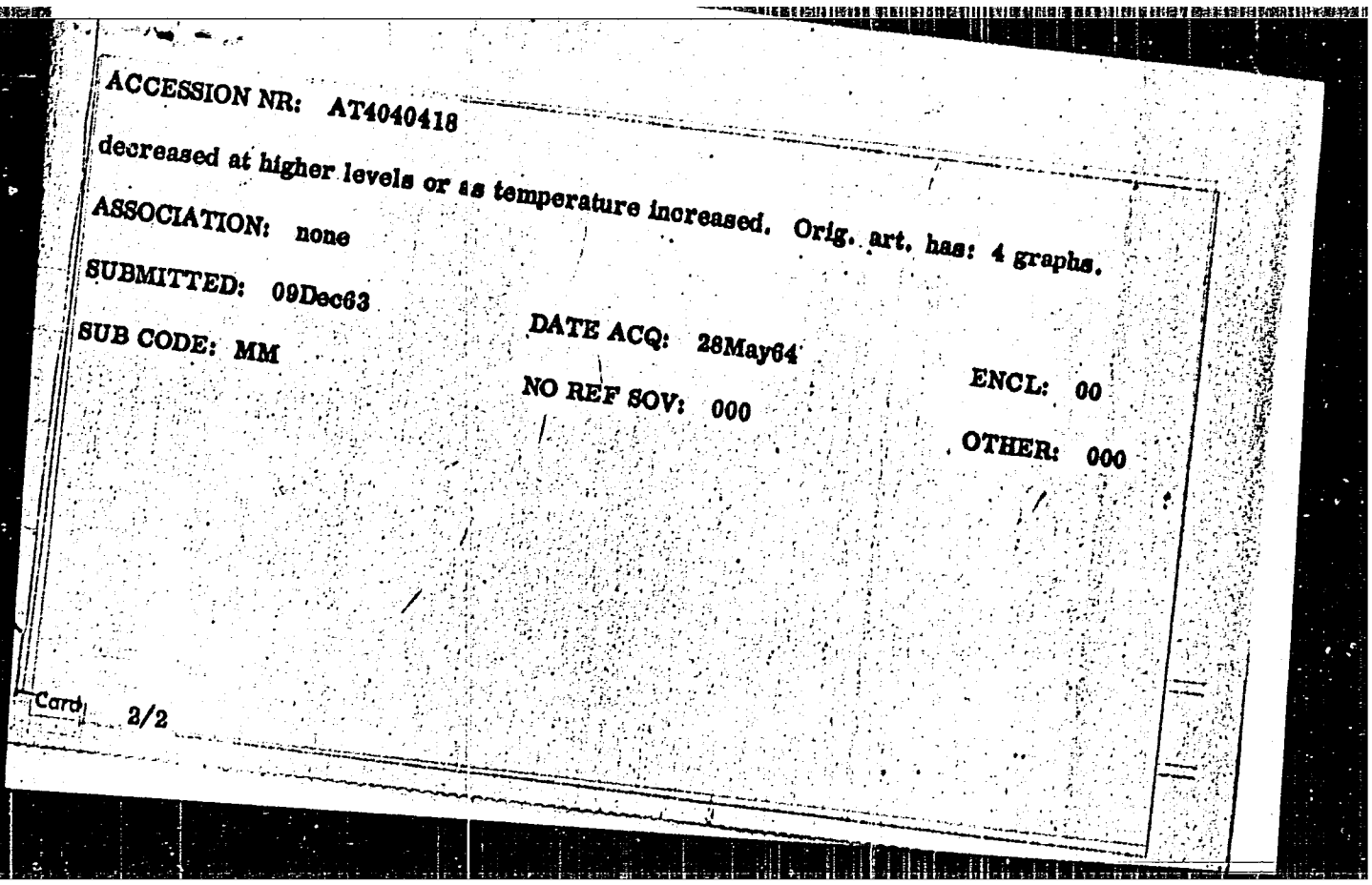

ACCESSION NR: AT4040418

decreased at higher levels or as temperature increased. Orig. art. has: 4 graphs.

ASSOCIATION: none

SUBMITTED: 09Dec63 DATE ACQ: 28May64 ENCL: 00

SUB CODE: MM NO REF SOV: 000 OTHER: 000

Card 2/2

ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.; MALYASOVA, L.A.

Simultaneous chromatographic determination of the composition of two mixtures. Neftekhimiia 4 no.2:337-339 Mr-Ap'64 (MIRA 17:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut yadernoy geofiziki i geokhimii.

SUKHORUKOV, O.A.; ZHUKHOVITSKIY, A.A.

Concentrating impurities by the thermodynamic method during the anlysis of metallurgical systems. Izv. vys. ucheb. zav., chern. met. 7 no.9:5-10 '64. (MIRA 17:6)

1. Moskovskiy institut stali i splavov.

L 00737-66 EWP(e)/EPA(s)-2/EWT(m)/EPF(c)/EWP(i)/EPA(w)-2/EWP(t)/EWP(b)/ETC(m)
IJP(c) JD/WW/WH

ACCESSION NR: AP5022693 UR/0181/65/007/009/2603/2606

AUTHOR: Bronfin, M. B.; Zhukhovitskiy, A. A.; Marichev, V. A.

TITLE: Effect of oxide films on sublimation kinetics

SOURCE: Fizika tverdogo tela, v. 7, no. 9, 2603-2606

TOPIC TAGS: sublimation, aluminum oxide, magnesium oxide

ABSTRACT: One of the methods for studying rate of vaporization is continuous weighing of specimens during isothermal holding in a vacuum. When the specimens are metals which have a strong affinity for oxygen, two characteristic periods may be distinguished on kinetic curves for weight loss. In the first period, the loss in weight increases with time, then after reaching a maximum value the loss remains constant in the second period (see fig. 1 of the Enclosure). This increase in the rate of sublimation at the beginning of isothermal annealing is due to gradual destruction of the oxide film on the surface of the specimen. Kinetic curves for weight loss in some alloys show a similar shape. If the alloy base has a considerably lower vapor pressure than the dissolved material, there is a third period on the curve where the rate of sublimation decreases due to a reduction in the concentration of the volatile component on the surface of the sample. Aluminum-zinc and

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L 00737-66

ACCESSION NR: AP5022693

aluminum-magnesium alloys are examples of such systems. The authors study the first stage of the sublimation process. Thermal dissolution of magnesium and aluminum oxides is practically impossible at experimental temperatures because of their thermal stability. Therefore there should be another mechanism responsible for the destruction of these films. Nearly all surface films on metals except for aluminum have various types of microscopic discontinuities. During isothermal annealing in a vacuum, atoms of the volatile component pass through these defects and leave the surface of the metal, thus increasing the concentration of vacancies in the defect zone. Vacancy coagulation takes place due to the interface between the oxide film and the metal. With the formation of microscopic pores close to this interface, the bond between substrate and oxide film is broken and the film is destroyed, increasing the defect area. Thus the minority atoms are more rapidly evaporated, microscopic pores are formed and the autocatalytic process of film removal is accelerated. A kinetic equation is proposed for the process of sublimation when there is an oxide film on the surface of the metal. Theoretical calculations show excellent agreement with experimental results. Orig. art. has: 3 figures, 14 formulas.

ASSOCIATION: none

SUBMITTED: 06Feb65 ENCL: 01 SUB CODE: IC, GC

NO REF SOV: 000 OTHER: 001

Card 2/3

L 00737-66

ACCESSION NR: AP5022693

ENCLOSURE: 01

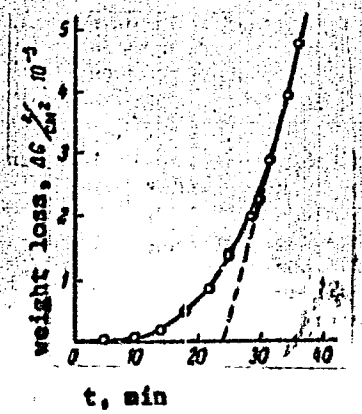

Fig. 1. Specific loss of weight for magnesium as a function of isothermal holding time at 350°C.

Card 3/3

GRIGOR'YAN, V.A.; ZHUKHOVITSKIY, A.A.; MIKHALIK, Ye.

Effect of the chemical process on surface properties. Zhur. fiz. khim. 39 no.5:1179-1184 My '65. (MIRA 18:8)

1. Moskovskiy institut stali i splavov.

L 23718-66 EWT(m)/EWA(d)/EWP(t) IJP(c) JD/NB

ACC NR: AP6013374 SOURCE CODE: UR/0370/66/000/002/0177/0187

AUTHOR: Bokshteyn, S. Z. (Moscow); Bronfin, M. B. (Moscow); Zhukhovitskiy, A. A. (Moscow); Kishkin, S. T. (Moscow); Marichev, V. A. (Moscow)

ORG: none

TITLE: Characteristics of metal sublimation in the presence of an oxidized surface layer

SOURCE: AN SSSR. Izvestiya. Metally, no. 2, 1966, 177-187

TOPIC TAGS: sublimation, vacuum sublimation, magnesium alloy, aluminum alloy, alloy sublimation/VM65-1 alloy, V95 alloy

ABSTRACT: Theoretical and experimental studies have been made of the sublimation and mechanism of the breakdown in the presence of an oxidized surface layer of VM65-1 magnesium-base alloy (5—6% Zn, 0.3—0.9% Zr) and V95 aluminum-base alloy (2.5% Mg and 6% Zn) in a vacuum of 10^{-8} torr at a temperature of 200—380C. It was found that magnesium alloy with a surface oxide film sublimated slowly at 200 or 250C for the first 12—15 hr; then the sublimation rate increased sharply. Specimens which were vacuum annealed at 300C for 4 hr prior to testing sublimated at a high rate from the very beginning of the test (see Fig. 1). The weight of surface-oxidized V95 alloy specimens does not change at 300C for 4 hr. However, at 350C rapid sublimation begins after 10—15 min. Annealing at 340C removes the oxide film, eliminates the inoculation period, and induces rapid sublimation (as in the

Card 1/2 UDC: 669.049.6

L 23718-66
ACC NR: AP6013374

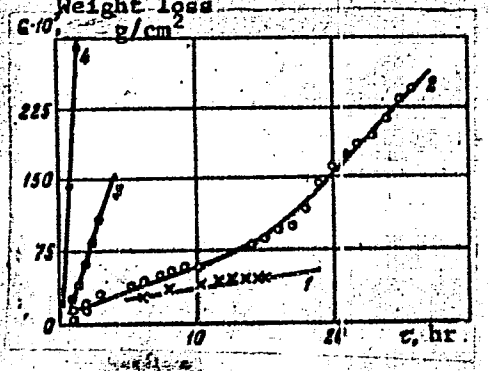

Fig. 1. Sublimation curves of VM65 alloy in vacuum

1 - 200C; 2 - 250C; 3 - 200C; 4 - 250C (3 and 4 after annealing at 300C for 4 hr).

case of VM65 alloy) at the very beginning of the test. The experimental values of the sublimation rate agree well with values obtained from kinetic equations for the sublimation process of tested alloys. Orig. art. has: 7 figures and 26 formulas. [AZ]

SUB CODE: 11, 13/ SUBM DATE: 18Feb65/ ORIG REF: 004/ OTH REF: 004/ ATD PRESS: 4247

Card 2/2

L 29800-66 EWT(1)/EWT(m)/EEC(k)-2/T/EWP(t)/ETI/EWP(k)

ACC NR: AT6016344 (N) SOURCE CODE: UR/0000/65/000/000/0022/0029

AUTHORS: Bokshteyn, S. Z.; Bokshteyn, B. S.; Zhukhovitskiy, A. A.; Kishkin, S. T.; Nechayev, Yu. S.

63

B+1

ORG: none

TITLE: Relaxation method for the study of point defects in the crystal lattice of metals

SOURCE: AN UkrSSR. Podvizhnost' atomov v kristallicheskoy reshetke (Mobility of atoms in crystal lattice). Kiev, Izd-vo Naukova dumka, 1965, 22-29

TOPIC TAGS: metal crystal, crystal lattice, ~~[illegible] defect~~, crystal lattice defect, ~~[illegible]~~ electric resistance

ABSTRACT: A relaxation method for the study of point defects in metal crystal lattices is presented. The proposed method is particularly suited for the separate determination of the activation energies of vacancy formation Q_f, and vacancy mobility Q_m in metal crystal lattices. The method is based on the determination of the vacancy relaxation time as a function of the temperature

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$$\left.\begin{aligned} \nu_B &= Z\nu_D \exp(S_m/R)\exp(-Q_m/RT) \\ l^2 &= 4\int_0^\tau D_B dt \\ D_B &= \frac{1}{6}\nu_D \delta^2 \exp(S_m/R)\exp(-Q_m/RT) \\ \tau_T &= \frac{3}{2}\cdot\frac{l^2}{\delta^2\nu_D}\exp(-S_m/R)\exp\left(\frac{Q_m}{RT}\right) \end{aligned}\right\}$$

where ν_B is the number of vacancy jumps per second, Z is the coordination number, ν_D is Debye frequency, S_m is entropy of activation for vacancy mobility, l is distance between sources and sinks of vacancies, D_B is diffusion coefficient of vacancies, δ is lattice constant, and n is the number of vacancy jumps during time τ_T. The relaxation time τ_T is determined by measuring the electrical resistance of a metal specimen as a function of time and temperature when the specimen is subjected to rapid heating. The changes in temperature ΔT_2, ΔT_3, etc, corresponding to changes in resistance ΔR_2, ΔR_3, etc for corresponding rates of heating ϑ_2, ϑ_3, etc, are obtained graphically (see Fig. 1). From these τ_T follows as

$$\tau_T = \frac{\Delta T_2}{\text{m. point } \vartheta_2} = \frac{\Delta T_3}{\vartheta_3},$$

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L 29800-66

ACC NR: AT6016344

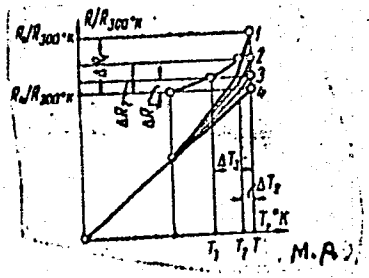

Fig. 1. Temperature dependence of the electrical resistance of metals for different rates of heating. 1 - lattice with equilibrium vacancies concentration, small heating rate; 4 - lattice without vacancies, large heating rate; 2, 3 - intermediate curves.

and Q_m from $\tau_r = A \exp(Q_m/RT)$.

The value of Q_f is derived from a graph of $\ln \frac{\Delta R}{R}$ vs $\frac{1}{T}$. The method was tested on aluminum specimens, and a schematic of the experimental installation is presented. It was found that the relaxation time for Al at the melting point was 1.9×10^{-2} sec and $Q_f = 17 \pm 4$ kcal/mole. A variation of the above method affords a study of the kinetics for the reestablishment of equilibrium vacancies concentrations. This method is based on the determination of the change in the electrical resistance $\Delta \rho_1 = \rho_1 - \rho_{01}$, where ρ_{01} is the electrical resistance of an ideal lattice at T_1 and ρ is the equilibrium value of the electrical resistance at T_1

$$\Delta\rho = \Delta\rho_1 [1 - \exp(-t/\tau_{r_1})],$$

Orig. art. has: 7 figures and 4 equations.

SUB CODE: 20// SUBM DATE: 07Dec64

Card 3/3

ACC NR: AP6029681 SOURCE CODE: UR/0369/66/002/004/0415/0421

AUTHOR: Belashchenko, G. I.; Zhukhovitskiy, A. A.

ORG: Institute of Steel and Alloys, AN SSSR, Moscow (institut stali i spavov AN SSSR)

TITLE: The forces arising upon action of admixtures on polycrystalline thin copper wires

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 4, 1966, 415-421

TOPIC TAGS: copper wire, thin wire, polycrystalline structure, crystal structure, creep, stress analysis, copper alloy

ABSTRACT: In order to study processes which take place on the internal surfaces of division boundaries in studying surface tension of solids, experiments were performed on the measurement of surface tension of solid copper under the influence of various additives. The surface tension of pure copper wire was first measured by stretching the wires under defined load at 1050 C in a vacuum of 10^{-4} mm Hg. The surface tension was found to be 900—1200 erg/cm^2. Then, after applying admixtures directly onto the wire (Sn, Ga, Ag) or applying the admixtures to the wire as a vapor (Ag, Sb, Pb, B), the experiments were repeated in an atmosphere of helium. It was found that in the presence of tin a force arises which counteracts extension of the wire and may even cause a shortening of the wire, even against a considerable load. This process, found to be an activation process, is rather widespread for various additives. In addition

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ACC NR: AP6029681

to the shortening, in all cases an increase in the creep rate under the influence of the additives was noted. Some of the effects noted were caused by displacement of copper atoms, superequivalent displacement, and by the atoms of the additive. The displaced copper atoms migrate inward and reduce vacancies in a certain layer near the boundary, causing it to become effectively compressed. The results show that a study of creep of thin wires can produce characteristics not only of the external but also the internal boundaries of a solid. Orig. art. has: 6 formulas and 8 figures.

SUB CODE: 11/ SUBM DATE: 16Aug65/ ORIG REF: 006/ OTH REF: 006

Card 2/2

L 21729-66 EWT(m)/EWP(t) IJP(c) JD

ACC NR: AP6008059 SOURCE CODE: UR/0032/66/032/002/0133/0135

AUTHOR: Zhukhovitskiy, A. A.; Turkel'taub, N. M. (Deceased); Koreshkova, R. I.; Karymova, A. I.

ORG: All-Union Scientific Research Institute of Nuclear Geophysics and Geochemistry (Vsesoyuznyy nauchno-issledovatel'skiy institut yadernoy geofiziki i geokhimii)

TITLE: Use of the sorption substitution method for determining helium and carbon dioxide impurities

SOURCE: Zavodskaya laboratoriya, v. 32, no. 2, 1966, 133-135

TOPIC TAGS: carbon dioxide, helium, gas analysis, ethane, ionization detector

ABSTRACT: During motion of mixtures along a layer of sorbent, some components in one mixture are substituted for components in the other in the same or in altered concentrations. The authors discuss various possibilities for practical use of this phenomenon. A method is proposed for gas analysis based on substitution of a gas for an impurity which is difficult to determine. This is a superior method for analyzing gases with poor indicator properties. The method is illustrated by deter-

UDC: 543.544.2

Card 1/2

L 21729-66

ACC NR: AP6008059

mination of helium and carbon dioxide by substituting ethane for these impurities and using a flame-ionization detector. Helium was determined in a $He-CO_2$ mixture and carbon dioxide in a N_2-CO_2 mixture. The method is reliable for determination of 10^{-3}% helium and approximately $2 \cdot 10^{-3}$% CO_2. Orig. art. has: 4 figures, 2 formulas.

SUB CODE: 07/ SUBM DATE: 00/ ORIG REF: 001/ OTH REF: 000

Card 2/2 UDC

SHEVTSOV, V.Ye.; ZHUKHOVITSKIY, A.A.

Analysis of blast-furnace gas by chromatography without gas carriers. Zav. lab. 31 no.11:1318-1321 '65.

(MIRA 19:1)

1. Moskovskiy institut stali i splavov.

SOMOV, A.P.; ZHUKHOVITSKIY, A.A.

Vacantolonization method of determining microvolumes of gases and its use in the study of heterogeneous processes. Zav. lab. 31 no. 12:1442-1445 '65 (MIRA 19:1)

1. Moskovskiy institut stali i splavov.

ZHUKHOVITSKIY, A.A.; LAPKIN, L.M.; DATSKEVICH, A.A.

Zero line in vacantochromatography as a basis of continuous dose-less analysis. Dokl. AN SSSR 162 no.5:1089-1091 Je '65. (MIRA 18:7)

1. Moskovskiy institut stali i splavov. Submitted November 30, 1964.

ZHUKHOVITSKIY, A.A.; SELENKINA, M.S.; TURKEL'TAUB, N.M.; SHVARTSMAN, V.P.; SHLYAKHOV, A.F.; SMIRNOVA, I.A.

Chromatography without gas carrier and the phenomenon of adsorption substitution. Zav. lab. 30 no.11:1308-1313 '64 (MIRA 18:1)

MIRZAYANOV, V.S.; BEREZKIN, V.G.; PROSKURNEVA, Ye.G.; PAKHOMOV, V.P.;
Prinimal uchastiye ZHUKHOVITSKIY, A.A., prof.

Preparative production of ethylene of high purity. Khim. i tekh. topl. i masel 9 no.9:66-68 S '64. (MIRA 17:10)

SHCHAPOV, N.P., prof., doktor tekhn. nauk, retsenzent;
ZHUKHOVITSKIY, A.A., prof., doktor khim. nauk, retsenzent

[Machines and instruments for the testing of metals and plastics] Mashiny i pribory dlia ispytaniia metallov i plastmass; sbornik statei. Moskva, Mashinostroenie, 1965. 134 p. (MIRA 18:2)

ANVAYER, B.I.; ZHUKHOVITSKIY, A.A.; LITOVTSEVA, I.I.; SAKHAROV, V.M.; TURKEL'TAUB, N.M.

Relation between the retention volume in gas-liquid chromatography and the dielectric constant of the stationary phase. Zhur. anal. khim. 19 no.2:178-183 '64.

(MIRA 17:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut yadernoy geofiziki i geokhimii, Moskva.

ZHUKHOVITSKIY, A.A., doktor khimich.nauk; ANVAYER, B.I.

Gas chromatography. Zhur. VKHO 9 no. 2:186-196 '64. (MIRA 17:9)

BELASHCHENKO, D.K.; ZHUKHOVITSKIY, A.A.

On the comments by B. Baranovskii and A. TSkurovskii. Zhur. fiz. khim. 36 no.9:2098 S '62. (MIRA 17:6)

ZHUKHOVITSKIY, A.A., otv. red.; VAGIN, Ye.V., red.; GOL'BERT, K.A., red.[deceased]; KISELEV, A.V., red.; TURKEL'TAUB, N.M., red.; PESENKO, Ye.P., red.; YANOVSKIY, M.I., red.

[Gas chromatography; transactions] Gazovaia khromatografiia; trudy. Moskva, Nauka, 1964. 483 p. (MIRA 17:12)

1. Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po gazovoy khromatografii. 2d, Moscow, 1962.

TURTEL'TAUB, N.M.; RYABCHUK, L.N.; MOROZOVA, S.N.; ZHUKHOVITSKIY, A.A.

Chromatographic determination of helium, neon, and hydrogen impurities in air. Zhur. anal. khim. 19 no. 1:133-134 '64.
(MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

FRUMKIN, A.N.; GERASIMOV, Ya.I.; CHMUTOV, K.V.; TEMKIN, M.I.; ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.

Kirill Alekseevich Gol'bert. Zhur.fiz.khim. 37 no.1:249 Ja '63. (MIRA 17:3)

MIRZAYANOV, V.S.; ZHUKHOVITSKIY, A.A.; BEREZKIN, V.G.; TURKEL'TAUB, N.M.

Frontal-displacement method for concentrating poorly adsorbed impurities. Zav. lab. 29 no.10:1166-1169 '63. (MIRA 16:12)

ACCESSION NR: AP4009730 S/0075/64/019/001/0133/0134

AUTHOR: Turkel'taub, N. M.; Ryabchuk, L. N.; Morozova, S. N.; Zhukhovitskiy, A. A.

TITLE: Chromatographic determination of helium, neon and hydrogen admixtures in air

SOURCE: Zhurnal analiticheskoy khimii, v. 19, no. 1, 1964, 133-134

TOPIC TAGS: helium determination, neon determination, hydrogen gas determination, gaseous air admixture, air analysis, air impurity concentration, charcoal gas absorption, elution chromatography, air admixture chromatography

ABSTRACT: Prior concentration and subsequent analysis of these contents by elution chromatography on activated charcoal at room temperature rather than low temperatures, afforded simultaneous determination of these admixtures with satisfactory precision at the following concentrations: He-0.0001%, Ne-0.0004%, H_2-0.0001%. The concentration method was based on frontal analysis (to obtain

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ACCESSION NR: AP4009730

the less absorbable components) with a 2-step technique in a U-shaped charcoal filled tube. The usual chromatographic set-up for this medium was used for analysis with argon as carrier gas. The concentration coefficients were 12 for He, 15 for Ne and 10 for H_2. After 12 tests of air from the street the following standard deviation errors were obtained: 4.6% for He, 4.1% for Ne and 7.8% for H_2. The sensitivity limits of the equipment were 0.001% for He, 0.0035% for Ne and 0.001% for H_2 for a 3.5 cc sample. Orig. art. has: 4 figures

ASSOCIATION: Vsesoyuznyy*y nauchno-issledovatel-skiy institut yadernoy geofiziki i geokhimii, Moskva (All-Union Scientific Research Institute of Nuclear Geophysics and Geochemistry)

SUBMITTED: 01Jul63 DATE ACQ: 14Feb64 ENCL: 00

SUB CODE: CH NO REF SOV: 001 OTHER: 004

Card 2/2

ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.; MALYASOVA, L.A.; SHLYAKHOV, A.F.; NAUMOVA, V.V.; POGREBNAYA, T.I.

Chromatography without gas carriers. Zav. lab. 29 no.10:1162-1166 '63. (MIRA 16:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut yadernoy geofiziki i geokhimii.

ACCESSION NR: AP4013303 S/0032/64/030/002/0186/0190

AUTHORS: Rotin, V. A.; Belashchenko, D. K.; Bokshteyn, B. S.; Zhukhovitskiy, A. A.

TITLE: Method of determining electron diffusion potentials in binary melts of metals

SOURCE: Zavodskaya laboratoriya, v. 30, no. 2, 1964, 186-190

TOPIC TAGS: diffusion potential, electron diffusion, eutectic diagram, glass capillary, quenching oil bath, metallic melt

ABSTRACT: The electron diffusion in two types of alloys has been determined: alloys with simple eutectic diagrams and slight departures from ideal solutions (Pb-Sn, Bi-Sn, Bi-Cd) and alloys with fixed chemical composition but with large departures from laws of ideal solutions (Na-Tl and Bi-Te). The two metals were placed in a glass capillary and separated by means of 1-2 mm molybdenum solder. The capillary was placed in a quenching oil bath to keep the thermal emf of both metallic melts identical. The resulting diffusion potential was measured using a Gerts type 167300 high-sensitivity galvanometer with low input resistance. For large specimen impedances an M-95 galvonometer was used. The measurements indicated

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ACCESSION NR: AP4013303

a wide range of potential outputs, from a minimum of 5 μ kv for Pb-Sn to 100 μ kv for Na-Tl and Bi-Te systems. Orig. art. has: 4 figures, 3 tables, and 2 formulas.

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow Institute of Steels and Alloys)

SUBMITTED: 00	DATE ACQ: 26Feb64	ENCL: 00
SUB CODE: ML	NO REF SOV: 005	OTHER: 001

Card 2/2

SOMOV, A.P.; ZHUKHOVITSKIY, A.A.

Flame-ionization method of studying equilibrium in heterogeneous systems with a gaseous phase. Izv. vys. ucheb. zav. chern. met. 8 no.1:5-9 '65 (MIRA 18:1)

1. Moskovskiy Institut stali i splavov.

ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.

Iteration chromatography. Dokl. AN SSSR 150 no.1:113-115 My '63.
(MIRA 16:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut yadernoy geofiziki i geokhimii. Predstavleno akademikom P.A.Rebinderom.
(Gas chromatography)

GRIGORYAN, V.A.(Moskva); KUROCHKINA, L.A.(Moskva) [deceased]; ZHUKHOVITSKIY, A.A. (Moskva); GAL',V.V.(Moskva)

Kinteics of cementite decomposition. Izv. AN SSSR.Otd.tekh.nauk. Met. i topl. no.5:159-162 S-O '62. (MIRA 15:10)
(Metals—Hardening) (Phase rule and equilibrium)

KRISHTAL, M.A.; PINES, B.Ya., prof., retsenzent; ZHUKHOVITSKIY, A.A., red.; GORDON, L.M., red. izd-va; OBUKHOVSKAYA, G.P., tekhn. red.

[Diffusion processes in iron alloys] Diffuzionnye protsessy v zheleznykh splavakh. Moskva, Metallurgizdat, 1963. 277 p. (MIRA 16:7)

1. Kafedra metallovedeniya i termicheskoy obrabotki Moskovskogo instituta stali i splavov (for Pines).
(Iron alloys--Metallography) (Diffusion)

ZHUKHOVITSKIY, A.A.; SELENKINA, M.S.; SERENKOVA, A.G.; TURKEL'TAUB, N.M.

Methods of chromatographic identification of the components of complex mixtures. Trudy Kom.anal.khim. 13:216-224 '63. (MIRA 16:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologorazvedochnyy neftyanoy institut.
(Chromatographic analysis) (Petroleum--Analysis)

ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.

Chromatographic determination of impurities. Neftekhimiia 3 no.1:135-143 Ja-F '63. (MIRA 16:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut yadernoy geofiziki i geokhimii.
(Chromatographic analysis)

ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.; GAYYER, M.; LAGASHKINA, M.N.; MALYASOVA, L.A.; SHLEPUZHNIKOVA, G.P.

Vacancy chromatography. Zav.lab. 29 no.1:8-13 '63. (MIRA 16:2)

1. Institut yedernoy geofiziki i geokhimii.
(Chromatographic analysis)

ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.; KANCHEYEVA, O.A.; NAUMOV, V.V.; RYABCHUK, L.N.

Partition step chromatography. Zav.lab. 29 no.1:14-18 '63. (MIRA 16:2)

1. Institut yadernoy geofiziki i geokhimii.
(Chromatographic analysis)

GUGLYA, V.G.; TSZYAN PEN-CHEY; BOKSHTEYN, B.S.; ZHUKHOVITSKIY, A.A.

Feasibility of the Mueller relation for the reflection of β-particles from artificial mixtures. Zav.lab. 29 no.4:449-453 '63. (MIRA 16:5)

1. Moskovskiy institut stali i splavov.
(Beta rays) (Metallurgical analysis)

GUGLYA, V.G.; TSZYAN PEN-CHEY; ZHUKHOVITSKIY, A.A.

Accuracy of analysis of ores by the reflection method. Zav.lab. 29 no.5:579-580 '63. (MIRA 16:5)

1. Moskovskiy institut stali i splavov.
(Mineralogy, Determinative) (Beta rays)

S/020/63/149/001/011/023
B104/B186

AUTHORS: Zhukhovitskiy, A. A., Krichtal, M. A.

TITLE: On one case of a realization of the theoretical strength

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 1, 1963, 88 - 89

TEXT: Plastic deformation and destruction of metals and alloys occur usually at tensions less than that obtained in the theory of interatomic bond; this divergence is caused by the dislocations. Here it is shown that the range of plasticity of different materials is decreased at high deformation rates. When the frequency of deformation is within the spectrum of solid body vibrations the energy is accumulated on the gliding planes and destruction ensues. If the rate of shear deformation is greater than the velocity of sound the energy is dispersed along the gliding planes. It is possible that in the range of [illegible] deformation rates the Newton law is satisfied; it is [illegible] is proportional to the size of the shear deformation. [illegible] for the coefficient of viscosity [illegible] results obtained in

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S/020/63/149/001/011/023
B104/B186

experiments using pulsation methods with great deformation rates. Here, ρ is the density, c is the sound velocity, δ is the lattice period and k is a factor.

ASSOCIATION: Tul'skiy mekhanicheskiy institut (Tula Mechanical Institute)

PRESENTED: October 23, 1962, by P. A. Rebinder, Academician

SUBMITTED: October 19, 1962

L 12706-63 EWT(m)/BDS AB

ACCESSION NR: AP3000304 S/0020/63/150/001/0113/0115

AUTHOR: Zhukhovitskiy, A. A.; Turkel'taub, N. M. 51

TITLE: Iterative chromatography 50

SOURCE: AN SSSR. Doklady, v. 150, no. 1, 1963, 113-115

TOPIC TAGS: chromatography, flame ionization, hydrocarbons, automatic control, laboratory analysis

ABSTRACT: Authors made use of iterative chromatography in two variations to analyze a substance (experimental works were carried out jointly with L. A. Malyasova). In the first of these, doses of a gas of known composition are introduced successively into the stream of the analyzed mixture. Authors then describe the steps used to carry out a complete analysis. The first variation was used for two cases: 1. a separation of a mixture of isobutane-butane. The detector was flame-ionization. Gas-carrier was nitrogen; 2. separation of hydrocarbons. Detector was flame-ionization. The gas carrier was nitrogen. In the second variation, the dosed mixture was prepared by a mixture of the components' streams. The second variation is simpler and more rational to use. Authors conclude that iterative method can be used not only for laboratory analysis but also for analysis carried out on the production line.

ANVAYER, B.I.; ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.

Second All-Union Conference on Gas Chromatography. Khim.i tekh.topl.i masel 7 no.7:65-68 Jl '62. (MIRA 15:9)
(Gas chromatography—Congresses)

KUROCHKINA, L.A. (Moskva) [deceased]; GRIGORYAN, V.A. (Moskva); ZHUKHOVITSKIY, A.A. (Moskva)

Carbon diffusion in cementite in the graphitization process. Izv.AN SSSR. Otd.tekh.nauk. Met.i topl. no.4:78-81 Jl-Ag '62. (MIRA 15:8)

(Annealing of metals)

ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.; SHLYAKHOV, A.F.

Analysis of some low boiling gases with the use of molecular sieves and complexing agents. Khim.i tekh.topl.i masel 7 no.6:7-11 Je '62. (MIRA 15:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut yadernoy geofiziki i geokhimii Ministerstva geologii i okhrany nedr SSSR.

(Gases--Analysis)

ZHUKHOVITSKIY, A.A.; SELENKINA, M.S.; TURKEL'TAUB, N.M.

Problem of the consecutive connection of columns in gas chromatography. Zhur.fiz.khim. 36 no.5:993-998 My '62. (MIRA 15:8)

1. Moskovskiy institut stali.

(Gas chromatography)

ALEKSEYEVA, K.V.; ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.

Study of the effect of various parameters in preparative chromatography. Khim.i tekh.topl.i masel 7 no.4:60-66 Ap '62. (MIRA 15:4)

1. Gosudarstvennyy institut po proyektirovaniyu zavodov kauchukovoy promyshlennosti.

(Gas chromatography)

ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.

Stepped chromatography. Dokl.AN SSSR 144 no.4:829-832 Je '62.
(MIRA 15:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologo-razvedochnyy neftyanoy institut. Predstavleno akademikom P.A.Rebinderom.
(Gas chromatography)

CHERNYSHEVA, G.I.; ZHUKHOVITSKIY, A.A.

Effect of thin wire shrinkage. Izv. vys. ucheb. zav.; chern. met. 4 no.7:129-137 '61. (MIRA 14:8)
(Alloys--Testing)
(Diffusion)

ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.

Increasing the effectiveness of gas chromatography. Zav.lab. 28 no.2:133-136 '62. (MIRA 15:3)
(Gas chromatography)

GRIGORYAN, V.A.; KHAN' CHI-YUN [Han Ch'ih-yung]; ZHUKHOVITSKIY, A.A.

Determination of the diffusion characteristics of components in solution (with the aid of wires) based on extrapolation to zero diameter. Zav.lab. 28 no.3:296-298 '62. (MIRA 15:4)

1. Moskovskiy institut stali.

(Diffusion)

ZHUKHOVITSKIY, A.A.; ANDREYEV, L.A.

Effect of dispersing on electron emissivity. Dokl. AN SSSR 142 no.6:1319-1322 F '62. (MIRA 15:2)

1. Moskovskiy institut stali. Predstavleno akademikom V.N. Kondrat'yevym.

(Electrons—Emission)
(Surface energy)

ZHUKHOVITSKIY, A.A.; TURKEL'TAUB, N.M.

Efficiency criteria in gas chromatography. Usp.khim. 30 no.7: 877-894 Jl '61. (MIRA 14:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologorazvedochnyy neftyanoy institut.
(Gas chromatography)

24,7000

S/181/62/004/007/005/037
B102/B104

AUTHORS: Bokshteyn, B. S., Belashchenko, D. K., and Zhukhovitskiy, A.A.

TITLE: Surface diffusion study in powders by the method of the electro-diffusion potential

PERIODICAL: Fizika tverdogo tela, v. 4, no. 7, 1962, 1728 - 1734

TEXT: Owing to the smallness of the diffusion current it is difficult to study surface diffusion experimentally. A new and simpler method is suggested, based on electric measurements. The activation energy of surface diffusion can be determined from the temperature dependence of the electro-diffusion potential. This potential was measured, in the range 210 - 310°C, for diffusion of tin into pressed nickel powder. That substance and temperature interval were chosen because the volume diffusion coefficient for them is less than 10^{-20} cm^2/sec, so that virtually no tin penetrates into the Ni grain volume. The mean grain size was 10^{-2}cm. The grains were porous (10 volume %, pore size 10^{-5} cm), the pressed samples (cylinders of 10 mm diameter and 5 mm height) having porosity of about 45%. The

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Surface diffusion study ...

measurements were made at 210, 240, 270 and 310°C. Temperature dependence of the electrodiffusion potential, that of the diffusion coefficients, and the dependence of the Sn concentration on the penetration depth are given graphically and numerically. The activation energy of the Sn surface diffusion was Q=12,000 cal/g-at, the range of error around 20%. Control meausrements were carried out with radioactive isotopes ($Sn^{113/123}$). The initial activity of the tin foil was 50,000 pulses/min, the penetration depth into the grain volume determined from the activity was about 1 Å, Q = 11,000 cal/g-at. The penetration depth, x, is proportional to $\sqrt{Dt}$ (where D is the diffusion coefficient) and, if $x \ll 2\sqrt{Dt}$, then $c/c_o = 1 - x/\sqrt{\pi Dt}$; or, since c_o is unknown, $\ln c/c_o \approx -x/\sqrt{\pi Dt}$; log c plotted versus x gives straight lines with the angle of inclination α. If $\alpha \ll 1$, then $D = 0.19/\pi t \tan^2 \alpha$. Q=11,000 cal/g-at is found from the slope of the straight line log D = f(1/T), which is in good agreement with the value obtained from electrodiffusion potential measurements. The measurements also show that surface diffusion takes place not only on the surface but also in a layer having a thickness of ≈250 Å which considerably exceeds that of the

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Surface diffusion study ... S/181/62/004/007/005/037
B102/B104

lattice constant. There are 3 figures and 3 tables.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: June 22, 1961 (initially), January 18, 1962 (after revision)

Card 3/3

SOTSKOV, A.D.; GAO I-SHAN'; ZHUKHOVITSKIY, A.A.

Radioisotopes in the study of diffusion processes accompanied by phase transitions and chemical transformations. Izv.vys. ucheb.zav.;khim. i khim.tekh. 3 no.3:452-456 '60. (MIRA 14:9)

1. Moskovskiy institut stali imeni I.V. Stalina, kafedra fizicheskoy khimii.
(Diffusion) (Radioisotopes)

AGEYENKOV, Vasiliy Gordeyevich [deceased]; MIKHIN, Yakov Yakovlevich; ZHUKHOVITSKIY, A.A., prof., doktor khim. nauk, retsenzent; POZDNYAKOVA, G.L., red. izd-va; ISLENT'YEVA, P.G., tekhn. red.

[Metallurgical calculation; general part] Metallurgicheskie raschety; obshchaia chast'. Moskva, Metallurgizdat, 1962. 207 p. (MIRA 15:6)

(Metallurgy--Tables, calculations, etc.)

TURKEL'TAUB, N.M.; ZHUKHOVITSKIY, A.A.; PORSHNEVA, N.V.

Investigation of molecular sieves by gas chromatography. Zhur. prikl.khim. 34, no.9:1946-1953 S '61. (MIRA 14:9)
(Adsorption)

BELASHCHENKO, D.K.; ZHUKHOVITSKIY, A.A. (Moskva)

Contribution to the theory of electrical transfer. Zhur. fiz.khim. 35 no.9:1921-1926 '61. (MIRA 14:10)
(Electrochemistry)

S/032/62/028/003/005/017
B101/B138

AUTHORS: Grigoryan, V. A., Han Ch'ih-yung, and Zhukhovitskiy, A. A.

TITLE: Determination of the diffusion characteristics of solution components by wires, on the basis of extrapolation to the zero diameter

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 3, 1962, 296 - 298

TEXT: A method is described for determining the diffusion coefficient, D, by convective diffusion to a cylinder whose diameter, d, is extrapolated to zero. $m = \Pi/\pi\, cl - d^{0.5}$ is derived from the Nusselt equation. Π is the flow to a cylinder of the length l, diameter d, c is the concentration of the solution. $m_{init} = 0.32D$. m_{init} is determined in the coordinate system m, $\sqrt{D}$ is found graphically. The method was experimentally checked by sedimentation of Ag from $AgNO_3$ enriched with Ag^{110} on copper wires of different diameters: 0.09, 0.2, 0.32, 0.4, 0.51, and 0.64 mm. The radioactive radiation of the Ag^{110} deposited on the wires was measured by

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a B-2 (B-2) apparatus. At 2, 20, 38.5, 59.5, and 76°C, $D \cdot 10^{-5}$ was found to be 0.76, 1.57, 2.36, 4.34, and 6.85 cm^2/sec, respectively. These values follow equation $D = 0.2 \exp(-5400/RT)$. The root mean square deviation from the straight line log D - 1/T was 1.5%. Mixing of the solution increased the gradient of the straight line $m - \sqrt{d}$, but did not change the value of m_{init}. The accuracy of the exponent 0.5 was checked by the equation $m = A + kd^n$ by calculating the minimum value of the root mean square error. $n_{min} = 0.5$ was found for 19° and 59.5°C. There are 3 figures and 7 references: 4 Soviet and 3 non-Soviet. The reference to the English-language publication reads as follows: Handbook of Chemistry and Physics, 37 edition, 2026 (1956).

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

BAO-SYUE-SIN"; BOKSHTEYN, B.S.; ZHUKHOVITSKIY, A.A.

Diffusion in heterophase systems. Fiz. tver. tela 3 no. 3:723-728 Mr '61. (MIRA 14:5)

1. Moskovskiy institut stali imeni I.V. Stalina.
(Diffusion) (Iron-copper alloys)

KHAN' CHI-YUN [Han Ch'ih-yung]; GRIGORYAN, V.A.; ZHUKHOVITSKIY, A.A.

Isotopic iron exchange in a two-phase system solid metal - liquid slag. Izv.vys.ucheb.zav.; chern.met. 4 no.5:5-16 '61. (MIRA 14:6)

1. Moskovskiy institut stali.
(Iron—Isotopes) (Phase rule and equilibrium)

TURKEL'TAUB, N.M.; ZHUKHOVITSKIY, A.A.

Chromatographic methods and apparatus for analyzing complex mixtures of gases and volatile substances. Trudy VNIGNI no. 10:257-265 '58. (MIRA 14:5)
(Chromatographic analysis) (Gases)

S/081/61/000/021/020/094
B102/B138

AUTHORS: Turkel'taub, N. M., Zhukhovitskiy, A. A.

TITLE: Choice of experimental parameters in gas chromatography

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1961, 69, abstract 21B556 (Sb. "Gaz. khromatografiya", M., AN SSSR, 1960, 144-161)

TEXT: Together with already published results (RZhKhim, 1958, no. 7, 20820; 1961, 6B698) the article gives the results of new studies of the influence of the experimental parameters on the degree of separation. The influence of the length of the sorbent layer on separation was studied for gas-adsorption and gas-liquid chromatography. The effect of different factors on band broadening was investigated. Band width and effective diffusion coefficient dependence on the flow rate of the gas carrier was examined, as also the dependence of the separation of a propane - propylene - butane mixture on the silica gel properties. An admixture of NaOH removes the irreversibility of butylene adsorption on silica gel and Al_2O_3. The specific value of the adsorption can be raised by modifying

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Choice of experimental ... S/081/61/000/021/020/094
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the silica-gel and brick by adding organic solvents. Examples are given of the separation of multi-component hydrocarbon mixtures, using brick modified by vaseline oil and NaOH. [Abstracter's note: Complete translation.]

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ANOSOV, V.Ya.; BELYAYEV, A.I.; VOL'SKIY, A.N.; GERASIMOV, Ya.I.; ZHUKHOVITSKIY, A.A.; KUZ'KIN, S.F.; NEKRASOV, B.V.; PONOMAREVA, K.S.

Aleksandr Nikolaevich Krestovnikov; on the 60th anniversary of his birth. Zhur. fiz. khim. 34 no.2:482-483 F '60. (MIRA 14:7)
(Krestovnikov, Aleksandr Nikolaevich, 1899-)

ZHUKHOVITSKIY, A.A.

BOKSHTEYN, Samuil Zeylikovich; KISHKIN, Sergey Timofeyevich; MOROZ, Lita Markovna; ZHUKHOVITSKIY, A.A., prof., doktor khim.nauk, retsenzent; RAKHSHTADT, A.G., dotsent, kand.tekhn.nauk, red.; SHAYNFAYN, L.I., izdat.red.; ROZHIN, V.P., tekhn.red.

[Investigating the structure of metals by means of radioactive isotopes] Issledovanie stroeniia metallov metodom radioaktivnykh izotopov. Moskva, Gos.izd-vo obor.promyshl., 1959. 217 p. (MIRA 13:2)

(Metallography)
(Radioisotopes--Industrial applications)

TOMASHOV, M.D., prof., doktor khim.nauk, red.; ZHUKHOVITSKIY, A.A., prof., doktor khim.nauk, retsenzent; PONOMAREVA, K.S., dotsent, retsenzent; ALAVERDOV, Ya.G., red.izd-va; POPOVA, S.M., tekhn.red.

[Corrosion and protection of steel; collection of articles] Korroziia i zashchita stalei; sbornik statei. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 233 p. (MIRA 12:10)

(Steel) (Corrosion and anticorrosives)

BELASHCHENKO, D.K. (Moskva), BOKSHTEYN, B.S. (Moskva), ZHUKHOVITSKIY, A.A., (Moskva)

Electrodiffusion potential in metals. Izv. AN SSSR. Otd. tekh. nauk. Met. i topl. no.6:109-111 N-D '60. (MIRA 13:12)
(Metals--Electric properties) (Diffusion)

18.7500 4016, 1145, 1413

S/181/61/003/003/006/030
B102/B214

AUTHORS: Pao-hsueh-hsin, Bokshteyn, B. S., Zhukhovitskiy, A. A.

TITLE: Diffusion in heterophase systems

PERIODICAL: Fizika tverdogo tela, v. 3, no. 3, 1961, 723-728

TEXT: The present paper considers theoretically and gives the results of experiments on the self-diffusion of iron in two-phase Fe-Cu alloys. The object of the investigation was to study the diffusion in the heterophase region of a multiphase alloy in order to determine the dependence of the effective diffusion coefficient on the composition of the alloy. It is of interest primarily due to the fact that the formulas derived theoretically differ from one another. The self-diffusion coefficient of Fe^{59} in the system Fe-Cu was determined at 900-1000°C by the method of the thick layer. At these temperatures, the alloys were mixtures of the γ(~5% Cu) and the ε-phase (~2.5% Fe). The pure phases were also studied. The starting materials were electrolytic copper remolten in a vacuum and electrolytic iron powder. The chemically determined compositions of the samples are given in Table 1. The grain sizes were determined for all the samples (Fe~0.01 mm, Cu smaller).

Diffusion in ...

Radioactive iron was electrodeposited on the surface of the samples which were then heated in a vacuum (10^{-4} mm Hg) for 100-150 hours. The decrease of the β-activity was measured by an end-window counter. The self-diffusion coefficients were determined from the kinetic curves obtained. The results ($\pm 15\%$) are collected in Table 2. The principal results may be summarized as follows: If to the "slow" γ-phase is added the ε-phase which has a much larger diffusion coefficient (16-50 times), the effective diffusion coefficient of the alloy increases only slightly. An addition of 36% ε-phase at 1000°C increases the self-diffusion coefficient of iron to less than its double. If, on the other hand, to the "fast" ε-phase is added the γ-phase, the effective diffusion coefficient diminishes considerably. By the addition of 9% γ-phase D_{eff} falls to half the value (at 1000°C), and when adding 43%, to less than one-sixth. The situation is quite different at 900°C. Here, the addition of 9% γ-phase suffices to decrease D_{eff} to less than one-third. Since the theoretical formulas available in the literature do not provide a satisfactory description of the experimental facts, a formula for the diffusion coefficient of the alloy for the case of small grain sizes and long diffusion times based on a more appropriate model is first obtained:

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Diffusion in ...

$D_{eff} = \frac{D_2}{(1+\frac{2}{3}\frac{N_1}{N_2})(1+\frac{1}{45}\frac{r_o^2}{D_1 t})}$. N_1, N_2 and D_1, D_2 are the volume concentrations and diffusion coefficients, respectively, of two components; r_o is the grain size of the γ-phase. This formula, however, does not agree with the experimental results; so the model is altered, and the final formula obtained is: $\frac{D_{eff}-D_1}{D_{eff}+2D_1} = N_2(\frac{D_2-D_1}{D_2+2D_1})$ (7). The subscript 1 refers to the γ-phase and 2 to the ϵ-phase. Putting $x = D_{eff}/D_2$ and $a = D_1/D_2$ the formula is $\frac{x-a}{x+2a} = N_2(\frac{1-a}{1+2a})$, and when $N_2 \ll 1$, $dx/dN_2 \approx 3D_1/D_2$; when $N_2 \approx 1$, $dx/dN_2 \approx 3D_1/N_1^2 D_2$. Formula (7) gives an excellent description of the experimental results. There are 2 figures, 2 tables, and 9 references: 6 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Moskovskiy institut stali im. I. V. Stalina (Moscow Steel Institute imeni I. V. Stalin)

Card 3/5

20781
S/181/61/003/003/006/030
B102/B214

Diffusion in ...

SUBMITTED: April 7, 1960

Legend to Table 1: 1) Number of sample. 2) % by weight. 3) % by volume.

1) Номер образца	Вес. % 2)		Вес. % 2)		Объем. % 3)	
	Cu	Fe	s	T	s	T
1	5.0	95.0	0	100	0	100
2	9.9	90.1	5	95	5	95
3	19.1	80.9	15	85	13.5	86.5
4	40.9	59.1	39	61	36	64
5	50.4	49.6	49	51	46	54
6	60.8	39.2	60	40	57	43
7	79.8	20.2	81	19	79	21
8	90 0	10 0	92	8	91	9
9	97.6	2.4	100	0	100	0

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D Diffusion in ...

Legend to Table 2: 1) Number of sample. 2) % by volume. 3) D_{eff}.

Table 2

(1) Номер образца	(2) N_{Ti} объемн. %	900° C			1000° C		
		m	$D_{эфф.}$ (3)	$\frac{D_{эфф.}}{D_{Ti}}$	m	$D_{эфф.}$	$\frac{D_{эфф.}}{D_{Ti}}$
1	0	720	$0.50 \cdot 10^{-12}$	0.019	276	$3.37 \cdot 10^{-12}$	0.055
2	5	—	—	—	236.3	$4.29 \cdot 10^{-12}$	0.070
3	13.5	584	$0.75 \cdot 10^{-12}$	0.029	210.5	$5.84 \cdot 10^{-12}$	0.095
4	36.0	487.5	$1.08 \cdot 10^{-12}$	0.042	200.0	$6.45 \cdot 10^{-12}$	0.105
5	46.0	397.0	$1.69 \cdot 10^{-12}$	0.063	—	—	—
6	57.0	328.0	$2.37 \cdot 10^{-12}$	0.091	166.6	$9.28 \cdot 10^{-12}$	0.151
7	79.0	232.0	$4.75 \cdot 10^{-12}$	0.183	116.6	$18.9 \cdot 10^{-12}$	0.308
8	91.0	175.0	$8.35 \cdot 10^{-12}$	0.322	87.0	$34.0 \cdot 10^{-12}$	0.554
9	100	148.6	$22.4 \cdot 10^{-12}$	1.0	64.7	$61.3 \cdot 10^{-12}$	1.0

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ZHUKHOVITSKIY, A.A.

PETUKHOV, S.S., inzh.; VAGIN, Ye.V., kand. khim. nauk; ZHUKHOVITSKIY, A.A., doktor khim. nauk.

Using adsorption in krypton production. Kislorod 10 no.3:17-21 '57. (MLRA 10:11)
(Adsorption) (Krypton)

ZHUKHOVITSKIY, A.A.

32-9-2/43

AUTHORS: Turkel'taub, N. M., Zhukhovitskiy, A. A.

TITLE: Theory of Chromatographical Methods in the Gas-Analysis (Teoriya khromatograficheskikh metodov analiza gazov).

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 9, pp. 1023-1034 (USSR)

ABSTRACT: Here the theoretical analysis of theimportance of different factors in the gas-analysis according to the different variants of the chromatographical method is given. First the development- and the distribution-chromatography is examined. The importance of the different factors and the choice of theoptimum experiment-values in the development- analysis are investigated and the particularities of the distribution-chromatography are shown. The latter gives additional possibilites for the choice of the adsorbent as it permits the application of different solvents and carriers.It is shown that, in addition to the required macroporosity of the carrier, it is practical to use a solvent of low viscosity. By this the demand of an optimum relation between the quantities of carriers and solvents is conditioned. It is referred to the fact that the danger of the wall effect should be considered and therefore sorption columns of a small cross-section should be used.It is shown that in the distribution chromatography low velocities should be used. The number of separation is investigated and it is shown that it is more practical to obtain it on the basis of

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the physical prameters which are connected with the statics and the kinetics of the sorption and the longitudinal diffusion. Next the chromathermography is investigated and it is referred to the fact that here essentially new effects can be obtained. Here the stationary and the non-stationary chromatothermography have to be distinguished. The first one as compared with the development-chromatography has the advantage of offering the possibility of separating a much higher number of components, especially in small concentrations of them. Also the possibility to carry out theprocess of the continuous mixture separation on the basis of the chromatographical method is of importance. In the non-stationary chromathermography it is referred to the existence of an acceleration depending on the adsorbability, which acceleration leads to an improvement of the selectivity.Finally the theory is illustrated by experimental data. There are 5 tables, 6 figures and 23 references, 15 of which are Slavic.

AVAILABLE: Library of Congress

Card 2/2

ZHUKHOVITSKIY, A.A.

AUTHOR: Turkel'taub, N.M., Zhukhovitskiy, A.A. 32-9-26/43

TITLE: A Chromatographical Universal Device for the Analysis of Complicated Gas Mixtures (Khromatermograficheskiy universal'nyy pribor dlya analiza slozhnykh gazovykh smesey)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 9, pp.1120-1124 (USSR)

ABSTRACT: A device for gas analysis, which is based upon the simultaneous application of the three variants of chromatographic analysis: Chromathermography, distribution-, and adsorption development chromatography, is described. Utilization of the thermal factor makes it possible easily to separate substances which differ with respect to adsorption, by means of an adsorbent. The selection of the temperature field in the layer and of the character of its modification with respect to time and length is carried out in dependence on the task to be fulfilled. The chromathermograph is fitted with an additional attachment by means of which it is possible, on the basis of the analysis of development on activated coal to carry out separation of the low-boiling gases at room temperature because they have linear isotherms. Separation of the isomers, which are near the adsorption characteristics and frequently differ considerably with respect to the degree of solubility,

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32-9-26/43

A Chromatographical Universal Device for the Analysis of Complicated Gas Mixtures

is carried out by means of a second attachment which is provided in form of a column with diatomes, which is saturated with a suitable solvent. The device is then described. With its help the following gases can be determined: Hydrogen, carbon monoxide, methane, ethane, ethylene, propane, propylene, isobutane, butane, isobutylene, trans-butylene-2, cis-butylene-2, isopentane, pentane, divinyle, hexane, heptane, octane. Deviations do not exceed 3 - 5%. The sensitivity of the analysis is 0.02%. There are 4 figures, 2 tables, and 8 references, 5 of which are Slavic.

ASSOCIATION: All-Union Scientific Research Institute for Geological Prospecting for Petroleum (Vsesoyuznyy nauchno-issledovatel'skiy geologo-razvedochnyy neftyanoy institut)

AVAILABLE: Library of Congress

Card 2/2

Zhukhovitskiy A.A.

AUTHORS: Gudkova, T.I., Gorbatov, V.S., Bokshteyn, S.Z., Zhukhovitskiy, A.A., Kishkin, S.T. 32-12-19/71

TITLE: A Method of Investigating the Influence Exercised by Tension and Deformation Upon the Self-Diffusion of Iron (Metodika issledovaniya vliyaniya napryazheniya i deformatsii na samodiffuziyu zheleza).

PERICDICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 12, pp. 1438-1439 (USSR)

ABSTRACT: In an Institute of the AN USSR, which is not mentioned here, a special device was constructed which makes it possible to carry out diffusion red hot heating in the vacuum, in which the diffusion properties of the samples can be investigated by making use of traction at the conditions of elastic and plastic deformation. The apparatus consists of a combination of the test-machine "BM-8", a steel vacuum camera having a diameter of 200 mm, and containing an electric furnace of 110 mm length and the necessary measuring devices. The flat samples of slightly carboniferous steel (0,1%C; 0,35%Mn; 0,024%P; 0,015%S) were subjected to traction in the machine up to the degree of extension and destruction. Because of the decrease of structural tensions the samples were previously softened in the vacuum at 1000°, after which they were on one side and on a surface of 1 cm^2 provided with a coating of electrolytic iron which served as diffusion

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A Method of Investigating the Influence Exercised by Tension and Deformation Upon the Self-Diffusion of Iron 32-12-19/71

object. The results obtained are shown together in a table. It was found that the self-diffusion of iron under certain conditions develops mainly according to the structural grain boundaries, and that the circumstances of the application of fraction as well as of the high temperature accelerate the diffusion of iron. The plastic deformation of the sample increases the self-diffusion of iron by nearly the three-fold, which is explained by the atomic motion which sets in. At the same time, however, the activation energy in the corresponding domain of the sample is diminished. Iron with a 0,1%C-content enters into the two-phase state (α - γ) at 750-800°, but because the α -phase remains predominant, it also determines the velocity of the diffusion current. There are 1 table and 9 Slavic references.

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Card 2/2 1. Iron-Self diffusion-Determination 2. Instrumentation 3. Iron-Tension 4. Iron-Deformation

AUTHORS: Zhukhovitskiy, A. A., Turkel'taub, N. M. 20-6-26/42

TITLE: Application of the Thermal Factor in Gas Chromatography (O primenenii termicheskogo faktora v gazovoy khromatografii).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 6, pp. 986-989 (USSR)

ABSTRACT: The advantages of chromatography can be most fully utilized by introducing the thermal factor into the development-chromatography. The simultaneous action of the current of a developer, and of a temperature field variable with respect to both time and space, is called chromothermography (reference 6). It is advisable first to investigate the dependence of the selectivity on temperature with the development analysis. In the development analysis the separation depends little on the temperature of the layer. Terms are given for the distance between the components and the width of the bend. With the chromatography of diffusion the diffusion-coefficient D decreases at decreasing temperature. In the case of a curvilinear isotherm the width of the bends increases intensily at decreasing temperature. A temperature field which is independent from the time does not improve the separation. The simple realizability of such a field and the possibility of separating many components within a short period, offers some practical advantages by applying this variant. When applying the thermal factor, the selectivity can only be increased

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when the components show various temperatures throughout the whole test. The medium temperature of development must thus be different for each component. It is advisable to investigate also such variants of chromatography with which the distance between the bends increases in comparison with the developper method. Hereby the worse absorbing component at higher temperatures must be localized then with the better adsorbing ones. The temperature gradient must therefore have the sign reversed to the velocity of flow. The inverse gradient can be determined by means of two methods which are briefly discussed here. The increasing acceleration decreases with growing adsorbability and improves the separation. The thermal effect can not only be applied in form of a continously effecting field, but also in form of a brief heating (impulse-like) with subsequent cooling down. In the case of an impulse-like chromatography of a compound, it is advisable to effect a circulation in which case the component after the impulse returns to the origins of the layer. There are 2 figures, 1 table and 14 references, 8 of which are Slavic.

PRESENTED: May 1o, 1957, by P. A. Rebinder, Academician
SUBMITTED: May 8, 1957
AVAILABLE: Library of Congress
Card 2/2

ZHUKHOVITSKIY, A.A.; SELENKINA, M.S.; TURKEL'TAUB, N.M.

Methods for the chromatographic identification of components in mixtures of hydrocarbons. Khim.i tekh.topl.i masel 5 no. 11:57-64 N '60. (MIRA 13:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologo-razvedochnyy neftyanoy institut.

(Hydrocarbons)

85181
S/065/60/000/011/008/009
E030/E412

5 5600 (1282 only) also 2209

AUTHORS: Zhukhovitskiy, A.A., Selenkina, M.S. and Turkel'taub, N.M.

TITLE: Chromatographic Identification of the Components of Complex Hydrocarbon Mixtures

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1960, No.11, pp.57-64

TEXT: A chromatographic method has been determined for separating complicated mixtures of hydrocarbons. It involves measuring the retention volumes and other properties of the peaks of the mixtures, such as area and skewness, when analyzed at one or more temperatures, and when dissolved in one or more solvents. These retention volumes are unique functions of the boiling point of a substance and its ambient temperature for a given column. The chromatographic column is calibrated using known hydrocarbons in known solvents, and straight-line graphs may be drawn of retention volume versus the ratio of boiling temperature to ambient temperature for series of substances in each of the hydrocarbon types, paraffins, cycloparaffins, isoparaffins and aromatics. By choosing highly selective solvents, peaks of hydrocarbons of different types which

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cannot be resolved on one chromatogram may be resolved with a different solvent. The more complex the mixture, the greater is the number of ambient temperatures and solvents necessary to complete the analysis. The method has been successfully used in analyzing mixtures of twelve hydrocarbons of four types: isopentane, n-pentane, hexane, cyclohexane, isooctane, heptane, benzene, methylcyclohexane, n-octane, nonane, decane and undecane. Three solvents were used in the following sequence at 25% concentration: dinonyl sebacate, tricresylphosphate and silicone E-301; for the last solvent, only two calibration curves were necessary since the aromatic and cycloparaffin, and paraffin and isoparaffin, data coincided. Temperatures used were 83, 118, 97, 107, 122, 150°C. Nitrogen was the carrier. A prerequisite of the method is that the components may be separated by chromatography. It is therefore unsuitable when many isomers are present, as in petroleum samples. For such cases, greater resolution is necessary; this could be obtained by using capillary column chromatography, by more stable

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Chromatographic Identification of the Components of Complex Hydrocarbon Mixtures

temperatures and carrier velocities and by using auxiliary data from mass spectrometry and infrared spectrometry. There are 2 figures, 1 table and 8 references: 7 English and 1 German.

ASSOCIATION: VNIGNI

Card 3/3

BRONFIN, M.B., BOKSHTEYN, S.Z., ZHUKHOVITSKIY, A.A.

Determination of the diffusion coefficient from the displacement of the activity curve. Zav.lab. 26 no.7: 828-830 '60. (MIRA 13:7)
(Diffusion) (Radioisotopes)

BOKSHTEYN, S.Z.; GUDKOVA, T.I.; ZHUKHOVITSKIY, A.A.; KISHKIN, S.T.

Effect of stress and deformation on diffusion processes.
Issl.po zharopr.splav. 4:158-164 '59. (MIRA 13:5)
(Diffusion) (Deformations(Mechanics))

Zhukovitskiy, A.A.

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

S/076/60/034/02/042/044
B010/B007

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 15, 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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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 vyssheye 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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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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ZHUKHOVITSKIY, A.A.

PHASE I BOOK EXPLOITATION SOV/3559

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. 5 (Investigations of Heat-Resistant Alloys, Vol 5) Moscow, Izd-vo AN SSSR, 1959. 425 p. Errata slip inserted. 2,000 copies printed.

Ed. of Publishing House: V.A. Klimov; Tech. Ed.: I.F. Kuz'min; Editorial Board: I.P. Bardin, Academician, G.V. Kurdyumov, Academician, N.V. Ageyev, Corresponding Member, USSR Academy of Sciences (Resp. Ed.), I.A. Oding, I.M. Pavlov, and I.F. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgical engineers, research workers in metallurgy, and may also be of interest to students of advanced courses in metallurgy.

COVERAGE: This book, consisting of a number of papers, deals with the properties of heat-resisting metals and alloys. Each of the papers is devoted to the study of the factors which affect the properties and behavior of metals. The effects of various elements such as Cr, Mo, and ... heat-resisting properties of various alloys are studied. Deformability and workability of certain metals as related to the thermal conditions are the object of another study described. The problems of hydrogen embrittlement, diffusion and the deposition of ceramic coatings on metal surfaces by means of electrophoresis are examined. One paper describes the apparatus and methods used for growing monocrystals of metals. Boron-base metals are critically examined and evaluated. Results are given of studies of interatomic bonds and the behavior of atoms in metal. Tests of turbine and compressor blades are described. No personalities are mentioned. References accompany most of the articles.

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Zhukhovitskiy, A.A.

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

S/076/60/034/02/042/044
B010/B007

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 [illegible] (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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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 vyssheye 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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Non-ferrous Metallurgy"). A.N. Krestovnikov was awarded the Order of Lenin in 1953 for his forty years of scientific and pedagogical activities. There is 1 figure.

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21(4) PHASE I BOOK EXPLOITATION SOV/2638

Zhukhovitskiy, Aleksandr Abramovich, Doctor of Chemical Sciences, Professor

Mechenyye atomy (Tagged Atoms) Moscow, Voyen. izd-vo M-va obor. SSSR, 1959. 112 p. (Series: Nauchno-populyarnaya biblioteka) Number of copies printed not given.

Ed.: S.Ye. Kipnis; Ed. of Publishing House: Ya. M. Kader; Consultant for the Publishing House: M. B. Neyman, Doctor of Chemical Sciences, Professor; Tech. Ed.: A.N. Mednikova.

PURPOSE: This book is intended for readers with a secondary-school knowledge of chemistry, physics, and mathematics.

COVERAGE: The author briefly describes the use of tagged atoms in biology, chemistry, physics, medicine, building, metallurgy, geology, archeology, and for military purposes. According to the author, the text does not treat of all possible applications of tracer techniques, but serves as an example of the many possiblities for the use of isotopes. No personalities are mentioned. There are 38 references: 31 Soviet, and 7 English.

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