OSIPOV, A.A. (g. Melitopol').

Methodology in carrying out the lesson "Electrolytic production of aluminum. Khim.v shkole 12 no.4:32-37 Jl-Ag '57. (MLRA 10:8)
(Aluminum--Electrometallurgy--Study and teaching)

OSIPOV, A.A.

OSIPOV, A.A. (Melitopol')

Acquainting the students with the metallurgy of cast iron and steel.
Khim.v shkole 12 no.5:37-49 S-O '57. (MIRA 10:10)
(Cast iron--Metallurgy--Study and teaching)
(Steel--Metallurgy--Study and teaching)

OSIPOV, A.A.

Handbook on iron and steel metallurgy ("Elements of metal production.", D.O.Slavin. Reviewed by A.A.Osipov). Khim. v shkole 11 no.1:72-73 Ja-F '56. (MLRA 9:2)
(Iron--Metallurgy) (Steel--Metallurgy) (Slavin, D.O.)

OSIPOV, A.A.

Preparation of liquefied gases and experiments with them. Khim. v shkole 15 no.6:64-66 N-D '60. (MIRA 13:11)

1. Pedagogicheskiy institut, Chelyabinsk.
(Gases--Liquefaction)

OSIPOV, A.A.; RAYSKIY, V.B.

Support for mounting working models and equipment. Khim. v shkole 16 no.2:58-59 Mr-Ap '61. (MIRA 14:6)

1. Pedagogicheskiy institut, g. Chelyabinsk.
(Chemical laboratories--Equipment and supplies)

OSIPOV, A.A.

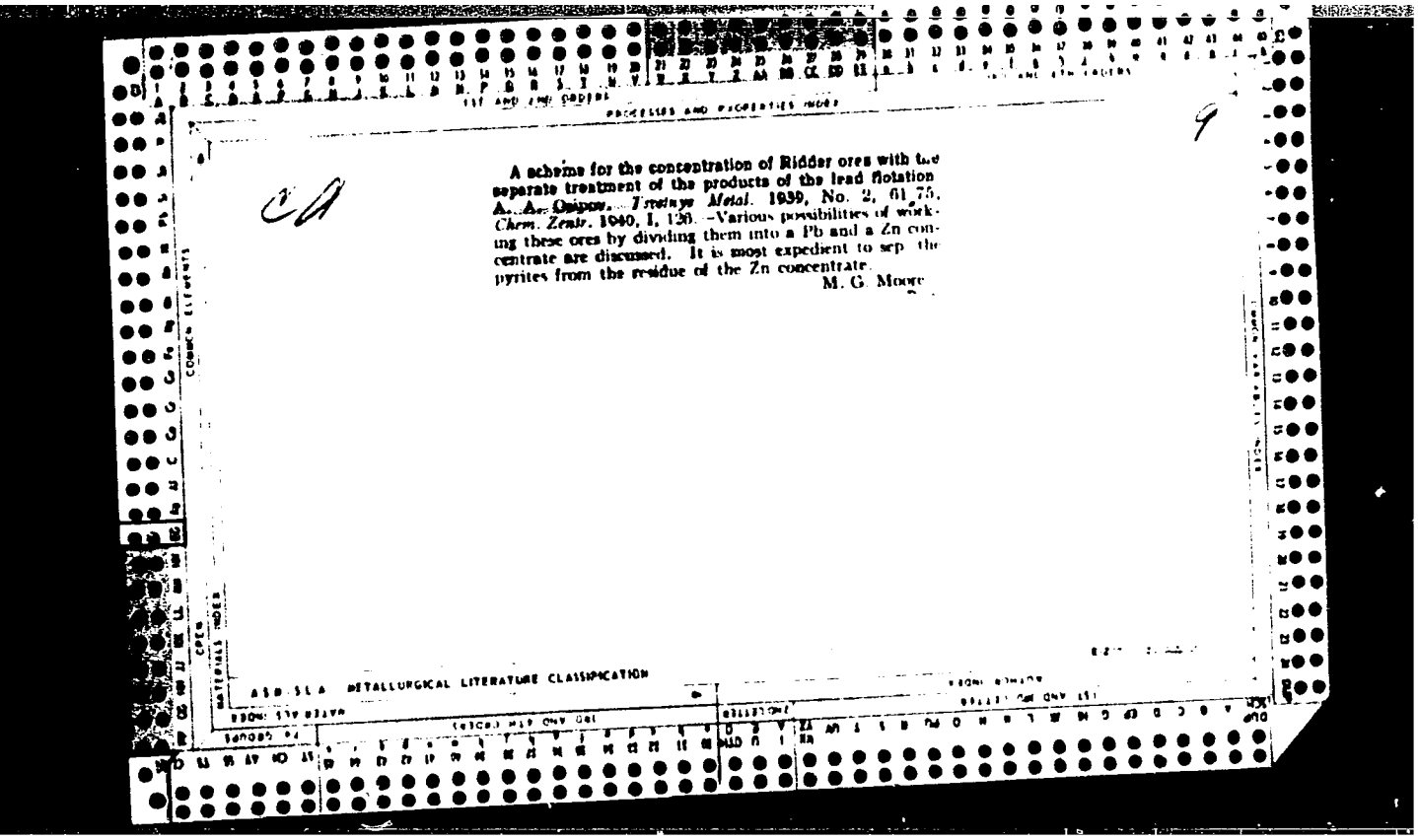
Popular-scientific books on the metallurgy of iron and steel ("Elementary iron," Evgenii Mar; "How steel is made," I.Peshkin. Reviewed by A.A. Osipov). Khim.v shkole 10 no.3:77-78 My-Je '56. (MLRA 9:8)

(Metallurgy) (Mar, Evgenii) (Peshkin, Il'ia Solomonovich)

OSIPOV, L. I.

[illegible] number. "A System of [illegible] Ridder Cores With Separate Pr[illegible] of U.S. Industrial Products [illegible] Flotation". Zavod. Lab., [illegible].

Report U-1206, [illegible].



A scheme for the concentration of Ridder ores with the separate treatment of the products of the lead flotation. A. A. Osipov. *Tsvetnye Metal.* 1939, No. 2, 61–75; *Chem. Zentr.* 1940, I, 126.—Various possibilities of working these ores by dividing them into a Pb and a Zn concentrate are discussed. It is most expedient to sep. the pyrites from the residue of the Zn concentrate.

M. G. Moore

NECHIPORENKO, Ye.P.; OSIPOV, A.D.

Device for determining the modulus of elasti[illegible] materials at elevated temperatures. Zav. lab. [illegible] '64.

1. Fiziko-tekhnicheskiy institut AN UkrSSR.

IVANOV, V. Ye.; NECHIPORENKO, Ye. P.; OSIPOV, A. D.; ZMIY, V. I.

Effect of stresses on defects in silicide layers on molybdenum.
Fiz. met. i metalloved. 14 no.4:574-577 O '62.
(MIRA 15:10)

(Metallic films—Defects)
(Thermal stresses)

ACCESSION NR: AP4015327 S/0032/64/030/001/0098/0099

AUTHORS: Nechiporenko, Ye. P.; Osipov, A. D.

TITLE: Apparatus for determing the modulus of elasticity of sheet materials at high temperatures

SOURCE: Zavodskaya laboratoriya, v. 30, no. 1, 1964, 98-99

TOPIC TAGS: modulus of elasticity, sheet material, high temperature apparatus, molybdenum disilicide, resonant frequency measurement

ABSTRACT: Apparatus is described for determining the modulus of elasticity of light, fragile samples by measuring the vibrational resonant frequency. The sample (in the form of a thin strip) was held at its nodal points by two metal filaments, one of which was vibrated by a solenoid. Resonance was measured by a differential capacitance device between the plates of which the sample was located. The sample and supports were enclosed by an oven. With this apparatus the modulus of elasticity at different temperatures of molybdenum disilicide was found to be 34×10^{-3} kg/mm^2 at 0C. It decreased linearly to 29×10^{-3} kg/mm^2 at 1100C (accuracy of 5%). Orig. art. has: 1 equation and 2 diagrams.

Card 1/2

ACCESSION NR: AP4015327

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk UkrSSR(Institute of Physics and Technology AN UkrSSR)

SUBMITTED: 00	DATE ACQ: 03Feb64	ENCL: 00
SUB CODE: MA	NO REF SOV: 001	OTHER: 000

Card 2/2

OSIPOV, A.D.

SOV/[illegible]-1-10/[illegible]

AUTHOR: Pflaumer, O.E., Candidate of Technical Sciences

TITLE: Definition of Strength of Concrete in Tension Using Compressed Cylindrical Testing Samples (Opredeleniye na szhimayemykh tsilindricheskikh obraztsakh prochnosti betona pri rastyazhenii)

PERIODICAL: Beton i Zhelezobeton, 1959, Nr 1, pp [illegible] (USSR)

ABSTRACT: The strength of concrete during tensioning can be obtained with satisfactory accuracy using cylindrical testing samples of 15 mm diameter and 30 cm length, loaded longitudinally (as illustrated in Fig.[illegible]), and 15 mm wide and [illegible] mm thick pads. In a similar way the strength of natural stones during elongation can be defined, but in this case the cylindrical stone samples have a diameter of 5 cm. The method described has many advantages, and standardization is advocated. Fig.1 gives the types and sizes of various non-standardized testing samples as used at present for definition of the strength of concrete during tensioning. In 1947 F. Carneiro (Brazil) devized a new method of testing the strength of concrete in tension, which considerably reduces the shortcomings of

Card 1/3

SOV/97-59-1-10

Definition of Strength of Concrete in Tension by Compression of Cylindrical Testing Samples

ex'sting methods. This new method is based on the principle of distribution of stresses in a [illegible] disk compressed on the perimeter by two forces (see Fig. 1. Fig.4 shows characteristics of the distribution of tensile stresses in a cylinder. Various tests have been carried out in Russia (A.B. Osipov: "Definition of the limit of strength of concrete at compression", published in Sbornik "Issledovaniye stroitel'stvo 1956, Nr 6; [illegible] and A.A. Gvozdev: "New method of the definition of the strength of concrete during tensioning," in Stroitel'naya promyshlennost', 1956, Nr 3) and abroad. Tests carried out by [illegible] and by the Institute for Building Materials ASIA SSSR are described in detail. Fig.3 shows cylindrical samples undergoing actual tests. Fig.5 shows graphs of the relationship between the strength of concrete during compression and tension carried out according to [illegible]. In 1957 the Institute of Building Materials carried out [illegible] comparative tests to establish the strengths of various marks of concrete during tensioning, using (a) tensioned

Card 2/3 rectangular samples. (b) bent rectangular samples.

Definition of Strength of Concrete in Tension Using Compressed Cylindrical Testing Samples

and (c) cylindrical samples. The composition of concrete mixes, the time of hardening, the strength of the concrete samples at the time of testing, and the strength in compression, are tabulated. Before the mechanical tests, the homogeneity of the concrete of all samples was tested by means of ultrasound. Both foreign and Russian tests prove the worth of the method of defining the strength of concrete during tensioning shown in Fig.2. There are 6 figures and 1 table.

ANDON'YEV, V.L.; BAUM, V.A.; BAUMGARTEN, N.K.; BEREZIN, V.D.; BIRYUKOV, I.K.; BIRYUKOV, S.M.; BLOKHIN, S.I.; BOROVOY, G.A.; BULEV, M.Z.; BURAKOV, N.A.; VERTSAYZER, B.A.; VOVK, G.M.; VORMAN, B.A.; VOSHCHININ, A.P.; GALAKTIONOV, V.D., kand. tekhn. nauk; GENKIN, Ye.M.; GIL'DENBLAT, Ya.D., kand. tekhn. nauk; GINZBURG, M.M.; GLEBOV, P.S.; GODES, E.G.; GORBACHEV, V.N.; GRZHIB, B.V.; GREKULOV, L.F., kand. s.-kh. nauk; GRODZENSKAYA, I.Ya.; DANILOV, A.G.; DMITRIYEV, I.G.; DMITRIYENKO, Yu.D.; DOBROKHOTOV, D.D.; DUBININ, L.G.; DUNDUKOV, M.D.; ZHOLIK, A.P.; ZENKEVICH, D.K.; ZIMAREV, Ye.V.; ZIMASKOV, S.V.; ZUBRIK, K.M.; KARANOV, I.F.; KNYAZEV, S.N.; KOLEGAYEV, N.M.; KOMAREVSKIY, V.T.; KOSENKO, V.P.; KOKENISTOV, D.V.; KOSTROV, I.N.; KOTLYARSKIY, D.M.; KRIVSKIY, M.N.; KUZNETSOV, A.Ya.; LAGAR'KOV, N.I.; LGALOV, V.G.; LIKHACHEV, V.P.; LOGUNOV, P.I.; MATSKEVICH, K.F.; MEL'NICHENKO, K.I.; MENDELEVICH, I.R.; MIKHAYLOV, A.V., kand. tekhn. nauk; MUSIYEVA, R.N.; NATANSON, A.V.; NIKITIN, M.V.; OVES, I.S.; OGUL'NIK, G.R.; OSIPOV, A.D.; OSMER, N.A.; PETROV, V.I.; PEKHYSHKIN, G.A., prof.; P'YANKOVA, Ye.V.; RAPOPORT, Ya.D.; REMEZOV, N.P.; ROZANOV, M.P., kand. biol. nauk; ROCHEGOV, A.G.; RUBINCHIK, A.M.; RYBCHEVSKIY, V.S.; SADCHIKOV, A.V.; SEMENTSOV, V.A.; SIDENKO, P.M.; SINYAVSKAYA, V.T.; SITAROVA, M.N.; SOSNOVIKOV, K.S.; STAVITSKIY, Ye.A.; STOLYAROV, B.P. [deceased]; SUDZILOVSKIY, A.O.; SYRTSOVA, Ye.D., kand. tekhn. nauk; FILIPPSKIY, V.P.; KHALTURIN, A.D.; TSISHEVSKIY, P.M.; CHERKASOV, M.I.; CHERNYSHEV, A.A.; CHUSOVITIN, N.A.; SHESTOPAL, A.O.; SHEKHTER, P.A.; SHISHKO, G.A.; SHCHERBINA, I.N.; ENGEL', F.F.; YAKOBSON, A.G.; YAKUBOV, P.A., ARKHANGEL'SKIY,

(Continued on next card)

ANDON'YEV, V.L.... (continued) Card 2.
Ye.A., retsenzent, red.; AKHUTIN, A.N., retsenzent, red.; BALASHOV, Yu.S., retsenzent, red.; BARABANOV, V.A., retsenzent, red.; BATURIN, P.D., retsenzent, red.; BORODIN, P.V., kand. tekhn. nauk, retsenzent, red.; VALUTSKIY, I.I., kand. tekhn. nauk, retsenzent, red.; GRIGOR'YEV, V.M., kand. tekhn. nauk, retsenzent, red.; GUBIN, M.F., retsenzent, red.; GUDAYEV, I.N., retsenzent, red.; YERMOLOV, A.I., kand. tekhn. nauk, retsenzent, red.; KARAULOV, B.F., retsenzent, red.; KRITSKIY, S.N., doktor tekhn. nauk, retsenzent, red.; LIKIN, V.V., retsenzent, red.; LUKIN, V.V., retsenzent, red.; LUSKIN, Z.D., retsenzent, red.; MATRIROSOV, A.Kh., retsenzent, red.; MENDELEYEV, D.M., retsenzent, red.; MERKEL', M.F., doktor tekhn. nauk, retsenzent, red.; OBRAZKOV, S.S., retsenzent, red.; PETRASHEN', P.N., retsenzent, red.; POLYAKOV, L.M., retsenzent, red.; RUMYANTSEV, A.M., retsenzent, red.; RYABCHIKOV, Ye.I., retsenzent, red.; STASENKOV, N.G., retsenzent, red.; TAKANAYEV, P.F., retsenzent, red.; TARANOVSKIY, S.V., prof., doktor tekhn. nauk, retsenzent, red.; TIZDEL', R.P., retsenzent, red.; FEDOROV, Ye.M., retsenzent, red.; SHEVYAKOV, M.N., retsenzent, red.; SHMAKOV, M.I., retsenzent, red.; ZHUK, S.Ya. [deceased], akademik, glavnyy red.; ILLSO, G.A., kand. tekhn. nauk, red.; FILIMONOV, N.A., red.; VOIKOV, A.N., red.; GRISHIN, M.M., red.; ZHURIN, V.D., prof., doktor tekhn. nauk, red.; KOSTROV, I.N., red.; LIKHACHEV, V.P., red.; MEDVEDEV, V.M., kand. tekhn. nauk, red.; MIKHAYLOV, A.V., kand. tekhn. nauk, red.; PETROV, G.D., red.; RAZIN, N.V., red.; SOBOLEV, V.P., red.; FERINGER, B.P., red.; FREYGOFER,
(Continued on next card)

ANDON'YEV, V.L.... (continued) Card 3.
Ye.F., red.; TSYPLAKOV, V.D. [deceased], red.; KORABLINOV, P.N., tekhn. red.; GENKIN, Ye.M., tekhn. red.; KACHKROVSKIY, N.V., tekhn. red.

[Volga-Don; technical account of the construction of the V.I. Lenin Volga-Don Navigation Canal, the TSimlyansk Hydroelectric Center, and irrigation systems] Volgo-Don; tekhnicheskii otchet o stroitel'stve Volgo-Donskogo sudokhodnogo kanala imeni V.I. Lenina, TSimlianskogo gidrouzla i orositel'nykh sooruzhenii, 1949-1952; v piati tomakh. Moskva, Gos. energ. izd-vo. Vol.1. [General structural descriptions] Obshchee opisanie sooruzhenii. Glav. red. S.IA. Zhuk. Red. toma M.M. Grishin. 1957. 319 p. Vol.2. [Organization of construction. Specialized operations in hydraulic engineering] Organizatsiia stroitel'stva. Spetsial'nye gidrotekhnicheskie raboty.

(Continued on next card)

ANDON'YEV, V.L.... (continued) Card 4.
Glav. red. S.IA. Zhuk. Red. toma I.N. Kostrov. 1958. 319 p.
(MIRA 11:9)

1. Russia (1923- U.S.S.R.) Ministerstvo elektrostantsii. Byuro tekhnicheskogo otcheta o stroitel'stve Volgo-Dona. 2. Chlen-korrespondent Akademii nauk SSSR (for Akhutin). 3. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Grishin, Razin).
(Volga Don Canal--Hydraulic engineering)

MIKULOVICH, B.F., inzhener; OSIPOV, A.D., inzhener.

Rubber keys for precast slabs used for channel facing. Gidr.stroi. 25 no.5:20-23 Je '56. (MIRA 9:9)
(Canals)

OSIPOV, A.D., inzhener.

Determining the tensile strength of concrete. Gidr.stroi.25 no.8:28-30 S '56. (MLRA 9:10)
(Concrete--Testing)

OSIPOV, A.D., inzh.; SHARKUNOV, S.V., inzh.

Experimental studies of the function of the precast prestressed buttress of a dam. Energ. stroi. no.20:53-56 '61. (MIRA 15:1)

1. Gidroproyekt.

(Prestressed concrete)
(Sinyachikha Hydroelectric Power Station--Dams)

OSIPOV, A.D., inzhener.

Experimental drainage of a foundation ditch with needle filters. Gidr.stroi. 22 no.11:13-14 N-D '53. (MLRA 6:11)
(Drainage) (Pumping machinery)

L 28408-66 EWT(m)/EPF(n)-2/EWP(t)/ETI IJP(c) JD/WW/JG/GD

ACC NR: AT5027942 SOURCE CODE: UR/0000/65/000/000/0077/0082

AUTHOR: Ivanov, V. Ye.; Nechiporenko, Ye. P. (Dr. of Technical Sciences); Osipov, A. D.; Vasyutinskiy, B. M.; Kartmazov, G. N.

B+1

ORG: none

TITLE: Thermal stresses in chromium coatings on molybdenum

SOURCE: Seminar po zharostoykim pokrytiyam. Leningrad, 1964. Zharostoykiye pokrytiya (Heat-resistant coatings); trudy seminara. Leningrad, Izd-vo Nauka, 1965, 77-82

TOPIC TAGS: chromium plating, vapor plating, molybdenum, heat effect, internal stress, adhesion, thermal stress

ABSTRACT: Previous studies (FMM, IX, 4, 558, 1960) showed that coatings obtained by the condensation in vacuum of Cr vapors on the surface of Mo samples had good protective properties, but that their service life decreased considerably when they were subjected to temperature fluctuations. A study was made on the effect of temperature on internal stresses in chromium coatings on molybdenum produced

Card 1/3

L 28408-66

ACC NR: AT5027942

in various vacuum conditions and having various strengths of adhesion of the coating to the substrate. The value of stress (σ) was determined from changes in the deflection (d) of the plated samples (100 x 5 x 2mm) by using the formula $\sigma = 4 E h_2^3 d / 3l^2 h_1 (h_1 + h_2)$, where E is the Young modulus, l is the length of the coated part of the sample, and h_1 and h_2 are the thicknesses of the coating and the base metal, respectively. The curves of deflection (in mm) vs temperature were plotted during the experiments. The changes in the slope of the curves (inflections), corresponding to the conversion of elastic into nonelastic deformations, were observed during heating and cooling of the samples. Nonelastic deformations in the low-temperature range ($\leq$ 400C) were formed at the critical stress σ=8 kg / mm^2. The value of the critical stress could be controlled either by the deformation of the coating itself or by the strength of adhesion of the coating to the substrate. Experiments with the coatings of various degrees of adhesion strength (strength of adhesion was changed by applying the coatings to the surface of Mo oxidized to various degrees, or by increasing the roughness of the Mo surface) proved that the value of the critical stress did not depend on the adhesion strength and was controlled by the deformation of the coating itself. The adhesion strength of coatings applied to the surfaces of oxidized

Card 2/3

L 28408-66

ACC NR: AT5027962

and nonoxidized Mo were about the same and were similar to the strength of the coating. The curves plotted for the temperature range of 100 - 1000C for the coatings applied under various values of vacuum (10^{-3} - 10^{-5} mm Hg) showed that the samples produced in 10^{-3} vacuum failed at smaller σ than the samples coated in the higher vacuum. Orig. art. has: 4 fig.

SUB CODE: 20/ SUBM DATE: 20Jul65/ ORIG REF: 003

Card 3/3 LC

I 28409-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD/JG/GD

ACC NR: AT5027943 SOURCE CODE: UR/0000/65/000/000/0083/0086

AUTHOR: Ivanov, V. Ye. (Corresponding member AN SSSR); Mechiporenko, Ye. P. (Dr. of Technical Sciences); Osipov, A. D.; Matyushonko, N. N.

ORG: none

TITLE: Siliconizing of molybdenum in vacuum with a controlled rate of silica delivery

SOURCE: Seminar po zharostoykim pokrytiyam. Leningrad, 1964. Zharostoykiye pokrytiya (Heat-resistant coatings); trudy seminara. Leningrad, Izd-vo Nauka, 1965, 83-86

TOPIC TAGS: vapor plating, silica, molybdenum, crystal structure

ABSTRACT: An experiment was conducted to siliconize Mo under a controlled delivery rate so that the amount of SiO_2 deposited on the sample surface was nearly similar to the amount necessary for the formation of a diffusion layer at a given temperature. This resulted in the formation of the silicide layers at temperatures above the eutectic, with the rate controlled only by diffusion. Siliconizing was done

Card 1/3

L 28409-66

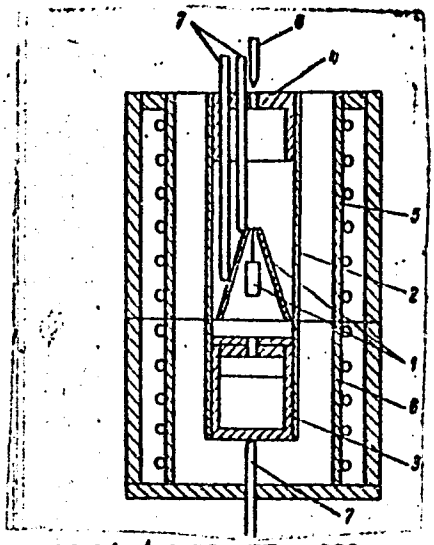
ACC NR: AT5027943

in a special apparatus (see Fig.) where sample 1 was set into container 2 having in its lower part the crucible 3 containing SiO_2. The container was closed by lead 4, charged into vacuum chamber and exposed to a vacuum of 10^{-5} mm Hg. The container was then closed by rod 8 and heated to the required temperature by resistance heaters 5 and 6 controlled by Pt-PtRh thermocouple 7. The rate of silica delivery, commensurable with the diffusion at a given temperature, was regulated by the selection of openings in the crucible and the container and by changing the temperature in the SiO_2. The microphotograph of the layer produced at 1500C showed that it consisted of a single phase which was determined by X-ray diffraction analysis as $MoSi_2$. Therefore, the use of a controlled rate of delivery of SiO_2 during siliconizing from the vapor phase permitted the authors to increase the temperature of siliconizing above the eutectic and to increase the rate of growth and the thickness of the layer. The changes in temperature of the production of the silicide layer insignificantly affected the temperature of the beginning of cracking in the coating. Orig. art. has: 3 fig. and 1 table.

Card 2/3

L 28409-66

ACC NR: AT5027943



SUB CODE: 14,11/ SUBM DATE : 20Jul65/ ORIG REF: 003

Card 3/3 YC

OSIPOV, A.F.

Spontaneous gastric rupture. Khirurgiia, no.4:85 Ap '55.
(MLRA 8:9)

1. Khlebnikovskaya rayonnaya bol'nitsa Mariyskoy ASSR.
(STOMACH--WOUNDS AND INJURIES)

OSIPOV, A. F.

"Investigation of the Stable Operation of Gear Pumps and Motors Under High Operating Fluid Pressures." Cand Tech Sci, Moscow Order of Lenin Aviation Inst imeni Sergo Ordzhonikidze, Moscow, 1955. (RL, No 11, Mar 56)

SO: Sum. No. 627, 29 Sep 56-Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions. (12)

39937
S/258/62/002/001/003/013
1028/1228

24.4300

AUTHOR: Osipov, A. F. (Moscow)

TITLE: One-dimensional non-stationary gas inflow and outflow from reservoirs of limited capacity

PERIODICAL: Inzhenernyy zhurnal, v.2, no. 1, 1962, 29–40

TEXT: The time of inflow–outflow is calculated as a function of the initial and final pressure inside the reservoir for all practically possible cases of gas inflow and ouflow. A non-dimensional time $\bar{\tau}$ is defined by

$$\bar{\tau} = \left(\frac{w\gamma}{p}\right)_1 \tau \qquad (1.2)$$

where w = velocity of efflux (inflow), p = pressure, γ = specific weight, τ = time; index 1 corresponds to values inside the reservoir at the beginning of the efflux, index f to values in the exit section. The following equation is established with the aid of the equation of efflux and the law of energy conservation.

$$d\bar{\tau} = \frac{d(V\gamma)}{\left(\frac{p}{w\gamma}\right)_1 \gamma_f \sqrt{2g} \sum_{j=1}^{n} (\alpha F)_j} \cdot \frac{1}{\left(\int_{p_f}^{p} \frac{dp}{\gamma}\right)^{\frac{1}{2}}} \qquad (1.9)$$

where V = the reservoir volume, F = the exit section, α = a coefficient determining the energy losses in the orifice, n = number of orifices. Formula (1.9) is integrated in the subcritical and supercritical cases of poly-

Card 1/2

OSIPOV, A.F., kand.tekhn.nauk, dotsent

Durability of high-pressure gear pumps. Vest.mash.[illegible] (MIRA [illegible])
no.6:18-20 Je '62.
(Pumping machinery)

OSIPOV, A.F., kand. tekhn. nauk, dotsent

Securing steady performance of a hydrostatic pump at a low rotation rate. Vest. mashinostr. 43 no.6:26-29 Je '63. (MIRA 16:7)

(Pumping machinery)

L 35438-65 EWP(m)/EPF(n)-2/EPR/EWT(l)/EPA(bb)-2/FCS(k)/T-2/EWA(d)/EWA(l) Pd-1/
Ps-4

ACCESSION NR: AP5008252 S/0122/65/000/003/0044/0046

AUTHOR: Osipov, A. F. (Candidate of technical sciences, Docent) 38
B

TITLE: On maximum pressure in a volumetric pump

SOURCE: Vestnik mashinostroyeniya, no. 3, 1965, 44-46

TOPIC TAGS: pump, laminar flow, turbulent flow, intake stroke, stability condition

ABSTRACT: The limiting pressure above which a volumetric pump becomes unstable was studied analytically. The operation characteristics of the particular pump under study are given in Fig. 1 on the Enclosure, where M is the torque, N is the driving power, and Q is the pumping capacity. First, the flow leakage Q_n within the pump and through the network of successively and parallel-connected clearances is determined as the sum of laminar and turbulent flow leakages. Then the analysis

L 35438-65

ACCESSION NR: AP5008252

pressure for stable operation is given by $\bar{p}_{N\,max} = \dfrac{\frac{J_{max}\Gamma\gamma_n}{Ap_{max}} - \bar{M}(0) - \bar{A}\bar{n}\exp(h\bar{n} - h\bar{n}^2)}{2 + \frac{\bar{n}_{min}}{\bar{n}}}$.

Orig. art. has: 10 formulas and 3 figures.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 01 SUB CODE: PR, TD

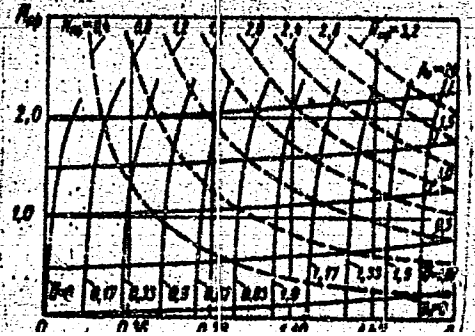
NO REF SOV: 003 OTHER: 002

L 35438-65

ACCESSION NR: AP5006252

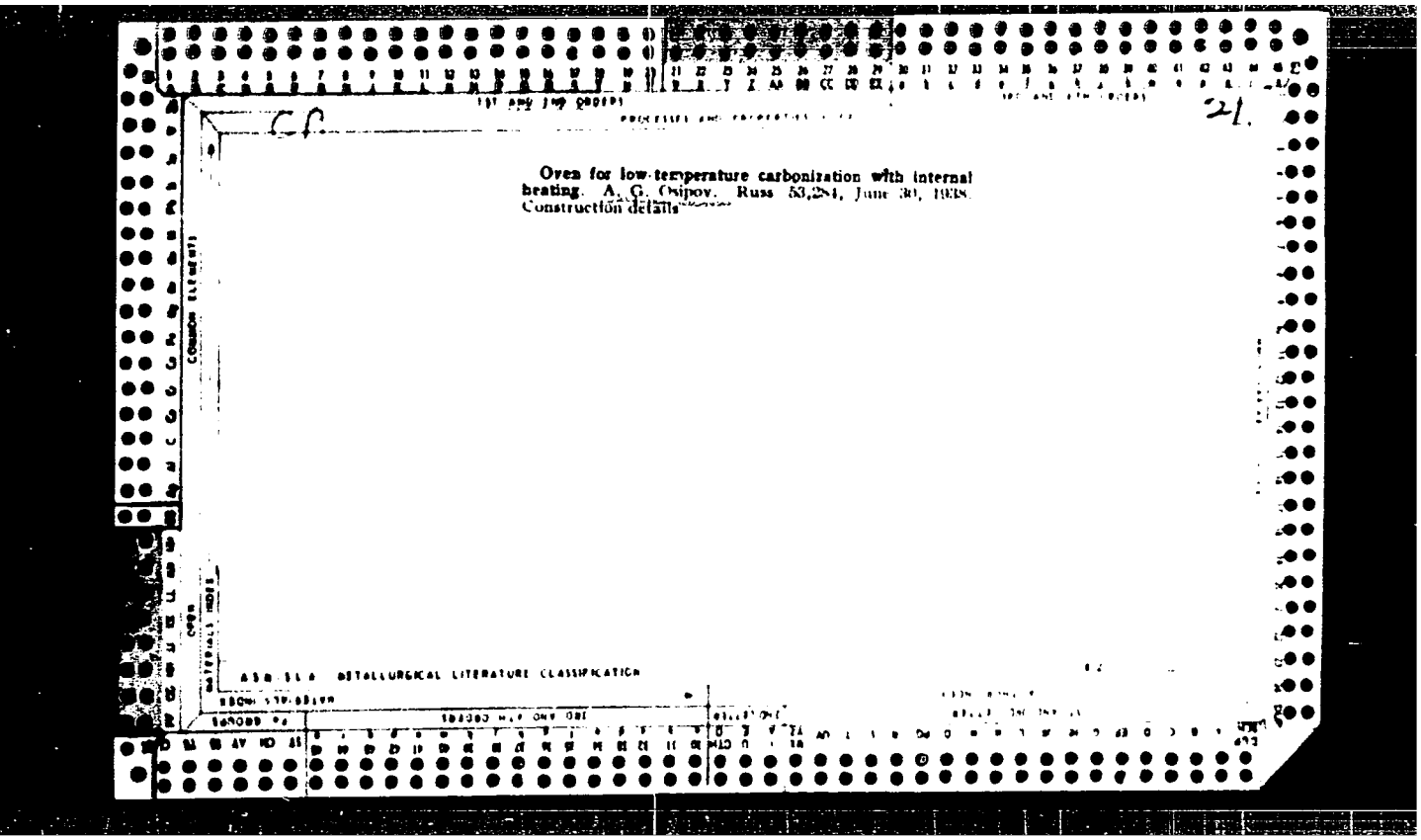
ENCLOSURE: 01

0

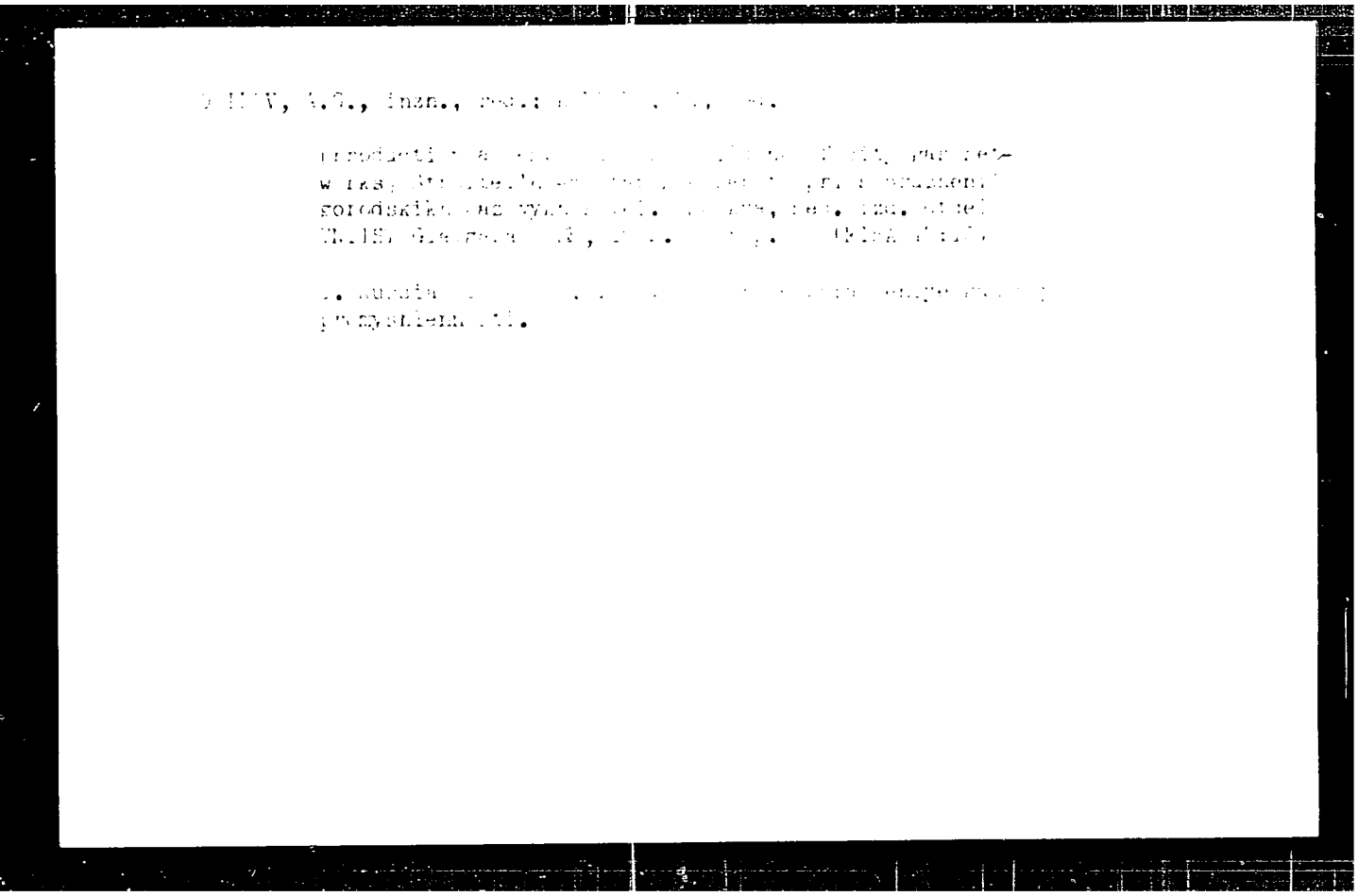


Card 3/3

-technical conference on



Oven for low-temperature carbonization with internal heating. A. G. Osipov. Russ 53,284, June 30, 1938. Construction details.



OSIPOV, A., inzh.

Explosion is the miner. IUn.tekh. 6 no.2:32 '62. (MIRA 15:2)
(Shaft sinking) (Rock drills)

OSIPOV, A. I.; PAVLOV, E. A.; UVAROV, N. V.

The TsNIIME-K-5 Light-Duty Electric Saw (Oblegchennaya elektropila TsNIIME-K5), Goslesbumizdat, 1949, 40 pp.

OSIPOV, A. I., Eng.

USSR/Electricity - Electric Saws Jul 50
Power Plants

"Electric Saws With 200-CPS Three-Phase Current for Logging," E. A. Pavlov, A. I. Osipov, Engineers, Cen Sci Res Inst for Mechanization and Electrification of Logging

"Elektrichestvo" No 7, pp 44-47

Discusses construction and experimental operation of new electric saws, types VAKOP and K5. Includes data on laboratory tests, and recommendations for further modernization of electric saws, cable networks, and power plants, with photograph of mobile power plant Type PES-12-200

[redacted] BA 164T16

GORSHKOV, D.S., otv. red.; ASHMARINA, L.A., red.; UDILOV, V.I., glav. inzh., red.; BAYANOV, M.A., starshiy nauchnyy sotr., red.; KAPUSTIN, V.A., starshiy nauchnyy sotr., red.; STATKEVICH, I.I., starshiy inzh.; OSIPOV, A.I., starshiy nauchnyy sotr., otv. red.

[Transactions of the Sverdlovsk Scientific Research Institute for the Lumbering Industry] Trudy Sverdlovskogo nauchno-issledovatel'skogo instituta lesnoy promyshlennosti. [n.p.] TSentr. nauchno-issl. in-t mekhanizatsii i energetiki lesnoi promyshl., 1960. 56 p. (MIRA 15:1)

1. Sverdlovsk. Sverdlovskiy nauchno-issledovatel'skiy institut lesnoy promyshlennosti. 2. Direktor Sverdlovskogo nauchno-issledovatel'skogo instituta lesnoy promyshlennosti (for Gorshkov). 3. TSentral'nyy nauchno-issledovatel'skiy institut mekhanizatsii i energetiki lesnoy promyshlennosti (for Osipov).
(Lumbering--Research)

SUDNITSYN, Ivan Ivanovich; ORESHKIN, Sergey Ivanovich; ROGOZKIN, Aleksandr Vladimirovich; OSIPOV, Aleksandr Ivanovich; GORBACHEVSKIY, Viktor Andreyevich; ZAV'YALOV, Mikhail Aleksandrovich; GATSKEVICH, Vladimir Antonovich; PATSIORA, Pavel Pavlovich; SOLOV'YEV, N.S., red.; POLTEVA, B.Kh., red.izd-va; PARAKHINA, N.L., tekhn.red.

[Problems of mechanizing lumbering] Problemy mekhanizatsii lesozagatovok. Moskva, Goslesbumizdat, 1960. 194 p. (MIRA 14:6)

(Lumbering--Machinery)

VORONITSYN, K.I., kand. tekhn. nauk, red.; TIZENGAUZEN, P.E., kand. tekhn. nauk, red.; NADBAKH, M.P., red.; TANTSEV, A.A., starshiy nauchnyy sotr., red.; ABRAMOV, S.A., kand. tekhn. nauk, red.; ABRAMOV, D.A., red.; BOGDANOV, N.I., starshiy nauchnyy sotr., red.; VINOGOROV, G.K., kand. tekhn. nauk, red.; GAVRILOV, I.I., starshiy nauchnyy sotr., red.; GUSARCHUK, D.M., starshiy nauchnyy sotr., red.; D'YAKONOV, A.I., red.; ZAV'YALOV, M.A., kand. tekhn. nauk, red.; ZARETSKIY, M.S., starshiy nauchnyy sotr., red.; KACHELKIN, L.I., starshiy nauchnyy sotr., red.; KISHINSKIY, M.I., kand. tekhn. nauk, red.; KOLTUNOV, B.Ya., starshiy nauchnyy sotr., red.; OSIPOV, A.I., kand. tekhn. nauk, red.; SHINEV, I.S., kand. ekon. nauk, red.

[Materials of the enlarged session of the Scientific Council of the Central Scientific Research Institute for Mechanization and Power Engineering in Lumbering on problems concerning power engineering and the electrification of the lumber industry] Materialy rasshirennoi sessii Uchenogo soveta TsNIIME po voprosu energetiki i elektrifikatsii lesnoi promyshlennosti. Moskva, 1961. 75 p. (MIRA 15:4)

(Continued on next card)

VORONITSYN, K.I.---(continued) Card 2.

1.Khimki.TSentral'nyy nauchno-issledovatel'skiy institut mekhanizatsii i energetiki lesnoy promyshlennosti. 2. Nachal'nik TSentral'nogo byuro tekhnicheskoy informatsii lesnoy promyshlennosti (for Nadbakh). 3. Direktor TSentral'nogo nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy promyshlennosti (for Voronitsyn). 4. Uchenyy sovet TSentral'nogo nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy promyshlennosti (for D'yakonov). 5. Nachal'nik otdeleniya energetiki i sredstv avtomatizatsii TSentral'nogo nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy promyshlennosti (for Zaretskiy).
(Lumbering) (Electric power)

24(5)
AUTHOR: Osipov,A.I. SOV/55-58-4-11/3

TITLE: On the Theory of Shock Excitation of the Vibration Level of Two-Atomic Molecules (K teorii udarnogo vozbuzhdeniya kolebatel'nykh urovney dvukhatomnykh molekul)

PERIODICAL: Vestnik Moskovskogo universiteta, Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1958, Nr 4, pp 97-108 (USSR)

ABSTRACT: The author considers the collision of a two-atomic molecule with a heavy particle the inner degrees of freedom of which are not considered. He asks for the probability for the transition of the molecule from the initial into the excited state. The author's investigation permits to give the following image for the distribution of the transition probabilities over the spectrum of the vibration energy. In the lower part of the discrete spectrum only transitions to the neighbouring levels are allowed, where the transition probabilities increase intensively with the level number. In the upper part there appear also transitions to further levels, the probability of the neighbouring levels, however, always remains the greatest one. At the end of the discrete spectrum the probability for the transition into a continuous spectrum is noticeable. Beginning at a certain level, the last probability is greater than that for the transition to

Card 1/2

On the Theory of Shock Excitation of the Vibration Level of Two-Atomic Molecules

SOV/51-5-4-11/...

the neighbouring level. This result was obtained by an investigation of the potential curve of Morse. The author thanks Professor Ye.V.Stupochenko for giving the problem and aid.

There are 10 references, 3 of which are Soviet, 2 English, 4 American, and 1 German.

ASSOCIATION: Kafedra molekulyarnoy fiziki (Chair of Molecular Physics)

SUBMITTED: July 24, 1957

Card 2/2

SOV/155-58-4-25/34

~~24(7)~~ 24,6000

AUTHOR: Osipov, A.I.

TITLE: On the Application of the Method of Born for the Determination of the Probabilities of an Impulse Excitation of the Oscillation Levels of Diatomic Molecules (O primenenii metoda Borna dlya opredeleniya veroyatnostey udarnogo vozbuzhdeniya kolebatel'nykh urovney dvukhatomnykh molekul)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1958, Nr 4, pp 149 - 154 (USSR)

ABSTRACT: The author considers the collision of a diatomic molecule with a heavy particle, the internal degrees of freedom of which are not taken into account. It is assumed that the heavy particle moves on the straight line which goes through the nuclei of the diatomic molecule. The author calculates the probabilities for the transfers from one oscillation level to others. The method is based on the solution of a stationary Schrödinger equation and on the determination of the asymptotic behavior of the solution at infinity (application of the method of Born). The obtained formula holds in the case

$$\frac{\Delta E R_0}{\hbar \cdot v} \ll 1 ,$$ where ΔE

Card 1/2

On the Application of the Method of Born for the Determination of the Probabilities of an Impulse Excitation of the Oscillation Levels of Diatomic Molecules

SOV/155-58-4-25/34

is the transferred energy, R_o the radius of the interaction, v the relative velocity of the centers of gravity. For the transition probability from the initial state n into the state m of the discreet spectrum it holds

$$p_{nm} = \frac{k_m}{k_n} |A_m|^2 \quad , \quad A_m = i \int_{-\infty}^{\infty} \exp i (k_n + k_m) \lambda x \psi_n(x) \psi_m^*(x) dx \quad ,$$

where x is the intermolecular coordinate, $\psi_n(x)$ are the eigenfunctions of the molecule.

The author thanks Professor Ye.N. Stupochenko and Professor N.D. Sokolov for valuable indications. - There are 1 figure, and 4 references, 1 of which is Soviet, 1 English, and 2 American

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

SUBMITTED: May 17, 1958

Card 2/2

SOV/76-32-7-30/45

AUTHORS: Stupochenko, Ye. V., Osipov, A. I.

TITLE: On the Mechanism of a Thermal Dissociation of Diatomic Molecules (O mekhanizme termicheskoy dissotsiatsii dvukhatomnykh molekul)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 7, pp 1673 - 1674 (USSR)

ABSTRACT: According to Carery (Ref 1) the dissociation is caused as a consequence of a collision of the molecules with particles the kinetic energy of which is of the order of the dissociation energy; Rice (Ref 2), however, is of opinion that the particle moves with a medium thermal velocity and that the molecule must have an internal energy of the order D - kT. In order to find out which of the two opinions is correct the authors carried out such calculations for the diatomic molecule model according to Morze. It is found that in the collision only those molecules are dissociated which are on a higher level of oscillation; this substantiates the dissociation mechanism suggested by Rice. Rice and Carery assumed in their calculation of the dissociation velocity that the dissociation process does not disturb the Boltzmann distribution of the molecules; this is, however, only the case at sufficiently low temperatures.

Card 1/3

On the Mechanism of a Thermal Dissociation of Diatomic Molecules SOV/76-32-7-34/45

At high temperatures the deviation from the Boltzmann distribution at the last levels is of the order of the distribution function itself. Calculations of the steric factor show that it decreases more rapidly with a rise of temperature than is the case according to the theory by Rice; this agrees qualitatively with the experimental data. The anomalous values of the former at low temperatures are explained by an increase of the linear dimensions of the molecules in an excited state. There are 4 references, 1 of which is Soviet.

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

SUBMITTED: July 9, 1957

Card 2/3

On the Mechanism of a Thermal Dissociation of Diatomic Molecules SOV/76-32-7-36/45

1. Molecules--Ionization 2. Molecules--Energy 3. Particles--Ionizing effects 4. Particles--Velocity 5. Mathematics

Card 3/3

5 (4)
AUTHORS. Stupochenko, Ye. V., Osipov, A. I. SOV/76-33-7-17/41

TITLE. On the Kinetics of Thermal Dissociation of Diatomic Molecules

PERIODICAL. Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 7, pp 1526-1533 (USSR)

ABSTRACT For the purpose of explaining the part played by the individual molecular collisions and by a disturbance of the equilibrium function of molecule distribution according to energy states in the theory of thermal dissociation (D), the authors measured the rate of thermal (D) of diatomic molecules. It was assumed that the (D) of molecules resulted from a transition from the discrete ocell at an state to the continuous one. In order to simplify investigations the authors assume that the dissociating gas was present as a relatively small impurity in a monatomic gas. The above explanations are mathematical deductions indicate among other things that in many cases interesting from practical standpoints the Boltzmann distribution of molecules according to higher energy levels is heavily disturbed by (D), with rising temperature which affects the reaction rate (and its temperature depender

Card 1/3

This is also confirmed by the deduced gas kinetic equations (17), (24), and (29), which permit estimation of the effect of thermal (D) in a transition from highly excited oscillation levels to the continuous spectrum. The process of thermal (D) is effected by a transition of molecules from highly excited oscillation levels to the continuous spectrum. The number of molecules on the upper oscillation levels during the process of (D) differs from their equilibrium value. This deviation increases (as mentioned above) with rising temperature. The disturbance of equilibrium distribution according to oscillation levels affects the (D) considerably. From the above gas kinetic equations analytic data were obtained on the (D) rate and the molecule distribution according to oscillation levels that is not in equilibrium. There are 9 references, 7 of which are Soviet.

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

SUBMITTED: December 23, 1957

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001238

83933
S/188/60/000/004/012/014
B005/B060

24.6100 (1395)

AUTHOR: Osipov, A. I.

TITLE: Vibrational Relaxation in a Binary Gas Mixture

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 3. fizika, astronomiya, 1960, No. 4, pp. 96-97

TEXT: The relaxation time of vibration in a binary gas mixture is a certain over-all characteristic feature of the respective mixture. If both gases (A and B) possess vibrational degrees of freedom and there occurs no exchange between their vibrational quanta, the relaxation time τ of the mixture then equates the longer relaxation time of vibration of the individual components. When these relaxation times of vibration of the individual components (τ_A, τ_B) are calculated, it is necessary to take account of both collisions between A and A and collisions between A and B (Ref. 1). An exchange of vibrational quanta between the two components may change the value of τ. If, for example, the relaxation time τ_k for the exchange between the vibrational quanta is considerably

Card 1/3

Vibrational Relaxation in a Binary Gas Mixture

smaller than τ_A and τ_B, then τ of the entire system is not determined by the larger but by the smaller value of the individual relaxation times τ_A and τ_B, and equilibrium is established in the following manner. if $\tau_A \ll \tau_B$, the vibrational quanta resulting from collisions of component A with molecules of A and B spread rapidly between the components A and B, and after time τ_A has elapsed, a vibrational equilibrium is established in the entire system. The decisive process in this case is the formation of vibrational quanta of A, since the exchange between already formed quanta takes place much more quickly. The formation of vibrational quanta of gas B molecules by direct excitation is, in comparison, little probable. An example of such a system is air. At temperatures $kT \gg h(\omega_{N_2} - \omega_{O_2})$, the vibrational equilibrium in nitrogen sets in on the expense of vibrational quanta of oxygen, while the direct excitation of N_2 molecules is less probable. Another interesting case exists if the relaxation time τ_k is between τ_A and τ_B. In this case, τ of the entire system is determined by the

Card 2/3

Vibrational Relaxation in a Binary Gas Mixture

S/188/60/000/004/012/013
B005/B060

value of τ_k, and equilibrium is established in the following manner: First, the equilibrium distribution in the component A ($\tau_A \ll \tau_B$) sets in after time τ_A has elapsed, and then begins the transfer of vibrational quanta from A to B. This transfer ends before the formation of vibrational quanta due to direct collision between A and B, or B and B begins. Due to condition $\tau_k \gg \tau_A$, the vibrational equilibrium in A is not disturbed by the transfer of vibrational quanta from A to B. The author finally thanks Professor Ye. V. Stupochenko for discussing the results obtained in the present work. There are 2 non-Soviet references

ASSOCIATION: Moskovskiy universitet Kafedra molekulyarnoy fiziki (Moscow University, Chair of Molecular Physics)

SUBMITTED: March 22, 1960

Card 3/3

82837
S/048/60/024/008/014/017
B012/B067

24.6100
AUTHORS. Osipov, A. I., Stupochenko, Ye. V.

TITLE: Energy Transfer in Molecular Collisions

PERIODICAL. Izvestiya Akademii nauk SSSR. Seriya fizicheskaya. 1960, Vol. 24, No. 8, pp. 992-995

TEXT: In the present paper the semiclassical method of calculating the probabilities is investigated and the probabilities of a transfer of the translation energy in molecular collisions with strongly non-adiabatic course into oscillation energy is determined. Also the probabilities of a transfer of the oscillations in molecular collisions were determined The investigation was made with central collisions of diatomic molecules. where the nuclei of the colliding molecules move along a straight line The transfer probabilities are determined by an asymptotic solution of the steady Schrödinger equation for the collision. C. Zener (Ref. 3) suggested a system of equations (1) and (2) for determining these probabilities. The solution of this system is simpler than that of the

Card 1/3

Energy Transfer in Molecular Collisions

mentioned Schrödinger equation, however, the problem of the limits of applicability of such an approximation has not been solved. Usually for sufficiently high velocities of the relative motion and for $\Delta E \ll E$, the agreement between the results obtained in the calculation by the method of distorted waves, and those which are obtained from the method by Zener (Refs. 3,4) will be satisfactory. ΔE denotes the energy transferred, E the original reserve of kinetic energy. The authors deduced the system of equations (1) and (2) from the steady Schrödinger equation. In this connection it was found that besides the mentioned conditions also condition (3) must be fulfilled. This condition is fulfilled a priori when the amplitude of the atom oscillations in the molecule is considerably smaller than the radius of action of the intermolecular forces. Formula (4). Practically, this condition (3) is fulfilled in the first oscillation levels. In the following, the method shown here for determining the probabilities is applied to the transition of translation energy into oscillation energy in collisions of atoms with molecules in a strongly nonadiabatic course. Formula (7) for the transition probabilities is obtained. It is pointed out that

82837

Energy Transfer in Molecular Collisions

S/048/60/024/008/014/017
B012/B067

Ye. Nikitin (Ref. 5) solved an analogous problem for oscillators. The formula obtained is analyzed by an example. It is also pointed out that in the application of the present method formula (7) is restricted by condition (4) that it can be demonstrated, however, that this formula holds for any interaction potential if condition (6) (Ref. 6) is fulfilled. The method described here may be used for determining the probabilities of an oscillation transfer in molecule collisions irrespective of the degree of the adiabatic course of the collision. Formula (11) for the probability of the energy transfer is deduced in an analogous way. Its application is demonstrated by an example. There are 7 references. 3 Soviet, 3 British, and 1 German.

ASSOCIATION. Moskovskiy gos. universitet im. M. V. Lomonosova
(Moscow State University im. M. V. Lomonosov)

Card 3/3

67910

S/020/60/130/03/011/065
B014/B014

5.4300
5.4220

~~24 (5)~~

AUTHOR: Osipov, A. I.

TITLE: Relaxation of Oscillatory Motion in an Isolated System of Harmonic Oscillators

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 3, pp 523 - 525 (USSR)

ABSTRACT: The author first points out that the Maxwell-Boltzmann equilibrium is disturbed in the chemical reaction of gases. The author carried out a theoretical investigation of thermal relaxation of molecular vibrations by means of an isolated system of harmonic oscillators in the case of Maxwell velocity distribution. A similar case is realized by a monatomic gas with only a few diatomic molecules. Vibrational relaxation is studied here by means of an isolated system of harmonic oscillators in analogy to the vibrational relaxation in diatomic gases. When two oscillators collide, this relaxation also shows exchange processes due to vibrations. The part played by these processes in the establishment of equilibrium is studied in the present paper. The establishment of equilibrium is described by gas-kinetic equations (1) according to the vibrational degrees of

Card 1/3

Relaxation of Oscillatory Motion in an Isolated System of Harmonic Oscillators

S/020/60/130/03/011/065
B014/B014

freedom in the system under consideration. In accordance with reference 3 it holds that nonelastic collisions are accompanied only by single-quantum transitions. The general solution of the system of (1) is very difficult. A solution is, however, possible if the probability of exchange of a vibrational quantum during the collision of particles each of which passes over from the first excited level to the ground state, is much greater than the probability of transition of an oscillator from the first excited level to the ground state. From the set of equations (1) it may be seen for this case that equilibrium is established in two stages to which two relaxation times correspond. A quasisteady distribution was found to occur in the first short-time stage (τ_1) as a result of exchange events by vibrational quanta with an unchanged total number of vibrational quanta. In the second stage, equilibrium is slowly established (τ_2). It holds that $\tau_2 \gg \tau_1$. The distribution of oscillators according to the vibrational level in the first stage is described by the system of equations (2) which is easily solved (Ref 2). The quasisteady solution of system (1) at the instant $\tau_1 \ll t \ll \tau_2$ is derived here. It is shown that,

Card 2/3

S/053/61/074/003/001/002
B102/B209

AUTHORS: Losev, S. A., Osipov, A. I.

TITLE: Study of non-equilibrium effects in shock waves

PERIODICAL: Uspekhi fizicheskikh nauk, v. 74, no. 3, 1961, 393-434

TEXT: The propagation of intense shock waves in a gas is entailed by rather essential phase conversions leading to a violation of statistical equilibrium. The present paper deals with such problems. The authors give a synoptic discussion on the most important techniques and results of theoretical and experimental studies concerning the individual relaxation processes in shock waves. The introductory sections present a theoretical consideration of balancing with respect to the individual degrees of freedom. These considerations are based on the kinetic theory of gases (Maxwellian distribution, balancing with respect to the individual degrees of freedom, theory of vibrational relaxation; balancing with respect to the rotational degrees of freedom, theory of rotational relaxation; balanced dissociation (thermal); balanced ionization). In the following (sections 4, 5) the authors discuss the experimental results of the study of the

Card 1/3

Study of non-equilibrium ...

gaseous phase in shock waves. These investigations are performed by means of shock tubes, discharge chambers, pulsed and other devices. The authors are particularly concerned with operation and techniques of shock tubes since they make it possible to obtain the maximum of results concerning high-temperature relaxation kinetics on most simple conditions. Only endothermal processes in gases are discussed. The data are taken almost exclusively from western publications. In particular the authors discuss the following techniques by means of shock tubes: Measurement of gas density according to Ref. 69 (§§ 4, 5) by means of a schlieren method and its photographic and photoelectric varieties, by means of an interferometer, determination of gas density from electron beam scattering (this method is used at low pressures), and according to the absorption of soft X radiation; measurement of the gas component concentration (behind shock wave) from the analysis of the absorption spectrum; measurement of the radiative intensity, determination of the spectral and time characteristics of emission, study of the process behind the wave front; measurement of gas temperature (behind the front) by gaging the natural radiation of the gas, by gaging the light source according to its temperature; measurement of the electron concentration according to the Langmuir probe method according to the

Card 2/3

Study of non-equilibrium .

S/053/61/074/003/001/002
B102/B209

shift and broadening of the spectral line contour due to the Stark effect, according to the displacement of the magnetic field lines, and, finally, by means of the method of microradiowaves (determination of the shf absorption); measurement of pressure utilizing the piezo-effect according to S. G. Zaytsev (piezoelectric transmitter with $BaTiO_3$ ceramics). Measurement of the flow velocity by means of a Tepler device and other methods. In the last section of the article, the results are summarized, discussed, and compared, partly in the form of tables. Mention is made of R. I. Soloukhin, Ya. B. Zel'dovich, Yu. P. Rayzer, A. S. Kompaneyets, L. D. Landau, E. Teller, A. A. Brandt, R. Kh. Kurtmulayev, T. V. Bazhenova, Yu. S. Lobastov, N. A. Generalov, and S. S. Semenov as well as the Institut mekhaniki AN SSSR (Institute of Mechanics of the USSR). There are 12 figures, 7 tables, and 191 references: 67 Soviet-bloc and 114 non-Soviet-bloc. The three most important references to English-language publications read as follows: R. N. Schwartz, K. F. Herzfeld, J. Chem. Phys. 22, 767 (1954); E. Resler, S. C. Lin, A. Kantrowitz, J. Appl. Phys. 23, 1390 (1952); D. R. White, J. Fluid Mech . 4, 585 (1958).

Card 3/3

OSIPOV, A.I.

Violation of the Boltzmann distribution in the process of thermal molecular dissociation. Dokl. AN SSSR 137 no.4:833-835 Ap '61. (MIRA 14:3)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova. Predstavleno akademikom V. N. Kondrat'yevym.
(Molecular theory)
(Distribution(Probability theory))

OSIPOV, A.I.

Probability of the transformation of the oscillation energy of oxygen in a collision with a nitrogen dioxide molecule. Dokl. AN SSSR 139 no.2:351-354 Jl '61. (MIRA 14:7)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova. Predstavleno akademikom M.A. Leontovichem.
(Collisions (Nuclear physics)) (Photochemistry)

37420
S/188/62/000/002/006/013
B125/B108

AUTHOR: Osipov, A. I.

TITLE: Distribution of the vibrational energy of molecules excited by sources

PERIODICAL: Moscow. Universitet. Vestnik. Seriya III. Fizika, astronomiya, No. 2, 1962, 41 - 45

TEXT: The distribution function of vibrational energy in a system consisting of diatomic molecules B, added in a small quantity to a monatomic gas A, is determined. It is assumed that the molecules B vibrate and possess a certain amount of vibration energy E_{n_o}. By inserting

$\chi_n(t) = tN\chi_n^{(o)} + f_n$, $n = 0, 1, 2, \ldots$ into the balance equation

$$P_{n+1,n} = P_{n,n+1} e^{-\varepsilon_n + \varepsilon_{n+1}} \quad \left(\varepsilon_n = \frac{E_n}{kT}\right),$$

for the vibrational relaxation of molecules B in the presence of sources, one obtains a system of algebraic equations for the perturbation function

Card 1/4

Distribution of the vibrational...

f_n yielding the solution

$$f_{n+1} = \left[\frac{N}{Z} \sum_{m=0}^{n} \frac{e^{\theta m+1}}{P_{m+1,m}} \sum_{l=0}^{m} (\chi_l^{(0)} - \delta_{ln_0}) + f_0 \right] e^{-\theta n+1}$$

$\chi_n^{(o)}$ is the Boltzmann function for the number of molecules on the n-th vibrational level normalized to unity. The constant f_o may be set equal to zero. By substituting the energy $\varepsilon_{m+1} = (m+1)\theta$, $\theta = \hbar\sqrt{kT}$ and the transition probability $P_{m+1,m} = (m+1)\gamma^m P_{10}$ with $\gamma \gtrsim 1$ into Eq.(4), the following equations are obtained for the lowest levels of a Morse oscillator used as a molecular model:

$$f_n = \frac{N}{ZP_{10}} \left\{ \sum_{m=1}^{n} \frac{e^{m\theta} - 1}{m\gamma^{m-1}} + f_0 \right\} e^{-n\theta} \qquad n \leqslant n_0. \tag{6}$$

$$f_n = \frac{N}{ZP_{10}} \left\{ \sum_{m=1}^{n_0} \frac{e^{m\theta} - 1}{m\gamma^{m-1}} - \sum_{n_0+1}^{n} \frac{1}{m\gamma^{m-1}} + f_0 \right\} e^{-n\theta} \qquad n > n_0. \tag{7}$$

Card 2/4

For low temperatures these equations assume a simple form:

$$f_n = B(n)\, e^{-n\vartheta} \qquad n \leqslant n_0, \qquad (8)$$
$$f_n = B(n_0)\, e^{-n\vartheta} \qquad n > n_0,$$

$$B(n) = \frac{Ne^{n\vartheta}}{ZP_{10}n\gamma^{n-1}}.$$

If $n \leqslant n_0$, f_n is very different from the Boltzmann form, but if $n > n_0$, it has a Boltzmann form with the fictitious number of particles $B(n_0)$. These results are then used to analyze R. Norrish's experiments on the deactivation of vibrating O_2 molecules excited during the collision photolysis of ClO_2 and NO_2 in the presence of large amounts of N_2 and other gases. If the initial distribution of molecules among the vibrational levels (maximum at the eighth level) is a δ-function at the end of the impact, the probability, $P_{6,5}$, of transition from the sixth to the fifth level is $\sim 5 \cdot 10^{-3}$. R. Norrish (see reference) estimated this quantity at

Distribution of the vibrational...

$>2 \cdot 10^{-3}$. Professor Ye. V. Stupochenko is thanked for comments. The most important English-language reference is: Lipscomb F., Norrish R., Thrush B. Proc. Roy. Soc. Amer., 233, 455, 1956.

ASSOCIATION: Kafedra molekulyarnoy fiziki (Department of Molecular Physics)

SUBMITTED: June 7, 1961

Card 4/4

OSIPOV, A.I.

Anomalous role of HCl vibration temperatures in the experiments of Cashion and Polanyi. Zhur.fiz.khim. 36 no.8:1798 Ag '62. (MIRA 15:8)

1. Moskovskiy gosudarstvennyy universitet, fizicheskiy fakul'tet, kafedra molekulyarnoy fiziki.
(Hydrochloric acid) (Molecules)

OSIPOV, A. I.

Vibrational relaxation of I_2 in a I_2 - He mixture. Dokl. AN SSSR 143 no.6:1392-1394 Ap '62. (MIRA 15:4)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova. Predstavleno akademikom V.N.Kondrat'yevym.
(Iodine) (Helium) (Gas dynamics)

L 9928-63 EWT(1)/BDS--AFFTC/ASD--IJP(C)
ACCESSION NR: AP3002803 S/0207/63/000/003/0041/0044

52

AUTHOR: Osipov, A. I.; Stupochenko, Ye. V.

TITLE: Nonequilibrium energy distribution with respect to the vibrational degrees of freedom of molecules when the Maxwell distribution is disturbed

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 3, 1963, 41-44

TOPIC TAGS: energy distribution, fast-particle sources

ABSTRACT: The distribution of vibrational energy in a gas disturbed by a fast-particle source has been investigated. It is shown that the disturbance of Maxwell distribution is usually accompanied by disturbance of the equilibrium energy distribution with respect to all degrees of freedom. In the case of a model of harmonic oscillators comprising a small impurity of diatomic molecules in a light monatomic gas disturbed by a source generating similar monatomic particles whose initial kinetic energy is smaller than hNu, the distribution of vibrational energy can be represented as the Boltzmann distribution characterized by the temperature THETA. For a THETA different from the temperature T of the

Card 1/2

L 9928-63
ACCESSION NR: AP3002803

light gas (for sufficiently intense sources THETA may considerably exceed T), an explicit expression is obtained in terms of source parameters. The deviation of vibrational energy distribution from equilibrium is associated with a relatively small perturbation of the Maxwell distribution (small in the sense that only a small portion of all the particles of the monatomic gas is affected by perturbations). Orig. art. has: 10 formulas.

ASSOCIATION: none

SUBMITTED: 14Mar63 DATE ACQ: 16Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 004 OTHER: 000

Card 2/2

OSIPOV, A.I.

Vibrational relaxation of oxygen. Kin. i kat. 4 no.3:487-489 My-Je '63. (MIRA 16:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, fizicheskiy fakul'tet.
(Oxygen) (Molecular spectra)

OSIPOV, A.I.

Vibrational relaxation of diatomic molecules in nonadiabatic collisions. Zhur. fiz. khim. 37 no.12:2757-2760 D '63. (MIRA 17:1)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

S/053/63/079/001/003/003
B102/B186

AUTHORS: Osipov, A. I., Stupochenko, Ye. V.

TITLE: Non-uniform energy distributions with respect to the vibrational degrees of freedom in gases

PERIODICAL: Uspekhi fizicheskikh nauk, v. 74, no. 1, 1963, 81-113

TEXT: This review article deals with causes and effects of non-uniform energy distribution in gas kinetics. The introduction is followed by the two chapters of the paper: (1) The vibrational relaxation (Introduction; gas-kinetic equations; transition probabilities; vibrational relaxation in an isothermal system - relaxation equations; vibrational relaxation in an isothermal system - the distribution of the molecules with respect to the vibrational levels; vibrational relaxation in an isolated system - the gas-kinetic equations; vibrational relaxation in an isolated system - the distribution of the molecules with respect to the vibrational levels). (2) The distribution of the vibration energy in systems with particle sources (Introduction; thermal dissociation considered as sinks of vibrationally excited molecules;

OSIPOV, A. I.; STUPOCHENKO, Ye. V.

Nonequilibrium energy distribution by vibrational degrees of freedom in gases. Usp. fiz. nauk 79 no.1:81-113 Ja '63.
(MIRA 16:1)

(Gases, Kinetic theory of)
(Molecules)

ACCESSION NR: AP4022648 S/0207/64/000/001/0041/0046

AUTHOR: Osipov, A. I. (Moscow)

TITLE: Relaxation of vibrational energy in a binary system of two-atom gases

SOURCE: Zhurnal priklad. mekhan. i tekhn. fiz., no. 1, 1964, 41-46

TOPIC TAGS: two-atom gas, binary gas mixture, vibration energy, vibration energy transfer, vibration relaxation, vibration relaxation time

ABSTRACT: The author attempts to give an accurate description of the vibrational relaxation in a binary system of two-atom molecules. Certain vibrational energy transfer effects distinguish these systems from pure gases and mixtures of one-atom and two-atom gases. These effects were previously investigated by A. I. Osipov (Kolebatel'naya relaksatsiya v binarnoy smesi gazob. Vestn. Mosk. un-ta, 1960, No. 4, str. 96) and have recently been confirmed experimentally. Let A and B be the components of the mixture whose vibrational relaxation is described by a system of equations, balanced for the number of molecules of A and B in each vibrational level. The vibrational quanta transfer between A and B will influence the relaxation of vibrational energy only if one of the relaxation times

Card 1/2

ACCESSION NR: AP4022648

is much larger than the other. These cases are studied. In one case a formula obtained coincides with an analogous expression given by L. H. Valley and S. Legvold (Vibrational relaxation times for gas mixtures. Phys. Fluids, 1960, vol. 3, No. 5, p. 831). The results are used to analyze experiments performed for mixtures of CO with N_2. Experimental results in the fluorescence and vibrational relaxation of nitric oxide are discussed, as are analogous experiments with HCl. "The author thanks Ye. V. Stupochenko for advice and suggestions." Orig. art. has: 23 equations.

ASSOCIATION: none

SUBMITTED: 14Oct63 DATE ACQ: 08Apr64 ENCL: 00

SUB CODE: PH, CH NO REF SOV: 002 OTHER: 009

Card 2/2

AP4010307 S/0048/64/028/001/0134/0137

AUTHOR: Osipov, A.I.

TITLE: Calculation of the probabilities for impact excitation of vibrational levels of molecules by the method of non-stationary theory /Report, Second All-Union Conference on the Physics of Electronic and Atomic Collisions held in Uzhgorod, 2-9 Oct 1962/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.1, 1964, 134-137

TOPIC TAGS: impact excitation, molecular collision, vibrational relaxation, diatomic molecule, Landau-Teller formula, one-quantum transition, many-quantum transition, transition probability, high temperature effects, argon, oxygen

ABSTRACT: A concept fundamental to modern theories of thermal dissociation and vibrational relaxation of diatomic molecules is that of one-quantum transitions between vibrational and translational degrees of freedom. In general calculations of the probabilities for rotational excitation of molecules can be carried out either quantum mechanically or semiclassically. In the semiclassical method the coordinate of the relative motion of the colliding molecules is assumed to be a time dependent parameter. The equations for the probability amplitudes for the one dimen-

sional case were derived earlier by the author (A.I.Osipov and E.V.Stupochenko, Izv. AN SSSR,Ser.fiz.,24,992,1960). The transition probabilities given by these equations and averaged over the Maxwellian velocity distribution agree with the probabilities given by the Landau-Teller formula, which is valid for one-quantum transitions. At present, however, by virtue of development of shock tube techniques, it has become feasible to investigate vibrational relaxation processes at temperatures of up to 10 000°K. In considering the data for this high temperature region there arise two questions: is the Landau-Teller formula pplicable in this case and what role do many-quantum transitions play in this high temperature region? In order to answer these questions the probability amplitude equations, simplified to fit the given case, were solved numerically for the specific case of O_2-A collisions. The modified set of equations was solved with the aid of the "Strela" computer at the Computation Center at Moscow State University for a reasonable range of parameters. The results show that the Landau-Teller formula yields somewhat high but still reasonable results for temperatures up to 5000°K, but that in the temperature region above 7000°K the Landau-Teller formula is no longer applicable, in view of the fact that in this temperature region many-quantum transitions begin to play a significant role. It is noted, however, that in view of the approximate character of the model employed there is no point in comparing the calculated transition probabili-

AP4010307

ties with the experimental values; the calculated values must be regarded as only indicative of the trend to be expected. "In conclusion, the author expresses his deep gratitude to V.M.Marty*nova for carrying out the numerical computations." Orig.art.has: 15 formulas, 1 table and 1 figure.

ASSOCIATION: Fizicheskiy fakul'tet, Moskovskogo gos. universiteta im. M.V.Lomonosova (Physics Department, Moscow State University)

SUBMITTED: 00 DATE ACQ: 10Feb64 ENCL: 00

SUB CODE: PH NR REF SOV: 005 OTHER: 001

Card 3/3

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001238

ACCESSION NR: AP4040947 S/0020/64/156/005/1057/1060

AUTHOR: Generalov, N. A.; Losev, S. A.; Osipov, A. I.

TITLE: Vibrational energy relaxation of air molecules behind the front of a straight shock wave

SOURCE: AN SSSR. Doklady*, v. 156, no. 5, 1964, 1057-1060

TOPIC TAGS: vibrational relaxation, vibrational energy, shock wave, vibrational relaxation time, vibrational energy exchange

ABSTRACT: The vibrational relaxation of air molecules behind a shock wave front is considered. By calculating the distribution of vibrational energy of molecules behind the shock front in the air with and without the effect of exchange taken into account, conditions are determined under which the exchange of vibrational energy between molecules of a binary mixture of diatomic gases O_2 and N_2 is substantial. The equations are established describing the variation of vibrational energy of single components of a binary gas mixture due to the transitional energy into vibrational energy of one component and to the

Card 1/2

ACCESSION NR: AP4040947

process of vibrational energy exchange between molecules. The results of calculation made on a computer for shock wave velocities with M = 5, 9, and 20 are given in graphs and discussed. It is shown that the relative effect of the exchange decreases with an increase in shock wave velocity. Orig. art. has: 3 figures and 4 formulas.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 12Dec63 ATD PRESS: 3055 ENCL: 00

SUB CODE: ME NO REF SOV: 002 OTHER: 002

Card 2/2

STUPOCHENKO, Yevgeniy Vladimirovich; LOSEV, Staliy Andreyevich; OSIPOV, Aleksey Iosifovich; SAMUYLOV, Ye.V., red.

[Relaxation processes in shock waves] Relaksatsionnye protsessy v udarnykh volnakh. Moskva, Nauka, 1965. 484 p. (MIRA 19:1)

L 04299-67 EEC(k)-2/EWP(k)/EWT(d)/EWT(l)/T IJP(c) RTW/WG/WW

ACC NR: AP6029760 SOURCE CODE: UR/0414/66/000/002/0083/0089

AUTHOR: Osipov, A. I. (Moscow); Generalov, N. A. (Moscow)

43
B

ORG: none

TITLE: Theory of vibrational relaxation

SOURCE: Fizika goreniya i vzryva, no. 2, 1966, 83-89

TOPIC TAGS: vibration relaxation, vibration collision, gas mechanics, gas property

ABSTRACT: An attempt was made to extend the Landau-Teller theory of vibration relaxation to two-component systems involving diatomic molecules in a monoatomic gas medium up to 10,000°K. Excellent agreement was found between the experimentally determined vibration relaxation times (up to 7000-8000°K) for pure oxygen and oxygen in argon with those determined according to the Landau-Teller theory. At temperatures above 7000-8000°K, the vibrational relaxation times predicted by the Landau-Teller theory were up to 7% greater than those found experimentally. Orig. art. has: 2 figures, 24 formulas.

SUB CODE: 20 / SUBM DATE: 09Nov65/ ORIG REF: 005/ OTH REF: 005

UDC: 536.45

Card 1/1

ACC NR: AM6008484 Monograph UR/

Stupochenko, YEvgeniy Vladimirovich; Losev, Stalliy Andreyevich; Osipov, Alekseey Iosifovich

Relaxation processes in shock waves (Relaksatsionnyye protsessy v udarnykh volnakh) Moscow, Izd-vo "Nauka," 1965. 482 p. illus., biblio., index. 4000 copies printed.

TOPIC TAGS: gas relaxation, vibrational relaxation, relaxation process, relaxing flow, shock tube, shock wave, shock wave heating, shock wave structure, strong shock wave, gas dissociation, radiation heat transfer, nonequilibrium flow, equilibrium flow, thermodynamic equilibrium, gas dynamics, thermal dissociation

PURPOSE AND COVERAGE: This book is intended for scientific personnel concerned with the problems of gasdynamics, high-temperature thermal physics, chemical physics, and also for candidates and senior students of these specialties. The present state of experimental and theoretical investigations of relaxation processes taking place in shock waves in gases and air is described and analyzed. Particular attention is paid to physical aspects of relaxation phenomena and to elucidation of patterns in processes taking place in the establishment of statistical equilibrium with respect to various degrees of freedom. It contains a foreword and six chap-

Card 1/4 UDC: 533.601.172

ters. The first chapter deals with general problems and presents a qualitative description of the relaxation process and the fundamentals of experimental methods. The second deals with shock tubes as a means for generating and studying strong shock waves and related phenomena. Chapter three deals with the experimental methods used for investigating nonequilibrium phenomena taking place in shock waves. Chapter four is devoted to a theoretical analysis of relaxation processes and available experimental data. Chapter five deals with nonequilibrium phenomena taking place behind a shock front in air. Chapter six briefly outlines the gas flow properties in relaxation and contains a brief analysis of gaskinetic methods for deriving equations of equilibrium and relaxation hydrodynamics and methods of the thermodynamics of irreversible processes. The authors are grateful to N. A. Generalov, Yu. P. Rayzer, and E. V. Samuylov for valuable comments.

TABLE OF CONTENTS [abridged]:

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001238

ACC NR: AM6008484

SUB CODE: 20/ SUBM DATE: 11Nov65/ ORIG REF: 208/ OTH REF: 418

Card 4/4

OSIPOV, A. I

Investigation of mixing properties in open-hearth furnace baths with the aid of radioactive isotopes. A. I. Osipov, L. A. Shvartsman, V. B. Ludin, and M. L. Sazonov. *Conf. Acad. Sci. U.S.S.R. on Peaceful Uses of Atomic Energy, Session Div. Tech. Sci.* 1955, 17–25(Pub. 1956)(Engl. translation).—See *C.A.* 50, 135c.

B. M. R.

Os/Pov AI

Investigation of mixing properties in open-hearth furnace baths with the aid of radioactive isotopes. A. I. Orlov, L. A. Shvartsman, V. E. Iudin, and M. L. Sazonov. *Sessiya Akad. Nauk S.S.S.R. po Mirnomu Ispol'zovaniyu Atomnoi Energii* 1955, *Zasedaniya Otdel. Tekh. Nauk*, 20–31 (English summary, 47).—Radiocobalt was used in the time study of its uniform distribution in the molten metal in large open-hearth furnaces. The time necessary for the uniform distribution of radiocobalt throughout the liquid metal is established from the kinetic curves of changes of zones.

W. M. Sternberg

Osipov, A. I.

Mixing of Metal and Slag in Open-Hearth Furnaces. A. I. Osipov, L. A. Shvartsma, M. T. Bolshi and A. G. Shimov. (*Stal'*, 1955, (8), 709–712). [In Russian]. In the investigation described the mixing of metal and slag under the conditions prevailing in 350-ton O.H. furnaces was studied with the aid of radioactive phosphorus. Very small additions became uniformly distributed throughout the slag and metal in 60–70 min. The curves of distribution against time indicate the diffusional nature of the process, and an estimate has been made of the coefficient of turbulent diffusion of phosphorus in liquid steel. The tracer technique worked satisfactorily and further experiments with radioactive elements which do not pass between the liquid phases (e.g. cobalt and calcium) are envisaged.—s. k.

Osipov A.I.

USSR

New method of rapid analysis of slag for phosphorus with the use of a radioactive indicator. A. I. Osipov, L. M. Koshevnikov, V. E. Iusin, M. L. Sazhin-Sazhenov, V. G. Dul'skii, A. G. Alimin, A. M. Skrepisov, and A. P. Ryabchikov. Zavodskaya Lab. 21, 691-3(1955).—P^{32} is introduced into the melt by packaging its mixts. with powd. Fe in sealed Cu tubes, which are then inserted into the mass of molten metal and are thus dissolved with distribution of P^{32} through the mass during production of cast iron. Slag samples are analyzed for P by the conventional counting technique. Detailed description of the counting app. is given.
G. M. Kosolapoff

Central Sci-Res. Inst Ferrous Metallurgy and Zavod "Azovstal".

YUDIN, V.Ye.; SAZONOV, M.L.; OSIPOV, A.I.

Apparatus for measuring the radioactivity of metal samples.
Zav.lab.21 no.11:1384-1385 '55. (MLRA 9:2)

1.Institut metallovedeniya i fiziki metallov TSentral'nogo nauchno-issledovatel'skogo instituta tekhnologii chernoy metallurgii.
(Radioactivity--Measurement)

LEPORSKIY, V.V.; OSIPOV, A.I.; BUL'SKIY, M.T.; ALIMOV, A.G.; SVIRIDENKO, F.F.; SKREBTSOV, A.M.; SLEPKANEV, P.N.

Radioactive tracer study of the refining of phosphorus-containing pig iron. Stal' 16 no.1:19-22 '56. (MLRA 9:5)

1. Zavod "Azovstal'" i TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii.
(Iron--Metallurgy) (Phosphorus--Isotopes)