ACC NR: AP7001196

describes the stationary anode shape shows that: (1) The machined surface cannot, in principle, be strictly parallel to the direction of motion of the cathode; (2) The anode-current density is maximal at anode extremal points; (3) No sharp edges, fins, or apices are possible; (4) A complicated-shape anode surface is not equidistant to the corresponding cathode surface. The shape of a corrected cathode surface depends on the required anode shape and the process conditions (cathode-feed rate, anode material, electrolyte characteristics, source voltage). In machining large surfaces, nonuniform distribution of temperature over the gap should be taken into account as it affects both electrolyte viscosity and electric conductivity. Approaches to a mathematical formulation of this problem are indicated. Orig. art. has: 18 formulas.

SUB CODE: 13, 09 / SUBM DATE: none / ORIG REF: 007

Card 2/2

ACC NR: AP7001203 (A) SOURCE CODE: UR/0407/65/000/05-/0108/0112

AUTHOR: Volkov, Yu. S. (Moscow); Moroz, I. I. (Moscow)

ORG: none

TITLE: Distinctive hydrodynamic conditions in electrochemical metal machining

SOURCE: Elektronnaya obrabotka materialov, no. 5-6, 1965, 108-112

TOPIC TAGS: electrochemical machining, metal machining

ABSTRACT: The intricate problem of hydrodynamic conditions in the inter-electrode gap (rate-of-flow, cathode and anode processes, reaction-product removal, solution heating, gap variation) is theoretically considered on the basis of published data re kindred processes in other branches of industry. Turbulent flow conditions, gas-liquid interaction, gap hydraulic resistance, and cavitation are examined with these results: (1) Developed turbulent conditions are desirable

Card 1/2

ACC NR: AP7001203

for ensuring stable and high-productivity machining process; (2) Hydraulic loss can be reduced by selecting suitable cathode shape and by using smoother surfaces of both electrodes; (3) Cavitation can be prevented by providing proper entrance-in-the-gap conditions of electrolyte; probability of cavitation increases with temperature. Orig. art. has: 3 formulas.

SUB CODE: 13, 09 / SUBM DATE: none / ORIG REF: 008 / OTH REF: 004

Card 2/2

ACC NR: AP7001453 (A) SOURCE CODE: UR/0413/66/000/0[illegible]/0195/0195

INVENTORS: Livshits, A. L.; Moroz, I. I.; Alekseyev, G. A.; Yakobson, [illegible] M.; Kuznetsov, B. V.

ORG: none

TITLE: A method for electrochemical working of external surfaces of large details. Class 48, No. 188251 [announced by Experimental Scientific Research Institute of Metal Cutting Machines (Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 21, 1966, 195

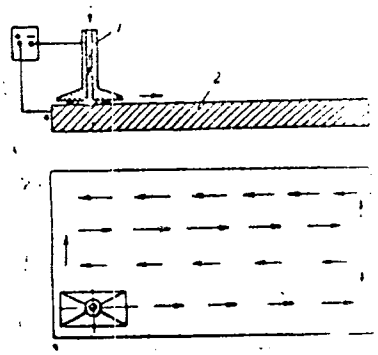
TOPIC TAGS: metalworking, metalworking machinery, metal electroforming, electrode

ABSTRACT: This Author Certificate presents a method for working external surfaces of large details by using a source of pulsed direct current. To apply a small power current source, the treatment is carried out by an electrode-tool moving along the external surface of the detail (see Fig. 1). The working surface of this tool is considerably smaller than the worked surface of the detail.

Card 1/2 UDC: 621.9.047.7

ACC NR: AP7001453

Fig. 1. 1 - electrode-tool; 2 - detail



Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 27Nov64

Card 2/2

1. MOROZ, I.K., KOSENKO, E.D.

2. USSR (600)

4. Cement Industries; Kilns, rotary

7. Strengthening the shells of rotary kilns when water cooling of the clinkering. Tsement no. 2 (1952) Inzh.

9. Monthly List of Russian Accessions, Library of Congress, August, 1952. UNCLASSIFIED.

MOROZ, I.K.; SATARIN, V.I.

Brief survey of the cement industry in the United States.
TSement 27 no. 2:29-31 Mr-Ap '61. (MIRA 14:5)
(United States—Cement industries)

MOROZ, I.K.; SATARIN, V.I.

Some technological systems and types of equipment in the cement industry of the U.S.A. TSement 27 no.3:28-30 My-Je '61. (MIRA 14:7)
(United States--Cement plants--Equipment and supplies)

MOROZ, Ivan Konstantinovich; RAKHMANOVA, R., red.

[Possibilities for the intensification of agriculture] Rezervy intensifikatsii sel'skogo khoziaistva. Tashkent, Uzbekistan, 1964. 77 p. (MIRA 18:3)

MOROZ, I.K., inzh.

Improving the quality of cement is an important task. TSement 31 no.1:1-4 Ja-F '65. (MIRA 18:4)

1. Nachal'nik Upravleniya tsementnoy promyshlennosti Gosudarstvennogo komiteta po promyshlennosti stroitel'nykh materialov.

MOROZ, I.K.

Speed up the ma[illegible] enterprises. TSement 30 no.3:1-2 My-Je '64. (MIRA 17:11)

1. Nachal'nik upravleniya tsementnoy promyshlennosti Gosudarstvennogo komiteta po promyshlennosti stroitel'nykh materialov pri Gosstroye SSSR.

MORC.., I.K., inzh.

Rotary kilns with cyclone heat exchangers. TSement 3[illegible] (MIRA 17:..
20-22 Jl-Ag '64.

MOROZ, I.M., general mayor aviatsii

Our most important task is the heightening of combat readiness.
Vest.protivovozd.obor. no.9:9-11 S '61. (MIRA 14:8)
(Russia--Armed forces)

MOROZ, I. M.

MOROZ, I. M. -- "The Use of Intra-Arterial Effects to Treat Endarteritis Obliterans." Min Health Ukrainian SSR. Dnepropetrovsk State Medical Inst. Dnepropetrovsk, 1955.
(Dissertation for the Degree of Candidate in Medical Sciences).

SO: Knizhnaya Letopis', No 9, 1956

MOROZ, I.M.

Amputation of the extremities and exarticulation of the toes in endarteritis obliterans. Nov.khir. arkh.no.6:79 N-D '57. (MIRA 11:3)

1. Khirurgicheskiye kliniki L'vovskogo i Dneopetrovskogo meditsinskikh institutov
(AMPUTATION OF LEG) (TOES--SURGERY)
(ARTERIES--DISEASES)

MOROZ, I.M. (Ternopol'), ul. [illegible], d.12, kv.[illegible]

Repeated surgery on the [illegible]
Grud. khir. [illegible] no.2:48-4[illegible] Mr-Ap '[illegible].

1. Kafedra [illegible] khirurgii Ternopol'skogo [illegible]
instituta (nachalnyy konsultant - prof. [illegible].Karpman V.).

MOROZ, I.P.

Equations for the solution of problems concerning the threshold characteristics of the photographic apparatus in the differentiation of various objects in the field of vision. Zhur. nauch. i prikl. fot. i kin. 3 no.2:138-139 '58. (MIRA 11:5)
(Photographic optics)

MOROZ, I.P., laureat Stalinskikh premiy; ZHURAVLEV, A.Ya., laureat Stalinskikh premiy.

Standard construction design is a source of lowered costs in road construction. Avt.dor. 18 no.1:8-9 Ja-F '55. (MLRA 8:4)
(Roads--Estimates and costs)

KUBASOV, A.S.; MOROZ, I.P.

Modern techniques of surveying and designing. Avt.dor.20 no.10:21-23 O '57. (MIRA 10:12)

1. Nachal'nik Soyuzdorproyekta (for Kubasov). 2. Glavnyy inzhener Soyuzdorproyekta (for Moroz).
(Roads--Design)

Moroz, I. P.

25(5);30(5) PHASE I BOOK EXPLOITATION SOV/2935

Moscow. Inzhenerno-ekonomicheskiy institut imeni Sergo Ordzhonikidze

Voprosy povysheniya ekonomicheskoy effektivnosti kapital'nykh vlozheniy za schet uluchsheniya ekonomiki i organizatsii stroitel'nogo proizvodstva, a takzhe stroitel'nogo proyektirovaniya (Problems of Increasing Economic Benefits of Capital Investments by Improving the Economy and Organization of Construction Work and Planning) Moscow, Gosstroyizdat, 1959. 673 p. (Series: Its: Trudy, vyp. 14) Errata slip inserted. 2,000 copies printed.

Additional Sponsoring Agencies: USSR. Gosudarstvennyy komitet po delam stroitel'stva. Otdel ekonomiki stroitel'stva, Akademiya stroitel'stva i arkhitektury SSSR. Nauchno-issledovatel'skiy institut ekonomiki stroitel'stva, and Nauchno-tekhnicheskoye obshchestvo stroitel'noy promyshlennosti SSSR. Sektsiya ekonomiki i organizatsii.

Eds.: B. I. Bukshteyn, G. A. Dovzhik, A. S. Ginzburg, S. A. Yefremov, L. A. Kantorovich, A. G. Rotshteyn, V. V. Uspenskiy, E. A. Maslov, V. E. Shafranskiy, and A. N. Shkinev; Tech. Ed.: P. G. Vilenson; Editorial Board of the Institute: G. V. Kozlova (Resp. Ed.) Docent; Ye. I. Varenik, Professor, V. L. Veyts, Professor, S. P. Vostroknutov, Professor, V. G. Davidovich, Professor, M. I. Dunayevskiy, Professor, S. P. Zhebrovskiy, Professor, S. Ya. Karmazin, Professor, P. V. Kaniovskiy, Professor, N. N. Nekrasov, Professor, L. I. Oniashchik, Professor, B. Ye. Pestov, Professor, L. N. Roytburd, Professor, E. A. Satel', Professor, G. V. Teplov, Professor, B. A. Teleshev, Professor; Editorial Commission of this volume: V. F. Girovskiy (Chairman) Docent, Ye. I. Varenik, Professor, M. S. Gurevich, I. Ya. Ivanin, Docent, S. N. Reynin, Candidate of Technical Sciences.

PURPOSE: This collection of articles is intended for staff members of construction organizations, design bureaus, and scientific research establishments as well as for faculty members and students of institutions of higher education.

COVERAGE: This collection of reports on construction problems was originally presented and discussed at a scientific-technical conference held in Moscow in February 1958 under the auspices of the Moscow Engineering and Economic Institute and other government and scientific organizations. Possibilities of increasing economic benefits from capital investments by improving methods of organizing and planning construction projects are reviewed. Results of efforts by construction and design organizations to reduce the costs of construction and building operations, to introduce economic accountability and planning in lower level construction units, to increase the productivity of labor, and to boost work and planning efficiency are analyzed. Problems in preparing estimates, making financial forecasts, and financing construction projects are discussed. No references are given.

Card 5/11

MOROZ, I.P., inzh.; SEMENOVSKIY, A.A., inzh.

Conference on designing highways. Avt. dor. 23 no. 12:20-21 D '60. (MIRA 13:12)
(Roads--Design)

MOROZ, I. P.; MESHCHERYAKOVA, I. P.

Recommendations for soil stabilization on highways in Kazakhstan.
Avt. dor. 25 no.10:10-11 O '62. (MIRA 15:10)

(Kazakhstan—Road construction)
(Kazakhstan—Soil stabilization)

MOROZ, I.P., inzh.; SEMENOVSKIY, A.A., inzh.

Manual with a low technical level. Avt. dor. 26 no.6:32 Je '63. (MIRA 16:8)

(Roads--Surveying)

MOROZ, I.Ya.

Roadside improvement workers of the Melitopol' Road Operating Section who participated in the All-Union Agricultural Exhibition. Avt.dor.19 no.2:21 F '56. (MLRA 9:6)
(Melitopol--Roadside improvement)

MOROZ, I.Ya.

Experience in organizing nurseries for roadside planting. Avt.dor. 20 no.3:16 Mr '57. (MLRA 10:5)
(Roadside improvement)

MOROZ, I.Ya.

Roadside planting on highways in the Zaporozh'ye Province. Avt.dor. 21 no.3:31-32 Mr '58. (MIRA 11:3)

1. Uchastnik Vsesoyuznoy sel'skokhozyaystvennoy vystavki, agronom Zaporozhskogo oblavtoshosdora.
(Zaporozh'ye Province--Roadside improvement)

MOROZ, I.Ya.

Road builders of Zaporozh'ye. Avt.dor. 21 no.10:17 O '58.
(MIRA 11:11)

(Zaporozh'ye--Roadside improvement) (Zaporoz'ye--Roads)

MOROZ, I.Ya.

Using large nursery stock in roadside planting. Avt.dor. 22 no.12:18-19 D '59. (MIRA 13:4)

1. Starshiy agronom-sadovod Zaporozhskogo oblupravtoshosdora.
(Zaporozh'ye Province--Roadside improvement)

MOROZ, I.Ya.

The most valuable species should be planted on roadsides. Avt. dor. 25 no.2:20 F '62. (MIRA 15:2)
(Roadside improvement)

MOROZ, I.Ya.

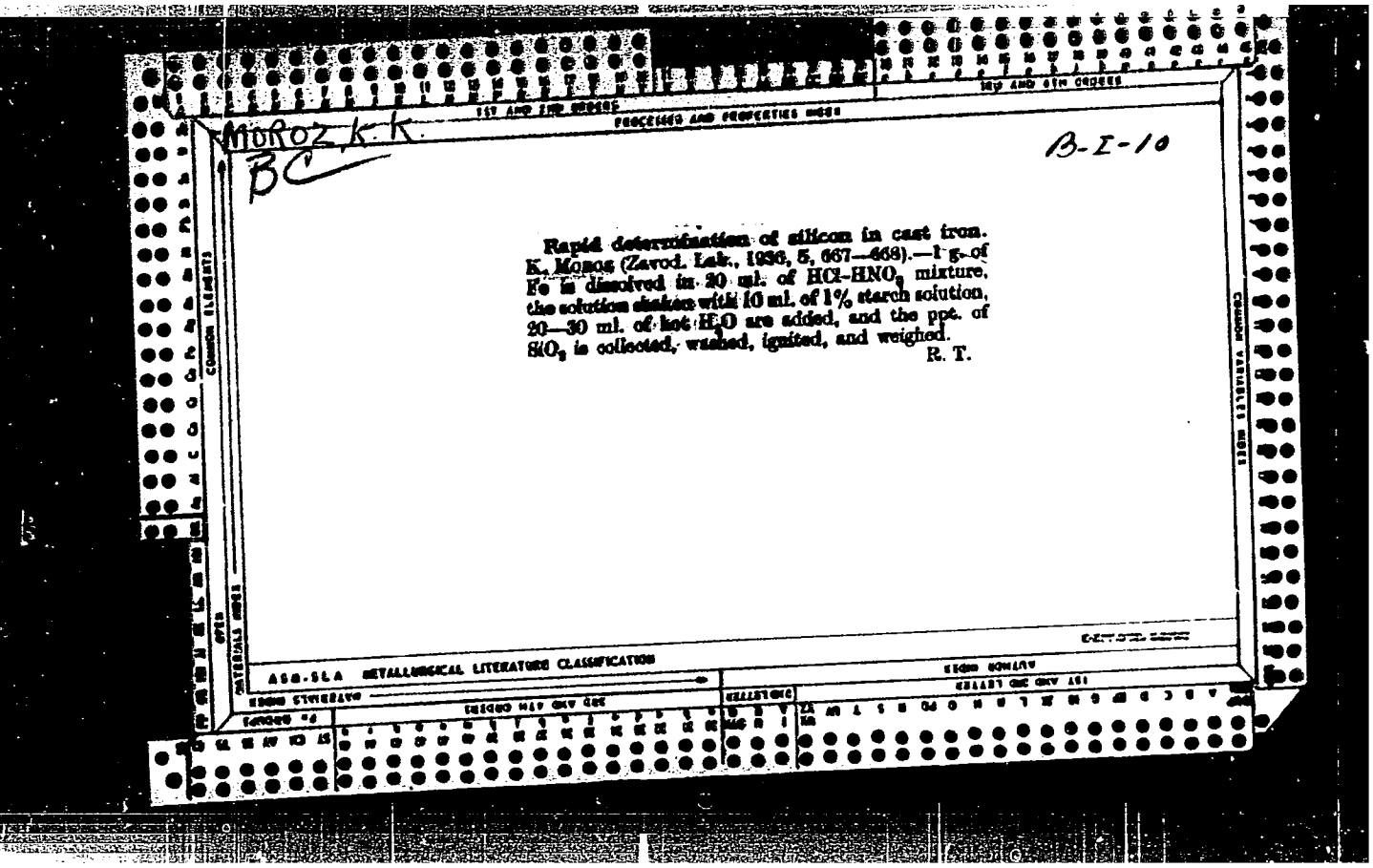
Work of snow-protection planting on roads in Zaporozh'ye. Avt.dor. 26 no.9:12 S '63. (MIRA 16:10)

SYCH, Marek; PIECH, Andrzej; GLAZUR, Janina; MOROZ, Janusz; SZLEZYNGER, Jozef; WECLAWOWICZ, Janusz; STEFANKO, Stanislaw; LADZINSKI, Kazimierz

Clinical and experimental studies on the use of fluothane in general anesthesia. Pol. przegl. chir. 35 no.10/11 1044-1048 '63.

1. Z I Kliniki Chirurgicznej AM w Krakowie Kierownik: prof. dr J. Bogusz z Oddzialu Chirurgicznego Szpitala Wojskowego w Krakowie Ordynator płk. dr A. Bielas z Pracowni Anatomo-patologicznej Szpitala Wojskowego w Krakowie Kierownik: mjr doc. dr S. Stefanko z Kliniki Neurochirurgicznej AM w Krakowie Kierownik: prof. dr A. Kunicki.

(ELECTROENCEPHALOGRAPHY)
(LEUKOCYTE COUNT)
(ELECTROCARDIOGRAPHY)
(EPINEPHRINE) (PHARMACOLOGY)
(BLOOD PRESSURE)



Morozkk
BC

B-I-10

Rapid determination of silicon in cast iron. K. Monos (Zavod. Lab., 1936, 5, 667—668).—1 g. of Fe is dissolved in 20 ml. of HCl–HNO_3 mixture, the solution shaken with 10 ml. of 1% starch solution, 20—30 ml. of hot H_2O are added, and the ppt. of SiO_2 is collected, washed, ignited, and weighed.
R. T.

MOROZ, K. K.

AID P - 5392

Subject : USSR/Engineering

Card 1/1 Pub. 103 - 22/28

Authors : Lesnykh, D. S., M. S. Smovt, and K. K. Moroz

Title : Electro-sulfidation of steel and cast iron in water solutions and in melted salts.

Periodical : Stan. i instr., 9, 35-36, S 1956

Abstract : A brief description of the thermo-chemical, electrolytic process of sulfidation of the 45-steel and gray cast-iron is presented. It was developed in the Rostov University laboratories, and reportedly increases the corrosion resistance of treated metals.

Institution : As above

Submitted : No date

MOROZ, K.M.

Using phosphate meal. Zemledelie 4 no.2:40-43 Ap '56. (MLRA 9:8)
(Phosphates)

BOREVICH, V.A., inzh.; ZVEGINTSEVA, K.V., inzh.; MOROZ, K.S., inzh.

Organization of model production welding at the "Compressor" Plant. Svar. proizv. no.2:20-23 F '61. (MIRA 14:1)

1. Zavod "Kompressor," Moskva (for Borevich). 2. Vsesoyuznyy proyektno-tekhnologicheskiy institut tyazhelogo mashinostroyeniya Mosgorsovnarkhoza (for Moroz).
(Moscow—Refrigeration and refrigerating machinery) (Welding)

MOROZ, K. S. (Engineer) (VPTIstroydormash)

"Mechanized continuous assembly line and welding of pare evaporators in factory 'Compressor'".

Report presented at the regular conference of the Moscow city administration NTO Mashprom, April 1963.
(Reported in Avtomaticheskaya Svarka, No. 8, August 1963, pp 73-75, V. M. Popechin)

JPRS24,651 17 May 64

MOROZ, K.S., inzh.

Mechanized continuous production of panel evaporators. Svar. proizv. no.2:23-26 F '65. (MIRA 18:3)

1. PKTIMASH Soveta narodnogo khozyaystva Moskovskogo gorodskogo ekonomicheskogo rayona.

MOROZ, K.S., inzh.

Continuous mechanized lines for assembling and welding at the "Kompressor" Plant. Svar. proizv. no.5:17-19 My '64. (MIRA 18:11)

1. Proyektno-konstruktorskiy i tekhnologicheskiy institut mashinostroyeniya Soveta narodnogo khozyaystva Moskovskogo gorodskogo ekonomicheskogo rayona.

MOROZ, L., starshiy inzh. otdela truda i zarabotnoy platy mashinostroi-tel'nogo zavoda

Shop sections with a complete item production cycle. Sots. trud 6 no. 1:134 Ja '61. (MIRA 14:1)
(Machinery industry--Production standards)

:OROV, L.

Ways to stimulate the [illegible] dents. [illegible]
S '64.

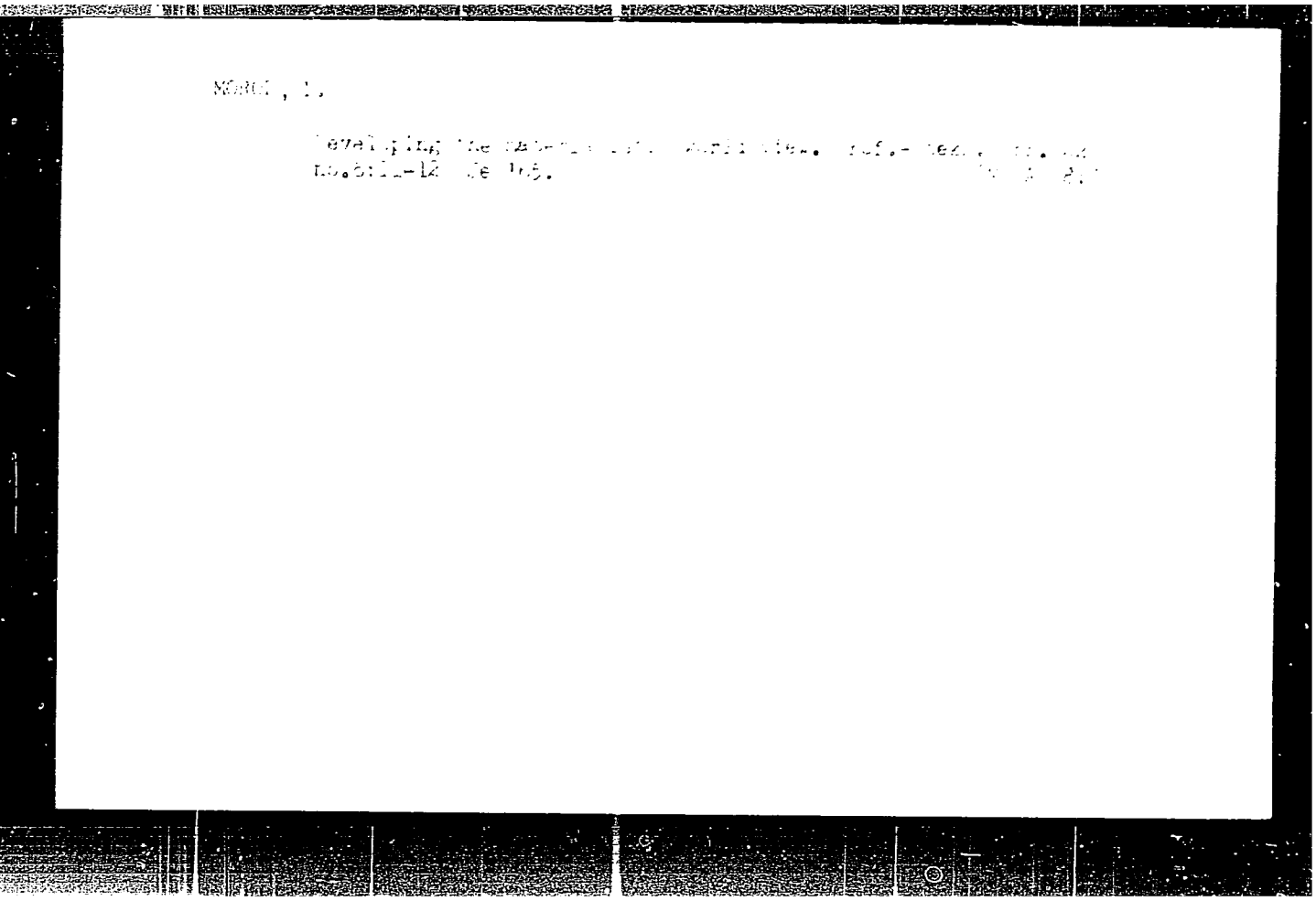
MORIZ, L., [illegible]

Experimental work on programmed instruction. Prof. tekh. obr. 22 no. 12:3-5 D '65 (MIRA 19:1)

1. Nauchno-issledovatel'skiy institut professional'no-tekhnicheskogo obrazovaniya.

MOROZ, L.A.; ZAPYATOY, A.P.

Mechanizing the cleaning of cast wheels for industrial cars. Mashinostroitel' no.9:8-9 S '62. (MIRA 15:9)
(Foundries--Equipment and supplies)



MOROZ, L.G., doktor tekhn.nauk; MINGIN, T.E., inzh.

Hydrogen embrittlement of steel. Metallovedenie 2:3-34 '58.
(MIRA 13:9)
(Steel--Hydrogen content)

MOROZ, L.G.; FEDOROV, F.I.

Wave functions of an electromagnetic field in a vacuum.
Trudy Inst.fiz.i mat.AN BSSR no.3:154-166 '59.
(MIRA 13:4)

(Wave mechanics) (Electromagnetic waves)

S/058/60/000/006/002/040
A005/A001

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 6, p. 22, # 13077

AUTHORS: Moroz, L.G., Fedorov, F.I.

TITLE: On the Wave Functions of the Electromagnetic Field in a Vacuum

PERIODICAL: Tr. In-ta fiz.i matem. AN BSSR, 1959, No. 3, pp. 154-166

TEXT: The electromagnetic field theory in the vacuum is developed on the basis of the "generalized" wave equation of first order for the ten-component wave function consisting of the components of the vector potential and the field tensor (Fedorov, V.I., Dokl. AN SSSR, 1952, Vol. 82, p. 37). Hereat, the necessarity does not arise to impose an additional condition on the system-state vector, and the scalar and longitudinal photons are excluded from the observed field quantities without using the indefinite metric. The formulation presented makes it possible to apply the common invariance-calculation methods developed for particles with arbitrary spin (RZhFiz, 1959, No. 11, # 24203).

E.M. Lipmanov

Translator's note: This is the full translation of the original Russian abstract

Card 1/1

83176
S/056/60/039/002/015/044
B006/B056

24.4500

AUTHORS: Moroz, L. G., Fedorov, F. I.

TITLE: The Scattering Matrix in Consideration of Pauli Interaction

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki. 1960
Vol. 39, No. 2(8), pp. 293-303

TEXT: In an earlier paper, the authors, proceeding from the generalized wave equation of first order $(\gamma_\varrho \nabla_\varrho + \gamma_0)\psi(x) = 0$, developed a ten-dimensional formalism of the electromagnetic quantum field theory (in the vacuum). The wave function ψ consists of potential- (ψ_μ) and field components ($\psi_{\mu\nu} = -\psi_{\nu\mu}$). The γ_ϱ are ten-dimensional matrices of the vectorial meson theory which obey the Duffin-Kemmer algebra; γ_0 is a projective matrix in which only a_{33} and a_{44} do not vanish. In this formalism, the authors derive an expression for the quantum-electrodynamic scattering matrix in consideration of the so-called Pauli interaction, which is represented by the

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83176
S/056/60/039/002/015/044
B006/B056

The Scattering Matrix in Consideration of Pauli Interaction

Pauli interaction Lagrangian $L_{int}^{(2)} = \frac{1}{2} iel\, \bar{\varphi}(x)\psi_{\mu\nu}(x)\beta_\mu\beta_\nu\varphi(x)$ where l is a real constant of the dimension of a length. Scalar photons are not taken into account. Finally, the following expression is obtained for the S matrix. $S = \sum_{n=0}^{\infty} \frac{(-1)^n}{(\hbar c)^n n!} \int dx_1 \cdots \int dx_n T\{H(x_1), H(x_2) \cdots H(x_n)\}$ This expression is found to be unsuited for practical use, as H(x) consists of two terms of first and second order with respect to the Sommerfeld constant. By employing a method similar to that used by E. M. Lipmanov (Ref. 9), the form

$$S \sim \sum_{n=0}^{\infty} \left(-\frac{e}{\hbar c}\right)^n \frac{1}{n!} \int dx_1 \cdots \int dx_n T\left[\bar{\varphi}(x_1)\hat{\psi}(x_1)\varphi(x_1) \cdots \bar{\varphi}(x_n)\hat{\psi}(x_n)\varphi(x_n)\right]$$

is obtained by way of an expansion in series. This form is suited e.g. for calculating Compton scattering on a proton. For problems of the electromagnetic interaction between two different Dirac particles, the S-matrix is finally given in the form of (63), by means of which the same results are obtained as by the Feynman method, e.g., when calculating

Card 2/3

83176

The Scattering Matrix in Consideration of Pauli Interaction

S/056/60/039/002/013/044
B006/B056

the Möller scattering of two different Dirac particles. There are 1 figure and 10 references: 8 Soviet and 2 US.

ASSOCIATION: Institut fiziki Akademii nauk Belorusskoy SSR (Institute of Physics of the Academy of Sciences Belorusskaya SSR)

SUBMITTED: November 2, 1959 (initially) and May 5, 1960 (after revision)

Card 3/3

MOROZ, L.G.; FEDOROV, F.I.

Taking Pauli interaction into account in a scattering matrix.
Zhur. eksp. i teor. fiz. 39 no.2:293-303 Ag '60. (MIRA 13:9)

1. Institut fiziki Akademii nauk Belorusskoy SSR.
(Particles (Nuclear physics)) (Field theory)

S/056/60/039/003/009/045
B004/B060

AUTHOR: Moroz, L. G.

TITLE: Electromagnetic Scattering of Particles With Spin 1/2

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 3 (9), pp. 589-590

TEXT: The author started from the scattering matrix, and by taking account of the structure of particles by way of form factors $F_\mu(k^2)$, $l_\mu(k^2)$ for mesons, and $F_N(k^2)$, $l_N(k^2)$ for nucleons (k being the pulse transferred), he calculated the muon-nucleon scattering cross section in the case of longitudinal polarization. The determination was made in the laboratory system, so that it was possible to choose the spin projection operator of the incoming muon as that of the nucleon at rest. The following relations were found to hold for the differential scattering cross section: $d\sigma/d\Omega = [e^4\varrho/(2\pi)^2 v_{rel}] \{|M|^2 \pm |R|^2\}$.

Card 1/3

Electromagnetic Scattering of Particles With Spin 1/2

S/056/60/039/003/009/045
B004/B060

$e^2/4\pi = 1/137$; $v_{rel} = |\vec{p}_o|/E_o$; $\varrho = \vec{p}_\mu^2 WE/[|\vec{p}_\mu|(M + E_o) - E|\vec{p}_o|\cos\vartheta]$. The signs + and - refer to parallel and antiparallel spin, $|\mathfrak{M}|^2$ is the square of the scattering matrix element of nonpolarized particles, and agrees with the expression obtained by A. I. Nikishov (Ref. 1), if the latter is converted to the laboratory system. A bulky explicit expression is written down for $|R|^2$. M is the mass of the nucleon, μ the mass of the meson, E_o, $\vec{p}_o$, E, $\vec{p}_\mu$ denote the initial and the final energy and momentum of the meson, W the final energy of the nucleon. For point particles, and if the incoming particle has no anomalous magnetic moment— ($F_\mu = F_N = 1$, $l_\mu = 0$), the expression for the differential cross section is simplified, thus: $d\sigma/d\Omega = [e^4/(2\pi)^2]\,\varrho'(v_{rel} MWE_o Ek^4)\{M(ME_o^2 - \frac{1}{2}E_o k^2 - \frac{1}{4}Mk^2)(1 + l_N^2 k^2) + \frac{1}{4}k^2(\frac{1}{2}k^2 - \mu^2)(1 + 2l_N M^2) \pm \frac{1}{2}[\frac{1}{4}k^2(1 + 2l_N M) + ME_o\vec{p}_\mu^2\sin^2\vartheta](1 + 2l_N M)\}$. The author thanks F. I. Fedorov for the

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Electromagnetic Scattering of Particles With Spin 1/2

S/056/60/039/003/009/045
B004/B060

calculation method proposed by him. There are 4 references: 3 Soviet and 1 US.

ASSOCIATION: Institut fiziki Akademii nauk Belorusskoy SSR (Institute of Physics of the Academy of Sciences, Belorusskaya SSR)

SUBMITTED: November 2, 1959

Card 3/3

MOROZ, L. G., Cand Phys-Math Sci -- "Diffusion matrix in quantum electrodynamics with the interaction of Pauli." Minsk, 1961. (Belorus State U im V. I. Lenin) (KL, 8-61, 227)

ACCESSION NR: AP4044255 S/0250/64/008/007/0441/0443

AUTHOR: Moroz, L. G.; Bogush, A. A.

TITLE: Scattering of a circularly polarized photon by a longitudinally polarized proton

SOURCE: AN BSSR. Doklady*, v. 8, no. 7, 1964, 441-443

TOPIC TAGS: photon, photon scattering, polarized photon, proton, polarized proton, scattering matrix

ABSTRACT: On the basis of the scattering matrix of a Pauli interaction, the differential scattering cross section for a photon incident on a proton is calculated in the first Born approximation, using the laboratory system in order to simplify the form of the spin projection operators. Using a Feynman diagram, an expression is obtained for the cross section, the contribution from the direct diagram for parallel spins being zero, as is also true in the center-of-mass system. This may be explained as compensation of spin waves because of opposite polarizations of the colliding particles. When an intermediate state is involved, this compensation does not occur and the contribution from the exchange diagram is not zero. An expression is given for the scattering cross section of a circularly polarized photon with positive spin projection and parallel spins, and it is noted that the deriva-

Card 1/2

ACCESSION NR: AP4044255

tion for antiparallel spins can be carried out using Powell's formula. Orig. art. has: 1 figure and 11 formulas.

ASSOCIATION: Institut fiziki AN BSSR (Physics Institute, AN BSSR)

SUBMITTED: 04Sep63 ENCL: 00

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

Card 2/2

MOROZ, L.G.; TRET'YAKOV, V.N.

Polarizability of the neutron. Dokl. AN BSSR 8 no.9:575-578 S '64.
(MIRA 17:12)

1. Institut fiziki AN Belorusskoy SSR.

MOROZ, L.G. [Maroz, L.R.]; BOGUSH, A.A. [Bohush, A.A.]

Covariant formulation of the scattering matrix with ra[illegible] interaction. Vestsi AN BSSR. Ser. fiz.-tekh. nav. [illegible]; 46-52 '64. (MIRA 18:2)

MOROZ, L.G.

Substantial changes in the neural tissue in hysteriosis. Fiziol. zhur. 51 no.8:960-965 Ag '65. (MIRA 18:7)

1. Laboratoriya fiziologii kletki Gosudarstvennogo universiteta imeni Zhdanova, Leningrad.

MOROZ, L.G.; TRET'YAKOV, V.N.

Relation between the imaginary part of the amplitude of the Compton effect on a neutron and the photoproduction of π-mesons. Vestsi AN BSSR. Ser.fiz.-mat.nav.no.2:83-87 '65. (MIRA 19:1)

L 6984-65 EWT(m) DIAAP/AFWL/SSD/ESD(t)

ACCESSION NR: AP4047007 S/0250/64/008/009/0575/0578

AUTHOR: Moroz, L. G.; Tret'yakov, V. K.

TITLE: The polarizability of the neutron

SOURCE: AN BSSR. Doklady*, v. 8, no. 9, 1964, 575-578

TOPIC TAGS: neutron, neutron polarization, neutron scattering, meson cloud, meson polarization, nucleon

ABSTRACT: The electric polarizability derived from scattering experiments with slow neutrons seems larger than that supported by other experimental data. The contribution due to the meson cloud has been considered by several authors. The present authors calculate the electric and magnetic meson polarizability at 60 MeV with forward scattering using dispersion relations for six independent amplitudes. The total Compton scattering amplitude in the centroid system is expressed as a linear combination of these amplitudes. The dispersion relations for the real part are then given. Using unitarity requirements, the imaginary part is expressed as a bilinear combination of amplitudes for π-meson production at the nucleon in the S- and P-states. This can then be directly expressed by the angular distribution coefficients of the photomesons created at a proton and the ratio of cross sections

Card 1/2

L 6984-65
ACCESSION NR: AP4047007

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for π-meson production at the threshold of photoproduction. After some manipulations, the polarizabilities are given in terms of dispersion integrals which are then integrated by Simpson's method using six points, the numerical results so obtained being then tabulated. The electric polarizability was found to be (1.23 $\pm$ 0.25) x 10^{-42} cm^3, and the magnetic: (7.7 $\pm$ 10) x 10^{-44} cm^3. Recoil contributions can be neglected in this region. The values agree for those of the proton in order of magnitude, thus supporting Baldin's assumption. These results permit a conclusion to be drawn in favor of polarization of the π-meson cloud as the main mechanism of the polarizability of nucleons. "The authors acknowledge aid from V. K. Fedyanin and V. A. Petrun'kin". Orig. art. has: 1 table, and 7 equations.

ASSOCIATION: Institut fiziki AN BSSR (Physics Institute, AN BSSR)

SUBMITTED: 03Dec63 ENCL: 00 SUB CODE: NP

NO REF SOV: 007 OTHER: 005

Card 2/2

MORCZ, L.I., inzhener.

Studies by professor P.N. Lebedev and his school in the field of acoustics. Sbor.trud.LONITOVT no.1:105-121 '54. (MLRA 10:5)
(Sound waves)

MOROZ, L.I.

Problems of chemical electrothermics at the Fourth International Congress on Electrothermics. Khim.prom. 2:172-174 My '60. (MIRA 13:7)

1. NIO po karbidu kal'tsiya Giprokauchuka.
(Electrochemistry--Congresses)

MOROZ, L.I., inzh.

Reports of the electrometallurgical and electrochemical sections of the Fourth International Congress on Electrothermy. Elektrichestvo no.4:85-86 Ap '60. (MIRA 14:4)

(Electric heating--Congresses)

MOROZ, L. I.

Improvement of the methods of production of acetylene from natural gases in foreign countries. Khim.prom. no.5:430-435 Jl-Ag '60. (MIRA 13:9)

(Acetylene) (Gas, Natural)

MOROZ, L.I., inzh. (Leningrad)

Survey of foreign calculation methods used in designing electric metal-melting furnaces. Elektrichestvo no.9:67-72 S '60.
(MIRA 13:10)

(Electric furnances)

MOROZ, L.I.

Production of calcium carbide in the U.S.A. Khim.prom. no.5:362-365 My '61. (MIRA 14:6)
(United States—Calcium carbide)

MOROZ, L.I., inzh.

Mechanization and automation of basic processes in carbide production. Mekh. i avtom. proizv. 15 no.7:48-51 Jl '61. (MIRA 14:7)

(Automation) (Calcium carbide)

MOROZ, L.I.

New trends in the design of charge resistance furnaces. Stal' 21 no.2:130-134 F '61. (MIRA 14:3)
(Electric furnaces)

S/110/61/000/001/018/023
E194/E455

AUTHOR: Moroz, L.I., Engineer

TITLE: The Selection of Current and Voltage for Carbide Electric Arc Furnaces

PERIODICAL: Vestnik elektropromyshlennosti, 1961, No.1, pp.63-66

TEXT: Correct selection of current and voltage for large arc furnaces is very important. The choice is usually related to the electrical rating per unit volume of furnace and for carbide furnaces this is usually in the range 225 to 310 kW/m^3. There are various disadvantages in having constant electrical loading per unit volume and various other characteristics are used in foreign designs. These too are not very satisfactory in relation to large furnaces and the usual equations are in need of some correction. The assumptions upon which the usual empirical equations can be theoretically justified are discussed. It is concluded that the product of the effective resistance of the electrode and the perimeter of the electrode section may be considered constant, to a first approximation: there is no serious objection to an equation based on this assumption. However, the supplementary equation in

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S/110/61/000/001/018/023
E194/E455

The Selection of Current and Voltage for Carbide Electric Arc Furnaces

which the current is determined as the electrode diameter raised to a certain power and multiplied by a constant is not valid, and various factors that govern the heat balance of the electrode should be taken into account. Accordingly, a graph recommended by Pense (Ref.5) should be used to determine the current and current density in the electrodes as functions of its diameter. This graph is widely used in foreign practice. An empirical formula giving fairly good agreement with the graph is suggested. Current voltage and power rating data are then collected together for a number of furnaces in Europe, America and China and it is shown that the agreement between the measured values of current and voltage and those calculated by the method recommended here is reasonably good. There are 1 figure, 2 tables and 5 references: 1 Soviet and 4 non-Soviet.

SUBMITTED: July 4, 1960

Card 2/2

MOROZ, L.I., inzh.

Detection of leaks in water supply systems. Vod.i san.tekh. no.11:2-6 N '62. (MIRA 15:12)
(Water—Distribution)

MOROZ, L.I., inzh.

Automation of auxiliary operations in calcium carbide production. Mekh.i avtom. proizv. 16 no.5:49-51 '62. (MIRA 16:5)

(Calcium carbide) (Automation)

MOROZ, L.I., inzh.

Improvement of the design of short networks of electric arc furnaces. Prom.energ. 17 no.5:38-43 My '62. (MIRA 15:5)
(Electric furnaces)

MOROZ, Lev Izrailevich; KAPUSTINA, V.S., red.; NOVOSELOVA, V.V., tekhn. red.

[Methodology of teaching the fundamentals of electric engineering in the eight grade of evening (staggered) schools] Metodika prepodavaniia osnov elektrotekhniki v VIII klasse vechernei (smennoi) shkoly. Moskva, Izd-vo APN RSFSR, 1963. 100 p. (MIRA 16:12)

(Electric engineering--Study and teaching)

MYSHLYAYEV, A.M.; PUSTIL'NIK, I.G.; MOROZ, L.I.

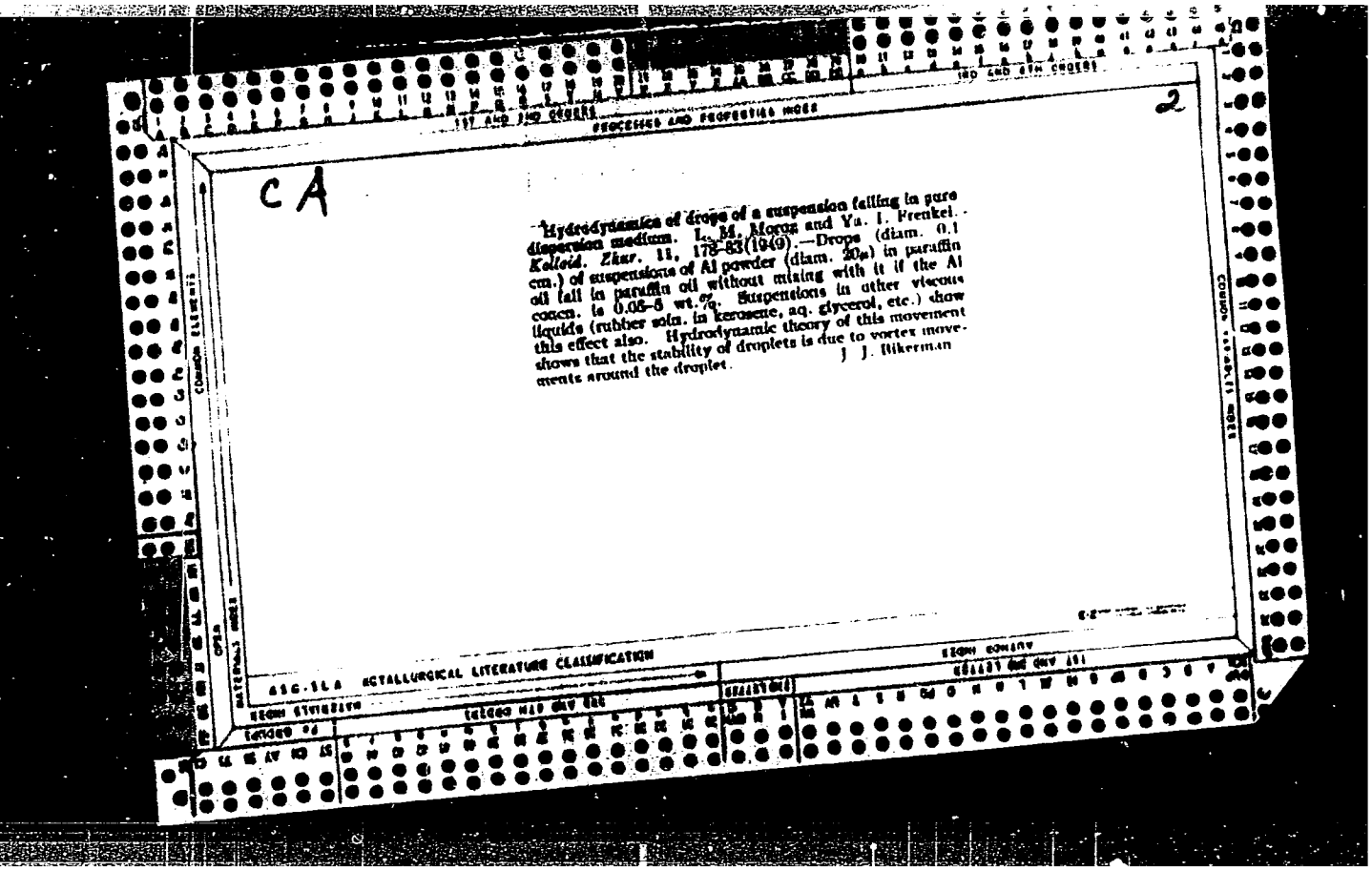
Discussing the contents and structure of the school physics course. Fiz. v shkole 23 no.5:40-45 S-O '63.
(MIRA 17:1)

1. Pedagogicheskiy institut, g. Karachayevsk (for Myshlyayev).
2. 36-ya srednaya shkola, g. Sverdlovsk (for Pustil'nik).
3. Institut vechernikh (smennykh) i zaochnykh shkol Akademii pedagogicheskikh nauk RSFSR, Leningrad (for Moroz).

MOROZ, L. M. and FRENKEL, Ya. I.

"Toward the hydrodynamics of dripping suspensions which fall in a pure dispersion medium," Colloid Journal, Vol. 11, No. 3, 11 August 1948.

All-Union Order Lenin Sci. Res. Inst. Aviation Materials,



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Hydrodynamics of drops of a suspension falling in pure dispersion medium. L. M. Morgun and Ya. I. Frenkel. *Kolloid. Zhur.* 11, 178-83(1949).—Drops (diam. 0.1 cm.) of suspensions of Al powder (diam. 20μ) in paraffin oil fall in paraffin oil without mixing with it if the Al concn. is 0.05-8 wt.%. Suspensions in other viscous liquids (rubber soln. in kerosene, aq. glycerol, etc.) show this effect also. Hydrodynamic theory of this movement shows that the stability of droplets is due to vortex movements around the droplet. J. J. Bikerman

MOROZ, L. M.

In Collection of Papers Dedicated to the 70th Anniversary of A. F. Ioffe, Academy of Sciences, U.S.S.R., 1950, pp 417-429, Strengthening Effect of Dispersed Carbides in Steel.

MOROZ, L. M., PUTILOVA, I. M. and GINDIN, L. G.

Doklady Akademii Nauk S.S.S.R., 1950, Vol 71, Nr 1, pp 81-83, Behavior of Soap Dispersions in Liquid Dielectrics in a Constant Electric Field.

"Formation of peculiar ribbon-shaped structures was observed in 0.1% dispersions pf Ba pr Zn stearate, and of Ba oleate, in aviation gasoline and paraffin oil, in an elec. field of 7500 v./cm between 2 Ag electodes 0.6 mm. apart. The ribbons start at one electrode, then a fragment breaks away and attaches itself to the other electode; the 2 fragments continue to grow until they become united. At the stage when the ribbons connect the electrodes, the elec. cond. of the dispersion is increased very condsiderably, which indicates that the soap ribbons possess a very high elec. cond. Structurally, the ribbons appear to be cryst."

C.A

Electric breakdown of suspensions of metals in liquid dielectrics. L. G. Gladin, L. M. Marus, I. N. Putilova, Ya. I. Frenkel, and O. A. Riganskaya. *Doklady Akad Nauk S.S.S.R.* 72, 671-4(1950).—Application of about 300 v. to a suspension of fine metal particles in a dielec. liquid (gasoline, paraffin oil, etc.) contg. from 0.005 to 1% of metal (in most expts. 0.1%) and placed between 2 metal electrodes at 3 mm. distance, gave rise, first, to a migration of the particles and their accumulation at the cathode. At the anode some metal appears only at later stages. As soon as the elec. field E reaches a crit. value E_c, breakdown occurs, but only after a certain induction period τ. For Al in gasoline, E_c = 4000 v./cm., τ = a few sec. The breakdown is characterized by a sharp rise of the c.d., a halt of the migration of the particles, and a fall of E down to ~1 v./cm. Once the particles have settled, a thread-like metal bridge becomes visible between the electrodes. This bridge persists after removal of the voltage, for a length of time depending, among others, on the viscosity of the liquid (~1 hr. in gasoline, longer in paraffin oil). This persistence of the metal thread is termed "elec. memory." E_c increases with the fineness of the metal particles; thus, a 5-fold decrease of the size of Al particles resulted in an increase of E_c from 4000 to 13,000 v./cm. The "elec. memory" is particularly long in suspensions where the ds. of the metal and of the liquid are close. The nature, shape, size, condition, and disposition of the electrodes have no effect on E_c. No change of E_c was observed in the temp. interval 20–115°. E_c falls with increasing dielec. const. of the liquid; thus, for Al in gasoline, E_c = 4000, and in $PhNO_2$, 1000 v./cm. The elec. resistance of the bridge formed also falls with increasing dielec. const. of the liquid.

N. Thon

MOROZ, L. M.

SA

B 64
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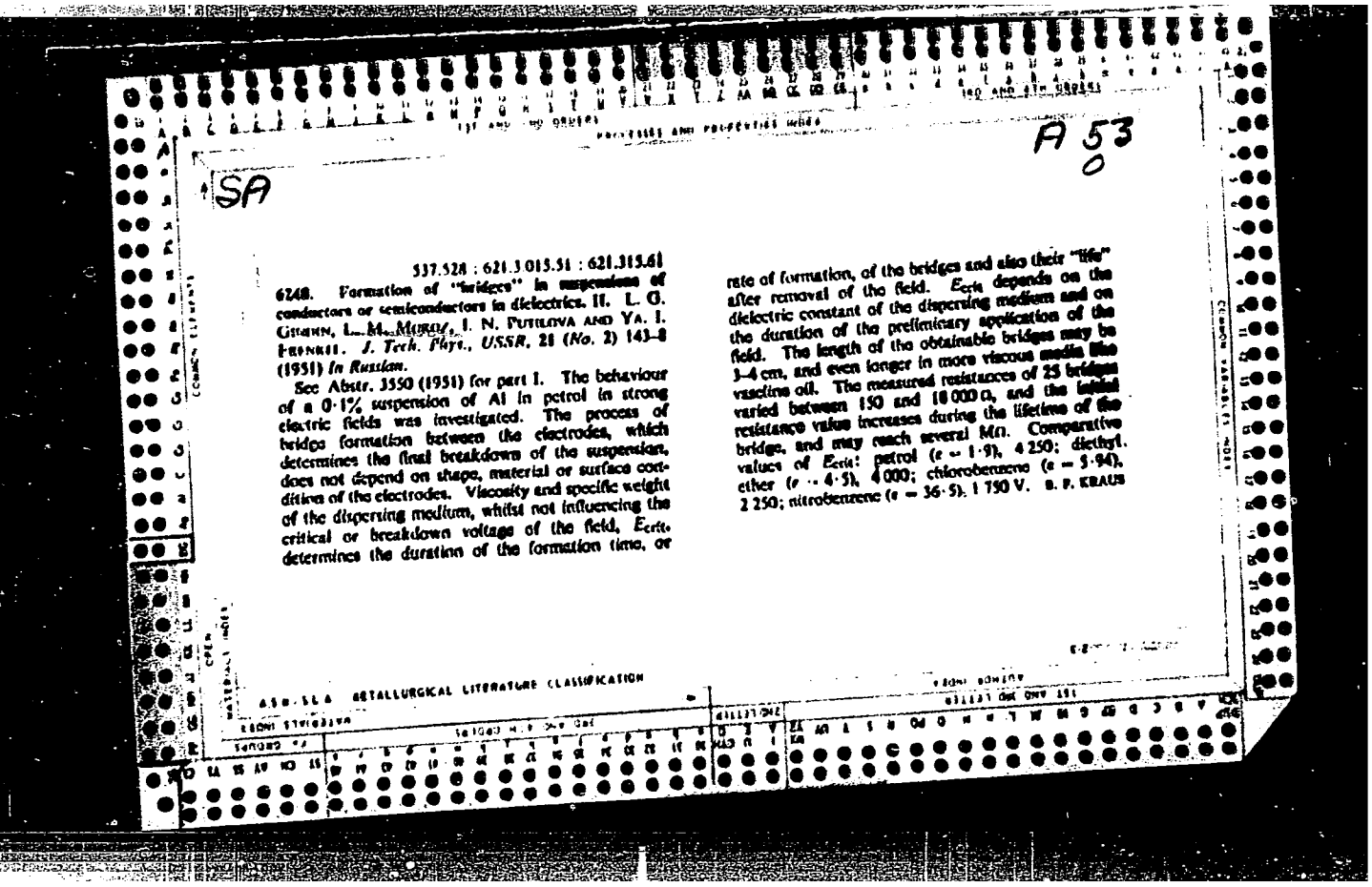
621.315.615 : 621.3.015.51 : 537.528

1310. The mechanism of electrical puncture of liquid dielectrics with suspended metals. L. G. Gindin, L. M. Moroz, I. N. Putilova and Ya. L. Frenkel. Dokl. Akad. Nauk, SSSR, 74 (No. 1) 49-52 (1950) In Russian.

A theoretical explanation is given of phenomena previously described. (See Abstr. 4055 (1950).) J. Luknszeqicz (R)



A 53
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SA

537.528 : 621.3.015.51 : 621.315.61

6248. Formation of "bridges" in suspensions of conductors or semiconductors in dielectrics. II. L. G. GRANN, L. M. MURAV'I, I. N. PUTILOVA AND YA. I. FRENKEL. *J. Tech. Phys., USSR*, 21 (*No.* 2) 143–8 (1951) *In Russian.*

See *Abstr.* 3550 (1951) for part I. The behaviour of a 0·1% suspension of Al in petrol in strong electric fields was investigated. The process of bridge formation between the electrodes, which determines the final breakdown of the suspension, does not depend on shape, material or surface condition of the electrodes. Viscosity and specific weight of the dispersing medium, whilst not influencing the critical or breakdown voltage of the field, $E_{crit.}$ determines the duration of the formation time, or rate of formation, of the bridges and also their "life" after removal of the field. $E_{crit.}$ depends on the dielectric constant of the dispersing medium and on the duration of the preliminary application of the field. The length of the obtainable bridges may be 3–4 cm, and even longer in more viscous media like vaseline oil. The measured resistances of 25 bridges varied between 150 and 10 000 Ω, and the initial resistance value increases during the lifetime of the bridge, and may reach several MΩ. Comparative values of $E_{crit.}$: petrol ($\varepsilon = 1{\cdot}9$), 4 250; diethyl ether ($\varepsilon = 4{\cdot}5$), 4 000; chlorobenzene ($\varepsilon = 5{\cdot}94$), 2 250; nitrobenzene ($\varepsilon = 36{\cdot}5$), 1 750 V. B. P. KRAUS

A 53 METALLURGICAL LITERATURE CLASSIFICATION

MOROZ, L.

3

Changes in mechanical properties of quenched alloyed iron at room temperature. L. Moroz and T. Mingin. *Zhur. Tekh. Fiz.* 21, 1612-17(1951).—A steel with C 0.04, [illegible] Si 0.04, Mn 0.26, Cr 8, Ni 0.46% was quenched as 1.5 mm. wire in a 10% NaOH from 1000° and tensile tested 3 min. to 17 days after quenching. The yield point and tensile strength are not affected by aging, but reduction of area increases during the first 24 hrs. and then becomes stationary. The change must be attributed to relaxation which is speeded by high and slowed by low temp. J. D. Gat

Nuclear Sci Abs. v8.
1-31-54
Mineralogy, Metallurgy
& ceramics

305

ON LOCAL DISTORTIONS OF THE CRYSTAL LATTICES OF ALLOYS DURING TRANSFORMATION HARDENING. L. Morozand I. Minglin. Translated from Doklady Akad. Nauk S.S.S.R. 91, 249-51(1953). 3p. (NSF-tr-99)

The integrated intensities of the (220) and (110) lines in the same x ray photograph for quenched and highly tempered samples of alloyed Fe were compared. They were also compared to the intensities of the lines in x-ray photographs of plastically deformed samples. An Fe alloy with 0.02% C, 4.3% Mn, and 0.97% Cr was used. The data suggested that a considerably smaller number of atoms with incoherent attachment due to static distortions of the lattice was formed during quenching than during plastic deformation. It was also assumed that there was a substantial difference in the nature of the local lattice distortions of an alloy which is in the states of transformed and mechanically cold-worked metal. (J.A.G.)

(2) 4

MOROZ, L.M.

21 537.311.35

2244. THE ACTION OF A CONSTANT ELECTRIC FIELD ON A SUSPENSION OF METALS AND SEMICONDUCTORS IN LIQUID DIELECTRICS. L.G.Gindin, I.N.Putilova and L.M.Moroz. Dokl. Akad. Nauk SSSR, Vol.94, No. 2, 277-9 (1954). In Russian.

The behaviour of 0.1% by weight suspensions of micron-sized particles in aviation petrol. Pt showed high conductivity (σ) at the lowest fields. Cu had small σ below 100 V/cm which gradually increased with field until at 400 V/cm it jumped suddenly by a factor $> 10^3$. Boron carbide below 1000 V/cm showed a small, apparently cataphoretic σ; near 3000 V/cm this increased sharply by about 10^2-10^3. Cu_2O behaved similarly, though σ tended to grow with time as the sharp increase in σ near 12 000 V/cm was approached. With both Cu_2O and boron carbide the inter-electrode "bridge" formed at high fields was stable on removing the applied voltage. The high σ of Pt suspensions was attributed to the absence of surface oxide.

C.H.L.Goodman

USSR/Solid State Physics - Diffusion, Sintering, E-6

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34753

Author: Bokshteyn, S. Z., Gudkova, T. I., Kitkin, S. T., Moroz, L. M.

Institution: None

Title: Study of Uniformity of Alloys and Mobility on the Grain Boundaries Using Radioactive Isotopes

Original Periodical: Zavod. Laboratoriya, 1955, 21, No 4, 423-432

Abstract: None

1 of 1

MOROZ, L. M.

Determination of alloy uniformity and the mobility along the grain boundaries by the radioactive tracer method. S. Z. Bokshtein, T. I. Gudkova, S. T. Kishkin, and L. M. Moroz. *Zavodskaya Lab.*, 21, 423–32 (1955).—The method used was based on the photoactivity of the radioactive radiation; a photographic plate was placed in direct contact with the polished metal specimen for 1–13 days. The distribution of the radioactive elements and a greater nonuniformity of distribution can be detd. by this method, even when the alloying metals were in a concn. considerably lower than satn. The kinetics of redistribution of the elements was found to depend on the thermal pretreatment of the alloys, the crystn. rate, and the alloy compn. A heterogenization of alloys by a long diffusion annealing was demonstrated; there was also a considerably greater mobility in deformed alloys than in cast. The intercryst. diffusion and the diffusion along the grain boundaries were studied separately. Sn was found to diffuse differently in Fe and in Ni with a much greater diffusion rate in Ni along the grain boundaries, than in Fe. Small B additions greatly retarded the diffusion rate in Ni along the grain boundaries.

W. M. Sternberg

L. M. Moroz

A quantitative investigation of the distribution of the elements in alloys. S. T. Kishkin, S. Z. Bokshtein, L. M. Moroz, and T. I. Gudkova. *Doklady Akad. Nauk S.S.S.R.* 101, 667-70(1955).—The distribution was studied by autoradiography of alloys contg. radioactive isotopes. A 100× magnification of the autoradiograph gives a clear image of the distribution of the elements. A good agreement of the autoradiographs with the micrographic structure of the alloys is illustrated on an example of steel contg. 0.33% C. Large chem. nonhomogeneity was found within a single phase and within a single structure element of the alloys. Mo, Nb, Zr, and Sc are enriched in the boundary region of Ni and in the interdentritic spaces, while W is preferentially distributed along the dentritic axes. In Ni alloyed with Fe, the latter is found principally throughout the grain vol., while the boundaries are impoverished in it. S, P, Sb, etc., are arranged principally along the grain boundaries and in the interdendritic spaces. Nonhomogeneity is observed even in binary alloys, with a very small concn. of the added metal (below 0.01%). The nonuniformity cannot be explained by the surface tension phenomena. W. M. Sternberg

(3)

Sci. Res. Inst. Aviation Materials.

MOROZ, L. M

USSR/ Physics - Metal diffusion

Card 1/1 Pub. 22 - 18/49

Authors : Bokshteyn, S. Z.; Kishkin, S. T.; Moroz, L. M.; and Gudkova, T. I.

Title : Studying the internal and surface diffusion of metal granules by the auto-radio-graphic method

Periodical : Dok. AN SSSR 102/1, 73-76, May 1, 1955

Abstract : Experiments intended to establish a certain law of a metals' diffusion are described. Tin, iron and nickel were used in the experiments. The diffusion of tin molecules with surface and volume (internal) molecules of iron and nickel was determined by the auto-radio-graphic method. Results are presented. Eight references: 2 USA and 6 USSR (1931-1953). Graphs; illustrations.

Institution : .....

Presented by : Academician G. V. Kurdyumov, July 15, 1954

MOROZ, L. M.

"Effect of Metal Composition and Structure on Grain Boundary Diffusion," S. Z. Bokshteyn, S. T. Kishkin, and L. M Moroz, Moscow Aviation Inst, USSR

Paper pubmitted for presentation at the International Conference on Radioisotipes in Scientific Research, Paris, 9-20 Sep 1957.

129-2-1/10

AUTHOR: Bokshteyn, S.Z., Dr. of Technical Sciences Prof., Kishkin, S.T., Dr. of Technical Sciences Prof. and Moroz, L.M., Eng.

TITLE: Self-Diffusion of Iron in the Volume of the Grain and Along its Boundaries. (Samodiffuziya zheleza v ob'yeme i po granitsam zerna).

PERIODICAL: Metallovedeniye i obrabotka metallov, 1957, No. 2, pp 2-10 (U.S.S.R.)

ABSTRACT: In a series of papers V.I. Arkharov et alii (14, 15) show, on the basis of metallographic analysis, that there is preferential diffusion of a number of elements along the grain boundaries of iron, nickel and copper. Gruzin, P.L., Kuznetsov, E.V. and Kurdyumov, G.V. (22) studied the diffusion of iron in the alloys iron-nickel and iron-nickel-carbon (25% Ni, 0.69% C) and found that the straignt lines expressing the dependence lg D on 1/T show a break at 1000 to 1100°C. The inclination angle at lower temperatures indicates lower values of the activation energy compared with respective high temperature values; this dependence was observed only if the alloy was subjected to martensite transformation prior to diffusion annealing. In fact, the diffusion coefficient at 900°C in this case is three times as large as for specimens which have not been subjected to martensite transformation, i.e. 7.65×10^{-12} and 2.35×10^{-12} cm^2/sec respectively. Apparently, the influence of earlier transformations

Card 1/5

TITLE: Self-Diffusion of Iron in the Volume of the Grain and Along Its Boundaries. (Samodiffuziya zheleza v ob'yeme i po granitsam zerna).

is nullified only after heating the specimens to 1000 to 1100 C. Earlier investigations by the authors of this paper (21, 23) by means of auto-radiography methods indicates that this process is nonuniform in a polycrystalline body and has a pronounced local character. The process of self-diffusion of iron was investigated by means of an auto-radiography method described earlier by the authors of this paper (21,23). 20 x 10 x 10 mm specimens of Armco iron (0.028% C, 0.030% S, 0.017% P, 0.12% Si, 0.22% Mn) were coated with radio-active Fe^{59} in an electrolytic bath of such a composition that the coating can be effected at room temperature, is not liable to oxidation, is stable in operation and does not have to be frequently corrected. During 10 to 15 minutes an 0.2 to 0.5 μ thick radio-active iron layer was deposited with an activity of 4000 to 7000 imp/cm min. For self-diffusion of the iron in the α and the γ states annealing was effected in the temperature range 800 to 1200°C, maintaining the temperature constant within 2°C. At

TITLE: Self-Diffusion of Iron in the Volume of the Grain and Along its Boundaries. (Samodiffuziya zheleza v ob"yeme i po granitsam zerna).

first the qualitative self-diffusion of iron was studied at 800, 1000, 1100 and 1200°C. Fig. 1 shows auto-radiograms of specimens after diffusion annealing at 800,1000 and 1200°C. Fig. 2 shows the measured values of the depth of self-diffusion of iron in the grain for 1000°C. Fib. 3 shows the dependence of the density of blackening on the depth of self-diffusion of iron along the grain boundaries. Fig. 4 shows the temperature dependence of the self-diffusion coefficient of iron inside the grain and along the grain boundaries. Measured values of the influence of the temperature on the coefficient of self-diffusion inside the grain and along the grain boundaries are given in a table on p. 8. As a result of the tests, the character of the process of self-diffusion of iron in the α and the γ states was determined. It is shown that displacement of atoms during self-diffusion of the iron takes place predominantly along the grain boundaries within a wide range of temperatures (800 to 1200°C) and is independent on the type of crystal lattice. For the temperature dependence of the coefficient of self-diffusion of γ iron the relations were determined separately

Card 3/5

TITLE: Self-Diffusion of Iron in the Volume of the Grain and Along its Boundaries. (Samodiffuziya zheleza v ob"yeme i po granitsam zerna).

for the grain boundary and for the grain volume, namely:

$$D_{boundary} = 2.3e^{-30\ 600/RT}$$

$$D_{grain} = 0.16 \times 10^{-6} e^{-64\ 000/RT}$$

Although conserving a high mobility along the crystal boundaries in the case of self-diffusion right up to 1200°C, a decrease is observed in the speed of diffusion with increasing temperatures, namely:

$D_{boundary}/D_{grain}$ (at 1000°C) 12 000

Card 4/5 $D_{boundary}/D_{grain}$ (at 1200°C) 2 500.

129-2-1/10

TITLE: Self-Diffusion of Iron in the Volume of the Grain and Along its Boundaries. (Samodiffuziya zheleza v ob"yeme i po granitsam zerna).

The observed differences in the parameters of the self-diffusion of iron inside grains and along the grain boundaries are attributed fundamentally to the features of the structure of the crystal lattice in the boundary zone.

One photo, three graphs, and one table are shown. There are 26 references, of which 12 are Slavic.

ASSOCIATION: ---

PRESENTED BY: ---

SUBMITTED: ---

AVAILABLE: Library of Congress

Card 5/5

MOROZ, L.M.

19 7 18 1

Autoradiography of chromium self-diffusion and diffusion in some metals. S. Z. Bokshtein, S. T. Kishkin, and L. M. Moroz. *Zavodskaya Lab.* 23, 316-18(1957).—Cr diffusion was studied by the addition of Cr^{51} to Cr and Fe (99.5% pure) and to Ni (99.7% pure), by using a modification of the method described by Bokshtein, *et al.* (*C.A.* 49, 12804*f*; 50, 20*e*). The Cr atoms migrated at a higher rate in the crystal boundary regions in all the metals studied. The diffusion along the grain boundaries was most readily observed in self-diffusion, in the absence of any possible interaction with other components. The at. diffusion inside their lattices is energetically advantageous and proceeds rapidly. The Cr self-diffusion coeffs. were calcd. at 1100, 1200, and 1300°; the process activation energy inside the grain was 70,000 and along the boundaries 46,000 cal./g.at. The app. used is illustrated. W. M. Sternberg

MOROZ, L M.

PHASE I BOOK EXPLOITATION SOV/3726

Bokshteyn, Samuil Zeylikovich, Sergey Timofeyevich Kishkin, and Lita Markovna Moroz

Issledovaniye stroyeniya metallov metodom radioaktivnykh izotopov (Study of the Structure of Metals by the Method of Radioactive Isotopes) Moscow, Oborongiz, 1959. 217 p. Errata slip inserted. 3,200 copies printed.

Reviewer: A.A. Zhukhovitskiy, Doctor of Chemistry, Professor; Ed.: A.G. Rakhshtadt, Candidate of Technical Sciences, Docent; Ed. of Publishing House: L.I. Sheynfayn; Tech. Ed.: V.P. Rozhin; Managing Ed.: A.I. Sokolov, Engineer.

PURPOSE: The book is intended for scientific workers and engineers specializing in metallurgy and the physics of metals.

COVERAGE: This book deals with the problem of the nonhomogeneity of metal alloys and the state of the metal at the interfaces, in particular at

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the grain boundaries. The methods and results of investigations of the chemical nonhomogeneity of various alloys and of diffusion along the grain boundaries are presented. The authors devote considerable attention to methods and techniques of using tagged atoms in investigating distribution and diffusion processes. Engineer T.I. Gudkova participated in the experimental investigations of distribution processes of alloy components. The authors thank Professor A.A. Zhukhovitskiy, Doctor of Chemistry, and A.G. Rakhshtadt, Candidate of Technical Sciences. There are 47 references: 35 Soviet, 11 English, and 1 German.

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