar{u}_{i,o}$. The calculation of this latter value by means of the Einshteyn (Einstein)-relation does not solve the problem for the following reasons: The principle of relativity of classic mechanics requires the invariability of all physical rules governing the observation of a real object in any inertial system of coordinates. At the transition of one system of coordinates to any other which moves rectilinearly and regularly at a velocity "v" in relation to the former system, it may be assumed that the energy of the real object (with a mass m) changes for the term:

$m\frac{v^2}{2}$ of a sum. Since it makes no difference in which inertial system of coordinates the material object is considered, the energy of the object cannot be clearly determined. It contains any term of a sum which is proportional to the mass. Consequently, the law of

energy-conservation has only a concrete quantitative value if the form of the motion or an exchange of motion take place which are considered in any inertial system of coordinates selected at random (e. g. in a chemical process (Reference 1)). The uncertainty of the absolute value of the inner energy of the object causes also an equal uncertainty of the chemical potential. The equation (2) conserves its quantitative value in this connection due to the law of mass-conservation in the chemical process. The latter law plays the role of the energy conservation law in application to the equation (2) with chemical transformations, viz. it guarantees the fulfillment of this law with the uncertainty of the absolute values of energy. The author is of opinion that the above considerations can be profitably utilized in teaching the bases of thermodynamics and chemical thermodynamics.

There is 1 Soviet reference.

Correlation Between the Law of Mass Conservation and the Thermodynamic Condition of Chemical Equilibrium 153-58-1-27/29

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M. V. Lomonosova, Kafedra fizicheskoy khimii (Moscow State University imeni M. V. Lomonosov, Chair for Physico-Chemistry)

SUBMITTED: November 2o, 1957

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5(4) AUTHOR: Gerasimov, Ya.I. Corresponding Member, Academy of Sciences, USSR

SOV/55-58-2-35/35

TITLE: Conference on Thermodynamics and the Structure of Solutions (Soveshchaniye po termodinamike i stroyeniyu rastvorov)

PERIODICAL: Vestnik Moskovskogo Universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1958, Nr 2, pp 251-253 (USSR)

ABSTRACT: The meeting which took place from January 27 - 30, 1958 was organized by the Faculty of Chemistry of the Moscow State University and by the Section of Chemical Sciences of the Academy of Sciences of the USSR. There were 600 participators from 75 scientific institutes in 34 towns of the USSR and from Hungary (Sh.Lend'yel, E. Beres), Eastern Germany (G. Falkenhagen, G. Kelbg), Poland (S. Mints, K. Zemborak); 70 lectures were given.
On thermodynamics of solutions of electrolytes there spoke : A.Ye. Glauberman (L'vov), N.A. Izmaylov (Khar'kov) K.P. Mishchenko (Leningrad) K.B. Yatsimirskiy (Ivanovo) B.P. Nikol'skiy (Leningrad), G. Falkenhagen and G. Kelbg (Eastern Germany), I.R. Yukhnovskiy (L'vov) G.I. Nikulin (Verkhneye, Donbass) V.A. Kozheurov (Chelyabinsk) Sh. Lend'yel (Hungary)

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Conference on Thermodynamics and the Structure of Solutions 07/55-58-2-35/35

A.M. Sukhotin (Leningrad) Ye.N. Vasenko (L'vov) V.P. Vasil'yev (Ivanovo) G.I. Akhumov (Leningrad) S.A. Shchukarev (Leningrad). On thermodynamics of solutions of nonelectrolytes: M.I. Shakhparonov (Moscow) A.Z. Golik (Kiyev) I.Z. Fisher and V.S. Kuzmich (Minsk) K. Zemborak (Poland) and V.V. Sventoslavskiy, G.L. Starobinets and V.F. Tikavyy (Minsk) M.F. Lantrata and A.F. Alabyshev (Leningrad) I.R. Krichevskiy and N.E. Khazanova (Moscow) B.B. Kudryavtsev (Moscow) V.F. Nozdrev (Moscow) A.V. Storonkin and A.G. Morachevskiy (Leningrad) I.T. Sryvalin and O.A. Yesin (Sverdlovsk) G.M. Bartenev and A.A. Remizov (Moscow) D.S. Tsiklis (Moscow) G.D.Yefremova (Moscow) M.I. Usanovich (Alma-Ata) L.V. Lanshina (Moscow) On the structure of solutions : O.Ya. Samoylov (Moscow) A.F. Kapustinskiy (Moscow) V.M. Chulanovskiy (Leningrad) V.L. Levshin and Ye.G. Baranova and L.D. Derkacheva and L.V. Levshin (Moscow) B.S. Neporent (Leningrad) M.F. Vuks (Leningrad) S. Mints (Poland) R.P. Roshchina (Kiyev) N.G. Shlenkina (Tula) A.M. Sarzhevskiy and A.N. Sevchenko (Minsk) L.V. Levshin (Moscow) R.M. Bertenev (Moscow) M.A. Styrikovich (Moscow) Yu.I. Solov'yev (Moscow).

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USCOMM-DC-60,527

GERASIMOV, Ya.I.; KRESTOVNIKOV, A.N.

Thermodynamics of zinc oxide reduction by carbon monoxide and carbon. Izv.vys. ucheb. zav.; tsvet. met. no.3:54-62 '58. (MIRA 11:11)

1. Moskovskiy gosudarstvennyy universitet i Moskovskiy institut tsvetnykh metallov i zolota.
(Oxidation-Reduction reaction) (Zinc oxide)

GERASIMOV, Ya.I.; YEVSEYEV, A.M.; POZHARSKAYA, G.V.

Determining thermodynamic parameters of chromium-cobalt alloys by measurements of saturated chromium vapor. Issl. po zharoprr. splav. 3:56-60 '58. (MIRA 11:11)
(Chromium-cobalt alloys--Thermal properties)
(Vapor pressure--Measurement)

SOV/55-58-6-30/31

AUTHORS: Gerasimov, Ya. I., Yeremin, Ye. N., Kiselev, A. V., Lebedev, V. B., Shavrov, S. M., Topchiyeva, K. V., Shakhparonov, M. I.

TITLE: Training and Education of Teachers of Higher Schools, and of Scientists and Researchers (O putyakh podgotovki prepodavateley vysshey shkoly i nauchnykh rabotnikov)

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1958, Nr 6, pp 235 - 238 (USSR)

ABSTRACT: According to the opinion of the authors the actual training and education of qualified specialists in the field of natural sciences suffers from certain drawbacks: They first go through a three-years' stage as candidates. This kind of activity is in no way a guarantee for thoroughly penetrating into all necessary fields of theoretical and experimental work in the domain of physics and physical chemistry, and of the other sciences related therewith. Besides the time is too short for defending and proving again the truth of the scientific investigations carried out. It is obvious that the brevity of time prevents the candidates from ascending in their investigations from a perfunctory to a more scientific level. There is no possibility of selecting certain more interesting themes,

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and the like. Finally the time is too short for giving the candidate a sufficient pedagogical training. Consequently, it is suggested to replace the term of three years for candidates by a five years' term for assistants-on-trial during which time the practical work and the seminaries will be conducted according to pedagogical principles and the scientific investigations will be carried out in accordance with the plans of the Chair. The examination on the special scientific training can only be passed, if the assistant-on-trial adduces the proof of having made a number of particular scientific reports, and of having passed the examination on the fundamentals of marxism and leninism, as well as that of foreign languages. After having completed his trial term and having successfully passed the final examination, he may become candidate lecturer at his own or at any other school. By a well-controlled guidance of the assistant-on-trial, an excellent selection is warranted of first-class men of science. Besides, this system will successfully further and advance the scientific work of the assistants-on-trial. The authors believe that the chief result of this

reorganisation will be a good training both in the scientific sector and, in the pedagogical field, and will therefore be the best way of forming first-class higher school instructors.

5-58-7-3/36

AUTHORS: Gerasimov, Ya.I., Yeremin, Ye.N., Kiselev, A.V., Skuratov, S.M., Topchiyeva, K.V., Professors; Shakhparonov, M.I., Doctor of Chemical Sciences and Lebedev, V.P., Dotsent

TITLE: The National Economy Needs Physico-Chemists (Narodnomu khozyaystvu nuzhny fiziko-khimiki)

PERIODICAL: Vestnik vysshey shkoly, 1958, Nr 7, pp 14-16 (USSR)

ABSTRACT: The authors stress the necessity of creating special faculties on physico-chemistry in universities. At present, faculties train chemists whose knowledge of physics is rather limited. The student is not trained in a special branch of chemistry, and the shortage of time does not allow him to develop his knowledge of practical methods.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni Lomonoscva (The Moscow State University imeni Lomonosov)

Card 1/1

AUTHORS: Gerasimov, Ya. I., Corresponding Member, 30-58-7-35/49
AS USSR, Shakhparonov, M. I., Doctor of Chemical Sciences

TITLE: Thermodynamics and the Structure of Solutions (Termodinamika i stroyeniye rastvorov) Transactions of the Conference in Moscow (Soveshchaniye v Moskve)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 7, pp. 122 - 124 (USSR)

ABSTRACT: This conference was called by the Department of Chemical Sciences of the AS USSR and th. Chemistry Department of Moscow University (Otdeleniye khimicheskikh nauk Akademii nauk SSSR i khimicheskiy fakul'tet Moskovskogo universiteta); it convened from January 27th to January 30th. It was attended by about 600 physicists, chemists and thermal power engineers from the Soviet Union as well as from the people's democracies. Problems of statistical mechanics were discussed. In the development of modern molecular theory of solutions new methods are being worked out. The theory deals with new methods of mechanical statistical computation of the thermodynamic and kinetic properties of multicomponent systems. The existing methods permit a sufficiently exact computation of the free energy as well as of the properties of the diluted solutions of electrolytes and non-

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Thermodynamics and the Structure of Solutions. 30-58-7-35/49
Transactions of the Conference in Moscow

-electrolytes connected with it; among the mentioned methods those suggested by N.N.Bogolyubov and his collaborators are of greatest importance. In the reports and discussions on the statistical theory of solutions participated: A.Ye.Glauberman, A.Z. Golik, O.A.Yesin, G.Kel'bg, German Democratic Republic (GDR), V.A.Kozheurov, G.I.Mikulin, M.I.Usanovich, G.Fal'kenkhagen, German Democratic Republic, I.Z.Fisher, I.R.Yukhnovskiy and others. The main part of the reports and informations dealt with the problems of the molecular structure of the solutions. The consideration of some problems of the theory of fluctuation played an important part. G.M.Bartenev, M.V.Fuks, I.R.Krichevskiy, B.B. Kudryavtsev, V.F.Kozdrev, G.P.Roshchina, V.P.Skripov and others participated in the reports and the discussion concerning the problems of the theory of fluctuations and critical phenomena. Great attention was paid to investigations of solvatation, association and dissociation of molecules in the solution by optical and thermodynamic methods. N.A.Izmaylov, V.L.Levshin, Sh. Lend'yel, Hungary (Vengriya), A.Ye.Lutskiy, S.Mints, Poland (Pol'sha), V.P.Nikol'skiy, G.L.Starobinets, A.M.Sukhotin, Yu.I. Solov'yev, M.I.Usanovich, B.M.Chulanovskiy, K.B.Yatsimirskiy and

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others delivered reports and informations on those problems. Some problems concerning phenomenological thermodynamics of liquid solutions and alloys were also discussed. The limits of application of the first law by Konovalov and the second law by Vrevskiy were determined and the thermodynamic analysis of the connection between the solubility of gases in liquids and the pressure were carried out. The influence of a third component on the solubility of salts in water was investigated. The thermodynamic properties of a series of metallic alloys were investigated and the results of research work of oversaturated solutions were mentioned. The hearing of the reports and discussions were joined by: K.P.Zemborak,(Poland), O.A.Yesin, A.G. Morachevskiy, V.V.Sventoslavskiy, (Poland), A.V.Storonkin, M.M. Shul'ts, S.A.Shchukarev, and others. On behalf of the Committee of Chemical Thermodynamics of the AS USSR (Komissiya po khimicheskoy termodinamike Akademii nauk SSSR) Ya.A.Gerasimov reported on a series of measures indispensable for the development of scientific work in this field. The conference recorded the achievements and errors in the development of research work in this field and suggested measures for a successful development.

GERASIMOV, Ya.I.

Conference on the thermodynamics and structure of solutions. Vest.Mosk.un.Ser.mat.,mekh.,astron.,fiz.,khim. 13 no.2:251-253 '58. (MIRA 12:2)

1. Chlen korrespondent AN SSSR. (Thermodynamics) (Solution (Chemistry))

AUTHORS: Gerasimov, Ya. I., Shatenshteyn, A. I. 78-32 5-46/47

TITLE: Yakov Iosifovich Ol'shanskiy (Yakov Iosifovich Ol'shanskiy) Obituary Notice (Nekrolog)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 5, pp. 1186 - 1187 (USSR)

ABSTRACT: Yakov Iosifovich Ol'shanskiy, Doctor of Chemical Sciences, died at the age of 46 on January 6, 1958. He held lectures in the field of physical chemistry and dealt with the investigations in the field of the physical chemistry of high temperatures with relation to the theory of the formation of rocks and minerals, these being an important contribution to the theory of the formation of magmatic sulfide deposits, as well as to the theory and practice of metallurgical processes. He developed some original theories for the equilibrium up to 2500°C. His last works dealt with the theory of the development of thermal waters, in which he showed that the solutions can display a migration of substance, although they may be practically unsolvable; he also showed that a rearrangement of the particles in the solid phase takes place. In connection herewith he made some proposals

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Yakov Iosifovich Ol'shanskiy 76-32-5-46/47

for the use of radioactive isotopes, and he published altogether about 40 works, including experimental works which he had carried out himself.

Card 2/2 1. Chemistry--USSR 2. Scientific personnel--USSR

GERASIMOV, Ya.I.

Resolutions of the Conference on Thermodynamics and Structure of Solutions. Zhur. fiz. khim. 32 no. 6:1443-1445 Je '58. (MIRA 11:8)

1. Predsedatel' orgkomiteta Soveshchaniya po termodinamike i stroyeniyu rastvorov.
(Solution(Chemistry))

5(4) SOV/76-32-12-27/32

AUTHORS: Vecher, A. A., Gerasimov, Ya. I.

TITLE: Investigation of the Thermodynamic Properties of Binary Metal Systems by Means of the Method of Electromotive Forces (Issledovaniye termodinamicheskikh svoystv dvoynykh metallicheskikh sistem metodom elektrodvizhushchikh sil) IV. The Copper-Antimony System in Solid State (IV. Sistema med'-sur'ma v tverdom sostoyanii)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 12, pp 2835-2840 (USSR)

ABSTRACT: Measurements were carried out on copper-antimony and pure-copper electrodes in a fusion of potassium chloride and lithium chloride containing some copper-I-chloride. From the values obtained the equations for the dependence of the electromotive force (EMF) upon the temperature were developed. The values calculated show a maximum deviation of 1% from the measured ones. Entropies for copper, antimony, and the compounds Cu_2Sb and Cu_3Sb at a temperature of 775°K were then calculated. These entropy values deviate somewhat from the test results, which may be due to the method of approximation and the influence of

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Investigation of the Thermodynamic Properties of Binary Metal Systems by Means of the Method of Electromotive Forces. IV. The Copper-Antimony System in Solid State

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other factors which were not considered. The positive entropies in the formation of copper-antimony alloys can be explained by changes of the atomic vibrations in the Cu_2Sb and Cu_3Sb lattices.

The system Cu-Sb is characterized by negative heat coefficients and negative isobaric potentials. This might be explained by the appearance of intermediate compounds. The coefficients calculated for the compound Cu_2Sb are:

$$\Delta H_{775} = -1.1 \pm 0.2 \text{ kcal/g.at.}$$

$$\Delta Z_{775} = -1.81 \pm 0.02 \text{ kcal/g.at.}$$

$$\Delta S_{775} = +1.0 \pm 0.25 \text{ cal/grad.g.at.}$$

There are 2 figures, 4 tables, and 11 references, 7 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: March 3, 1957

Card 2/2

SOV/20-120-6-30/59

AUTHORS: Geyderikh, V. A., Gerasimov, Ya. I., Corresponding Member, Academy of Sciences, USSR, Vecher, A. A.

TITLE: Thermodynamics of the Production of the Highest Iron Antimonide (Termodinamika obrazovaniya vysshego antimonida zheleza)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 120, Nr 6, pp 1274 - 1276 (USSR)

ABSTRACT: This is an investigation of the production of $FeSb_2$ from the elements according to the reaction $Fe(solid)+2Sb(solid)=FeSb_2$ by means of the e.m.f.method. This was done by investigating the dependence of the e.m.f.of the cell $Fe \mid Fe^{2+}$, KCl+LiCl (solution) $\mid FeSb_2+Sb$ upon temperature in the interval 410 - 610°. 12 melts with a varying composition (within the heterogeneous range $FeSb_2+Sb$ of the phase diagram of the Fe-Sb system) were investigated. The experimental methods have been described already earlier. The results of all experiments were interpreted by means of the method of least squares. The equation $E = 0,1497 - 0,00004\ T$ (in Volts) was found for the function

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Thermodynamics of the Production of the Highest Iron Antimonide SOV/20-120-6-30/59

E=f(T). By means of this equation it is possible to compute the variations of the isobaric-isothermal potential, of enthalpy and of entropy in the production of $FeSb_2$ by means of this reaction: $\Delta Z=-nFE=-6,9+0,0018T$ (kcal/mol), $\Delta H=-6,9\pm 0,4$ (kcal/mol)$=-2,30\pm 0,1$ (kcal/gram atom), $\Delta S=-1,8\pm 0,4$ (kcal/degree·mol)$=0,6\pm 0,1$ (kcal/degree·gram atom). Differences between these results and that obtained by other authors and the possible causes for this fact are mentioned. Finally the theoretical calculation of ΔZ by means of the equation for the liquidus range of the meltability diagram of the Fe-Sb system is presented. The agreement attained is satisfactory. There are 1 figure and 8 references, 6 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im.M.V.Lomonosova (Moscow State University imeni M.V.Lomonosov)

SUBMITTED: March 1, 1958

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Thermodynamics of the Production of the Highest Iron Antimonide SOV/20-120-6-30/59

1. Antimony-iron systems--Production 2. Antimony-iron systems--Thermodynamic properties 3. Antimony-iron systems--Enetropy 4. Antimony-iron systems --Enthalpy 5. Mathematics--Applications

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18(6)

AUTHORS: Alekseyev, N. V., Gerasimov, Ya.I., Corresponding Member, AS USSR

SOV/20-121-3-26/47

TITLE: The Investigation of the Structure of the Liquid Bi-Sn Alloys (Issledovaniye struktury zhidkikh splavov Bi-Sn)

PERIODICAL: Doklady Akademii nauk SSSR, Vol 121, Nr 3, pp 488-491 (USSR)

ABSTRACT: The properties of the liquid alloys are determined essentially by the force of the intermolecular bonds and by the grouping of the molecules. Therefore it is important experimentally to determine the structure of the liquid alloys and the (at least qualitative) connection between the structure of the alloy and its properties. First, an equation is given for the calculation of the curve of the radial distribution (for the case that the liquid consists of several kinds of atoms). The authors investigated the system Bi-Sn by means of the electron diffraction instrument EM-4 which was adapted to experiments at high temperatures. The method of the free films which was suggested by A. I. Bublik and B. Ya. Pines (Ref 2) did not give the expected results. The best results were obtained when the film of the free metal was fastened by very thin quartz layers.

The Investigation of the Structure of the Liquid Bi-Sn Alloys

The preparation of the samples is discussed in a few lines. Measurements were carried out at t = 290°. The curves of the experimental intensity were deduced from the data of these measurements and are shown in a diagram. The positions of the diffraction maxima are given in a table. First the authors give a detailed report on the pure metals. For Sn, the position of the maxima agrees well with the data found by other authors. The structure of liquid Bi depends in a high degree on temperature. For the intensity curves of the intermediary alloys the following rule was found: There is a gradual transition from the type of pure Sn to the type of pure Bi without any additional maxima. The values obtained for normalized intensity were used for the calculation of the radial distribution function. The integrals were calculated by means of an electronic computer. The curves of radial distribution are given in a figure. It is advantageous to subdivide the investigation of these curves into 3 stages: 1) Pure Bi and pure Sn, 2) alloy of eutectic composition; in this case the first maximum of the radial distribution is the result of the superposition of 3 maxima. The place of the first maximum corresponds

The Investigation of the Structure of the Liquid Bi-Sn Alloys

well with the least distance between the atoms in liquid Sn (3,25 - 3,35 Å). According to the calculations discussed by the author, 7,8 Sn atoms are located at a distance of 3,35 Å around a given Sn atom. Moreover, 2,1 Bi atoms are located at a distance of 3,85 Å. But if Bi is located in the center of the coordination sphere, 2 Sn atoms (r = 3,85 Å) and 5,2 Bi atoms (r = 4,15 Å) are arranged around this Bi atom. These results imply a distinctly expressed tendency towards microheterogeneity. 3) Alloys of a composition which is between eutectic composition and the pure components. In this case, the maxima are not resolved into their components and their position does not coincide with the position of the maxima of the pure components. These phenomena may be caused by the total miscibility of the components. There are 3 figures, 1 table, and 10 references, 8 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: April 16, 1958

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5(4)
AUTHORS: Germanov, Ya. I., Corresponding Member, Academy of Sciences, USSR, Vecher, A.A., Geyderikh, V. A. SOV/20-122-5-24/56

TITLE: The Thermodynamic Properties of the Solid Solutions Cu-Ni and Fe-Co (Termodinamicheskiye svoystva tverdykh rastvorov Cu-Ni i Fe-Co)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 5, pp 854 - 856 (USSR)

ABSTRACT: The authors determined the free energy, the heat of formation, and the entropy of formation of the alloys Cu-Ni and also the activity of iron in the alloys Fe-Co by the method of electromotive forces. The electromotive force of the alloys Cu-Ni was measured in a galvanic element: Cu(solid)| Cu^+ (melt)CuJ+KJ+NaJ)| Cu-Ni(alloy). The alloys were produced from nickel- and zinc powder by pressing and subsequent annealing(for a duration of up to 100 hours at 1050-1250°C) and were analyzed after the smelting test. The results obtained by these experiments are shown by a diagram. The electromotive

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force was perfectly constant and reproducible within a limit of errors of 1,5 to 2%. From the electromotive force and its temperature dependence the activity (a_{Cu}), the partial relative heat content L_{Cu} and the partial entropy of the mixture of the copper ($\Delta \bar{S}_{Cu}$) were determined for each of the alloys. By means of graphical integration the integral heat and entropy of formation of this system were then found. Formulae are given for the approximated description of the experimental results obtained. The system Cu-Ni forms a continuous series of solid solutions. According to the data given by the authors, the system Cu-Ni furnishes positive deviations from Raoult's (Raul') law, which, however, are less than those for the system Au-Fe and Au-Ni. However, the excess entropy of the mixture (izbytochnaya entropiya smesheniya) of the alloys Cu-Ni are negative. No ordered distribution of atoms in the alloys Cu-Ni could be ascertained by radiographic

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investigations because the difference with respect to diffrangibility between the copper- and nickel atoms is too small. However, measurements of the electric resistance and the magnetic properties of the copper-nickel alloys indicate the existence of a certain order in them. This ordered state is probably connected with the self-action of the free electrons (valence electrons) of copper and nickel. An ordered state in Cu-Ni-alloys is, according to the authors' opinion, quite possible. The ordered state of the Cu-Ni-alloys exercises considerable influence upon the values of the excess entropy of formation. The highly negative values of the excess entropy (if calculated from relatively low positive heats of formation) give positive excess free energies. The electromotive force increases more rapidly than linearly with increasing temperature. Herefrom it follows 1) that with increasing temperature the positive deviations from Raoult's (Raul') law rapidly decrease, and 2) the heat

and the entropy of formation of copper-zinc alloys depends on temperature. Further investigations of the structure of copper-zinc alloys appear to be necessary. The values of the activity of iron in Fe-Co"-Le-alloys found by the authors are shown by a diagram and agree well with the results obtained by T.Satov et al.(Ref 11). There are 4 figures and 11 references, 4 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im.M.V.Lomonosova (Moscow State University imeni M.V.Lomonosov)

SUBMITTED: July 1, 1958

SOV/20-123-5-27/50

24(8), 18(6)

AUTHORS: Vecher, A. A., ~~Gerasimov, Ya. I.~~, Corresponding Member, Academy of Sciences, USSR

TITLE: The Thermodynamic Properties of the Alloys of Copper With Palladium (Termodinamicheskiye svoystva splavov medi s palladiyem)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 5, pp 868-869 (USSR)

ABSTRACT: The authors determined (by the method of electromotive forces) the free energy, the heat and the entropy of mixing of copper-palladium alloys. For this purpose, the electromotive force of the galvanic element Cu/Cu^{+}(halide solution)/ Cu-Pd (alloy) was measured. The method of these measurements was described in a previous paper (Ref 1). Melts of potassium chloride and lithium chloride of eutectic composition and also of sodium iodide and potassium iodide of minimum melting temperature ($\sim 590^{\circ}C$) were used as electrolytes. In the first case, ~ 1% CuCl was added to the electrolyte, in the second case - CuJ. In the majority of the experiments, melts of potassium iodide, sodium

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The Thermodynamic Properties of the Alloys of Copper With Palladium

iodide, and copper iodide of the above-discussed composition were used. The preparing of the alloys is described in short. The experiments were carried out at temperatures of 600-760°C in an atmosphere of purified argon; they took 130-150 hours. The experimentally found values of the electromotive force for any composition were plotted against temperature, and a straight line was drawn through the experimentally found points. The deviations of the individual values of the electromotive force are not higher than $\pm$ 0.5 - 1%. The further evaluation of experimental data was described in a previous paper (Ref 2). The second figure shows the activity of copper and palladium in alloys at the temperature of 1000°K. The third figure gives the integral values of the heat, free energy and entropy of the formation of copper-palladium alloys at 1000°K. At temperatures above 600°, the investigated alloys were not ordered. A tendency towards ordering is distinctly marked, however, also at high temperatures. This conclusion may be drawn from the negative deviation of the thermodynamic functions from the ideal laws, from the strongly negative heat of mixing, and from other phenomena. The thermodynamic properties of the copper-palladium alloys at 1000°K (which

The Thermodynamic Properties of the Alloys of Copper With Palladium

were found by the authors) correspond to the existence of superstructures in these alloys at lower temperatures. There are 3 figures and 6 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: August 29, 1958

SOV/156-59-1-4/54

18(6), 5(4)

AUTHORS: Vecher, A. A., Gerasimov, Ya. I.

TITLE: The Construction of a Part of the Liquidus Curve of the System Copper - Antimony According to Thermodynamic Data (Postroyeniye chasti krivoy likvidusa sistemy med' - sur'ma po termodinamicheskim dannym)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya. 1959, Nr 1, pp 16 - 18 (USSR)

ABSTRACT: The thermodynamic data used are not listed here but are given in two previous publications by the authors (Ref 1, Ref 2). The liquidus curve between 0 and 40 wt% of copper and the position of the maximum between 50 and 60 wt% of copper are given a close investigation. For calculating the curve, the dependence $\lg a_{Sb}$ on $\frac{1}{T}$ per 0.05 atomic yields of antimony between 0.95 - 0.60 Sb in the temperature range 800 - 1000°K is calculated (Table 1). The values found are in agreement with data obtained by other authors (Diagram, Fig 2). The curve between the eutectic point and the peritectic point of Cu_2Sb formation is similarly calculated from

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The Construction of a Part of the Liquidus Curve of the System Copper - Antimony According to Thermodynamic Data SOV/156-59-1-1/54

the condition $2 \lg a_{Cu(alloy)} + \lg a_{Sb(alloy)} = \frac{\Delta Z_{Cu_2Sb}}{4.575\ T}$ at 800 and 850°K (the data for this calculation are given in reference 2). The temperature dependence of the electromotive force of the galvanic cell

$Cu_{solid} | Cu^+$ (in KCl + LiCl + CuCl melt) $|$ Cu-Sb liquid alloy

shows that the maximum of the liquidus curve is near the compound Cu_5Sb_2 and not, as has been presumed by other authors, near Cu_2Sb. The phase diagram of the system Cu-Sb is shown. There are 3 figures, 2 tables, and 6 references, 5 of which are Soviet.

ASSOCIATION: Kafedra fizicheskoy khimii Moskovskogo gosudarstvennogo universitete im. M. V. Lomonosova (Chair of Physical Chemistry of Moscow State University imeni M. V. Lomonosov)

SUBMITTED: June 30, 1958

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SOV/78-4-10-2/40

5(2)

AUTHORS: Yevseyev, A. M., Pozharskaya, G. V., Nesmeyanov, An. N., Gerasimov, Ya. I.

TITLE: Vapor Pressure of Lithium Fluoride

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 10, pp 2189-2191 (USSR)

ABSTRACT: The determination of the vapor pressure was carried out according to the effusion method in a nickel chamber because this metal does not react with lithium fluoride. The temperature of the chamber was measured with a Pt-PtRh-thermocouple and a potentiometer of the PPTN-1 type and the galvanometer of the M21/4 type. The easily volatile impurities (Li_2CO_3, LiOH) were removed by heating in vacuo up to 700°. The results of the determination are presented in table 1; figure 1 shows the dependence of the vapor pressure of LiF on the temperature in the range of from 926 - 1026.5°K. From this the heat of sublimation for the absolute zero point was found to be 60.64 kcal/mole. The value is in good agreement with the calculation made by the Institut goryuchikh iskopayemykh Akademii nauk SSSR (Institute of Mineral Fuels of the Academy

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Vapor Pressure of Lithium Fluoride

of Sciences, USSR), which gave 60.74±0.1 kcal/mole. There are 1 figure, 2 tables, and 3 references, 1 of which is Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: July 20, 1958

5(2) SOV/78-4-10-3/40

AUTHORS: Khandamirova, N. E., Yevseyev, A. M., Pozharskaya, G. V., Borisov, Ye. A., Nesmeyanov, An. N., Gerasimov, Ya. I.

TITLE: Pressure of Saturated Vapor of Beryllium Fluoride

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 10, pp 2192-2195 (USSR)

ABSTRACT: Beryllium fluoride was produced according to the method of A. V. Novoselova from beryllium sulfate. The vapor pressure was measured by means of effusion in vacuum and determination of the weight lost during the experiment (Method 1) or by analysis of the resultant condensate (Method 2). The effusion chamber in method 1 was made of tantalum (Fig 1) and was heated by a "Mars"-electric furnace with a power of 1200 w, the temperature was checked thermoelectrically by means of the PPTN-1 potentiometer. In method 2 the effusion chamber consisted of molybdenum. The condensate was analysed with the colorimetric photometer of the FEK-52 type by using the reagent "Berillon-11 IRYeA". Both methods gave values in good agreement which are given in table 1. By means of the values obtained and of the data found by the Institut goryuchikh iskopayemykh

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Akademii nauk SSSR (Institute of Combustible Minerals of the Academy of Sciences, USSR) for the thermodynamic potentials of the gaseous and solid beryllium fluoride the heat of sublimation was calculated to be 55.2±0.6 kcal/mole at 0°K, which is also given in table 1. Table 2 compares this value with the data obtained by K. A. Sense et al (Ref 1) and the value computed on the basis of the 3rd law of thermodynamics. There are 2 figures, 2 tables, and 1 reference.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: July 20, 1958

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5(2)

AUTHORS: Yevseyev, A. M., Pozharskaya, G. V., Nesmeyanov, An. N., Gerasimov, Ya. I.

TITLE: Vapor Pressure of Aluminum Fluoride

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 10, pp 2196-2197 (USSR)

ABSTRACT: The papers available so far on the problem mentioned in the title (Refs 1-3) are mentioned in brief and the results obtained by W. Olbrich (Ref 2) and I. I. Naryshkin (Ref 3) were denoted as inexact. The determination of the vapor pressure of AlF_3 was carried out in the temperature range of 980-1123°K in a platinum effusion chamber. The device has already been described in a previous paper (Ref 4). The data obtained are given in table 1. From the experimental data and the heat capacities (these were calculated in Institut goryuchikh iskopayemykh Akademii nauk SSSR - Institute of Combustible Minerals of the Academy of Sciences, USSR) a heat of sublimation of 73.46 kcal/mole at 0°K resulted. Table 2 compares the values obtained with the data of references 1-3. There are 1 figure, 2 tables, and 4 references, 2 of which are Soviet.

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SOV/76-33-5-27/33

5(4)

AUTHORS: Nikol'skaya, A. V., Lomov, A. L., Gerasimov, Ya. I. (Moscow)

TITLE: The Investigation of the Thermodynamic Properties of Binary Metallic Systems According to the Method of Electromotoric Forces (Issledovaniye termodinamicheskikh svoystv dvoynykh metallicheskikh sistem metodom elektrodvizhushchikh sil). 5.The System Copper - Bismuth (5. Sistema med' - vismut)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 5, pp 1134 - 1139 (USSR)

ABSTRACT: The concentration chains $^{-}Cu_{solid} | CuCl, NaCl - KCl | (Cu_N Bi_{1-N})^{+}_{liquid}$ (N = molar copper content of the melt) were investigated. The investigation was carried out in a temperature interval of from 1150 - 1225°K at a concentration N_{Cu} = 0.063 - 0.710. The values for the emf were plotted as f(T) for each concentration, and a linear dependence was found. The values for 1150, 1175, 1200, and 1225°K were found by interpolation. Table 1 shows these values. The activity of copper with regard to solid and to liquid undercooled

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copper was calculated from the values for the emf. The values for the logarithm of the activity coefficient of copper ($\lg\gamma_{Cu}$), the partial heats, and the surplus entropies of the mixing of copper are also shown in table 1. Table 2 shows the corresponding values for bismuth. The values for electrodes with a copper content $N > 0.701$ were found by extrapolation. Figures 1 and 2 show graphical description of the partial and integral heats and the mixing entropies. The system Cu-Bi differs considerably from Racult's law. The differences decrease with rising temperature. The Cu-Bi melts are formed under heat absorption, the mixing heats being considerably high. With equiatomic composition their maximum is 1600 kcal/g-atm. The considerable positive differences of the entropy from the ideal values are characteristic of Cu - Bi melts. This fact is explained by the great difference of the atomic volumina of the two components. The retarded change of the mixing heat and the mixing entropies in the range of from 0.3 - 0.7 N_{Cu} is indicated. Hence

it is concluded that the Cu - Bi melts have a microheterogeneous structure. There are 3 figures, 2 tables, and 12 references, 6 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: November 11, 1957

SOV/76-33-7-39/46

5(4)

AUTHORS: Gerasimov, Ya. I., Topchiyeva, K. V., Semiokhin, I. A.,

TITLE: Georgiy Mitrofanovich Panchenkov. On the Occasion of His 50th Birthday

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 7, pp 1674 - 1675 (USSR)

ABSTRACT: On April 24, 1959 G. M. Panchenkov, a well-known Soviet specialist in physical chemistry and Professor at the Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. I. M. Gubkina and Moskovskiy gosudarstvennyy universitet (Moscow Institute for Petroleum-Chemical and Gas Industry imeni I. M. Gubkin and Moscow State University), celebrated his 50th birthday. The main fields with which he was concerned are the kinetics of heterogeneous catalytic processes, the methods of separating and analyzing isotopes, and the theory of the liquid phase. His investigations of the mechanism of the transformation of hydrocarbons on aluminum silicate catalysts by the use of deuterium as a marking atom as well as his publications on the theory of viscosity are especially worth mentioning. For the latter he was awarded the Stalin Prize for the field of sciences in 1952. The

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method of separating boron isotopes devised by G. M. Panchenkov et al was demonstrated at the Vsesoyuznaya promyshlennaya vystavka (All-Union Industrial Exposition) and was awarded a diploma of the second class, this method also has won general appreciation at international expositions in Geneva, Leipzig, Peking, and Warsaw. Professor G. M. Panchenkov, who is also a teacher, founded the Kafedra fizicheskoy i kolloidnoy khimii (Chair of Physical and Colloid Chemistry) at the above-mentioned Institute as well as the Laboratoriya khimii i razdeleniya izotopov v MGU (Laboratory for Chemistry and Isotope Separation at Moscow State University), which have been headed by him up to this day. 2 dissertations for the degree of Doctor and 15 dissertations for the degree of Candidate were completed under his supervision. He published 2 monographs, about 100 scientific articles, and obtained 10 patents for his inventions. G. M. Panchenkov is a member of the International Committee for Constants. Furthermore, he was awarded the orders "Krasnaya Zvezda" and "Znak Pocheta" as well as the title of Laureate of the Stalin Prize. There is 1 figure.

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AUTHOR: Gerasimov, Ya. I., Corresponding Member, AS USSR, Chairman of the Committee for Chemical Thermodynamics of the Department of Chemical Sciences of the Academy of Sciences, USSR

SOV/20-127-1-65/65

TITLE: To All Scientific Workers of the USSR Who Carry out Work That Is Connected With the Measurement of Thermal Quantities (Ko vsem nauchnym rabotnikam SSSR, provodyashchim raboty, svyazannyye s izmereniyem teplovykh velichin)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 1, Rear Cover (USSR)

ABSTRACT: The Komissiya po khimicheskoy termodinamike pri Otdelenii khimicheskikh nauk Akademii nauk SSSR (Committee for Chemical Thermodynamics of the Department of Chemical Sciences of the Academy of Sciences, USSR) states that there is no uniformity with respect to measuring units in the results published by various authors concerning the measurement of thermal quantities. Thus, it frequently happens that the nature of calories and their ratio to absolute joule is not specified. The probable causes of this lack of uniformity is briefly discussed. For the purpose of bringing about uniformity in this respect,

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To All Scientific Workers of the USSR Who Carry out Work That Is Connected With the Measurement of Thermal Quantities SOV/20-127-1-65/65

the above committee suggests that all authors take the following into account in their publications: 1) Absolute joule must serve as a measuring unit in all published results. Results obtained by measurements may also be expressed in calories, but in each publication the ratio between calory and absolute joule must be explained. 2) With respect to this ratio, the above committee is of the opinion that, according to the character and aim of the measurements concerned, one of the following quantities may be used: a) 1 calory = 4.1868 absolute joule (according to GOST 8550-57). This calory was defined at the 5. International Conference on the Properties of Water and Steam, London, 1956, as the "International Calory of the Properties of Steam". b) 1 calory = 4.1840 absolute joule. This is the conversion to absolute joule of the ratio 1 calory = 4.1833 international joule, which was accepted in 1934 by the Postoyannaya termodinamicheskaya komissiya (Standing Committee on Thermodynamics). The above ratio is at present being widely used in many countries for the purpose of expressing the results of papers on thermochemistry and chemical thermodynamics. As the

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fundamental measuring unit, absolute joule, is exactly established, selection of one or the other coefficients for the ratio between the unit (calory) beyond the fundamental system and the fundamental unit (absolute joule) is no longer of any basic importance and depends only on practical use. From this point of view, also the ratio 1 calory = 4.1840 absolute joule is also to be preferred for work in the field of chemical thermodynamics for the following reasons: a) In very many publications such as monographs, reference works, etc., this ratio is already being used without this fact being expressly mentioned. b) By using the ratio 4.1840 the averaged data may be compared without conversion with the overwhelming majority of data of foreign publications.

ASSOCIATION: Komissiya po khimicheskoy termodinamike pri Otdelenii khimicheskikh nauk SSSR Akademii nauk SSSR (Committee for Chemical Thermodynamics of the Department for Chemical Sciences of the Academy of Sciences, USSR)

5(4)

AUTHORS: Anikin, A. G., Gerasimov, Ya. I., Corresponding Member, AS USSR, Gordeyev, T. V. SOV/20-127-3-31/71

TITLE: The Absorption of Ultra-high Frequency Oscillations in Aqueous and Alcoholic Solutions of RbCl and CsCl-Salts

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 3, pp 589-590 (USSR)

ABSTRACT: The present paper is the first of a series of investigations of the above-mentioned oscillations of inorganic and elemental-organic compounds, carried out for the purpose of finding maxima on the obtained curves if there is a dependence between concentration and the temperature. Forman and Crisp (Ref 1) found such maxima for NaCl and CaCl, and it was found that with a decrease of frequency, the maximm shifted to lower concentrations. In the case of even lower frequencies, the maximum would have to shift towards even lower concentrations. This probable state of affairs was investigated in the present paper by means of the salts mentioned in the title within the frequency interval of from 3 - 11 megacycles. For the purpose of being investigated, the solution was introduced into the alternating field of a condenser. Voltage was measured by means of the kilovoltmeter S-96. All experiments were carried

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The Absorption of Ultra-high Frequency Oscillations in Aqueous and Alcoholic Solutions of RbCl and CsCl-Salts

out under the same conditions : 0.35 a, 3.6 kv, sample volume 5 ml. Absorption was determined from the temperature increase of the solutions at the various concentrations during the same irradiation periods. The data obtained are given by tables 1, 2 and figures 1, 2. Results: of the pure solvents, methyl alcohol absorbed the field more than water, and the alcoholic solutions absorbed more than the aqueous ones. The comparative investigations had been carried out at the same concentrations in the case of the two solvents. The maxima for RbCl in alcoholic solutions occurred at C = $8.9.10^{-4}$ mol/l, $100N_2 = 2.9.10^{-3}$ mol%; CsCl: C = $1.3.10^{-3}$ mol/l, $100N_2 = 4.3.10^{-3}$ mol%, and in aqueous solutions for RbCl at C = $9.3.10^{-3}$ mol/l, $100N_2 = 1.7.10^{-3}$ mol%; CsCl: C = $1.3.10^{-3}$ mol/l, $100N_2 = 4.3.10^{-3}$ mol%. Thus, the assumption concerning the shifting of the maxima toward lower concentrations at low frequencies was confirmed. Besides, the maxima for the salts investigated were found for the first time. There are 2 figures, 2 tables, and 2 references, 1 of which is Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: April 27, 1959

AUTHOR: Gerasimov, Ya. I., Corresponding Member, AS USSR, Chairman of the Commission SOV/20-127-3-71/71

TITLE: To All Scientific Workers of the USSR Carrying Out Work That Is Connected With the Measurement of Thermal Quantities

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 3, Rear Cover (USSR)

ABSTRACT: The following decision was made at the meeting of the Commission for Chemical Thermodynamics at the Otdeleniye khimicheskikh nauk Akademii nauk SSSR (Department of Chemical Sciences of the Academy of Sciences, USSR) on April 20, 1959. It is recommended that calories be defined in Joule, and to state what definition was used. There exist two definitions: (a) 1 cal = 4.1868 abs. Joule, which was filed under GOST 8550-57, and which corresponds to the international cal, determined at the International Conference on the Properties of Water and Steam, London 1956. The second definition, (b) 1 cal = 4.1840 abs. Joule corresponds to the conversion of the international value of 4.1833 fixed in 1934 into absolute Joule. Also the latter value may be used, because it is widely known in published works.

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AUTHOR: Gerasimov, Ya. I., Chairman of the Commission SOV/2o-128-1-58/58
and Corresponding Member, AS USSR

TITLE: To All Scientists of the USSR Occupied With Measurement of Thermal Quantities

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 1, Rear Cover (USSR)

ABSTRACT: This is a publication of a resolution adopted by the Komissiya po khimicheskoy termodinamike pri Otdelenii khimicheskikh nauk Akademii nauk SSSR (Commission for Chemical Thermodynamics at the Department of Chemical Sciences of the Academy of Sciences, USSR) at a meeting held on April 2o, 1959. The Commission suggested to introduce uniform definitions for thermal quantities according to the kind and purpose of measurement: a) 1 cal = = 4.1868 abs. Joule (GOST 8550-57) in accordance with the "International Calorie" (London 1956), or b) 1 cal = 4.184c abs. Joule, which is also a generally accepted equivalent (thermochemistry, chemical thermodynamics).

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5(4) 5.4700 SOV/20-128-5-37/67

AUTHORS: Zharkova, L. A., Gerasimov, Ya. I., Corresponding Member, AS USSR, Rezukhina, T. N., Simanov, Yu. P.

TITLE: The Equilibrium Between Zinc Tungstate and Hydrogen and the Thermodynamic Characteristics of $ZnWO_4$

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 5, pp 992-994 (USSR)

ABSTRACT: The thermodynamic characteristics of tungstates and molybdates of bivalent metals have been investigated at the laboratory of the authors since 1944. The method of circulation applied so far was not applicable here as zinc evaporates and is carried away from the reaction zone. The method devised by J.A.Kitchener and S. Ignatowicz (Ref 10, Fig 1) was therefore employed, yet not the quantity of the volatile product but the hydrogen content of the gas mixture in equilibrium was determined, i.e. by measuring the electromotive force between two hydrogen electrodes, one being saturated with pure hydrogen and the other with a mixture of hydrogen and argon. In order to check the precision of the apparatus, the authors measured the temperature dependence of the equilibrium constant of zinc-oxide reduction (Fig 2, I). Herefrom

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The Equilibrium Between Zinc Tungstate and Hydrogen and the Thermodynamic Characteristics of $ZnWO_4$

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it resulted that it was in good agreement with the values obtained by Kitchener and Ignatowicz. For the reaction $ZnWO_4 + 4H_2 = Zn_{gas} + W + 4H_2O$, the authors calculated the reaction constant K_p and determined the phase composition of the reaction products with the help of radiography. Experimental results are listed in table 1, and figure 2,II indicates the dependence of lgK_p on 1/T. $\Delta H^o_{298} = -327.0$ kcal/mol, $\Delta S^o_{298} = -110.66$ cal/mol.degree, $\Delta Z^o_{298} = -285.1$ kcal/mol were computed by a method developed by M. I. Temkin and L. A. Shvartsman (Ref 16). There are 2 figures, 1 table, and 16 references, 10 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: July 2, 1959

Card 2/2

FROST, Andrey Vladimirovich, prof. [deceased]. Prinimali uchastiye: BUSHMAKIN, I.N.; VVEDENSKIY, A.A.; GRYAZNOV, V.M.; DEMENT'YEVA, M.I.; DINTSES, A.I.; DOBRONRAVOV, R.K.; ZHARKOVA, V.R.; ZHERKO, A.V.; IPAT'YEV, V.N.; KVYATKOVSKIY, D.A.; KOROBOV, V.V.; MOOR, V.G.; NEMTSOV, M.S.; RAKOVSKIY, A.V.; REMIZ, Ye.K.; RUDKOVSKIY, D.M.; RYSAKOV, M.V.; SEREBRYAKOVA, Ye.K.; STEPUKHOVICH, A.D.; STRIGALEVA, N.V.; TATEVSKIY, V.M.; TILICHEYEV, M.D.; TRIFEL', A.G.; FROST, O.I.; SHILYAYEVA, L.V.; SHCHEKIN, V.V.; DOLGOPOLOV, N.N., sostavitel'; GERASIMOV, Ya.I., otv.red.; SMIRNOVA, I.V., red.; TOPCHIYEVA, K.V.; YASTREBOV, V.V., red.; KONDRASHKOVA, S.F., red. izd-va; LAZAREVA, L.V., tekhn.red.

[Selected scientific works] Izbrannye nauchnye trudy. Moskva, Izd-vo Mosk.univ., 1960. 512 p. (MIRA 13:5)

1. Chlen-korrespondent AN SSSR (for Gerasimov).
(Chemistry, Physical and theoretical)

PHASE I BOOK EXPLOITATION SOV/3640

Gerasimov, Yakov Ivanovich, Aleksandr Nikolayevich Krestovnikov, and Aleksey Sergeyevich Shakhov

Khimicheskaya termodinamika v tsvetnoy metallurgii. t. 1: Teoreticheskoye vvedeniye. Termodinamicheskiye svoystva vazhneyshikh gazov. Termodinamika tsinka i yego vazhneyshikh soyedineniy; spravochnoye rukovodstvo (Chemical Thermodynamics in Nonferrous Metallurgy. Vol. 1: Theoretical Introduction, Thermodynamic Properties of the More Important Gases. Thermodynamics of Zinc and Its More Important Compounds; Manual) Moscow, Metallurgizdat, 1960. 230 p. Errata slip inserted. 5,100 copies printed.

Compiler: M.S. Vendrikh, Candidate of Technical Sciences; Reviewers: K.V. Astakhov, Doctor of Chemical Sciences, Professor, and N.V. Gudima, Docent; Ed.: O.M. Kamayeva; Tech. Ed.: V.V. Mikhaylova.

PURPOSE: This book is intended for engineers, scientific workers, and students in advanced courses at schools of higher technical education.

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Chemical Thermodynamics (Cont.)

COVERAGE: This book is the first in a series of eight on the thermodynamic properties of nonferrous and rare metals, as well as their principal compounds (oxides, sulfides, chlorides, sulfates, and carbonates). This volume contains basic data on the principles of chemical thermodynamics, methods of calculating thermodynamic magnitudes, reference data on the thermodynamic properties of the more important gaseous participants in pyrometallurgical reactions, and data on the thermodynamic properties of zinc and its principal compounds. A basic bibliography of 75 publications on chemical thermodynamics and its application to metallurgical processes and metallography is included. No personalities are mentioned. There are 423 references: 51 Soviet, 171 English, 140 German, 30 French, 12 Japanese, 9 Italian, 4 Dutch, 2 Belgian, 1 Swiss, 1 Finnish, 1 Romanian, and 1 Norwegian.

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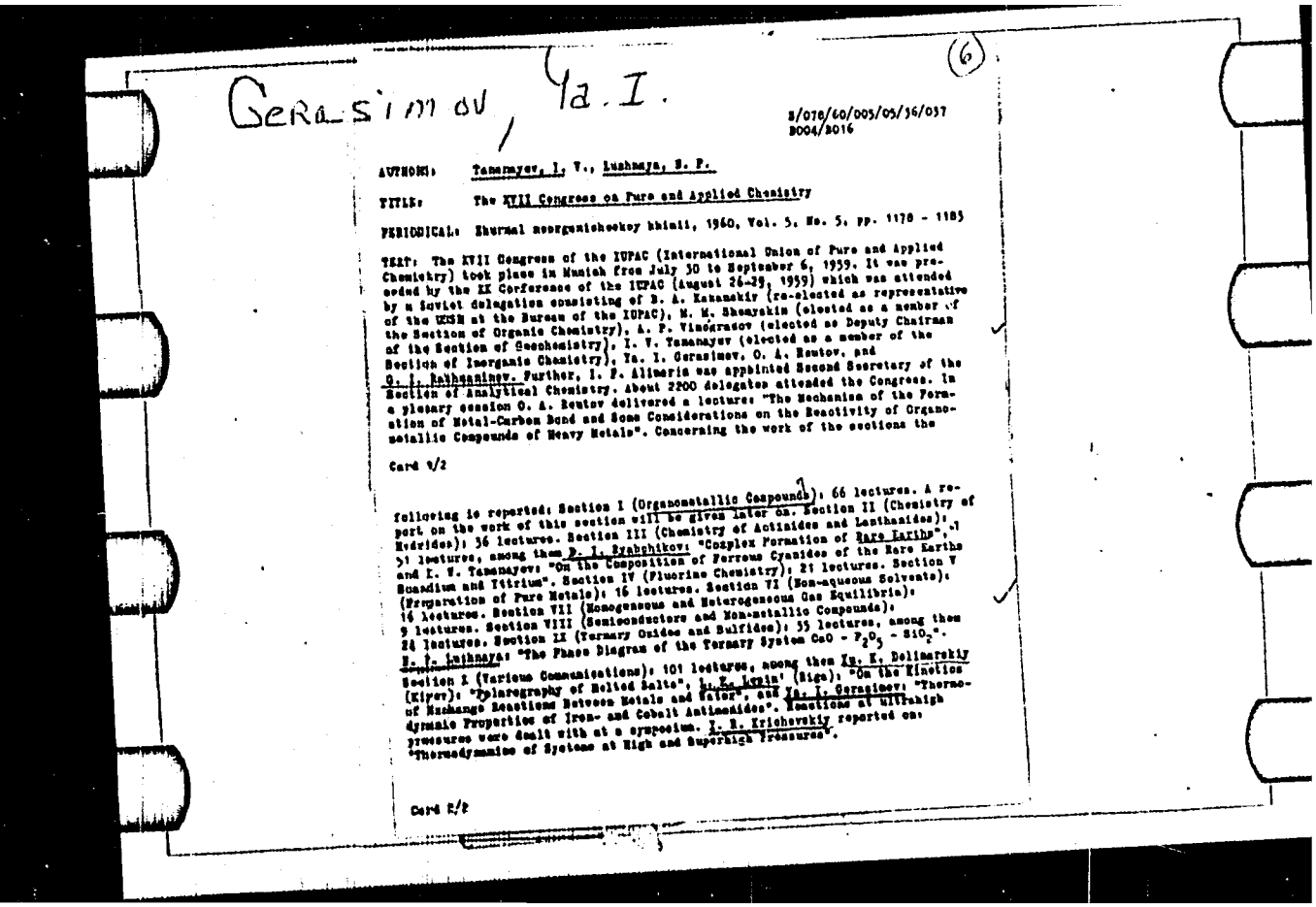

Gerasimov, Ya. I.

(6)

S/076/60/005/05/36/037
B004/B016

AUTHORS: Tamamyan, I. V., Lukhmyn, S. P.

TITLE: The XVII Congress on Pure and Applied Chemistry

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 5, pp. 1178 - 1185

TEXT: The XVII Congress of the IUPAC (International Union of Pure and Applied Chemistry) took place in Munich from July 30 to September 6, 1959. It was preceded by the IX Conference of the IUPAC (August 26-29, 1959) which was attended by a Soviet delegation consisting of B. A. Kazanskiy (re-elected as representative of the USSR at the Bureau of the IUPAC), N. M. Zhavoronkin (elected as a member of the Section of Organic Chemistry), A. P. Vinogradov (elected as Deputy Chairman of the Section of Geochemistry), I. V. Tamamyan (elected as a member of the Section of Inorganic Chemistry), Ya. I. Gerasimov, O. A. Reutov, and O. I. Nathanzinov. Further, I. P. Alimarin was appointed Second Secretary of the Section of Analytical Chemistry. About 2200 delegates attended the Congress. In a plenary session O. A. Reutov delivered a lecture: "The Mechanism of the Formation of Metal-Carbon Bond and Some Considerations on the Reactivity of Organometallic Compounds of Heavy Metals". Concerning the work of the sections the

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following is reported: Section I (Organometallic Compounds): 66 lectures. A report on the work of this section will be given later on. Section II (Chemistry of Hydrides): 36 lectures. Section III (Chemistry of Actinides and Lanthanides): 51 lectures, among them P. I. Fedorov: "Complex Formation of Rare Earths", and I. V. Tamamyan: "On the Composition of Ferrous Cyanides of the Rare Earths Scandium and Yttrium". Section IV (Fluorine Chemistry): 21 lectures. Section V (Preparation of Pure Metals): 16 lectures. Section VI (Non-aqueous Solvents): 16 lectures. Section VII (Homogeneous and Heterogeneous Gas Equilibria): 9 lectures. Section VIII (Semiconductors and Non-metallic Compounds): 24 lectures. Section IX (Ternary Oxides and Sulfides): 55 lectures, among them S. P. Lukhmyn: "The Phase Diagram of the Ternary System CaO - P_2O_5 - SiO_2". Section X (Various Communications): 101 lectures, among them Yu. K. Delimarskiy (Kiyev): "Polarography of Melted Salts", L. E. Levin' (Riga): "On the Kinetics of Exchange Reactions Between Metals and Salts", and Ya. I. Gerasimov: "Thermodynamic Properties of Iron- and Cobalt Antimonides". Reactions at Ultrahigh pressures were dealt with at a symposium. I. R. Krichevskiy reported on: "Thermodynamics of Systems at High and Superhigh Pressures".

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AUTHOR: Gerasimov, Ya. I. (Corresponding Member of the Academy of Sciences, USSR, Chairman of the Commission on Chemical Thermodynamics at the Branch of Chemical Sciences of the Academy of Sciences, USSR)

TITLE: To All Scientists of USSR, Conducting Work Connected With Measurements of Thermal Units

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 3, inside of the journal cover (USSR)

ABSTRACT: This is a resolution adopted by the above commission on April 20, 1959. The resolution stated that different scientists very often use different heat units in their publications. It recommends the use of joule as a systematic thermal unit. The calorie remains only as a nonsystematic unit and is to be used only if its value in terms of joules is given. The relation 1 calorie = 4.1840 joules is recommended.

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B010/B007

AUTHORS: Anosov, V.Ya., Belyayev, A.I., Vol'skiy, A.N., Gerasimov, Ya.I., Zhukhovitskiy, A.A., Kuz'kin, S.F., Murach, N.N., Nekrasov, B.V., Ponomareva, K.S.

TITLE: Aleksandr Nikolayevich Krestovnikov (A.N. Krestovnikov) (On the Occasion of His 60th Birthday)

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol 34, Nr 2, pp 482-483 (USSR)

ABSTRACT: On August 13, 1959 Doctor of Technical Sciences, Professor A.N. Krestovnikov attained the age of sixty. He is one of the leading Soviet experts on thermodynamics and is well-known by his fundamental work in the field of chemical thermodynamics and its application in non-ferrous metallurgy. A.N. Krestovnikov worked at the nauchno-petrograficheskiy Institut Litogea (Scientific Petrographical Institute Lithogea), the Institut prikladnoy mineralogii i petrografii (Institute of Applied Mineralogy and Petrography), Institut prikladnoy mineralogii i metallurgii tsvetnykh metallov (Institute of Applied Mineralogy and Metallurgy of Non-ferrous Metals), the Tsentral'nyy institut tsvetnykh metallov (Central Institute of Non-ferrous Metals), the Kazakhskiy filial AN SSSR (Kazakhskiy Branch of the AS USSR), and other research institutes dealing with problems of chemical technology, electrochemistry,

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Aleksandr Nikolayevich Krestovnikov (A.N. Krestovnikov) (On the Occasion of His 60th Birthday)

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and the physical chemistry of metallurgical processes. Under the supervision of the well-known scientists N.A. Shilov, E.V. Britske, and N.A. Izgaryshev, A.N. Krestovnikov very soon became a widely recognized scientist and pedagogue. In 1926 he began his pedagogical activities and lectured at higher technical schools in Moscow and its neighborhood, as well as at the Moskovskoye vysshe tekhnicheskoye uchilishche (Moscow Higher Technical School), the Voyenno-khimicheskaya akademiya im. K.Ye. Voroshilova (Military Chemical Academy imeni K.Ye. Voroshilov), the Institut khimicheskogo mashinostroyeniya (Institute of Chemical Machine Construction), the Metallurgicheskiy institut zavoda "Serp i Molot" (Metallurgical Institute of the Plant "Serp i Molot"), the Moskovskiy poligraficheskiy institut (Moscow Polygraphical Institute), the Voyennyy fakul'tet goryuche-smazochnykh materialov (Military Department for Fuels and Lubricants), and others. From 1932 up to the present day A.N. Krestovnikov has been active at the Institut tsvetnykh metallov i zolota im. M.I. Kalinina (Institute of Nonferrous Metals and Gold imeni M.I. Kalinin) and now has the Chair of Physical and Colloid Chemistry. Besides more than 100 publications, A.N. Krestovnikov (together with Corresponding Member of the AS USSR Professor Ya.I. Gerasimov) wrote the book "Khimicheskaya termodinamika v tsvetnoy metallurgii" ("Chemical Thermodynamics in

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Aleksandr Nikolayevich Krestovnikov (A.N. Krestovnikov) S/076/60/034/02/042/044
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Non-ferrous Metallurgy"). A.N. Krestovnikov was awarded the Order of Lenin in 1953 for his many years of scientific and pedagogical activities. There is 1 figure.

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AUTHORS: Gerasimov, Ya.I., Karapet'yants, M.Kh. S/076/60/034/02/043/044
B010/B007

TITLE: Valentin Aleksandrovich Kireyev (On the Occasion of His 60th Birthday)

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol 34, Nr 2, pp 484-485 (USSR)

ABSTRACT: On October 16, 1959, Doctor of Chemical Sciences V.A. Kireyev attained the age of sixty. The scientific and pedagogical activities of the well-known Soviet expert on physical chemistry began in 1923-1924. In the years from 1927 to 1932 he worked at the Fiziko-khimicheskiy institut im. L.Ya. Karpova (Institute of Physical Chemistry imeni L.Ya. Karpov). In 1935 V.A. Kireyev took the degree of Doctor of Chemical Sciences and became Professor of Physical Chemistry. His scientific work lay in the field of chemical thermodynamics, in which he mainly carried out determinations of physico-chemical constants of individual substances, investigations of solutions and phase-equilibria, and worked out calculation methods for chemical equilibria. In the course of his activities as Director of the Khimicheskiy institut Dal'nevostochnyy filial AN SSSR Vladivostok (Chemical Institute of the Far Eastern Branch of the AS USSR, Vladivostok) and as Scientific Director of the Physical and Chemical Laboratory of the Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut Moskva (All-Union Scientific

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Valentin Aleksandrovich Kireyev
(On the Occasion of His 60th Birthday)

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Chemical-Pharmaceutical Research Institute, Moscow) investigations were carried out under his supervision of the coking capacity of coal. V.A. Kireyev had already begun his pedagogical activities in 1924 and taught at the Ural'skiy (Ural), Dal'nevostochniy (Far East), Gor'kovskiy universitet (Gor'kiy University), at the Inzhenerno-ekonomicheskiy institut (Institute of Engineering and Economics), and in 1937 he took over the Chair of Chemistry at the Moskovskiy inzhenerno-stroitel'nyy institut im. V.V. Kuybysheva (Moscow Civil Engineering Institut imeni V.V.Kuybyshev). The books written by V.A. Kireyev were translated into several foreign languages. He took part in compiling the great Soviet encyclopedia and is at present Member of the Editors' College of an abridged chemical encyclopedia. V.A. Kireyev is a member of the Mendeleyevskoye obshchestvo (Mendeleyev Society), the Vsesoyuznoye obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy (All-Union Society for the Propagation of Political and Scientific Knowledge) and of a number of commissions of the AS USSR; he is also Chairman of the GEK khimicheskogo fakul'teta MGU (GEK (State Examination Commission) of the Department of Chemistry of Moscow State University). There is 1 figure.

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