

FRANSEN, B.S., mayor med. sluzhby

Defects of medical selection in aviation schools. Voen. med. zhur.
no.2:67-69 F '59. (MIRA 12:7)

(AVIATORS

med. selection in aviation schools defects (Rus))

ZASUKHA, P.F., kand.tekhn.nauk; LAZUTIN, A.G., inzh.; ZAVERYUKHA, A.Kh.,
inzh.; VOLEGOV, V.P., inzh.; FRANTSENYUK, I.V., inzh.

Selection of an efficient type of sheet rolling mill. Stal' 21
no.12:1090-1092 D '61. (MIRA 14:12)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov
i Novolipetskiy metallurgicheskiy zavod.
(Rolling mills)

SOV/109- -4-3-8/38

AUTHORS: M.I. Rodak and A.V. Frantsesson

TITLE: Application of the Turbulence Theory to the Scattering of Radiowaves at Wandering Irregularities (O primeneni teorii turbulentnosti k rasseyaniyu radiovoln na bluzhdayushchikh neodnorodnostyakh)

PERIODICAL: Radiotekhnika i Elektronika, 1959, Vol 4, Nr 3, pp 398-403 (USSR)

ABSTRACT: In an article published in this journal, G.S. Gorelik (Ref 1) obtained the following formula for the correlation function of the electromagnetic field scattered by means of a cloud of wandering irregularities (scatterers):

$$\overline{EE'} = \overline{E(t) E(t+s)} = \frac{N}{2} \overline{\cos k \Delta_s \xi} \cos \omega_0 s, \quad (1)$$

where $k = 2k_0 \sin \frac{\theta}{2}$; k_0 and ω_0 are the wave number and frequency of the radiated wave; θ is the scattering angle, $\Delta_s \xi$ is the ξ -projection of the displacement of a scatterer during a time s , and N is the number of scatterers. If the scattered field is represented in the form:

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$$E(t) = X(t) \cos \omega_0 t + Y(t) \sin \omega_0 t,$$

the correlation function of the field amplitude components is expressed by Eq (2). On the other hand, G.S. Gorelik showed (Ref 2) that the correlation function for the intensity of the scattered field is given by Eq (3). The aim of this paper is to find a relationship between the above formulae and the general principles of the turbulence theory. It is assumed (Ref 3) that a turbulent atmosphere contains large-scale whirls (winds) having dimensions of the order L and small-scale winds having dimensions l . For the region where the local turbulence is much smaller than L and much greater than l , the so-called structural function for $D(\rho)$ for the field of turbulent velocities is expressed by Eq (4), where v_q is the projection of the velocity at a point r on to an arbitrary direction \vec{q} ; $\beta = 1.45$, c_q is a coefficient of the order of 1 and ϵ is the average velocity of the energy dissipation per unit mass. It is usually assumed that in the troposphere L is of the order of 100 m or more, while l is of the order of

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a few cm. It is shown that in the region where $L \gg \lambda$, Eqs (1) and (2) can be written as Eq (7). When calculating the correlation function for the intensity of the scattered field it is first necessary to determine the probability function $w(\Delta_s(\xi_1 - \xi_j))$

which is dependent on the shape and the dimensions of the scattering volume. This probability function can be regarded as being in the form of the normal distribution (Refs 4,5); this leads to Eq (8). The function $p(\rho)$ of Eq (8) can be in the form of either of the last two equations on page 401; r^2 is the spread of the scatterers with respect to the scattering volume, while R is the radius of the sphere having a uniform density distribution; the function $p(\rho)$ is the probability density of finding two particles from the scattering volume at a distance ρ . It is shown that if $\rho \gg \lambda$ and $R \gg \lambda$ the intensity correlation function can be written as Eq (13). In its final form this can be expressed as Eq (14). By comparing the spectra of the

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amplitude components of the scattered field and the spectrum of the field intensity it is found that the width of the latter is smaller than that of the amplitude spectrum, when the cloud of the scatterers is smaller than the external dimension of the turbulence L . The effect becomes pronounced if the dimensions of the scattering volume are reduced. On the other hand, when the dimensions of the cloud are much greater than L , the effect disappears entirely. The work described was done under Dr. G.S. Gorelik, who died soon after the manuscript was submitted to the editor of the journal. There are 6 references, 5 of which are Soviet and 1 English; one of the Soviet references is translated from English.

Card 4/4

SUBMITTED: July 8, 1957

S/109/62/007/005/013/021
D201/D308

24,7900

AUTHORS: Atsarkin, V.A. Zhabotinskiy, M.Ye., and Frantsesson,
A.V.

TITLE: Achieving the limit sensitivity of a radio-spectro-
scope for the observation of electron paramagnetic re-
sonance

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 5, 1962,
866 - 873

TEXT: The authors consider the three basic noise sources which li-
mit the sensitivity of a paramagnetic radio-spectroscope; the SHF
receiver noise, the relative frequency instability of the signal
generator and of the cavity resonator and amplitude and frequency
instability noise of the local oscillator (where applicable). After
comparing various radio-spectroscope systems it is concluded that
maximum sensitivity is obtained in a superheterodyne system with
double magnetic field modulation and AFC from the cavity resonator,
in which system the effect of both klystron and resonator instabili-
ty on sensitivity may be neglected. Relevant circuits of an actual
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Achieving the limit sensitivity ...

S/109/62/007/005/013/021
D201/D308

superheterodyne radio-spectroscope are given, the instrument operates at 29,5 mc/s and has a deep 50 c/s modulation of the magnetic field. Its calculated sensitivity, with the receiver noise only, should be 6×10^{-13} g/mol DPG [Abstractor's note: Diphenyl guanidine?] with the Q of the resonator equal to 10^4 and the indicating instrument passband of 2 c/s. The experimentally measured sensitivity was actually found to be 2×10^{-12} g-mol DPG, which is considered to be in good agreement, if the inaccuracy of such factors as the r.m.s. value of noise is taken into account. The experimentally found sensitivity of the instrument when observing the paramagnetic resonance signal on a CRO was found to be 2×10^{-10} g-mol DPG with the receiver pass-band of 12.5 kc/s. There are 4 figures.

SUBMITTED: June 17, 1961

Card 2/2

ATSARKIN, V.A.; GERASIMOVA, E.A.; MATVEYEVA, I.G.; FRANTSESON, A.V.

Paramagnetic resonance of a trivalent chromium ion in the
crystal lattice of magnesium tungstate. Zhur. eksp. i teor.
fiz. 43 no.4:1272-1274 0 '62. (MIRA 15:11)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Paramagnetic resonance and relaxation)
(Chromium)
(Magnesium tungstate crystals)

KOTEL'NIKOV, V. A., akademik; GUS'KOV, G. Ya.; DUBROVIN, V. M.;
DUBINSKIY, B. A.; KISLIK, M. D.; KORENBERG, Ye. B.; MINASHIN,
V. P.; MOROZOV, V. A.; NIKITSKIY, N. I.; PETROV, G. M.;
PODOPRIGORA, G. A.; RZHIGA, O. N.; FRANTSESSON, A. V.;
SHAKHOVSKOY, A. M.

Radar tracking of the planet Mercury. Dokl. AN SSSR 147 no.6:
1320-1323 D '62. (MIRA 16:1)

1. Institut radiotekhniki i elektroniki AN SSSR.

(Mercury(Planet)) (Radar in astronomy)

ATSARKON, V.A., ZHABOTINSKIY, M.YE., FRANTSESON, A.V.

"Electron spin resonance of trivalent chromium ions in spinel and magnesium tungstate crystals."

Report submitted to the Third Intl. Conference on Quantum Electronics,
Paris, France 11-15 Feb 1963

KOTEL'NIKOV, V.A., akademik; APRAKSIN, L.V.; DUBROVIN, V.M.; KISLIK,
M.D.; KUZNETSOV, B.I.; PETROV, G.M.; RZHIGA, O.N.; FRANTSESSON,
A.V.; SHAKHOVSKOY, A.M.

Radar contact with Jupiter. Dokl. AN SSSR 155 no. 5:1037-1038
Ap '64. (MIRA 17:5)

1. Institut radiotekhniki i elektroniki AN SSSR.

ACCESSION NR: AP4009982

S/0109/64/009/001/0114/0117

AUTHOR: Zhabotinskiy, M. Ye.; Frantsesson, A. V.

TITLE: Paramagnetic amplifier for planet radar

SOURCE: Radiotekhnika i elektronika, v. 9, no. 1, 1964, 114-117

TOPIC TAGS: paramagnetic amplifier, radar, planet radar, 700 mc paramagnetic amplifier, Venus radar investigation, Mercury radar investigation, radiotelegraphy via Venus

ABSTRACT: A 700-mc paramagnetic resonator-type amplifier was developed and built for radar probing of the planets. A ruby with a 0.017% Cr concentration is used as a paramagnetic substance; the magnetic figure of merit is found to be proportional to the temperature within 1.7-4.2K. A constant magnetic field of about 140 oerst is oriented at right angles to the crystal axis. The two-frequency resonator is represented by a quarter-wave strip line. Cooled to liquid helium temperature, the resonator is tuned to about 11.0 kmc. An AFC system tunes the pumping klystron to the resonator with a stabilization coefficient of over

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ACCESSION NR: AP4009982

10,000. At pumping frequency, the resonator's Q-factor is over 5×10^3 at 10 mw. The resonator is immersed in liquid helium and a 40-gram permanent magnet is attached to it. It is claimed that the above paramagnetic amplifier "was successfully used in radar contact of Mercury in June, 1962, and of Venus in the October '62 - January '63 period. In November, 1962, the amplifier helped to establish a radio telegraph communication via Venus." "The authors wish to thank I. A. Kuz'min for his help in developing and building various parts of the amplifier, and also M. M. Dedlovskiy for his participation in operating the amplifier." Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 16Jul63

DATE ACQ: 10Feb64

ENCL: 00

SUB CODE: RA, AS

NO REF SOV: 004

OTHER: 001

Card 2/2

L 60859-65 EEG-4/ENG(v)/EWT(1)/FBD GW/WS-4

ACCESSION NR: AP5018071

UR/0020/65/163/001/0050/0053

AUTHOR: Kotel'nikov, V. A.; Aleksandrov, Yu. M.; Apraksin, L. V.;
Dubrovin, V. M.; Kislik, M. D.; Kuznetsov, B. I.; Petrov, G. M.; Rzhika, O. N.;
Frantsesson, A. V.; Shakovskoy, A. M.

67
56
B

TITLE: Radar observations of Venus in the Soviet Union in 1964

SOURCE: AN SSSR. Doklady, v. 163, no. 1, 1965, 50-53

TOPIC TAGS: radio wave reflection, Venus radar observation, radio emission measurement, radar observation, radio astronomy

ABSTRACT: Radar observations of Venus at 40 cm were conducted between 11 and 30 June 1964 by the Institute of Radio Engineering and Electronics of the Academy of Sciences USSR. Frequency modulation and periodic linear frequency modulation of radiated signals were employed. Paramagnetic and parametric amplifiers were used at the receiver output. Signal analysis was performed by means of a 20-channel analyzer with a filter bandwidth of 1.2 cps for each channel. The reflected signal spectrum and measurements of the radial velocity of the motion of Venus were determined on the basis of the Doppler shift of the signal spectrum of the central frequency in relation to the radiation frequency. Frequency manipulation

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L 60859-65

ACCESSION NR: AP5018071

was effected with the radiating signal shaped as two alternating telegraphic pulse packets at two carrier frequencies differing either by 62.5 or by 2000 cps. At each frequency, pulse duration and the intervals between transmissions were 4.096 sec. Radio wave reflection from the Venusian surface and measurements of the distance to Venus were effected with linear frequency modulation. The results of the measurements of the distance to Venus and of the radial velocity of its motion are shown in Fig. 1 of Enclosure, with the vertical sections showing rms error values, which till 23 June did not exceed 15 km for 5 min of observation (at a deviation of 4 kc) and after 23 June did not exceed 2 km (at a deviation of 32 kc). Measurement error for velocity did not exceed 2.5 cm/sec. Signal propagation time was calculated with an accuracy of ± 5 μ sec, and Doppler frequency, with an accuracy of ± 0.05 cps. The total rms error value for the initial data was ± 400 km. The energy distribution of signals reflected from Venus depending on distance ΔR is shown in Fig. 2. The following conclusions are drawn: 1) The width of the Doppler spectrum of the reflected signal caused by the rotation of Venus does not exceed 15 cps. 2) The Venusian reflection factor averages 19%. 3) The energy in the central band of 1 cps is approximately one half of the energy of the whole spectrum. 4) The orientation of the Venusian axis of rotation is practically perpendicular to the orbital plane. Orig. art. has: 4 figures. [DW]

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L 60859-65

ACCESSION NR: AP5018071

ASSOCIATION: Institut radiotekhniki i radioelektroniki Akademii nauk SSSR (In-
stitute of Radio Engineering and Electronics, Academy of Sciences SSSR)

SUBMITTED: 12Apr65

ENCL: 02

55
SUB CODE: DC, AA

NO REF SOV: 003

OTHER: 000

ATD PRESS: 4063

Card 3/5

L 60859-65

ACCESSION NR: AP3018071

ENCLOSURE: 01

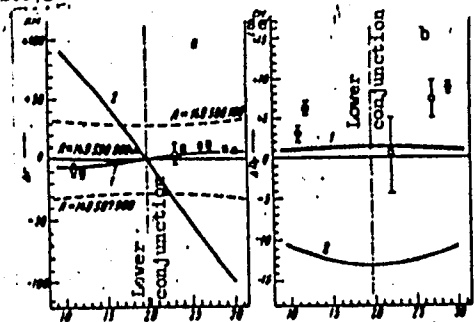


Fig. 1. (a) Variation in the relative calculated value of the distance to Venus and (b) the radial velocity of Venusian motion

Δr - Difference between the measured and calculated distance from the measuring point to the closest point on the surface of Venus; Δv_r - difference between the measured and calculated radial velocity of Venusian reflection center in relation to the measuring point.

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L 60859-65

ACCESSION NR: AP5018071

ENCLOSURE: 02

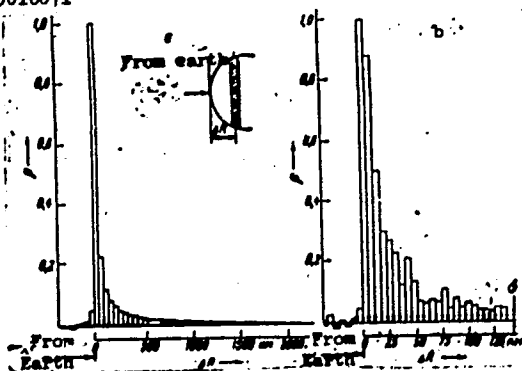


Fig. 2. Energy range distribution of signals reflected from Venus obtained by linear frequency modulation (a) with a deviation of 4 kc ($\sigma = 0.0025$ for narrow filters and $\sigma = 0.001$ for wide filters) and (b) with a deviation of 32 kc

Card 5/5 ⁴⁷⁰

ACC NR: AP7002662

SOURCE CODE: UR/0109/67/012/001/0056/0062

AUTHOR: Zhabotinskiy, M. Ye.; Frantsesson, A. V.

ORG: none

TITLE: Reflex-type multi resonator quantum paramagnetic amplifiers with active material in all resonators

SOURCE: Radiotekhnika i elektronika, v. 12, no. 1, 1967, 56-62

TOPIC TAGS: paramagnetic amplifier, amplifier design, *quantum device*

ABSTRACT: The possibility of increasing of the bandwidth of reflex-type quantum paramagnetic amplifiers by means of multi-resonator systems with the active material in all resonators is considered. By approximately uniform negative losses and applying contour integration the bandwidth of such systems was evaluated. The three-resonator quantum paramagnetic amplifier was analytically investigated; it was theoretically and experimentally shown that a three-resonator quantum paramagnetic amplifier with an amplification factor of 20db operating in the decimeter wave range (21 cm) provides greater bandwidth than a traveling-wave quantum paramagnetic amplifier. Orig. art. has: 7 figures and 9 formulas.

SUB CODE: 0970/ SUBM DATE: 06Aug65/ ORIG REF: 002/ OTH REF: 006
Card 1/1

UDC: 621.375.029.64

ACC NR: AP7002663

SOURCE CODE: UR/0109/67/012/001/0063/0066

AUTHOR: Zhabotinskiy, M. Ye.; Frantsesson, A. V.

ORG: none

TITLE: Quantum parametric amplifier with three resonators for 21-cm waves

SOURCE: Radiotekhnika i elektronika, v. 12, no. 1, 1967, 63-66

TOPIC TAGS: parametric amplifier, resonant amplifier

ABSTRACT: A parametric amplifier with three resonators has been designed which has an 18-Mc passband at 20-db gain. The miniature resonator system is formed by three parallel 1-mm-wide foil strips $1/4 \lambda$ long and 1.5 mm apart. In both sides of the set of strips are placed two $2 \times 9 \times 15$ -mm ruby plates. The strips and ruby plates are mounted along the wide side of the rectangular (4 x 17 mm) waveguide section. One end of each strip is soldered to the waveguide wall; the other end passes through the wall to be used for resonator adjustment and connection to the coaxial cable. A permanent magnet provides a 2000-oe magnetic field. The amplifier operates at 4.2K; helium consumption is 1.3 l per 24 hr. The amplifier was installed and tested in the modulated radiometer system of the

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UDC: 621.375.029.63

ACC NR: AP7002663

Pulkovo radiotelescope. The radiometers had a 1000K-equivalent input noise temperature which was reduced to 120K after installation. Orig. art, has: 7 figures.

SUB CODE: 09/ SUBM DATE: 09Aug65/ ORIG REF: 002/ ATD PRESS: 5111

Card 2/2

FRANTSESON, V.A.

DECEASED
C' 1961

1962/5

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SOIIS

FRANTSESSON, Ye.V.

Contact alterations of enclosing rocks associated with the
"Egiontey" kimberlite vein. Nauch.soob.IAFAN SSSR no.4:12-16
'60. (MIRA 14:12)

(Yakutia--Kimberlite)
(Metamorphism (Geology))

FRANTSESSON, Ye.V.

Comparison of the magnetic properties and chemical composition
of ilmenites from kimberlite pipes in Yakutia. Geol. i geofiz.
no.6:89-96 '62. (MIRA 15:7)

1. Institut geologii Yakutskogo filiala Sibirskogo
otdeleniya AN SSSR.

(Yakutia--Kimberlite)

(Yakutia--Ilmenite--Magnetic properties)

FRANTSESSON, Ye.V.

Composition and age interrelationship of the "Egientey" kimberlite pipe
and vein. Nauch.soob. IAFAN SSSR no.7:99-106 '62. (MIRA 16:3)
(Siberian Platform—Kimberlite)

FRANTSESSON, Ye.V.

Composition and structure of the "Mir" kimberlite pipe. Trudy
IAFAN SSSR. Ser.geol. no.8:19-38 '62. (MIRA 15:7)
(Yakutia--Kimberlite)

FRANSESSON, Ye.V.

Nature of the sculptured surfaces of kimberlite minerals. Vest.Mosk.
un.Ser.4: Geol. 19 no.5:55-61 S-0 '64.

(MIRA 17:12)

1. Kafedra petrografii Moskovskogo universiteta.

FRANTSESSON, Ye.V.

Petrochemical characteristics of Kimberlites and their position in the classification of igneous rocks. Vest. Mosk. un. Ser. 4:Geol. 20 no. 6:45-52 N-D '65 (MIRA 19:1)

1. Kafedra petrografii Moskovskogo gosudarstvennogo universiteta. Submitted July 25, 1964.

FRANTSEV, Andrey Nikolayevich; KOMAROV, S.G., red.; VERINA, G.P., tekhn.red.

Mechanic's handbook on repair of freight cars] Posobie slesariu
po remontu gruzovykh vagonov v poezdakh. Moskva, Gos. transp. zhel-
dor. izd-vo, 1958. 190 p. (MIRA 11:5)
(Railroads--Freight cars--Maintenance and repair)

FRANTSSEV, Andrey Nikolayevich; KOMAROV, S.G., red.; VERINA, G.P.,
tekh. red.

[Mechanic's manual for the maintenance of freight cars in
operation] Posobie slesariu po remontu gruzovykh vagonov v
poezdakh. Izd.2., perer. i dop. Moskva, Gos.transp.zhel-dor.
izd-vo, 1959. 235 p. (MIRA 12:12)
(Railroads--Freight cars--Maintenance and repair)

FRANTSEV, Andrey Nikolayevich; POPOV, A.I., inzh., retsenzent;
ARSHINOV, I.M., inzh., red.; VOROTNIKOVA, L.F., tekhn. red.

[Economy of materials and parts in car repairing] Ekonomia
materialov i detalei pri remonte vagonov. Moskva, Trans-
zheldorizdat, 1963. 138 p. (MIRA 16:4)
(Railroads--Cars--Maintenance and repair)

FRANTSEV, A.V. 2

ca

Chemical changes in the Uchinskii reservoir during the first three years of its existence. A.V. Frantsev. *Dokl. Akad. Nauk SSSR*, 1959, No. 4, 27-28 (in German, 28-29) (1959).—In the 1st yr, the water contained up to 8 mg/l. of Mn. It originated from the leached soil contg. about 0.7 g/kg. Mn. The amt. dissolved in the water is gradually increasing because of increasing oxidation of the water, which causes pptn. of Mn. The mineral N content increased during the 1st yr. near the bottom. Now the nitrates are disappearing as a result of denitrification. T. Loanev

ASB-LLA METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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FRANTSEV, A. V.

Moscow - Water Supply

Problem of reservoir operation at the Moscow water works. Gor. khoz. Mosk. 27, no. 2, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

FRANTSEV, A.V.

Ucha water-supply reservoir and problems dealt with investigating
it. Trudy Gidrobiol. ob-va 9:5-12 '59. (MIRA 12:9)

1. Uchinskaya laboratoriya Moskovskogo vodoprovoda.
(Ucha Reservoir--Water--Purification)

FRANTSEV, A.V.

Manganese in Ucha Reservoir. Trudy Gidrobiol. ob-va 9:13-28
'59. (MIRA 12:9)

1.Uchinskaya laboratoriya Moskovskogo vodoprovoda.
(Ucha Reservoir--Manganese)

FRANTSEV, A.V.

Some ways of controlling the life of fresh waters. Trudy Gidrobiol.
ob-va 11:323-330 '61. (MIRA 15:1)

1. Uchinskaya laboratoriya Moskovskogo vodoprovoda, st. Mamontovka
Moskovskoy oblasti.

(Fresh-water flora)

FRANTSEV, A.V.

Problems of improving the quality of water in the Moscow
sources of water supply. Trudy Gidrobiol. ob-va 14:42-51 '63.
(MIRA 17:6)

1. Uchinskaya laboratoriya Moskovskogo vodoprovoda, Moskva.

SOROKO, L.N., inzh.; FILONOV, V.A., inzh.; KSENZUK, F.A., inzh.;
TSIRLIN, B.M., inzh.; PAVLISHCHEV, V.B., inzh. Prinimali
uchastiye: BABAKOV, A.A.; BOROVSKIY, V.V.; YASHCHENKO, B.V.;
LAZUTIN, A.G.; ZAVERYUKHA, A.Kh.; FRANTSSEVIYUK, I.V.; ORLOVA, T.K.

Experimental rolling of stainless steel slabs on a 1200 mill
with coilers in the furnace. Stal' 21 no.12:1092-1096 D '61.
(MIRA 14:12)

1. Zavod "Zaporozhstal'" (for Soroko, Filonov, Ksenzuk,
TSirlin, Pavlishchev).

(Rolling mills—Equipment and supplies)
(Steel, Stainless)

FRANTSEV, V.I. (Moskva)

Clinical aspects and therapy of complications caused by transfusion of Rh incompatible blood. Klin. med. 32 no.11:40-43 N '54. (MLRA 8:1)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (dir.-prof. A.N.Bakulev) II Moskovskogo meditsinskogo instituta imeni I.V.Stalina i kabineta perelivaniya krovi (zav.-S.N.Velichkina) 1-y gorodskoy klinicheskoy bol'nitsy imeni Pirogova.

(RH FACTORS

incompatibility, causing compl. in transfusion, ther.)

(BLOOD TRANSFUSION, complications

caused by Rh incompatibility, ther.)

FRANTSEV, V.I., Cand Med Sci -- (diss) "Mechanical jaundice
and its treatment by surgery." Mos, 1958, 12 pp (Second
Mos State Med Inst in N.I. Pirogov) 250 copies (FL, 42-58, 118)

- 70 -

FRANTSEV, V.I.

Obstructive jaundice and treatment through surgery [with summary
in English. Eksper.khir. 3 no.2:26-31 Mr-An '58. (MIRA 11:4)

1. Iz fakul'tatskoy khirurgicheskoy kliniki imeni S.I.Spasokukotskogo
(dir.-prof. A.N.Bakulev) II Moskovskogo meditsinskogo inistituta imeni
N.I.Pirogova.

(JAUNDICE, OBSTRUCTIVE, surg.
statist. (Rus)

FRANTSEV, V.I., KAPULLER, L.L.

Resection of the bronchi as a radical surgery in bronchoadenoma
[with summary in English]. Eksp. khir. 3 no.5:34-40 S-O '58

(MIRA 11:11)

1. Iz kafedry grudnoy khirurgii i anesteziologii (zav. - prof.
Ye.N. Meshalkin) Tsentral'nogo instituta usovershenstvovaniya
vrachey (dir. V.P. Lebedev) i patologoanatomicheskogo otdeleniya
52 -y gorodskoy klinicheskoy bol'nitsy (glavnyy vrach P.S. Petrushko).

(BRONCHI, neoplasms

adenoma, surg., bronchial resection (Rus))

MEDVEDEV, I.A.; FRANTSEV, V.I.

Use of plastic prostheses in inoperable cancer of the esophagus. Eksp.
khir. 3 no.6:12-16 N-D '58. (MIRA 12:1)

1. Iz kafedry grudnoy khirurgii i anesteziologii (zav. - prof. Ye. N.
Meshalkin) Tsentral'nogo instituta usovershenstvovaniya vrachey (dir. -
V. P. Lebedeva).

(ESOPHAGUS, neoplasms
recanalization using plastmass prosth. in inoperable cases
(Rus))

MESHALKIN, Ye.N., prof. (Moskva, ul. Khmeleva, d.6, kv.11), FRANTSEV, V.I.,

Constriction of the pulmonary artery as a method of treatment in Eisenmenger's complex. [with summary in English]. Vest.khir. 81 no.7:29-34 J1 '58 (MIRA 11:8)

1. Iz kafedry grudnoy khirurgii i anestezologii (zav. prof. Ye.N. Meshalkin), Tsentral'nogo insituta usovershenstvovaniya vrachey.

(CARDIOVASCULAR DEFECTS, CONGENITAL, surg.
(Rus))

(CARDIOVASCULAR DEFECTS, CONGENITAL, surgery,
Eisenmenger complex, artif. constriction of pulm. artery
(Rus))

MESHALKIN, Ye.N. (Moskva, ul. Kostyakova, 8, kv.73); FRANTSEV, V.I.

Initial observations of late results following anastomosis of the peripheral ends of the vena cava superior and the branches of the pulmonary artery in case of dextroposition of the bulbus cordis (in Fallot's tetralogy). Grud.khir. 1 no.1:52-59 Ja-F '59. (MIRA 13:6)

1. Iz kafedry torchal'noy khirurgii i anesteziologii (zav. - prof. Ye.N. Meshalkin) %Sentral'nogo instituta usovershenstvovaniya vrachey (dir. V.P. Lebedeva).
(TETRALOGY OF FALLOT) (HEART--SURGERY)

FRANTSEV, V.I.

Repeated operations on patients with dextroposition of the
bulbus cordis (tetralogy of Fallot) treated by Blalock-
Taussig anastomosis. Eksp. khir. 4 no.4:25-33 J1-Ag
'59. (MIRA 12:11)

1. Iz kafedry grudnoy khirurgii i anestezologii (zav. - prof.
Ye.N.Meshalkin) Tsentral'nogo instituta usovershenstvovaniya
vrachey (dir. M.D.Kovrigina).
(TETRALOGY OF FALLOT surg)

FRANISEV, V. I.

LEON

These reports to be presented at the 2nd World Congress of Anesthesiologists (WCA), Toronto, Canada, July 2-6, 1974.

FRANISEV, V. I., Director, Institute of Experimental Biology and Medicine, Siberian Department, Academy of Sciences USSR, Novosibirsk, and Head of the Chair of Chest Surgery Anesthesiology, Central Institute for the Advanced Training of Physicians, Moscow, USSR, and FRANISEV, V. I., Central Institute for the Advanced Training of Physicians, Moscow, USSR.

FRANISEV, V. I., FRANKOVA, Ye. Ye., and FRANKOVA, Ye. Ye., Central Institute for the Advanced Training of Physicians, Moscow, and FRANKOVA, Ye. Ye., Central Institute for the Advanced Training of Physicians, Moscow - "Problems in anesthesia during operations with artificially produced acute occlusion of the superior vena cava."

FRANKOVA, Ye. Ye., Head, Laboratory of Experimental Physiology for the Resuscitation of an Organism, Academy of Medical Sciences USSR, Moscow - "Treatment of terminal states in over-drugged or hibernated animals."

FRANKOVICH, V. I., Institute of Surgery Ireni A. V. Vishnevskiy, Academy of Medical Sciences USSR, Moscow - "The principles of local anesthesia by A. V. Vishnevskiy's technique."

MESHALKIN, Ye.N.; DAMIR, Ye.A.; FRANFSEV, V.I. (Moskva, 3-y Shchukinskiy prospekt, d. 3, kv.116)

Surgical treatment for an anomalous confluence of the pulmonary veins.- Grud. khir. 2 no.6:33-37 N-D '60. (MIRA 14:1)

1. Iz kafedry grudnoy khirurgii i anesteziologii (zav. - prof. Ye.N. Meshalkin) Tsentral'nogo instituta usovershenstvovaniya vrachey (dir. M.D.Kovrigina).
(PULMONARY VEIN--ABNORMITIES AND DEFORMITIES)

FRANTSEV, V. I. (Moskva, D-98, 3-y Shukinskiy prcyezd. d.3, kv.11); OSTROVSKII, V.Yu.

Electroencephalographic observations in cavopulmonary anastomosis
in dextroposition of the bulbus cordis (tetralogy of Fallot). Grud.
khir. no.4:33-43 '61. (MIRA 14:12)

1. Iz kafedry grudnoy khirurgii i anesteziologii (zav. - prof.
Ye. N. Meshalkin) Tsentral'nogo instituta usovershenstvovaniya vrachey
(dir. M. D. Kovrigina).

(TETRALOGY OF FALLOT) (ELECTROENCEPHALOGRAPHY)
(VENA CAVA—SURGERY) (PULMONARY VEIN—SURGERY)

FRANTSEV, V.I.

Operative and postoperative complications in anastomosis of the superior vena cava with the pulmonary artery in dextroposition of the bulbus cordis (tetralogy of Fallot). Vop. pat. i reg. org. krov. i dykh. no.1:201-206 '61. (MIRA 18:7)

DAMIR, Ye.A.; SADYKOV, N.M.; FRANTSEV, V.I.

Anesthesia and the management of the period of operation of the cava-
pulmonary anastomosis in patients with dextroposition of the bulbus
cordis (tetralogy of Fallot). Vop. pat. i reg. org. krov. i dykh.
no.1:353-357 '61. (MIRA 18:7)

FRANTSEV, V.I.

Contrast angiography in the functional examination of an anastomosis between the superior vena cava and a branch of the pulmonary artery. Grudn. khir. 4 no.5:58-62 S-0'62

(MIRA 17:3)

1. Iz kafedry grudnoy khirurgii i anesteziologii (zav. - prof. Ye.N.Meshalkin) Tsentral'nogo instituta usovershenstvovaniya vrachey (direktor M.D. Kovrigina), Adres avtora: Novosibirsk, ulitsa Vavilova, dom 2, Institut eksperimental'noy biologii i meditsiny.

SADYKHOV, N.M., kand. med. nauk; FRANTSEV, V.I., kand. med. nauk

Use of anticoagulants following the establishment of pulmocaval
anastomosis in the case of the dextroposition of bulbus cordis
(tetralogy of Fallot). Azerb. med. zhur. no.9:19-26 S '62
(MIRA 18:1)

1. Iz kafedry grudnoy khirurgii i anesteziologii (zav. - prof.
Ye.N. Meshalkin) Tsentral'nogo instituta usovershenstvovaniya
vrachey (direktor - V.P.Iebedeva).

FRANTSEV, V.I. (Novosibirsk)

Pathogenesis of postoperative and spontaneous chylothorax.
Grud. khir. 5 no.6:115-116 N-D'63 (MIRA 17:9)

BELOVA, L.G.; FRANTSEV, V.I.

Clinical aspects and diagnosis of bacterial endocarditis complicating congenital heart defects. Sov.Med. 27 no.7:11-15 J1'63.
(MIRA 16:9)

1. Iz detskogo otdeleniya serdechno-sosudistoy khirurgii (zav. V.I.Frantsev) kliniki (zav. - prof. Ye.N.Meshalkin) Instituta eksperimental'noy biologii i meditsiny Sibirskogo otdeleniya AN SSSR.

(ENDOCARDITIS) (HEART—ABNORMITIES AND DEFORMITIES)

TSYGANKOVA, S.T., kand.biol. nauk; FRANTSEV, V.I., kand.med.nauk;
KIRICHENKO, M.N.

Hemopoietic characteristics in patients with Fallot's tetralogy.
Ter. arkh. 35 no. 4:74-79 Ap '63. (MIRA 17:1)

1. Iz klinicheskoy laboratorii (zav. I.I.Yevnina) i khirurgicheskogo otdeleniya (zav. v.I.Frantsev) Instituta eksperimental'noy biologii i meditsiny (dir. - prof. Ye. N.Meshalkin) Sibirskogo otdeleniya AN SSSR.

PRESSMAN, L.P., prof., red.; FRANTSEV, V.I., doktor med. nauk, red.;
LEONENKO, A.V., red.; SMIRNOV, B.V., red.; SHUSTER, M.A.,
kand. med. nauk, red.; ZAVRAZHIN, N.M., red.; URSOV, I.G.,
kand. med. nauk, red.

[Problems of clinical medicine and occupational pathology]
Voprosy klinicheskoi meditsiny i profpatologii. Moskva,
1965. 143 p. (MIRA 18:4)

1. Moscow. Oblastnoy nauchno-issledovatel'skiy klinicheskiy
institut.

S. PRANTSEV, V.P.

18,3200

77453
SOV/33-60-1-14/30

AUTHORS: Shul'te, Yu. A. (Doctor of Technical Sciences, Professor),
Tregubenko, A. P., Smolyukov, V. P., Miksizenko, V. D.,
Prantsev, V. P., Leytanzon, S. A., Girevskikh, I. A.

TITLE: Electrometallurgy. Electroslag Remelting of Ball
Bearing and Structural Chromium-Nickel-Tungsten Steels

PERIODICAL: Stal', 1959, No 1, pp 45-50 (USSR)

ABSTRACT: This is a description of a study of technology of electro-
slag remelting of ShKh15, ShKh15S0, and 18KhNVA steels.
The chemical composition of these steels (%) is as follows:
ShKh15, C, 0.95-1.10; Mn ≤ 0.4; Si ≤ 0.35; Cr, 1.30-1.60;
S ≤ 0.020; P ≤ 0.027; Ni ≤ 0.3; Cu ≤ 0.25; ShKh15S0, C,
0.90-1.10; Mn, 0.20-0.40; Si, 0.15-0.35; Cr, 1.30-1.65;
S ≤ 0.020; P ≤ 0.027; Ni ≤ 0.3; Cu ≤ 0.25; and
18KhNVA, C, 0.14-0.21; Mn, 0.25-0.55; Si, 0.17-0.37; S ≤
0.03; P ≤ 0.035; Cr, 1.35-1.65; Ni, 4.00-4.50; W,
0.8-1.20. Yu. V. Lataah and H. I. Maksimovich of the

Card 1/8

ASSOCIATION: Zaporozh'ye Machine Building Institute and
"Dnepropetsstal'" Plant (Zaporozhskiy mashin-
ostroyitel'nyy institut i zavod "Dnepropetsstal'")

Card 8/8

CHUYKO, N.M., doktor tekhn.nauk; PEREVYAZKO, A.T.; MOSHKEVICH, Ye.I.;
Prinimali uchastiye: RUTKOVSKIY, V.B.; KONISHCHEV, M.I.;
FRANTSEV, V.P.; DEMIDOV, P.V.

Controlling the gaseous phase composition in an electric furnace
by means of an air curtain. Met. i gornorud. prom. no.2:15-18
Mr-Ap '62. (MIRA 15:11)

1. Dnepropetrovskiy metallurgicheskiy institut (for Chuyko).
2. Dnepropetrovskiy staleplavil'nyy zavod vysokokachestvennykh
i spetsial'nykh staley (for Perevyazko, Moshkevich).
(Electric furnaces) (Gases--Analysis)

KLISHIN, I.; FRANTSEVA, G.; PESIN, L.; RUKAVCHUK, A., plotnik

The experience of innovators and the creative genius of efficiency promoters. Stroitel' 8 no.1:24 Ja '62.

(MIRA 16:2)

1. Instruktor peredovykh metodov truda Novosibirskoy normativno-issledovatel'skoy stantsii (For Klishin).
(Building—Technological innovations)

L 17653-65

AMD/Pa-4/Pb-4
ACCESSION NR: AR4045754

S/0299/64/000/013/M013/M013

SOURCE: Ref. zh. *Biologiya. Svodnyy tom*, Abs. 13M84

AUTHOR: Frantseva, K. A. B

TITLE: Participation of tissue mucopolysaccharides in transplant immunity 2

CITED SOURCE: Sb. 3 Vses. konferentsiya po peresadke tkanoy i organov, 1963. Yerevan, 1963, 99-100

TOPIC TAGS: polysaccharide, mucopolysaccharide, tissue, immunity, transplantation, homotransplantation, skin, accretion, lymph, mouse, serologic activity, accretion

TRANSLATION: The effect of mucopolysaccharide preparations on homotransplant skin accretion, their serological activity, and their capacity to produce reactions in the lymph system cells was investigated. The mucopolysaccharide preparations were made from a mixture of internal organs of pure bred mice and rabbits extracted by a phenol method and followed by lyophilization. Tests were conducted

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ACCESSION NR: AR4045754

on pure bred C₅₇B1, BALB, and C₃H mice. Skin homotransplantation was made from donor mice of the same breeds from which the preparation was made. The mucopolysaccharide preparations were administered in 0.05, 0.1, and 0.3 doses 5 days before skin transplantation. In one series of experiments, mucopolysaccharide preparations were injected repeatedly before and after homotransplantation with a total dose of 10 mg. Large doses of mucopolysaccharide preparations lengthened the life of homotransplants by 2 to 3 times in experimental animals compared to control animals. Small doses of mucopolysaccharide preparations did not affect the nature of homotransplant accretion or its sloughing off period. The effect of mucopolysaccharide preparations on regional lymph node reactions to transplants was tested in experiments on rabbits. It was established that the weight of the lymph nodes increased twofold 5 to 6 days after injection. A histological investigation of the lymph nodes showed that their lymphoid cells increased considerably, the same as in a reaction to a homotransplant, which indicates antigen activity on the part of tissue mucopolysaccharide preparations.

SUB CODE: LS

ENCL: 00

Card 2/2

FRANTSEVA, G.I., inzh.

Sprayer with a flat jet. Mekh. stroi. 19 no.6:24-25 Je '62.
(MIRA 17:2)

FRANTSEVA, A.Ya.; SHEYNINA, T.I., red.

[Use of mineral fertilizers in irrigation farming; a bibliographic list] Primenenie mineral'nykh udobrenii pri oroshenii; bibliograficheskii spisok. Moskva, 1964. 10 p. (EIRA 17:8)

1. Moscow. Tsentral'naya nauchnaya sei'skokhozyaystvennaya biblioteka.

5(4), 21(1)

SOV/78-4-1-8/48

AUTHORS:

Shchukarev, S. A., Vasil'kova, I. V., Drozdova, V. M.,
Frantseva, K. Ye.

TITLE:

The Determination of the Formation Heat of UO_2Cl_2 and UO_2Br_2 in Aqueous Solution
 $UO_2Cl_2 \cdot H_2O$, $UO_2Cl_2 \cdot 3H_2O$, $UO_2Br_2 \cdot H_2O$ and $UO_2Br_2 \cdot 3H_2O$
(Opredeleniye teplot obrazovaniya UO_2Cl_2 i UO_2Br_2 v roztvoraх,
 $UO_2Cl_2 \cdot H_2O$, $UO_2Cl_2 \cdot 3H_2O$, $UO_2Br_2 \cdot H_2O$ i $UO_2Br_2 \cdot 3H_2O$)

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 1, pp 39-41
(USSR)

ABSTRACT:

The crystal hydrates of uranyl chloride and uranyl bromide were produced from anhydrous UO_2Cl_2 and UO_2Br_2 by treatment with inert gas containing steam at room temperature. The synthesized compounds were analyzed by the determination of uranium according to the Vanadate method. The chlorine and bromine content was determined. The determination of the solution heat of anhydrous uranyl chloride and uranyl bromide and their monohydrates and trihydrates in water at infinite dilution was carried out at 25°. The results are shown in

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SOV/78-4-1-8/48

The Determination of the Formation Heat of $UO_2Cl_{2(aq)}$, $UO_2Br_{2(aq)}$, $UO_2Cl_2 \cdot H_2O$,
 $UO_2Cl_2 \cdot 3H_2O$, $UO_2Br_2 \cdot H_2O$ and $UO_2Br_2 \cdot 3H_2O$

table 2. The following values were given:

$$\Delta H UO_2Cl_2 = -23.86 \pm 0.13 \text{ kcal/mol}$$

$$\Delta H UO_2Cl_2 \cdot H_2O = -13.32 \pm 0.23 \text{ kcal/mol}$$

$$\Delta H UO_2Cl_2 \cdot 3H_2O = -10.00 \pm 0.11 \text{ kcal/mol}$$

$$\Delta H UO_2Br_2 = -33.28 \pm 0.32 \text{ kcal/mol}$$

$$\Delta H UO_2Br_2 \cdot H_2O = -24.42 \pm 0.08 \text{ kcal/mol}$$

$$\Delta H UO_2Br_2 \cdot 3H_2O = -21.51 \pm 0.12 \text{ kcal/mol}$$

On account of the values of the solution heat the formation heat of $UO_2Cl_{2(aq)}$, $UO_2Br_{2(aq)}$, $UO_2Cl_2 \cdot H_2O$, $UO_2Cl_2 \cdot 3H_2O$, $UO_2Br_2 \cdot H_2O$, and $UO_2Br_2 \cdot 3H_2O$ was calculated and summed up in table 3. The values of the formation heat of $UO_2Cl_{2(solid)}$ and $UO_2Br_{2(solid)}$ are as follows:

$$\Delta H_{\text{formation}}(298^\circ K) UO_2Cl_{2(solid)} = -301.9 \text{ kcal/mol}$$

$$\Delta H_{\text{formation}}(298^\circ K) UO_2Br_{2(solid)} = -281.6 \text{ kcal/mol.}$$

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SOV/78-4-1-8/48

The Determination of the Formation Heat of $UO_2Cl_{2(aq)}$, $UO_2Br_{2(aq)}$, $UO_2Cl_2 \cdot H_2O$,
 $UO_2Cl_2 \cdot 3H_2O$, $UO_2Br_2 \cdot H_2O$ and $UO_2Br_2 \cdot 3H_2O$

The dehydration heat of $UO_2Cl_2 \cdot 3H_2O$ was calculated according to the following equation: $UO_2Cl_2 \cdot 3H_2O = UO_2Cl_2 \cdot H_2O + 2H_2O_{gas}$. This value is in accordance with the value obtained by the tensimetric method (Ref 4). There are 3 tables and 6 references, 4 of which are Soviet.

SUBMITTED: September 5, 1958

Card 3/3

05890

SOV/78-4-11-43/50

5(2)

AUTHORS:

Shohukarev, S. A., Semenov, G. A., Frantseva, K. Ye.

TITLE:

The Mass Spectrometric Investigation of the Sublimation of Some Oxides of Vanadium and Niobium

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 11, p 2638 (USSR)

ABSTRACT:

The composition of the vapor over VO_2 , V_2O_3 and NbO_2 was investigated in the evaporation of the oxides on a platinum film in an ion source as described in reference 1 at an ionization voltage of 50 v. In the evaporation of VO_2 and NbO_2 , the ions VO_2^+ and NbO_2^+ predominate, the ions VO^+ in the case of V_2O_3 . A table gives the intensities of the ionization currents at 1500 - 1800°K as well as the sublimation energies. The deviation of the sublimation energy found for V_2O_3 with 111 ± 2 kcal/mol from the data by J. Berkovitz, W. A. Chupka and M. G. Inghram (Ref 2) for the process $[\text{VO}] \longrightarrow (\text{VO})$

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05890

SOV/78-4-11-43/50

The Mass Spectrometric Investigation of the
Sublimation of Some Oxides of Vanadium and Niobium

is assumed to be due to the circumstance that no VO develops in the solid phase of V_2O_3 , and the value found is influenced by secondary processes. The dissociation energy of VO_2 was found to be in good agreement with reference 2 and amounting to 12.7 ev. The dissociation energy of NbO_2 was equal to 14.8 ± 0.5 ev. There are 1 table and 2 references, 1 of which is Soviet.

SUBMITTED: May 11, 1959

Card 2/2

38962
S/020/62/145/001/016/018
B145/B101

21.2100
AUTHORS: Shchukarev, S. A., Semenov, G. A., and Frantseva, K. Ye.
TITLE: Determination of the saturation vapor pressure of niobium dioxide
PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 1, 1962, 119 - 121
TEXT: The saturation vapor pressure of niobium dioxide was measured in the range 1938 - 2122°K using a variant of Knudsen's effusion method (see T. E. Phipps, C. W. Sears, O. C. Simpson, Manhattan Project, Div. IV, 14b, The Transuranium Elements, N. Y., 1949, p. 704, and An. N. Nesmeyanov, Atomnaya energiya, 3, 227 (1957)), and the heat of sublimation and the dissociation energy of gaseous NbO₂ were calculated from the results. The cylindrical effusion chamber was of forged molybdenum (diameter of the effusion opening: 0.308 mm, ratio between the areas of the material to be vaporized and the effusion opening = 500 : 1; heating by electron bombardment; attainable vacuum: $1 \cdot 10^{-5}$ mm Hg; 2100°K). The oxide has the composition NbO_{2.008} and was tagged with Nb⁹⁵. The values measured satis-

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Determination of the saturation ...

S/020/62/145/001/016/018
B145/B101

fied the equation $-\log P = -30300/T + 12.42$ mm (heat of sublimation: 138 ± 2 kcal/mole). From the published values of $-(F_T^{\circ} - H_{298}^{\circ})/T$ and of $H_{298}^{\circ} - H_0^{\circ}$ for condensed and gaseous NbO_2 , the sublimation enthalpy ΔH_0° was calculated as 141 ± 0.4 kcal/mole. The dissociation energy of gaseous NbO_2 , calculated from published data for the heat of sublimation of metallic Nb and the heat of atomization, worked out as 14.9 ± 0.1 ev. There are 2 figures and 1 table. The most important English-language references are: J. L. Margrave, Proc. of the Symposium on High Temperature - a Tool for the Future, Berkeley, California, 1956; Physicochemical Measurements at High Temperatures, Ed. Bockris, White, Mackenzie, Butterworths Sci. Publ., 1959; L. Brewer, G. M. Rosenblatt, Chem. Rev., 61, 3 257 (1961).

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova
(Leningrad State University imeni A. A. Zhdanov)

PRESENTED: March 3, 1962, by A. N. Terenin, Academician

SUBMITTED: February 27, 1962
Card 2/2

S/153/62/005/005/001/011
E071/E133


AUTHORS: Shchukarev, S.A., Semenov, G.A., and Frantseva, K.Ye.

TITLE: A mass spectrometric study of the evaporation of NbO

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Khimiya i
Khimicheskaya tekhnologiya, v.5, no.5, 1962, 691-693

TEXT: Niobium monoxide for the investigation was obtained by the reduction of pure niobium pentoxide (99.96%) in dry hydrogen. A specimen of NbO was placed on a tungsten or iridium strip in the ionic source of a mass spectrometer MW-1305 (MI-1305). The temperature was measured with a calibrated tungsten-rhenium thermocouple welded to the strip. The presence in the vapour of the following ions was established: Nb^+ , NbO^+ and NbO_2^+ . In order to determine the origin of NbO^+ ions, the potential of their appearance was evaluated by plotting the dependence of ionic current NbO^+ against the ionising potential. This was evaluated as 10.5 eV. Complete absence of Nb^+ ions at an ionising potential of 15 V indicated that these were formed due to dissociation of neutral molecules present in the vapour NbO_2 and NbO.

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ACC NR: AF6019043

(A)

SOURCE CODE: UR/0078/56/011/002/0233/0236

AUTHOR: Shchukarev, S. A.; Somonov, G. A.; Frantsova, K. Ye.

ORG: Leningrad State Order of Lenin University im. A. A. Zhdanov. (Leningradskiy gosudarstvennyy ordena Lenina universitet)

TITLE: Thermodynamic study of evaporation of the lower oxides of niobium

SOURCE: Zhurnal neorganicheskoy khimii, v. 11, no. 2, 1966, 233-236

TOPIC TAGS: niobium compound, thermodynamic analysis, mass spectrometry, x ray analysis, heat of dissociation, *EVAPORATION*

ABSTRACT: This is a continuation of the previous works of the authors on the evaporation of Nb oxides (Zh. neorg. khimii, 4, 2638, 1959; Izv. vyzsh. uchoba. zavod. Khim. i khim. tekhnologiya, 5, 691, 1962; and Dokl. AN SSSR, 145, 119, 1962) attempting to evaluate quantitatively the parameters of the processes accompanying the evaporation of NbO and NbO₂ and consisting of measuring the vapor pressure by the effusion method with simultaneous mass-spectrometric analysis of the products of evaporation. The study of the evaporation of NbO at 1600-2200C under equilibrium conditions substantiated the conclusions of the previous works regarding the presence of NbO and NbO₂ molecules in the gas phase. At temperatures of >2300C Nb⁺ ions were observed in the effusion chamber after complete disappearance of the ion currents of NbO₂⁺ and NbO⁺. The heat of sublima-

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UDC: 546.882.2/.5-31 : 536.7

ACC NR: AP6019043

tion of Nb ($\Delta H_{2980}^{\circ} \approx 173$ kcal/g-at), which agreed well with the literature data (171.9 kcal/g-at), was determined from the angular coefficient of the curve $\log(I^{\circ} \cdot T) = f(1/T)$ plotted after measuring the dependence of the intensity of Nb^+ on temperature. X-ray phase analysis of the residue left after evaporation detected the presence of NbO and Nb and no NbO_2 in the solid phase. Therefore, the evaporation of NbO consisted of the following reactions: $NbO_{solid,liquid} \rightarrow (NbO)$ and $2NbO_{solid,liquid} \rightarrow (NbO_2) + [Nb]$. The part of each reaction in the evaporation of NbO was determined as $\gamma_{NbO} : \gamma_{NbO_2} = 2 : 1$. During evaporation of NbO_2 at 1500 - 2100C, the mass spectrum indicated the presence of predominant NbO_2 and subordinate NbO in amounts varying from fractions of 1% at 1500C to 7-8% at 2200C. The x-ray phase analysis detected only NbO_2 in the solid phase. It was thus concluded that two reactions were present during the evaporation of NbO: $NbO_2_{solid,liquid} \rightarrow (NbO_2)$ and $NbO_2_{solid,liquid} \rightarrow (NbO) + (O)$. The vapor pressures of the gas components of these two reactions were measured. The results agreed (with 5% accuracy) with data from previous investigations. The heat of sublimation of the NbO and NbO_2 molecules and the energies of their dissociation were calculated for NbO_2 as $\Delta H_{NbO_2}^{\circ} = 59.5 \pm 1$ kcal/mole and $I_0^{\circ} = 14.8 \pm 0.1$ ev and for NbO as $\Delta H_{NbO}^{\circ} = 49.5 \pm 1$ kcal/mole and $I_0^{\circ} = 7.8 \pm 0.1$ ev. The melting heats of NbO_2 and NbO were determined to be 18 and 22 kcal/mole, respectively. The equation of free energy of the gaseous NbO_2 and NbO from the elements can be written as

$$\Delta F_{(NbO_2)}^{\circ} = -54300 - 4.5T; \quad \Delta F_{(NbO)}^{\circ} = 49500 - 23.4T$$

The authors thank L. V. Gurevich and G. A. Khachkuranova for the calculation of the thermodynamic potentials of condensed and gaseous NbO_2 and NbO . Orig. art. has: 3 fig., 6 formulas, and 1 table.

SUB CODE: 07/ SUBM DATE: 30Jun64/ ORIG REF: 011/ OTH REF: 006

Card 3/3

CO

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MECHANICAL PROPERTIES INDEX

Mechanical properties of alloy steels at high temperatures. M. Vratski and I. Prantsevich, *Stal* 3, No 4-6, 62-68 (1933).--Steels of the 34U, 33U, 32, 100 and 4130 types were tested for tensile strength, elongation and reduction of area at temp. from 600° to 1200°. At 600° the tensile strengths were 24.0, 27.4, 34.7 and 34.0 kg. per sq. mm., resp., while at 1200° all tested approx. 2.5-3.0. The formula $R = K_0 \cdot T^m$ is proposed, where T is the abs. temp. and the const. m varies for the α , β and γ phases, depending on the internal energy of the space lattice. H. W. Rathmann

ASH 15A METALLURGICAL LITERATURE CLASSIFICATION

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CMT
 PROCESSES AND PROPERTIES
 The mechanical properties of hypereutectoid and high-alloyed steels at the rolling temperature. M. Viatkii, I. Prantsevich and B. Petrenko. *Akademiya Nauk SSSR, Ser. Fiz.-Mat. Nauki*, 1955, No. 1, 41-45; *Chem. Zvest.* 1955, II, 78270, 41 C. A. 28, 13137. Previous work is continued on determining the temp. limit at which metals lose their plastic properties and at which hot working is therefore dangerous. Hypereutectoid steels with C 1.03 and 1.12%, as well as a steel contg. C 0.73, W 18.5, Cr 4.5, V 0.7, Mn 0.3, Si 0.25 and one contg. C 0.2, Cr 17.2, Ni 8.2, Mn 0.45 and Si 0.3% were used. As a result of expts. reported, temp. limits for safe rolling of these steels are given.
 M. G. Moore

ASM-A6 METALLURGICAL LITERATURE CLASSIFICATION
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PROCESSES AND PROPERTIES INDEX

B-I-4

Influence of temperature on the resistance to plastic deformation of metals. I, H. I. N., FRANKENBERG and N. F. LASCHE (Trav. Inst. Chim. Charhov, 1925, 1, 81-85; 1926, 2, 87-93).—Mathematical. R. T.

ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX

COMMON ELEMENTS

COMMON VARIABLES INDEX

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100 AND 2ND COLUMNS

PROCESSES AND PROPERTIES INDEX

100 AND 2ND COLUMNS

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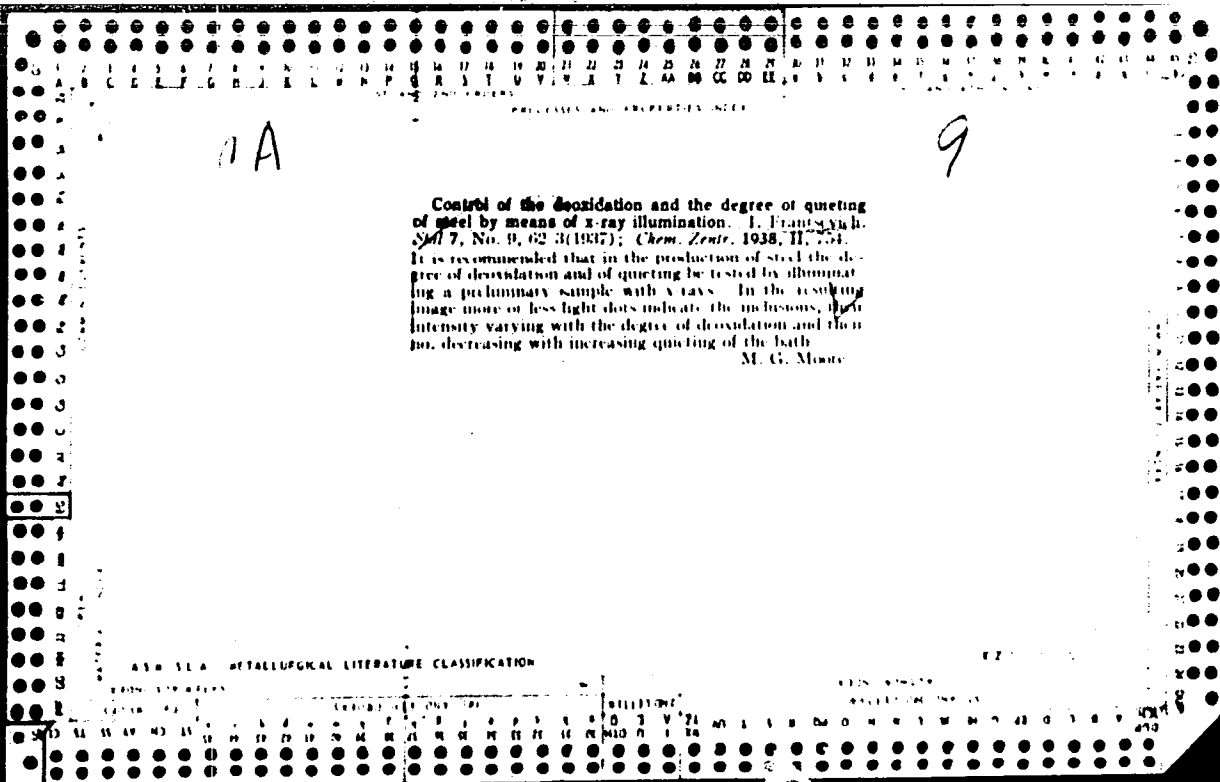
The nature of the creep of metals and its determination by means of a bending test. I. Frantsevich, N. Lashko and M. Kuzmanov. *Metal*, No. 2, 64-70, (1967). - A math. relation is developed showing that the rate of creep is a function of stress, temp., grain size, degree of cold work, m. p. of metal and lattice constants. H. W. Rathmann

GENERAL INDEX

450-55A METALLURGICAL LITERATURE CLASSIFICATION

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100 AND 2ND COLUMNS



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An Investigation into the Crushing of Rail Steel. I. Frantsevich, N. Lashko and M. Borushko. (Stal, 1938, No. 2, pp. 66-71). (In Russian). It is pointed out that crushing, which is one of the main causes of the wear of rails, has received very much less attention than the wear due to friction. In connection with wear, the theories of Fink, Bowder and Ridler are reviewed and some results of X-ray analyses carried out by the authors on the products of attrition of iron are quoted; these tend to support Fink's theory. The greater part of the paper deals with some experiments on the crushing in the surface layers of hollow cylindrical specimens subjected to wear tests in an Amalser wear-testing machine, using varying loads with a constant number of revolutions and *vice versa*. A rail steel containing 0.40% of carbon, 0.68% of manganese, 0.23% of silicon, 0.023% of phosphorus and 0.034% of sulphur was used. After the tests, the variation with depth of the deformation due to mechanical work applied to the outer curved surfaces of the cylindrical test-pieces was studied. For this purpose the surface was gradually etched away and the residual stresses were determined by an X-ray method. It was found that in test-pieces tested at specific pressures up to 100 kg. per sq. mm. the depth to which the deformation penetrated was small and remained constant. On exceeding a specific pressure of 100 kg. per sq. mm., the resistance of the surface layer, which is a characteristic of the given material, is overcome, and the centre of deformation rapidly spreads into the interior of the test-piece with well-marked points at which the value of the second-order stresses is a maximum. The stresses in the layer immediately adjacent to the surface are reduced owing to the setting in of plastic deformation—crushing of the metal in that region. With further increase in the specific pressure the position of maximum residual stress moves into the interior of the metal.

COMMON ELEMENTS

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PROCESSES AND PROPERTIES INDEX

Crushing strength and surface corrosion in relation to the crushing of rail steel. I. N. Frantsevich, N. P. Lashko, M. S. Borushko and K. I. Suvstov. *J. Tech. Phys.* (U. S. S. R.), 1961 (1968). Deformation of rails is at least as important as their wear. Rings of steel (C 0.40, Mn 0.65, Si 0.23, P 0.021, S 0.0017%) were rolled in an Amster machine, and the thickness t of the deformed layer was detd. by repeatedly dissolving off layers 0.01 mm. thick and taking x-ray powder diagrams of the subsequent surfaces. The deformed part has not only less sharp lines but the intensity ratio of the lines (211) and (220) is modified too. t is nearly const. up to 95 kg./sq. mm. and rises at higher rolling pressures. The reduction of the diam. of the ring, the squeezing out of metal at rolling and the corrosion in 5% HCl also increase more rapidly when the pressure exceeds 95 kg./sq. mm. t is independent of the no. of rollings. X-ray investigation of the oxides formed on the rubbed surfaces revealed chiefly α -Fe₂O₃ and less γ -Fe₂O₃ and Fe₃O₄; the absence of FeO confirms the theory of Fink (C. A. 27, 3132). I. I. Birkerman

METALLURGICAL LITERATURE CLASSIFICATION

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PROCESSES AND PROPERTIES INDEX

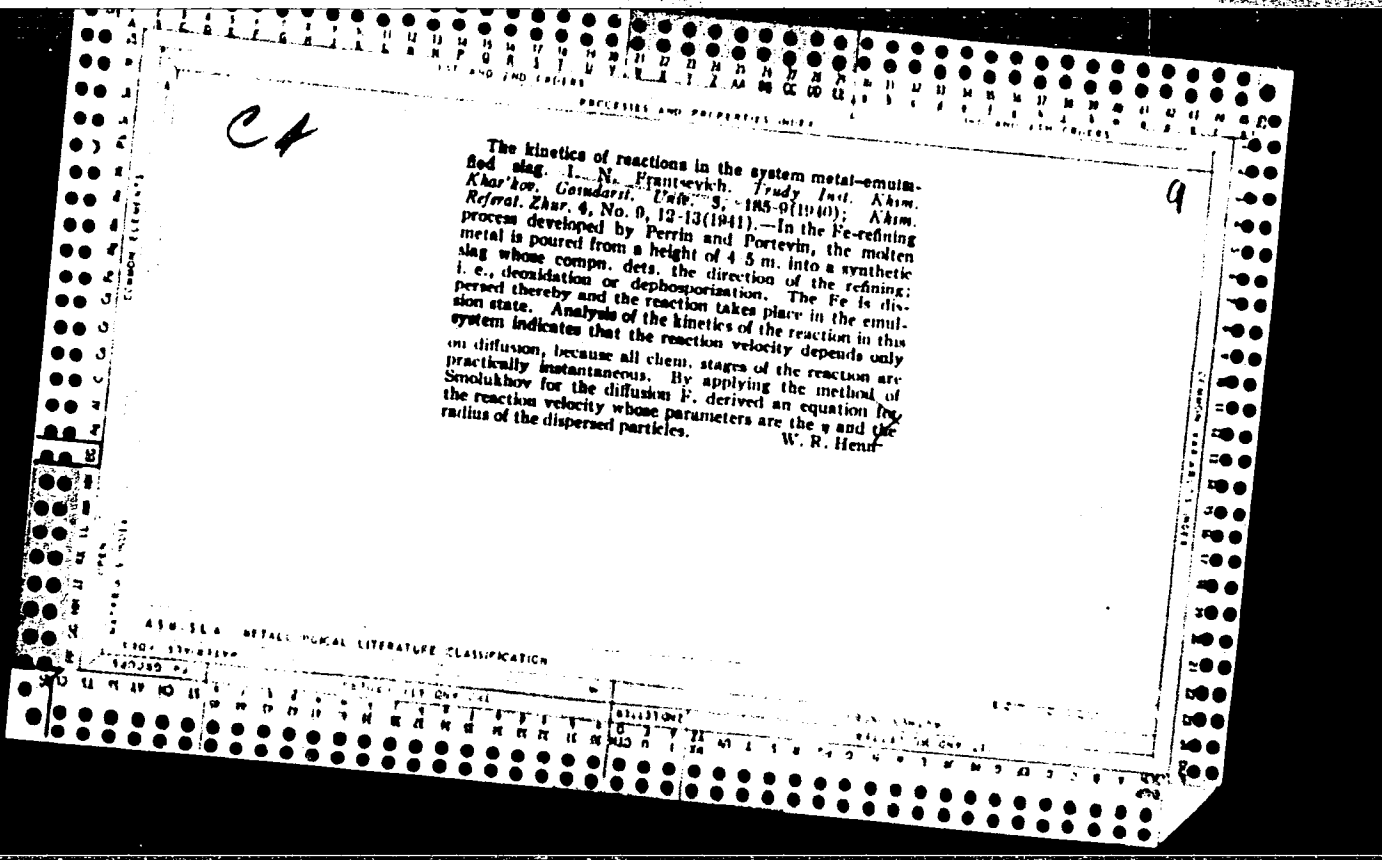
Pseudomorphism in the Structures of Quenched and Tempered Railway Tyre Steel. I. Frantsevitch, M. Borushko and L. N. Lavshko. (Stal, 1939, No. 7, pp. 61-66) (In Russian). Previous investigators had suggested and shown that impact-brittleness in tyres was connected with the presence of sorbite with martensitic pseudomorphism and that this in turn was connected with the rolling, and more particularly with the quenching temperatures. In the present research the conditions for the formation of this type of structure were studied in laboratory experiments on 0.52% carbon steel. After being subjected to different quenching and tempering treatments the specimens were examined metallographically by X-rays (photographing on isopanchromatic plates through filters in order to distinguish the different intermediate structures) and by hardness tests. In addition, the lattice distortion of α -ferrite in specimens annealed at different temperatures was studied. The temperature at which softening of compressed specimens occurred was also determined. The formation of quenching cracks in specimens quenched in different media from different temperatures was investigated, and finally, compression tests were

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made to determine the plastic properties of sorbitised specimens with both a regular sorbitic structure and a sorbitic structure with martensitic pseudomorphism. A detailed discussion, based on the experimental data, is presented of the quenching and tempering process with reference to the genesis of pseudomorphous formations in the tempered structures. Apart from the fundamental causes for the transformation of martensite into a heterogeneous mixture of α -ferrite and cementite, heterogeneities in the metal and oxygen content are regarded, under certain conditions of heat treatment, as factors favouring the occurrence of pseudomorphism in sorbitic and of shrinkage cracks. The stages of the transformation of the martensite lattice were determined by X-ray analysis and also demonstrated by corrosion tests. The need to raise the temperature range of heat treatment (maximum temperature about 950° C., for the development of sorbitic with the object of avoiding pseudomorphism and consequent brittleness is pointed out.



FRANTSEVICH, I. N.; KHURUSHCHOVA, T. F.; FRANK-ZABLUDOVSKAYA, T. F.

"Cathodic Protection of Gas Mains" (Katodnaya zashchita magistral'nykh gazoprovodov), AS USSR, 1949, 80 pp.

Institute of Ferrous Metallurgy, AS USSR

FRANTSEVICH, I.N.; BORUSHKO, M.S.

Recrystallization of ship building steel upon deformation in high temperature conditions. Trudy Inst. Chern. met. AN URSS 3:106-114 '49. (MLRA 8:7)

1. Chlen-korrespondent Akademii nauk USSR. (for Frantsevich)
(Sheet steel—Testing)

FRANTSEVICH, I.N.; BORUSHKO, M.S.; BARKOV, V.N.

Mechanical properties of low-carbon and low alloy steel at low temperatures. Trudy Inst. Chern. Met. AN USSR 3:115-125 '49.
(MIRA 8:7)

1. Chlen-korrespondent Akademii nauk USSR. (for Frantsevich)
(Steel--Testing) (Metals at low temperatures)

FRANTSEVICH, I.N., chlen-korrespondent; BORUSHKO, M.S.

Mechanical properties of low alloy steel at high temperatures and
their recrystallization by heat treatment. Trudy Inst. Chern. Met.,
AN URSR 3:126-138 '49. (MLRA 8:7)
(Steel--Heat treatment) (Metals at low temperatures)

FRANTSEVICH, I. N. - FRANTSEVICH-ZABLUDOVSKAYA, T. F.

27122

Potentsial korrodiruyushchey zhelenoy konstruktsii I zashchitnyy potentsial V usloviyakh katodnoy zashchity. Zhurnal prikl. Khimii, 1949, No 8. S 793-800 - Bibliogr: 5 Nazv.

SO: LITOPIS' No. 36, 1949

FRANTSEVICH, I. N.

Frantsevich, I. N. "Comparative studies of the corrosive action of acids",
Ukr. khim. zhurnal, Vol. XIV, Issue 2, 1949, p. 15-23, - Bibliog: 7 items.

SO: U-4392, 19 August 53, (Letopis 'Zhurnal 'nykh Statey, No 21, 1949).

CA

The potential of a corroding iron construction and the cathodic protection potential. I. N. Frantsylich and T. P. Frantsyevich-Zaludovskaya. *Zhur. Priklad. Khim.* (J. Applied Chem.) 22, 703-80(1949).--The potentials of Fe immersed in various samples of soils, measured against a Cu/CuSO₄ satd. electrode, ranged from -0.38 to -0.65 v., depending on the soil. Contrary to Rogers (C.A. 35, 1368), the potential of Fe (iron pipes) in the soil cannot be identified with the Fe/Fe²⁺ electrode potential. Rather, it is detd. by the potential of Fe/Fe²⁺ with the oxidizing action of the O₂ dissolved in the soil taken into account. This gives $E = -0.65 + 0.059 \log 8.4 \times 10^4 a_{O_2}$, i.e., with the pH of the soil varying between 4 and 9, one can expect E_0 to vary between -0.65 and -0.48 v. Superposition of the effect of the O electrode results in a lowering of the upper limit, and a broadening of the range of the possible potentials. The min. protective potential E_p necessary for effective cathodic protection against corrosion (leveling the anodic portions of the Fe by application of a neg. potential through connection with an expendable corrodible metal buried in the soil) is calcul. following a scheme correcting that of Harrell and Clerc (C.A. 34, 3600), to -0.870 v., and, with the O overvoltage taken into account, -0.630 v., i.e., relative to the Cu/CuSO₄ satd. electrode, -0.930 v. This is valid for uninsulated pipes, and can rise in the case of pipes partly coated with porous insulating materials.

N. Thon

FRANTSEVICH, I.N.

Chemical Abst.
Vol. 48 No. 3
Feb. 10, 1954
Metallurgy and Metallography

Gasoline carburizing from natural gas in the Ukrainian S.S.R. Pt. N. Frantsevich, M. I. Vitenson, M. V. Sektar, and V. P. Ivanov. *Fizika Khim. Zhur.* 16, 351-69 (1950) in Russian. Carburizing media were prepd. from a mixt. of propane 24.5%, butane 22.2%, and isobutane 24.9% by thermal decompn. in an 18% stainless steel tube. This steel catalyzed the decompn. The C deposited on the tube during decompn. speeded the reaction. Preliminary treatment of the steel tube with H₂ increased the catalytic effect, while treatment with O₂ decreased it. The presence of 1.5% O₂ in the mixt. depressed both the formation of C and the decompn. of complex hydrocarbons. Changes in per cent H₂ during thermal decompn. affected the reaction rate; the rate increased with increase in per cent H₂. Calculus showed that oxides of Fe could be reduced by H₂, thus accounting for the change in catalytic activity of the tube. Thermal decompn. of a propane-butane mixt. contg. O₂ 0.1 and CO₂ 0.2% in a tube with a carbonized surface and with a surface-to-vol. ratio of 2.7 showed that the products at 600° and 700° were unsuitable for carburizing because they were too rich in C and had a large amt. of unsatd. hydrocarbons. Decompn. at 800° and 900° produced gaseous products that were essentially CH₄ and H₂, and at 800° a small amt. of solid products of polymerization was obtained. Therefore, thermal decompn. at 900° was best for a carburizing gas. The rate of formation of C agreed with previous data. Tests of carburizing gases were made in a lab. app. on steel 20 Kh (C 0.2, Si 0.25, Mn 0.38, P 0.03, S 0.025, Cr 0.83%, trace of Ni) at 925° with a gas flow of 6 l./hr. with a propane-butane mixt. that was decompd. in a separately heated tube at temps. from 600° to 925°. Decompn. temps. of 900° to 925° gave carburizing rates somewhat lower than the max. rate at 800°, but they were best since C deposition on specimens and the tube was avoided. The microstructure of the carburized layer was eutectoidal with a gradual transition to the core. A few fine cementite grains appeared at the surface only after long times of 10³ hr. or more. A gas flow of 1 l./hr. gave a greater depth of carburizing than lower or higher values, 3, 9, and 12 l./hr. The higher values produced free cementite. When the same carburizing gas was used a second and a third time with preheating and carburiz-

(over)

ing temps. of 925° and gas flows of 6 l./hr., it carburized to 0.9 of the depth produced the first time. The 4th time the depth was only 0.1 and the gas could be used as a neutral atm. Carburizing at 975° produced objectionable free cementite. Carburizing at 875° was about 25% slower than at 925° but it avoided overheating the core. After carburizing at 925°, the best heat-treatment was oil-quenching after 20 min. at 875°, a second quenching after 30 min. at 700°, and tempering at 150 to 200°. This treatment gave a hardness of 53 to 62 Rc, a martensitic case, and a fine-grained core.

A. G. Guy

FRANTSEVICH, I. N.

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Metallurgical Abst.

June 1954

Electrometallurgy and Electrochemistry

Electrolytic Production of Nickel and Molybdenum Alloys.
 I. N. Frantsevich, T. F. Frantsevich-Zabludovskaya, and
 E. F. Zhelya (Zhur. Priklad. Khim., 1952, 25, (4), 350-
 361 (in Russian); J. Appl. Chem. U.S.S.R., 1952, 25, (4),
 387-396, 511 (in English)).—The electrodeposition of Ni-Mo
 alloys from tartrate or citrate baths was investigated, starting
 from a bath contg. Mo 12, Ni 4, Rochelle salt 200 g/l., NH₄OH
 to pH 10-10.5. The best temp. range was 25°-40° C.;
 above 55° C. or with high c.d. the deposits became dark.
 Na or K salts were added to improve the throwing power.
 The anode material had a considerable effect on both the
 bath behaviour and the appearance of the deposit; improved
 bright deposits were obtained by using cast Ni-Mo anodes.
 Ni-30%, Mo was the most efficient alloy, but with this the
 Ni concentration in the bath strongly increased, and it was
 necessary to remove Ni from the electrolyte by heating to
 decompose the NH₄ complex and precipitate Ni(OH)₂. It
 was necessary to circulate the electrolyte and maintain
 continuous supervision of its compn.; rough volumetric
 methods for determining Ni and Mo (with dimethylglyoxime
 and Pb acetate, resp.), suitable for routine control, are given.
 The Mo content of the deposit is related to its concentration
 in the bath, but not to the Ni:Mo ratio in the bath. The
 current efficiency increases with an increase in Ni concentra-
 tion, or a fall in Mo concentration. For a fixed bath compn.,
 the current efficiency is closely related to the cathodic c.d.,
 being greatest at ~80 m.amp./cm.²; it is also dependent on

I. N. FRANTSEVICH.

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whether the electrolyte is stirred and circulated or not. Comparison with the results obtained by Yntema and Ksychi (U.S. Patent 2,490,897, 7 March 1950) showed that the tartrate bath is much more efficient than those containing aliphatic acids or fluorides; replacement of Rochelle salt by K citrate (70 g./l.) also gave good results. If the total concentration of Ni and Mo in the baths is ≈ 24 g./l. dark streaks are produced. To obtain good-quality deposits, the baths must be recreated (e.g. for a 1-l. bath, 1 amp. is passed for 5 hr., the Ni and Mo concentrations having to be adjusted). Deposits contain up to 25% Mo and are bright, especially those obtained at lower c.d.; they oxidize in moist air to a golden colour. Those with compn. near to that of Hastelloy resist cold and hot 1:1 HCl, hot 5N alkali, and cold 1:1 H₂SO₄, but dissolve slowly in boiling 1:4 H₂SO₄ and hot 1:1 HNO₃. X-ray investigation showed that the deposits had b.c.c. structure, characteristic of the α solid soln., and that the lattice parameter was 3.55 Å. (contrary to Vegard's 4.03); large internal stresses were present. Metallographic examination (etching with hot Hein's reagent) did not reveal any β phase. Coatings have been deposited on Cu, brass, and Cu-plated steel; the adherence is better on the non-ferrous metals. Coatings $\approx 10 \mu$ peel off. The recommended bath contains Ni 4, Mo 8, K citrate 70, NaCl 58.5 g./l., 0.6% gelatin, NH₄OH to give pH 10-10.5; with temp. 35-40°C. cathodic c.d. 20 ma./cm.². G. V. E. T.