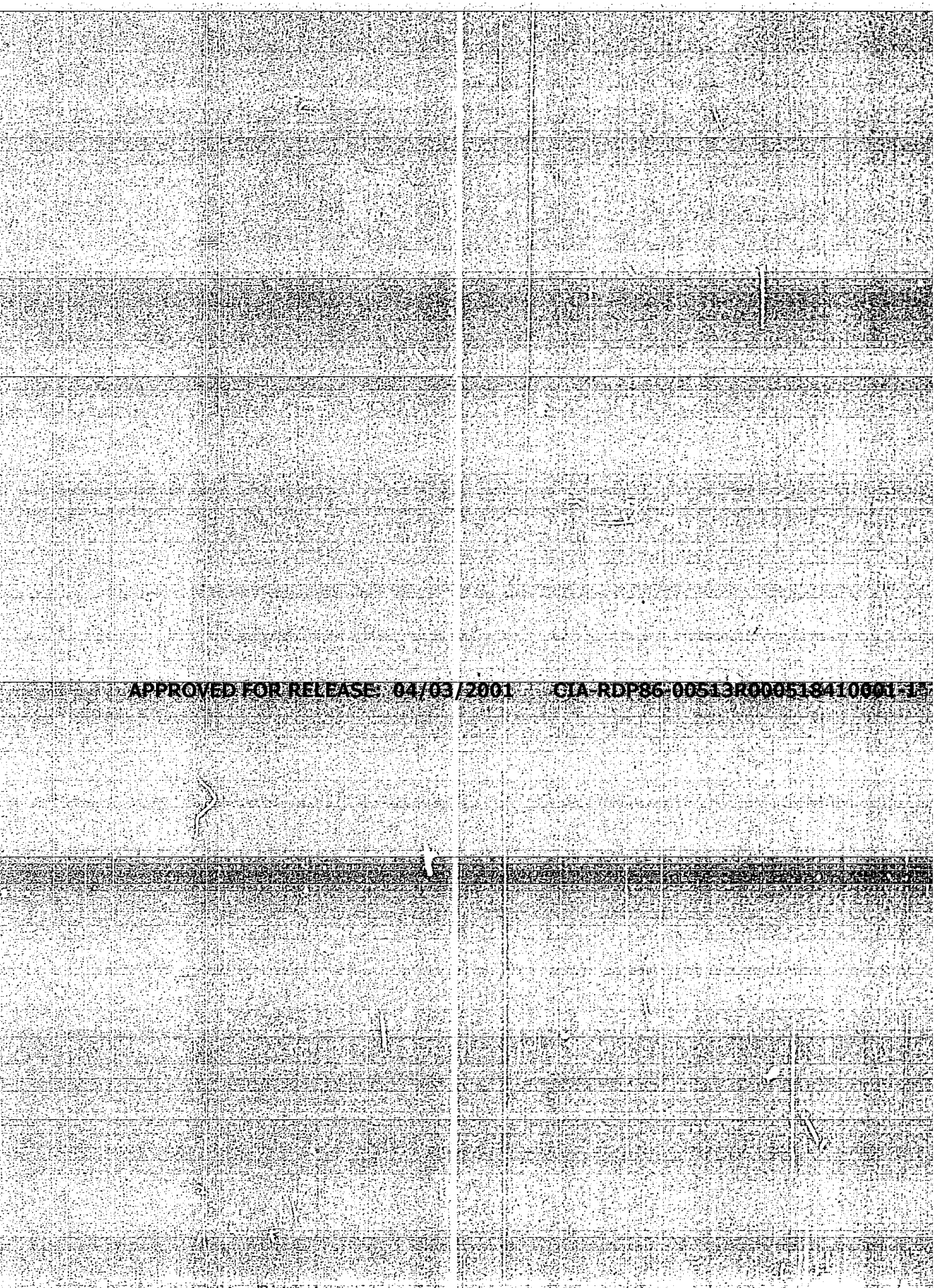
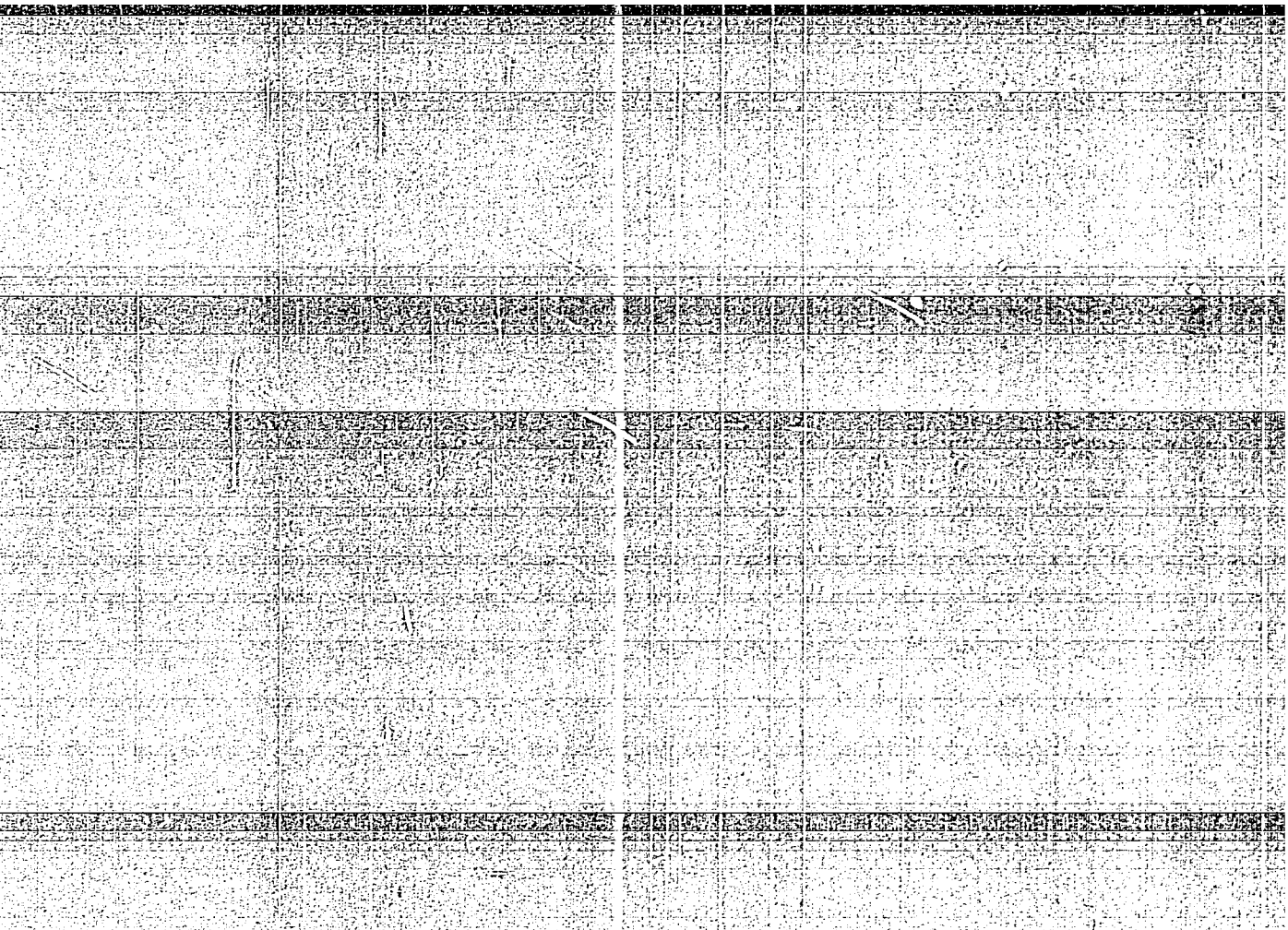


APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R000518410001-1



APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R000518410001-1"

IGNATOV, A., prof., doktor tekhn. nauk

Choice of basic measurements of screw propellers for motorboats.
Voen. znan. 34 no. 6:29-30 Je '58. (MIRA 11:8)
(Motorboats)

IGNATOV, A.

Shortcomings in financing construction. Fin.SSR 15 no.11:55-56
N'54. (MLRA 8:2)
(Construction industry--Finance)

IGNATOV, A.

In the fight to lower construction costs. Fin. SSSR 16 no.2:51-56 F '55. (MLRA 8:1)
(Construction industry--Costs)

IGNATOV, A.

Strengthen the financial structure of subsidiary organizations.
Fin.SSSR 17 no.7:61-63 Jl '56. (MLRA 9:9)
(Construction industry--Finance)

IGNATOV, A.

Hidden potentialities for reducing costs in building and installation work. Fin. SSSR 18 no.12:55-61 D '57. (MIRA 11:1)

1.Nachal'nik finansovogo otdela Leningradskogo tresta "Santekhmontazh - 62."
(Construction industry)

IGNATOV, A.

How we strengthen the economics of enterprises. Fin. SSSR 23 no.10:47-50 O '62. (MIRA 15:10)

1. Glavnyy bukhgalter upravleniya poligraficheskoy promyshlennosti Leningradskogo soveta narodnogo khozyaystva.
(Leningrad Province—Printing industry—Finance)

IGNATOV, A., inzh.

Improve the design of motor vehicles. Avt.transp. 42 no.12:21-22 D '64. (MIRA 18:4)

3257
S/089/62/012/002/009/015
B102/B138

26.2241

AUTHORS: Yurova, L. N., Polyakov, A. A., Ignatov A. A.

TITLE: New measurements of U^{235} fission neutron age in hydrogen-containing substances

PERIODICAL: Atomnaya energiya, v. 12, no. 2, 1962, 151 - 152

TEXT: The distributions of 1.46-ev neutrons as a result of slowing down U^{235} fission neutrons in H_2O and $C_{15}H_{16}$ were measured for two source thicknesses: 0.3 and 1.8 mm. An indium detector was placed in a stainless-steel tank in the thermal column of the reactor for measuring the age of neutrons slowed down in $C_{15}H_{16}$. A highly enriched uranium metal target converting fast fission neutrons into thermal neutrons was the neutron source. The neutron distribution was determined by two targets, one at the end of a 150 mm long aluminum tube, the other 120 mm from the bottom of the tank for control measurements, which showed that the aluminum tube did not distort distribution. On the outside of the tank bottom another target was

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New measurements ...

placed. The neutron distributions were measured and curves $\log N = f(R)$ were plotted in the R-range 0 - 50 cm; $\log N$ fell almost linearly with increasing R. The following results were obtained:

Moderator	$\tau_{measured}$ δ = 1.8 mm	δ = 0.3 mm	τ_{calcul}
H_2O	(31.1±0.9) cm^2	(27.3±1.0) cm^2	(26.0±0.5) cm^2
$C_{15}H_{16}$	(45.9±1.6) cm^2	(44.9±1.8) cm^2	41.4 cm^2

For zero thickness of source τ (1.46 ev) = (27.3±0.9) cm^2. There are 1 figure, 1 table, and 4 references: 3 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: D. Lambard, C. Blanchard, Nucl. Sci. and Engng., 7, 5, 448, 1960.

SUBMITTED: April 17, 1961

Card 2/2

ACCESSION NR: AT4018976 S/3064/63/000/004/0043/0046

AUTHOR: Yurova, L. N.; Polyakov, A. A.; Ignatov, A. A.

TITLE: The age of fission neutrons in water

SOURCE: Moscow. Inzh.-fiz. institut. Nekotory*ye voprosy* inzhenernoy fiziki (Some problems in engineering physics), no. 4, 1963, 43-46

TOPIC TAGS: nuclear reactor, neutron, fission neutron, neutron age, neutron absorption

ABSTRACT: The authors note that recent experiments to determine the age of neutrons in water indicate satisfactory agreement between the value of 26.0 ± 0.5 cm^2 given by Kh. Gol'dshteyn, P. Tsveyfel and D. Foster (Trudy* Vtoroy mezhdunarodnoy konferentsii po mirnomu ispol'zovaniyu atomnoy energii Geneva, 1958). Izbr. dokl. inostranny*kh ucheny*kh. T.2 - "Neytronnaya fizika". M., Atomizdat, 1959, str. 689) and the new values of 27.3 ± 1.0 and 27.3 ± 0.9 cm^2 given by L. N. Yurova, A. A. Polyakov, and A. A. Ignatov (Novy*ye izmereniya vozrasta neytronov v vode. "Atomnaya energiya", 10, no. 2, 1961) and by Lombard and Blanchard (Nucl. Sci. Engng, 7, 5, 1960), respectively. It is pointed out that the rated and experimental data converge, if the dependence of the spatial distribution of the

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ACCESSION NR: AT4018976

slowed neutrons on the effect of the absorption of these neutrons in the source is considered during the experiment. However, the last two papers mentioned contain no calculations confirming the existence of this dependence. In the present paper, an estimation of this effect is given on the basis of a concrete example. An infinite laminar source, with thickness d, is considered. The material of the source is U-235. The flow distribution from the right-hand side of the source ($x \geq 0$) is found. All the neutrons are broken down into three energy groups and the assumption is introduced that the laminar source absolutely does not absorb neutrons with energy greater than 1234 ev. An expression for the spatial distribution of the stream is derived, after which the neutron age with different source thicknesses can be easily computed. For a plain (flat) case, when

$$\tau = \frac{1}{2} \cdot \frac{\int_0^\infty x^2 \Phi(x)\,dx}{\int_0^\infty \Phi(x)\,dx},$$

the following are the results:

when $d = 0$ $\tau = 26.9$ cm^2

when $d = 0.18$ cm $\tau = 31.8$ cm^2

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ACCESSION NR: AT4018976

The authors note, in conclusion, that absorption of slowed neutrons in the source may have a substantial influence on the spatial distribution, with the latter, in turn, influencing the value of the neutron age in the medium. Orig. art. has: 12 formulas.

ASSOCIATION: Inzh.-fiz. institut, Moscow (Engineering Physics Institute)

SUBMITTED: 00 DATE ACQ: 05Mar64 ENCL: 00

SUB CODE: NP NO REF SOV: 002 OTHER: 004

Card 3/3

L 13219-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 DIAAP/SSD/AFWL/ASTC(p)/ESD(t)
DM/RM

ACCESSION NR: AP4047418 S/0089/64/017/004/0303/0304

AUTHORS: Yurova, L. N.; Polyakov, A. A.; Ignatov, A. A. B

TITLE: Neutron age in the fission of U-235 in monoisopropyl diphenyl and in iron-diphenyl and aluminum-diphenyl mixtures

SOURCE: Atomnaya energiya, v. 17, no. 4, 1964, 303-304

TOPIC TAGS: neutron age, uranium fission, organic moderator, homogeneous moderator, inhomogeneous moderator, neutron density distribution, diffusion length

ABSTRACT: The work was done in a thermal column of the heavy water reactor of AN SSSR in 1960 as part of a program of research on the moderating and diffusion properties of hydrogen-containing media. The age of neutrons produced by moderating U^{235} fission neutrons in monoisopropyl diphenyl ($C_{15}H_{16}$) was measured with an indium detector. The moderated-neutron distribution near the source was measured with

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a target consisting of indium foils. The neutron density distributions along the axis of the stainless steel tank (41 cm diameter 110 cm long) placed in the thermal column of the reactor were measured for the following cases: a) "small" (pointlike) source, target thickness 1.8 mm, diameter 20 mm; b) "small" (pointlike) source, target thickness 0.3 mm, c) "large" source, target thickness 0.3 mm, diameter 50 mm. The plotted distribution of the neutrons with energy 1.46 eV produced after moderation was used to calculate the neutron age. The value obtained experimentally was 42.7 ± 1.8 cm^2, which agrees well with the 43.4 cm^2 calculated by V. P. Kochergin and V. V. Orlov (Atomnaya energiya v. 6, 34, 1959), and with 43.4 cm^2 obtained by multi-group computer calculations made at the Fiziko-energeticheskiy institut. The thermal-neutron density distribution yielded for the diffusion length of the neutrons a value 3.71 ± 0.03 cm. An analogous procedure was used to measure the age of neutrons moderated in mixtures of diphenyl and iron and diphenyl and aluminum. For the diphenyl-iron (25% by volume) mixture the age was found to be

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ACCESSION NR: AP4047418

75.0 ± 4.4 cm^2, while for diphenyl-aluminum (20% volume) -- 87.8 ± ± 2.3 cm^2. This compares with 65.6 and 71.7 cm^2 obtained by Kocher-gin and Orlow and with 68.5 and 79.9 cm^2 obtained by the multi-group calculation. The corresponding diffusion lengths are 2.63 ± 0.04 and 11.19 ± 0.82 cm. The greater deviation in the case of moderator mixtures indicates that the heterogeneity of the medium must be taken into account in theoretical studies of moderation of neutrons in mixtures of hydrogen-containing compounds and metals. Orig. art. has: 1 figure and 2 formulas.

ASSOCIATION: None

SUBMITTED: 08Oct63 ENCL: 00

SUB CODE: NP NR REF SOV: 006 OTHER: 001

Card 3/3

IGNATOV, A.A.; KULAKOV, N.D.

Reliability of take in rollers of hot forging crank presses.
Kuz.-shtam.proizv. 7 no.2:20 F '65. (MIRA 18:4)

IGNATOV, ALEKSANDR ANDREYEVICH.

Gorizontal'no-kovochnye mashiny; eksploatatsiia i remont. Moskva, 1948.
360, (4) p. illus.

Bibliography: 1 p. at end.

(Bulldozers (horizontal forging machines); performance and repair.) CtY

DLC: TS235.I45

SO: Manufacturing and Mechanical Engineering in the Soviet Union,
Library of Congress, 1953.

IGNATOV, A. A.

Shtampovochnyye Moloty; Ekspluatatsiya I Remont. (Drop Hammers; Operation and Repair) Moskva, Mashgiz, 1950. 382 P. "Literatura": P. (382)

So: N/5
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IGNATOV, ALEKSANDR ANDREEVICH.

Shtampovochnye moloty (Eksploatatsiia i remont) Moskva, Gos. Mashgiz, 1950. 383 p.

(Swage hammers (Operation and repair,))

DLC: Unclass.

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

[illegible], [illegible]

Krivoshipnye goriacheshtampovochnye pressy (Crankshaft drop-forge press). Moskva, Mashgiz, 1952, 262 p.

SO: Monthly List of Russian Accessions, Vol 6, No. 3, June 1953

IGNATOV, Aleksandr Andreyevich.

[Crank die presses] Krivoshipnye goriacheshtampovochnye pressy. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit.lit-ry, 1953. 260 p. (MLRA 6:9)
(Punching machinery)

IGNATOV, A.A.

Change in crankshaft hydraulic "National" presses and their comparision with other presses of foreign make. Kuz.-shtam. proizv. 2 no.5:31-38 My '60. (MIRA 14:5)
(Power presses)

IGNATOV, A.A.

Life of KGShP forging press gear pairs. Kuz.-shtam.proizv. 4 no.10:36-39 O '62. (MIRA 15:12)
(Forging machinery) (Gearing)

IGNATOV, A.A.; VLASOV, V.I.; ZALESSKIY, V.I., prof., red.; SIROTIN, A.I., red.izd-va; MODEL', B.I., tekhn.red

[Clutches, brakes, and control mechanisms for crank press forging machines] Mufty, tormoza i mekhanizmy upravleniia krivoshipnykh kuznechno-pressovykh mashin. Moskva, Mashgiz, 1963. 446 p. (MIRA 16:11)
(Forging machinery--Design and construction)

50 c

L 41182-65 EWT(d)/EWP(c)/EWP(v)/T/EWP(k)/EWP(l) Pf-4
ACCESSION NR: AP5004677 S/0115/64/000/009/0058/0059 70 18 8

AUTHOR: none

TITLE: Fourth scientific and technical conference on "Cybernetics for the improvement of measurement and inspection methods"

SOURCE: Izmeritel'naya tekhnika, no. 9, 1964, 58-59

TOPIC TAGS: cybernetics, electric measurement, electric quantity instrument, digital computer, electronic equipment, electric engineering conference

ABSTRACT: The conference was held 1-4 July at the All-Union Scientific Research Institute of Metrology by the Section of Electrical Measurements of the Council on the Problem of "Scientific Instrument Making" of the State Committee on Coordination of Scientific Research Work in the USSR together with the All-Union Scientific Research Institute of Electrical Measurement Instruments and the Leningrad Regional Administration of the Scientific and Technical Division of the Instrument Making Industry. More than 400 delegates from 29 cities of the country participated. Fifty-seven reports were heard and discussed. Reports were given by: P. V. NOVITSKIY (Leningrad)--"Definition of the Concept of Informational Error in Measurement and its Importance in Practical Use" and "On the Problem of the Average Informational Criterion of Accuracy Throughout the Entire Scale of an Instrument"; Ya. A.

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ACCESSION NR: AP5004677

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KUPERSHMIDT (Moscow)--"On Determination of the Criteria of Accuracy for Measurement Devices"; S. M. MANDEL'SHTAM (Leningrad)--report on a new criterion of accuracy of measurement instruments; P. F. PARSHIN (Leningrad)--report on optimization when using Fourier transforms on electronic digital computers; S. P. DMITRIYEV, G. Ya. DOLGUNTSEVA and A. A. IGNATOV (Leningrad)--proposal of a new method for solving problems of optimum filtering for non-stationary random signals and interference; I. B. CHELPANOV--"Calculation of the Dynamic Characteristics of an Optimum Complex Two-Channel System which Uses Signals from a Position Meter and from a Speed Meter"; R. A. POLUEKTOV (Leningrad)--"Optimum Periodic Correction in the Measurement of Continuous Signals"; S. P. ADAMOVICH (Moscow)--"Analysis and Construction of Devices for Correction of Non-linearity and Scaling for Unitary Codes; G. V. GORELOVA (Taganrog)--"A Method for Statistical Optimization in Graduating the Scales of Electrical Measuring Instruments"; M. A. ZAKEL'MAN (Moscow)--"Analog-Digital Voltage Converter with Automatic Error Correction"; B. N. MALINOVSKIY, V. S. KALENCHUK and I. A. YANOVICH (Kiev)--"Automatic Monitoring of the Parameters of the Electrical Signals of Complex Radio and Electronic Equipment"; V. P. PEROV (Moscow)--"Operational Cybernetics as an Independent Scientific Specialization"; Ye. N. GIL'BO (Leningrad)--"On the Problem of Effective Non-linear Scales"; A. I. MARKELOV (Moscow)--"Devices for Preliminary Processing of the Results of Measurements Presented in the Form of

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Graphic Recordings For Subsequent Introduction of the Information into Universal Digital Computers"; O. M. MOGILEVER and S. S. SOKOLOV (Leningrad)--"On a Method for Reducing Excess Information"; T. V. NIKOLAYEVA (Leningrad)--"A Device for Temporal Discretization of Continuous Signals"; A. A. LYOVIN and M. L. BULIS (Moscow)--"Optimization of the Transmission of Telemetric Information as a Means for Raising the Efficiency and Eliminating Interference"; D. E. GUKOVSKIY (Moscow)--"On a Statistic Approach to the Detection of Events in Automatic Inspection"; M. I. LANIN (Leningrad)--"Method for Calculating the Holding Time of Communications in a Centralized Inspection System or Constant Servicing Time"; O. N. BRONSHTEYN, A. L. RAYKIN and V. V. RYKOV (Moscow)--"On a Single-Line Mass Service System with Losses"; Y. M. SHLYANDIN (Penza)--report on circuit designs for direct compensation electrical digital measuring instruments; A. N. KOMOV (Novocherkassk)--report on a new method for compensation of digital bridges; M. N. GLAZOV (Leningrad)--report on the problem of voltage-to-angular rotation conversion; V. S. GUTNIKOV (Leningrad)--"Methods for Construction of Frequency Capacitance Pickups with a Linear Scale"; R. Ya. SYROPYATOVA and R. R. KHARCHENKO (Moscow)--report on the determination of the amplitude-frequency and phase characteristics of PFM and PWM modulators; Ye. I. TENYAKOV (Novocherkassk)--"The Phototransistor as a Switch for Electrical Measurement Purposes"; N. V. MALYGINA (Leningrad)--a report on ways for making universal equipment for measurement of current, voltage and power; P. P. ORNATSKIY and V. I. ZOZULYA (Kiev)--reports on the construction of static voltmeters, wattmeters and

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ACCESSION NR: AP5004677

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phase motors; A. V. TRIKHANOV, I. G. SMYSHLYAYEV, N. I. SABLIN, V. M. RAZIN and V. A. GORBUNOV (Tomsk)--report on a device for automatic processing of the measurements of vibration amplitude of pneumatic hammers; L. K. RUKINA and V. G. KNORRING (Leningrad) --report on the development of a digital compensator for measuring pressure, force, etc.; N. B. DADUKINA (Leningrad)--report on a method for constructing frequency pickups for gas analysis; Ya. M. KARPOV, V. A. BRAZHNIKOV and B. Ya. LIKHTTSINDER (Kuybyshev)--reports on analysis and recording of boring speeds; Yu. V. PSHENICHNIKOV (Kuybyshev)--"A High Speed Voltage-to-Digital Code Converter for ac Pickups"; G. P. VIKHROV and V. K. ISAYEV (Vilna)--"A Highly Accurate Digital Peak-to-Peak Voltmeter"; and S. M. PERSIN (Leningrad)--"A Low Level Analog-Digital Voltage Converter."

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: EE, EC

NO REF SOV: 000 OTHER: 000 JPRS

me

Card 4/4

YUROVA, L.N.; POLYAKOV, A.A.; IGNATOV, A.A.

Age of fission neutrons from U^{235} in monoisopropylbiphenyl and in the mixtures biphenyl--iron and biphenyl--aluminum. Atom. energ. 17 no.4:303-304 O '64. (MIRA 17:10)

DMITRIYEV, S.P. (Leningrad); DOLGINTSEVA, G.Ya. (Leningrad); IGNATOV, A.A. (Leningrad)

Solution of some nonsteady-state problems in optimum filtration. Izv. AN SSSR Tekh. kib. no.1:169-181 Ja-F '65. (MIRA 18:4)

L 15050-66 EWT(d)/FSS-2

ACC NR: AP6002154 (A) SOURCE CODE: UR/0280/65/000/006/0114/0120

AUTHOR: Dmitriyev, S. P. (Leningrad); Dolgintseva, G. Ya. (Leningrad); Ignatov, A. A. (Leningrad)

39
B

ORG: none

TITLE: Optimal filtration of a specified-shape signal with a stationary random noise as a background

6,44

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 6, 1965, 114-120

TOPIC TAGS: signal noise separation, signal detection

ABSTRACT: In an earlier authors' work (Izv. AN SSSR, Tekhnicheskaya kibernetika, 1965, no. 1), a method was suggested for determining the weight function of an optimal filter from a solution of an Euler differential equation; the latter belonged with a variational problem that had properly formulated boundary conditions for the case when the desirable signal m(t) and noise n(t) were described by differential equations which set the connections with the initial white noise $V_m(t)$ and $V_n(t)$. The present article applies the above method to solving the problem of optimal filtration

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L 15050-66

ACC NR: AP6002154

of the signal $q(t) = \sum_{i=1}^{N} U_i q_i(t)$ that has random coefficients U_i and noise n(t) as a background; the filtration is described by the differential equation $w_n(p)n(t) = V_n(t)$, where $w_n(p) = \sum_{i=0}^{s} c_i p^i$, $p \equiv \frac{d}{dt}$, c_i are generally variable coefficients. The desirable signal and noise are not correlated. The method is easily generalized to cover problems with specified-shape input signals; in the unbiased-estimator problem, the Euler differential equation for the weight function ζ of the filter part being optimized degenerates into an algebraic equation. In the biased-estimator problem, the form of solution of the integral equation for ζ does not differ from that of the nonbiased-estimator solution. No singular cases arise in solving the optimum-filtration problem by the above method. Orig. art. has: 60 formulas.

SUB CODE: 09, 17 / SUBM DATE: 10Sep64 / ORIG REF: 002

Card 2/2

L 20749-66 EWT(d)/FSS-2

ACC NR: AP6010279 SOURCE CODE: UR/0103/66/000/003/0040/0047

AUTHOR: Dmitriyev, S. P. (Leningrad); Dolgintseva, G. Ya. (Leningrad); Ignatov, A. A. (Leningrad)

ORG: none

30

8

TITLE: Solution of the optimal filtration problem for random signals whose properties are varying at given instants

SOURCE: Avtomatika i telemekhanika, no. 3, 1966, 40-47

TOPIC TAGS: filtration, optimal filtration, optimal filter, Euler equation, random signal

ABSTRACT: A method is presented for determining the optimal filter for input signals consisting of the useful signal $m(\tau)$ and of the noise $n(\tau)$ which are random functions of time and whose statistical characteristics on the given intervals of time (t_0, t_1), $(t_1, t_2)\ldots(t_{N-1}, t_N)$ are different. These characteristics are described on every interval by given differential equations. The problem is reduced to determining the weighting function of the optimal filter in the form

$$g(t, \tau) = \sum_{k=1}^{N} g_k(t, \tau), \qquad (1)$$

under the assumption that weighting function $g_k(t, \tau)$ is nonzero on every interval

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L 20749-66

ACC NR: AP6010279

of the sequence of intervals. An estimate $m^*(t)$ of the useful signal at the output of the filter is derived and the filtration error $\varepsilon(t)$ is established. An expression for the variance $D_\varepsilon(t)$ of the filtration error is formed, and the weighting function minimizing the variance $D_\varepsilon(t)$ is sought. Determining the optimal weighting functions is reduced to the solution of a system of Euler's differential equations. Solutions of these equations contain a certain number of arbitrary constants as well as a certain number of parameters; a complete system of algebraic equations is derived for determining these parameters. The method is illustrated by an example. Orig. art. has: 40 formulas. [LK]

SUB CODE: 09/ SUBM DATE: 12May65/ ORIG REF: 002/ ATD PRESS: 4225

Card 2/2

L 25440-66 EPF(n)-2/EWA(h)/EWT(m)/ETC(f)/EWG(m)/EWP(t) WW/JD/JG/GS
ACC NR: AT6005817 SOURCE CODE: UR/0000/65/000/000/0085/0104

AUTHORS: Shikhov, S. B.; Ignatov, A. A.; Kudryashov, Ye. I. 47 45 B+1

ORG: none

TITLE: Influence of the method of unloading the side screen of a fast breeder reactor on its doubling time 19

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Nekotoryye voprosy fiziki i tekhniki yadernykh reaktorov (Some problems in the physics and engineering of nuclear reactors). Moscow, Atomizdat, 1965, 85-104

TOPIC TAGS: breeder reactor, nuclear reactor characteristic, nuclear material processing, uranium, plutonium

ABSTRACT: By calculating theoretically the amount of secondary fuel produced in the screen of a breeder reactor always present in the reactor between the loading-unloading cycles (defined as the 'frozen-in' fuel), the authors show that the doubling period of the total amount of fissioning material in the reactor depends strongly on the

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L 25440-66
ACC NR: AT6005817 2

sequence with which the screen breeder zone is replaced with fresh stacks of raw material. Three methods of fuel replacement are considered: 1) Moving screen, in which the innermost raw uranium blocks, in which plutonium is formed first, are removed first and the outer blocks are continuously moved inward. 2) Stationary screen, where each block is replaced by a fresh one after a prescribed norm of plutonium is produced in it, regardless of its position in the reactor and without rearrangement of the blocks. 3) Two-zone moving screen, which is essentially a combination of the first two methods. The over-all rate of breeding and the breeding in the individual concentric layers of the reactor are calculated for the first method and expressions are obtained for the distribution of the plutonium over the reactor in the other two. The influence of the amount of frozen-in plutonium on the doubling period, defined as the time elapsed before the newly produced excess fuel equals the total amount of fuel in the cycle, is determined and an equation is derived to establish the reloading method giving the best results. It is shown that the method of reloading becomes important the larger the norm of accumulation of plutonium in the raw uranium and the smaller the size of the active zone. Orig. art. has: 3 figures and 45 formulas.

SUB CODE: 18 / SUBM DATE: 05Jun65/

Card 2/2 cc

L 46654-66 EWT(d)/EWP v)/EWP(k)/EWP(h)/EWP(1) BC

ACC NR: AP6021389 SOURCE CODE: UR/0103/66/000/006/0050/0060

AUTHOR: Dmitriyev, S. P. (Leningrad); Dolgintseva, G. Ya. (Leningrad); Ignatov, A. A. (Leningrad)

ORG: none

51
B

TITLE: Asymptotic stability of optimal filters

SOURCE: Avtomatika i telemekhanika, no. 6, 1966, 50-60

14

TOPIC TAGS: optimal automatic control, control system stability, filter circuit, function analysis

ABSTRACT: The problem of the characteristics of an optimal filter weighting function $g(t, \tau)$ when $t \to \infty$ is considered. The fundamental assumption postulated by the authors consists in defining the useful signal $m(\tau)$ and the noise $n(\tau)$ by differential equations which link them with "white noise." It is demonstrated that regardless of the stability of the solutions of these differential equations, an optimal filter at $t \to \infty$ is stationary and asymptotically stable. Formulas are derived for the determination of the optimal weighting function for this particular case. A maximum limiting value for the error spread is found. An analysis is given for the problem of filter stability in cases in which the required conversion of the useful signal corre-

Card 1/2 UDC: 621.391.172

L 46654-66

ACC NR: AP6021389

sponds to the operator of an unstable system. Orig. art. has: 64 formulas.

SUB CODE: 12,09/ SUBM DATE: 30Dec65/ ORIG REF: 001/ OTH REF: 000

Card 2/2

ACC NR: AT7005808 (N,N) SOURCE CODE: UR/0000/66/000/000/0090/0095

AUTHORS: Nikolayev, M. N.; Ignatov, A. A.; Khokhlov, V. F.; Shikhov, S. B.

ORG: none

TITLE: Method of subgroups and its application in the diffusion approximation

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Inzhenerno-fizicheskiye voprosy yadernykh reaktorov (Problems of nuclear reactor engineering and physics); sbornik statey. Moscow, Atomizdat, 1966, 90-95

TOPIC TAGS: transport equation, neutron diffusion, nuclear reactor, reactor neutron flux, neutron spectrum

ABSTRACT: The method of subgroups for solving the neutron transport equation with consideration of the energy dependence is discussed for the case when the structure of the neutron spectrum depends significantly on diffusion. Algorithms are given for calculating the distribution of subgroups in adjacent media, one of which has a resonance structure of the total cross section $\Sigma_t(u)$. The portion of the cross section curve containing the resonances where the average resonance parameters are approximately constant is separated out. The neutrons in the interval can be distributed into subgroups corresponding to the distribution of the magnitude of the total cross section. The diffusion equation for neutrons of subgroup k of the

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ACC NR: AT7005808

resonance medium is expressed in the form

$$\left.\begin{aligned}\frac{1}{r^{\alpha}}\frac{dJ^k(r)}{dr}&=F^k(r)-\Sigma_t^k\Phi^k(r);\\ J^k(r)&=-r^{\alpha}D^k\frac{d\Phi^k(r)}{dr},\end{aligned}\right\}$$

where the superscript k indicates quantities relating to the subgroup k, J is the neutron current, Φ is the neutron flux, F is the subgroup sources including neutrons scattered into it and remaining in it, D is the diffusion constant, and α is a parameter determined by the system geometry. Application of the method of subgroups to the region of high energies is also discussed. Orig. art. has: 15 equations.

SUB CODE: 18/2/SUBM DATE: none/ ORIG REF: 004/ OTH REF: 003

Card 2/2

ACC NR: AT7005809 (A,N) SOURCE CODE: UR/0000/66/000/000/0096/0106

AUTHORS: Shikhov, S. B.; Ignatov, A. A.

ORG: none

TITLE: A method for calculating relaxation length of an asymptotic spectrum

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Inzhenerno-fizicheskiye voprosy yadernykh reaktorov (Problems of nuclear reactor engineering and physics); sbornik statey. Moscow, Atomizdat, 1966, 96-106

TOPIC TAGS: breeder reactor, neutron spectrum, asymptotic solution, GAS KINETIC EQUATION

ABSTRACT: A direct method is discussed for calculating the relaxation length and asymptotic spectra in weakly-breeding media by using multi-group P_n-approximations, including all the singularities of the scattering characteristic curve. The gas kinetic equation of neutron balance in a plane geometry is given by

$$\mu \frac{\partial \psi(x, u, \mu)}{\partial x} + \Sigma_t(u)\psi(x, u, \mu) = \int d\Omega' \int du' \psi(x, u', \mu') \Sigma_s \times$$
$$\times (u', u, \mu_0) + \frac{1}{4\pi} \int d\Omega' \int du' \psi(x, u', \mu') \Sigma_{tn}(u', u) + \qquad (1)$$
$$+ \frac{\varkappa(u)}{4\pi} \int d\Omega' \int du' \psi(x, u', \mu') \nu_f(u') \Sigma_f(u').$$

Card 1/2

The P_n-approximation is given by the expansion

$$A(u, \mu) \approx \sum_{l'=0}^{N} \frac{2l'+1}{2} A_{l'}(u) P_{l'}(\mu); \tag{2}$$

$$\sum_{l, \Delta}(u', u, \mu_0) \approx \sum_{l, \Delta}(u', u) \sum_{l=0}^{N} \frac{2l+1}{2} P_l(\mu_0) P_l(\mu_{0, \Delta}(V))$$

which, when substituted in equation (1), leads to the following set of equations for the elements $\left\{A_n^k\right\}$

$$\lambda(L) A_n^k = \sum_{l, l} B_{l, \Delta}^{k, l}(L) A_l^l. \tag{3}$$

These equations are then solved on the assumption that the set possesses a simple, positive, small modulus characteristic number to which corresponds a characteristic vector selected from the positive elements $\left\{A_l^k\right\}$. A separation-of-variables technique is used, and the characteristic numbers $\lambda(L)$ are calculated using a step-by-step iteration method. The domain where asymptotic assumptions fail is also investigated. The authors express their gratitude to A. I. Shabalov for his help in performing the calculations. Orig. art. has: 18 equations and 1 figure.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 007/ OTH REF: 004

C A

Layout of centrifuge shafts. A. O. Ignatov. *Khim. Mashinostroenie* 1939, No. 9, 1-4; *Khim. Referat. Zhur.* 1940, No. 7, 134; cf. *C. A.* 34, 6867.—A critical review of the performance of the shaft of vertical centrifuges. Ignatov applied mathematical calcns. to all possible cases encountered under practical conditions and made a no. of conclusions which explain the phenomena connected with the resonance zone observed during the starting and stopping of vertical centrifuges. W. R. Henn

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

IGNATOV, A. G.

Perevod neftianykh dvigatelei na gazoobraznoe toplivo. rukovodstvo po poverochnomu raschetu. Moskva, Gosenergoizdat, 1944. 178,(6)p. illus. diagrs.

Conversion of oil engines to gaseous fuel; manual on checking calculation.
DLC: TJ789.I35

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

IGNATOV, A. G.

Prakticheskoe rukovodstvo po perevodu statsionarnykh dvigatelei vnutrennego sgoraniia na gazoobraznoe toplivo; atlas. (Moskva, Izd-vo Narkomkhoza RSFSR, 1945) (176) p. of diagrs.

Practical manual on the conversion of stationary internal combustion engines to gaseous fuel; atlas.

DLC: TJ789.I38

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

IGNATOV, Andrey Grigor'yevich, prof.; IGOSHIN, M.G., red.; BLAZHENKOVA, G.I., tekhn.red.

[Selecting the size of a motorboat propeller] Vybor razmerov grebnogo vinta dlia motornoi lodki. Moskva, Izd-vo DOSAAF, 1959. 54 p. (MIRA 13:3)

(Propellers)

IGNATOV, A.G.

[Course in theoretical mechanics for technological institutes in nonmechanical fields] Kurs teoreticheskoi mekhaniki dlia tekhnologicheskikh institutov nemekhanicheskikh spetsial'nostei. Moskva, Mosk. khimiko-tekhnolog. in-t im. D.I.Mendeleeva. Pt.1. 1963. 115 p. (MIRA 18:3)

IGNATOV, A.G.

[Course of theoretical mechanics for students of technological institutes not specializing in mechanical subjects] Kurs teoreticheskoi mekhaniki dlia tekhnologicheskikh spetsial'nostei. Moskva, Mosk. khimiko-tekhnolog. in-t, 1964. 63 p. (MIRA 18:12)

KAGANOV, V.M.; FURMAN, A.Ye.; IGNATOV, A.I.; PLYUSHCH, L.N.; SHOROKHOVA, Ye.V.; YUROVAYA, I.L.; PLATONOV, G.V., red.; SUKHOV, A.D., red.izd-va; RYLINA, Yu.V., tekhn.red.; LAUT, V.G., tekhn.red.

[The problem of causality in modern biology] Problema prichinnosti v sovremennoi biologii. Moskva, 1961. 191 p. (MIRA 14:2)

1. Akademiya nauk SSSR. Institut filosofii.
(CAUSATION) (BIOLOGY--PHILOSOPHY)

IGNATOV, Aleksandr Ivanovich; KNYAZEVA, L., red.; CHEREMNYKH, I., mladshiy red.; MOSKVINA, R., tekhn. red.

[Problem of the origin of life] Problema proiskhozhdeniia zhizni. Moskva, Sotsekgiz, 1962. 343 p. (MIRA 15:11)
(Life—Origin)

IGNATOV, A.V.

21(4) PHASE I BOOK EXPLOITATION SOV/2714

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958

Doklady sovetskikh uchenykh; yadernoye goryucheye i reaktornyye metally. (Reports of Soviet Scientists; Nuclear Fuel and Reactor Metals) Moscow, Atomizdat, 1959. 670 p. (Series: Its: Trudy, vol. 3) 8,000 copies printed.

Ed. (Title page): A.A. Bochvar, Academician, A.P. Vinogradov, Academician, V.S. Yemel'yanov, Corresponding Member, USSR Academy of Sciences, and A.P. Zefirov, Doctor of Technical Sciences; Ed. (Inside book): V.V. Povetkin and O.M. Pchalintseva; Tech. Ed.: E.I. Mazel'.

PURPOSE: This volume is intended for scientists, engineers, physicians, and biologists working in the production and peaceful application of atomic energy; for professors and students of schools of higher technical education where the subject is taught; and for people interested in atomic science and technology.

COVERAGE: This is volume 3 of a 6-volume set of reports on atomic energy, presented by Soviet scientists at the Second International Conference on the Peaceful Uses of Atomic Energy, held in Geneva from September 1 to 13, 1958. Volume 3 consists of two parts. The first part, edited by A.I. Lebov, is devoted to geology, prospecting, concentration and processing of nuclear source material. The second part, edited by O.L. Zverev, includes 27 reports on metallurgy, metallography, processing technology of nuclear fuels and reactor metals, and neutron irradiation effects on metals. The titles of the individual papers in most cases correspond word for word with those in the official English language edition on the Conference proceedings. See SOV/2081 for the titles of the other volumes of the set.

Kiselev, A.A., I.D. Nikitin, I.I. Kornilov, Y.A. Fedorchenko, D.D. Sokolov, and I.I. Morozovskaya. Some Problems of Processing Zirconium and Its Alloys by Pressure (Report No. 2049) 425

Ivanov, O.S., and V.K. Grigorovich. Structure and Properties of Zirconium Alloys (Report No. 2046) 439

Yemel'yanov, V.S., Yu.G. Godin, and A.I. Yevstyukhin. Mechanical Properties of Zirconium Binary and Ternary Alloys With Tantalum and Niobium at Room and Elevated Temperatures (Report No. 2045) 462

Korobkov, I.I., A.V. Ignatov, A.I. Yevstyukhin, and V.S. Yemel'yanov. Electron Diffraction and Kinetic Investigations of the Oxidation Reactions of Zirconium and Some of Its Alloys (Report No. 2054) 474

Ambartsumyan, R.S., A.A. Kiselev, L.I. Tsuprun, R.V. Grebennikov, V.I. Kruglov, and A.V. Nikulina. Mechanical Properties and Corrosion Resistance of Zirconium and Its Alloys in Water, Steam, and Gases at High Temperatures (Report No. 2044) 486

Card 8/11

IGNATOV, A. V.

USSR

Chelyabinsk

"An Electric Contact Device for Checking the surface of Washers" Stanki i Instrument, 12, No. 1, 1941

Report U-1503, 4 Oct. 1951

ZIMIN, A.P.; IGNATOV, A.V.; KOZLOV, K.G., inzh., retsenzent; BUBYAKIN, N.S., inzh., retsenzent; DUGINA, N.A., tekhn.red.

[Technical manual for supervisors in the machinery industry] Tekhminimum kontrolera mashinostroitelia; posobie dlia kontrolerov mekhanicheskikh tsekhov. Moskva, Bos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1951. 262 p. (MIRA 10:12)
(Machinery industry)

Ignatov, A.V.

112-1-1241

Translation from: Referativnyy Zhurnal, Elektrotekhnika, 1957, Nr 1, p. 193 (USSR)

AUTHORS: Zilberg, G.A., Ignatov, A.V.

TITLE: Automation and Mechanization of Control of Mass-Production Components (Avtomatizatsiya i mekhanizatsiya kontrolya massovykh detaley)

PERIODICAL: Sbornik: Opyt proizvoditel'nosti truda, Chelyabinsk, Knigoizdat, 1956, pp.252-272.

ABSTRACT: Installations developed or applied at the Chelyabinsk Tractor Plant (ChtZ) are described: automatic machines with electric contact transmitters for the control of elasticity and of clearance of the lock of piston rings, mechanized light-signal devices for multimeter control of pistons (13 dimensions) and valves (9 and 7 dimensions), a device for controlling the thickness of nonmagnetic coatings by the method of its contact-breaking magnet which provides a reliable check up of galvanic and varnish

Card 1/2

Automation and Mechanization of Control of Mass Production (Cont.) 112-1-1241

coats up to 0.003 mm thick with an accuracy of 1 to 2 μ. Pneumatic control and measuring instruments are widely used for the control of dimensions executed according to the 1-st and 2-nd classes of precision. A hydroplastic equipment for an accurate and rapid basing of components for testing is described. The necessity of automation of the control of threaded articles is emphasized since for their calibration with gages, 8 to 15 times more time is consumed than in producing threads by knurling. A device for controlling external threads is described. A schematic draft of a micro-testing indicator for the inspection of discontinuous surfaces in the process of polishing is presented.

Card 2/2

M.P.S.

Игнатов, А.В.

ZIMIN, Arkadiy Pavlovich; IGNATOV, Aleksey Vasil'yevich; RYABOV, A.N., inzhener, retsenzent; YERMAKOV, N.P., tekhnicheskiy redaktor

[Technical essentials for supervisors of machine manufacturing; manual for inspectors in machine shops] Tekhminimum kontrolera-mashinostroitelia; posobie dlia kontrolerov mekhanicheskikh tsekhov. Izd. 3-e, ispr. i dop. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1957. 319 p. (MIRA 10:7)
(Machine-shop practice)

IGNATOV, A.V.

Automatic control equipment at the Chelyabinsk Tractor Plant.
Mashinostroitel' no.7:10-16 Jl '57. (MLRA 10:8)
(Chelyabinsk--Tractor industry)
(Automatic control)

IGNATOV, Aleksey Vasil'yevich; MARGULIS, D.K., kand.tekhn.nauk, red.; SVET, Ye.B., red.; VYGOLOVA, M.A., tekhn.red.

[Thread and its quality; technological handbook for machine-tool operators and inspectors] Rez'ba i ee kachestvo; tekhnologicheskaia pamiatka stanochnika i kontrolera. Pod red. D.K.Margulisa. Cheliabinsk, Cheliabinskoe knizhnoe izd-vo, 1958. 127 p. (MIRA 13:9)

(Screw threads)

ZIMIN, Arkadiy Pavlovich; IGNATOV, Aleksey Vasil'yevich; KOZLOV, K.G., inzh., retsenzent; DUGINA, N.A., tekhn.red.

[Inspecting engineer; textbook for inspectors of mechanical shops] Kontroler-mashinostroitel'; posobie dlia kontrolerov mekhanicheskikh tsekhov. Izd.4, ispr. i dop. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 327 p. (MIRA 13:7)

(Mechanical engineering) (Mensuration)

IGNATOV, A.V.

Devices for increasing the efficiency of thread testing. Mashinostroitel' no.3:23 Mr '60. (MIRA 13:6)
(Screw threads--Testing)

CHUKMASOV, S.F., doktor tekhn.nauk, prof.; YERSHOV, B.A., inzh.;
IGNATOV, A.V., inzh.; SEMENTSOV, V.Ya.

Strength analysis of capron and ceramic-metal bushings at normal and lower temperature. Vest.mash. 42 no.1:49-51 Ja '62. (MIRA 15:1)
(Nylon—Testing)
(Ceramic metals—Testing)

IGNATOV, Boncho, uchitel

Forming dialectical materialistic ideology and party spirit in teaching biology and geology. Biolog i khim no.6:18-22 '61.

1. Politekhnicheska gimnaziia, gr. Razgrad.

IGNATOV, B.

Public centers of the cities of Kazakhstan. Zhil. stroi. no.8: 4-6 '62. (MIRA 15:9)

1. Nachal'nik Upravleniya planirovki i zastroyki naselennykh mest Gosstroya Kazakhskoy SSR.
(Kazakhstan--City planning)

IGNATOV, B.F.

Formation of a system of civic centers in the residential districts of Ust'-Kamenogorsk. Trudy Kazakh. fil ASia no.2:35-48 '60. (MIRA 15:2)
(Ust'-Kamenogorsk--City planning)

LARIN, M.N., laureat Stalinskoy premii, doktor tekhnicheskikh nauk; IGNATOV, B.A., inzhener.

High-speed milling of cast-iron workpieces. Trudy VIOM no.13: 135-177 '51. (MLRA 10:8)

(Metal cutting) (Cast iron)

IGNATOV, B. A.

MASLOV, E. N. Prof., IGNATOV, B. A. Eng.

GRINDING AND POLISHING

Dependence of the smoothness of polished surface on the setting of polishing wheels. Vest. Mash. 32 no. 5, 1952.

Monthly List of Russian Accessions, Library of Congress October 1952 Uncalssified

IGNATOV, B. A.

USSR/Engineering - Grinding wheels

Card : 1/1

Authors : Maslov, E. N., Dr. Tech. Sc., Prof.; Ignatov, B. A., Engineer

Title : Dependence of the Durability of the Wheel on the Grinding System

Periodical : Vest. Mash. 34, Ed. 6, 50 - 54, June 1954

Abstract : An analysis is made of the results obtained from experiments with grinding wheels, which showed that the durability of such wheels depends on whether the feed is longitudinal or transverse, on the speed of the wheel

ing wheels, which showed that the durability of such wheels depends on whether the feed is longitudinal or transverse, on the speed of the wheel and its diameter, and to a lesser extent on the diameter of the part being machined and the hardness and grain of the wheel. These factors are taken up separately and interpreted. Tables; graphs.

Institution : ...

Submitted : ...

IGNATOV, B. A.:

IGNATOV, B. A.: "Investigation of the drilling of tempered steel." Min Heavy Machine Building USSR. Central Sci Res Inst of Technology and Machine Building. Moscow, 1956. (DISSERTATION FOR THE DEGREE OF CANDIDATE IN TECHNICAL SCIENCE).

So. : Knizhnaya Letopis' Moscow No. 15, 1956

IGNATOV, B.A., kand. tekhn. nauk

Investigating the drilling of highly hardened steels with electric current supply into the cutting area (electric contact heating of cut layers in drilling). Izv. vys. ucheb. zav.; mashinostr. no.11/12:142-152 '58. (MIRA 13:3)

1.Moskovskiy institut inzhenerov gorodskogo stroitel'stva.
(Drilling and boring) (Steel)

IGNATOV, B.F.

Possibility of the lateral migration of scattered bitumens.
Izv.vys.uchab.zav.; neft' i gaz 5 no.2:7-10 '62. (MIRA 15:7)

1. Saratovskiy gosudarstvennyy universitet imeni N.G. Chernyshevskogo.
(Bitumen—Geology)

IGNATOV, B.V.

Increase the strength of rail points. Put' i put. khoz. no.10:12 O '57. (MLRA 10:11)

1. Zamestitel' nachal'nika distantsii puti, Kazan'.
(Railroads--Switches)

IGNATOV, B.V.

New developments in the Yudino division. Put' i put.khoz. 4 no.10:21-22 O '60. (MIRA 13:9)

1. Nachal'nik Yudinskoy distantsii, st. Yudino, Kazanskoy dorogi. (Tatar A.S.S.R.--Railroads)

IGNATOV, B.V.; BARABLIN, Ye.K.; VASIL'YEV, N.N., inzh.

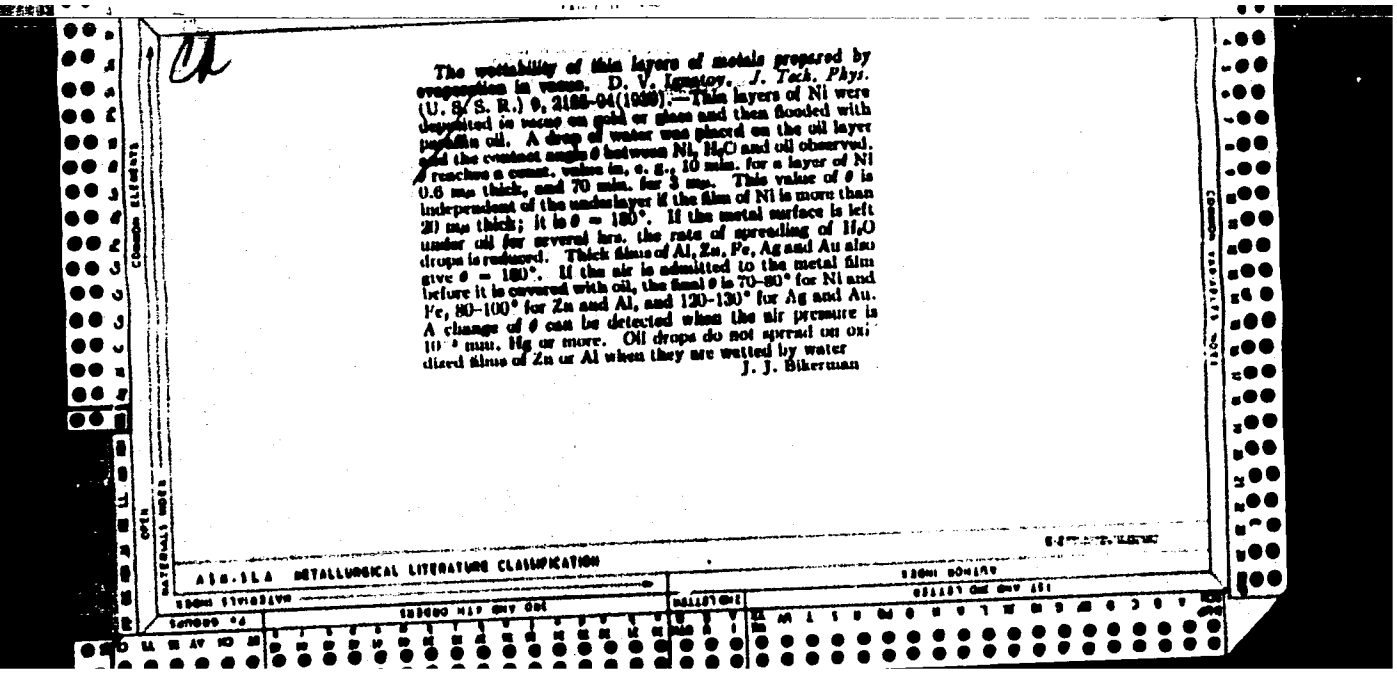
Using mechanisms in track maintenance. Put' i put. khoz. 8 no.1:4-5 '64. (MIRA 17:2)

1. Glavnyy inzh. sluzhby puti Kotel'nichskoy distantsii, Gor'kovskoy dorogi (for Ignatov). 2. Nachal'nik Kotel'nichskoy distantsii Gor'kovskoy dorogi (for Barablin). 3. Kotel'nichskaya distantsiya Gor'kovskoy dorogi (for Vasil'yev).

IGNATOV, B.V.

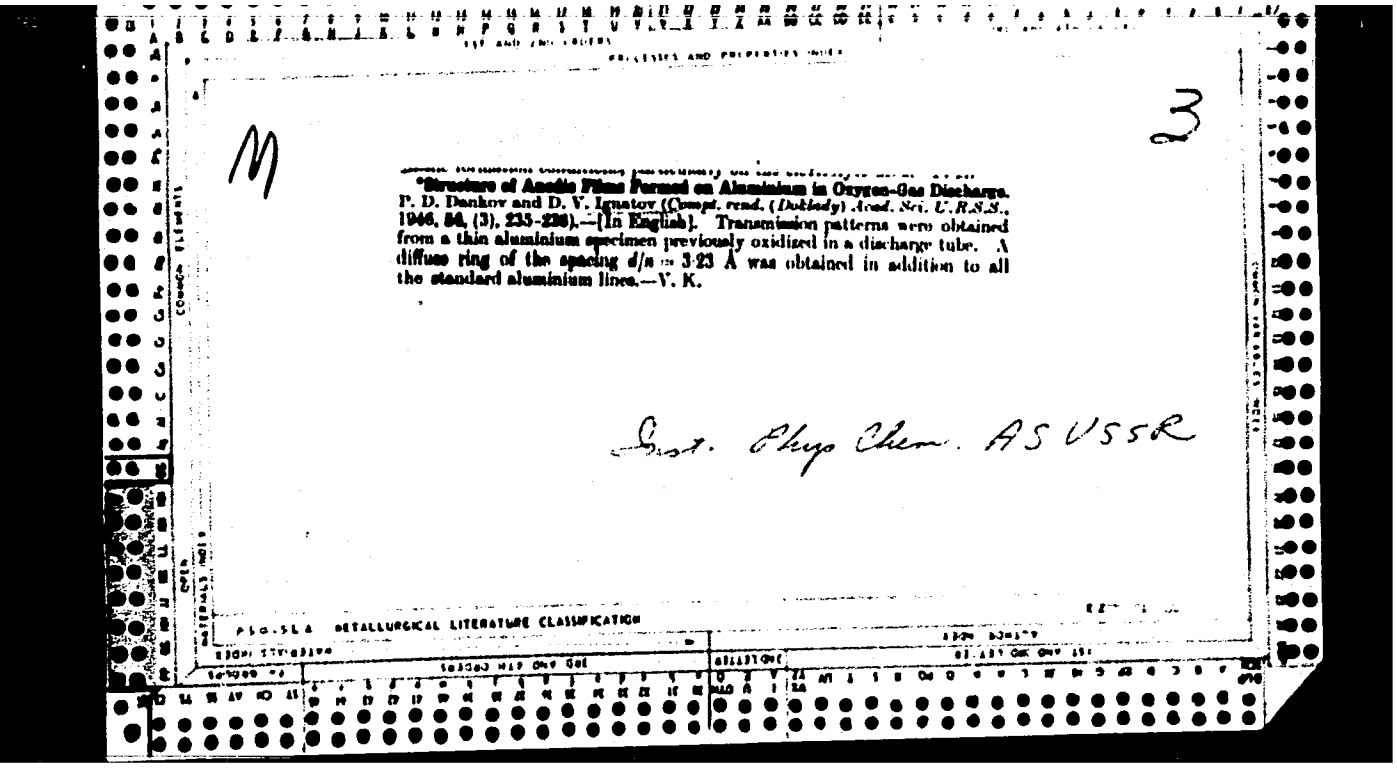
Potentials for increasing labor productivity. Put' i put. khoz. 9 no.7:13-15 '65. (MIRA 18:10)

1. Glavnyy inzh. sluzhby puti, g. Gor'kiy.



The wettability of thin layers of metals prepared by evaporation in vacuo. D. V. Ignatov. *J. Tech. Phys.* (U. S. S. R.) 9, 2185-94(1939).—Thin layers of Ni were deposited in vacuo on gold or glass and then flooded with paraffin oil. A drop of water was placed on the oil layer and the contact angle θ between Ni, H_2O and oil observed. θ reaches a const. value in, e. g., 10 min. for a layer of Ni 0.6 mμ thick, and 70 min. for 3 mμ. This value of θ is independent of the under layer if the film of Ni is more than 20 mμ thick; it is $\theta = 180°$. If the metal surface is left under oil for several hrs. the rate of spreading of H_2O drops is reduced. Thick films of Al, Zn, Fe, Ag and Au also give $\theta = 180°$. If the air is admitted to the metal film before it is covered with oil, the final θ is 70–80° for Ni and Fe, 80–100° for Zn and Al, and 120–130° for Ag and Au. A change of θ can be detected when the air pressure is 10^{-3} mm. Hg or more. Oil drops do not spread on oxidized films of Zn or Al when they are wetted by water.

J. J. Bikerman



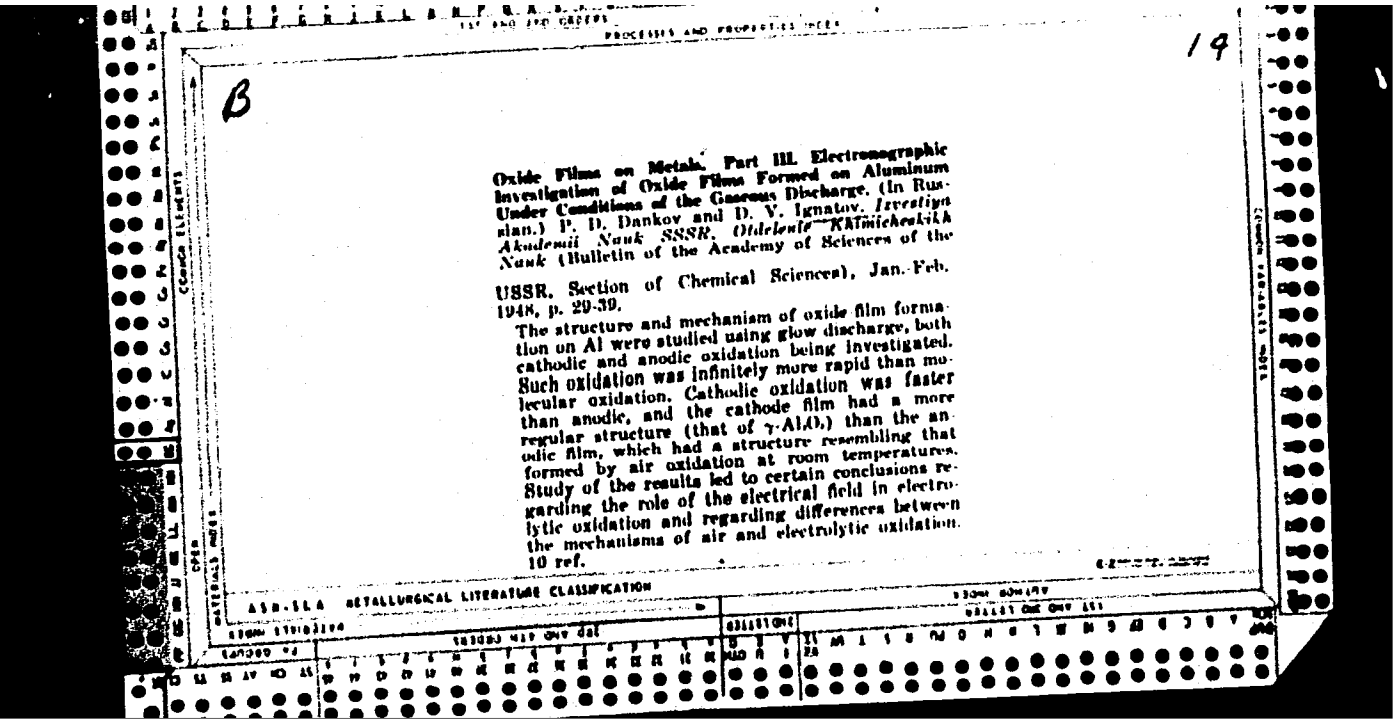
M

3

Structure of Anodic Films Formed on Aluminium in Oxygen-Gas Discharge. P. D. Dankov and D. V. Ignatov (*Compt. rend. (Doklady) Acad. Sci. U.R.S.S.*, 1946, **54**, (3), 235–236).—[In English]. Transmission patterns were obtained from a thin aluminium specimen previously oxidized in a discharge tube. A diffuse ring of the spacing $d/n = 3{\cdot}23$ Å was obtained in addition to all the standard aluminium lines.—V. K.

Inst. Phys Chem. AS USSR

P.S.L.A. METALLURGICAL LITERATURE CLASSIFICATION



B

19

Oxide Films on Metals. Part III. Electronographic Investigation of Oxide Films Formed on Aluminum Under Conditions of the Gaseous Discharge. (In Russian.) P. D. Dankov and D. V. Ignatov. *Izvestiya Akademii Nauk SSSR, Otdelenie Khimicheskikh Nauk* (Bulletin of the Academy of Sciences of the USSR, Section of Chemical Sciences), Jan.-Feb. 1948, p. 29-39.

The structure and mechanism of oxide film formation on Al were studied using glow discharge, both cathodic and anodic oxidation being investigated. Such oxidation was infinitely more rapid than molecular oxidation. Cathodic oxidation was faster than anodic, and the cathode film had a more regular structure (that of γ-Al_2O_3) than the anodic film, which had a structure resembling that formed by air oxidation at room temperatures. Study of the results led to certain conclusions regarding the role of the electrical field in electrolytic oxidation and regarding differences between the mechanisms of air and electrolytic oxidation. 10 ref.

CA

Electronographic study of the oxidation of copper at high temperatures. P. D. Dankov and D. V. Ignatov (Inst. Phys. Chem., Acad. Sci. U.S.S.R., Moscow). *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1949, 234-7.—The oxide film formed on heating of massive Cu differs essentially from the oxide observed by Bound and Richards (*C.A.* **33**, 4567[1]) on thin evapd. films. In electron diffraction, the oxide film formed in 25-min. heating in air, at 200°, of a 3-mm. electrolytic Cu plate, showed lines of both cuprite, Cu_2O, and of tenorite, CuO. However, lines of the latter were very much weaker in samples heated at the same temp. of 200° both for shorter (5 or 10 min.) and for longer times (50 min.); under these conditions, many of the CuO lines dropped out altogether, and, after 150 min., not a single line of CuO was left. Evidently, the CuO phase in the outer layer of the film reaches a max. at about 25 min. heating. These observations indicate that the growth of the oxide film is detd. by diffusion of Cu ions from the metal to the adsorbed layer of oxygen. Schematically, the outer thin layer of metal contains a small amt. of dissolved O_2, increasing toward the inner boundary of the Cu_2O film, where the Cu content falls sharply to 66.6 at. %. Throughout this film, the amt. of O_2 dissolved in Cu_2O increases rapidly in the direction of the boundary between the inner Cu_2O and the outermost CuO film, where the Cu again drops sharply to 50 at. %. Within the CuO layer, the Cu content again increases toward the solid/gas boundary. The cuprite lattice being particularly prone to deviations from stoichiometry in the sense of excess of metal (or deficit of O), the O concn. gradient in the Cu_2O layer is reached, and favors diffusion of Cu ions from the inside to the outside. The build up of the outer CuO film will reach a sufficient degree of lattice perfection only after a definite length of heating, and only then will CuO lines become detectable in electron diffraction. Once a regular outer CuO film has been formed, Cu ions will accumulate at the Cu_2O/CuO boundary, and, penetrating ever deeper into the Cu_2O layer, will gradually transform it into CuO. N. Thon

DANKOV, P. D. ; IGNATOV, D. V.

Electrons

Electronographic apparatus. Trudy Inst. fiz. khimii AN SSSR no. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, December 1952. Unclassified.

IGNATOV, D. V.

In memory of P. D. Dankov, D. V. Ignatov and N. A. Shishakov. *Uspekhi Khim.* 21, 383-5(1952).—Obituary with portrait (1902-1952) of D., a specialist in chemistry of metals.
G. M. Kosolapoff

DANKOV, P.D.; IGNATOV, D.V.; SHISHAKOV, N.A.; AGEYEV, N.V., redaktor.

[Electronographic study of oxide and hydroxide films on metals] Elektronograficheskie issledovaniia okisnykh i gidrookisnykh plenok na metallakh. Moskva, Izd-vo Akademii nauk SSSR, 1953. 199 p. (MLRA 6:12)

1. Chlen-korrespondent Akademii nauk SSSR (for Ageyev). (Electronograph) (Metallic oxides)

IGNATOV, D.V.

7

Dankov, P. D., Ignatov, D. V., and Shishakov, N. A.: Elektronograficheskie issledovaniya okisnykh i gidrookisnykh plenok na metallakh. (Electronographic Examination of Oxide and Hydroxide Coatings on Metals). Moscow: Izdatel'stvo Akad. Nauk S.S.S.R. 1953. 000 pp. R. 11.K. 10.

KUBASHEWSKI, O.; HOPKINS, B.E.; IGNATOV, D.V., redaktor; ALEKSEYEV, V.A., redaktor; GRIBOV, M.P., tekhnicheskiy redaktor.

[Oxidation of metals and alloys. Translated from the English] Okislenie metallov i splavov. Perevod s angliiskogo. Pod red. D.V.Ignatova. Moskva, izd-vo inostrannoi lit-ry, 1955. 311 p. (MLRA 9:5)

(Oxidation) (Metals) (Alloys)

KHAIN V, B. V.

"Electronographic (?) Studies on the Film of Oxyde Appearing on Aluminum and Nickel in an Electric Discharge in a Gaseous Environment", a report presented at the 6th Conference on Chemical Physics, Paris, 1956.

AUTHOR: Ignatov, D.V.

TITLE: An Electronographic Investigation of Phase Changes in Thin Films of Metals and Oxides. (Elektronograficheskoye issledovaniye fazovykh izmeneniy v tonkikh plenkakh metallov i okislov).

PERIODICAL: Kristallografiya, 1957, Vol.2, Nr 4, pp.484-488 (USSR).

ABSTRACT: Thin films of Al, Al-Fe alloys and also $NiO-Cr_2O_3$ and $NiO-Al_2O_3$ oxides were heated in air and the resulting changes were followed electronographically. The metal films were formed by vacuum evaporation to a thickness of 400-500 Å; in the case of the alloy two sources were used simultaneously. The films were formed on mica, removed in water and transferred to a microscope grid on which the oxidation was carried out. For the mixed oxides further layers were deposited by evaporation. The thicknesses were calculated to give the stoichimetric compositions $NiAl_2O_4$ and $NiCr_2O_4$. An Al film was heated in air at 300 C for 5 hours and at 400, 450, 500, 600 and 700 C for 10 minutes. At 300 there is significant γ'-Al_2O_3 which persists with Al up to 600. At 600 there is a transition to γ-Al_2O_3 which is stable to 1300. After 5 hours heating at 1300 the latter compound transforms to α-Al_2O_3. In

An Electronographic Investigation of Phase Changes in Thin Films of Metals and Oxides.

In Fe-Al the metals are both apparent up to 300 where some magnetite is detectable. At 400 the specimen is chiefly Fe_2Al_5 which remains till 700. In the picture at 700 there is Fe_2Al_5, FeAl and γ-Al_2O_3; at 800 FeAl and $FeAl_2O_4$; $FeAl_2O_4$ only at 900 C. The mixed oxides follow parallel courses:

400°	NiO + α-Cr_2O_3	;	NiO + γ-Al_2O_3
500	same		same
600	same + $NiCr_2O_4$ trace	;	same
700	same + $NiCr_2O_4$	;	same
800	$NiCr_2O_4$ + traces NiO + α-Cr_2O_3	;	γ-Al_2O_3 + NiO + $NiAl_2O_4$
900	specimens break up	;	$NiAl_2O_4$ + traces NiO + Al_2O_3
1000			$NiAl_2O_4$
1200			$NiAl_2O_4$
1300			α-Al_2O_3 + traces $NiAl_2O_4$.

70-4-6/16

An Electronographic Investigation of Phase Changes in Thin Films of Metals and Oxides.

There are 4 plates, 2 figures, 1 table and 4 references, 2 of which are Slavic.

ASSOCIATION: Institute of Metallurgy, Ac.Sc. USSR. (Institut Metallurgii, AN SSSR)

SUBMITTED: February 20, 1957.

AVAILABLE: Library of Congress.

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SOV/137-59-4-7379

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 4, p 149 (USSR)

AUTHORS: Ignatov, D.V., Belokurova, I.N., Belyanin, I.N.

TITLE: Investigation Into Diffusion Processes of Iron and Chromium in α-Al_2O_3, α-Cr_2O_3, $NiCr_2O_4$ and $NiAl_2O_4$ Oxides

PERIODICAL: V sb.: Metallurgiya i metallovedeniye, Moscow, AS USSR, 1958, pp 326-330

ABSTRACT: Tablets were pressed of α-Al_2O_3, α-Cr_2O_3 oxides and mixtures in a stoichiometric relation for spinels (NiO/Cr_2O_3 = 1 and NiO/Al_2O_3 = 1). The tablets were subsequently sintered. The active layer of 0.1 to 1μ thickness was applied by the method of evaporation in a vacuum. The thickness of the layer was determined from the growth of weight. Diffusion annealing was carried out in quartz tubes or ampoules in a vacuum ov 10^{-2} - 10^{-3} mm Hg for Cr at 1,100°, 1,000°, 900°C and for Fe at 1,200°, 1,100° and 1,000°C during 25 - 200 hours. The distribution of concentrations was investigated by removing the layers. All experimental lg D points (D is the coefficient of diffusion) depending on the inverse temperature 1/T can be satisfactorily arranged on a straight line. The authors point to the relative character of results obtained, due to the effect of surface

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IGNATOV, D.V.

Electronographic investigation of phase transformation in thin metal and oxide films. Issl. po zharopr. splav. 3:372-380 '58.
(MIRA 11:11)
(Phase rule and equilibrium) (Electron microscopy)

IGNATOV D. V.

89-3-17/30

AUTHORS: Belokurova, I. N., Ignatov, D. V.

TITLE: Investigation of the Diffusion Processes of Iron and Chromium in the Spinels $NiCr_2O_4$ and $NiAl_2O_4$ by the Aid of Fe^{59} and Cr^{51} (Issledovaniye protsessov diffuzii zheleza i khroma v shpinelyakh $NiCr_2O_4$ i $NiAl_2O_4$ s pomoshch'yu Fe^{59} i Cr^{51})

PERIODICAL: Atomnaya Energiya, 1958, Vol. 4, Nr 3, pp. 301-302 (USSR)

ABSTRACT: The samples of spinels were made from powdery NiO, Cr_2O_3, Al_2O_3 in the stoichiometrical ratios NiO : Cr_2O_3 = 1 and NiO : Al_2O_3 = 1 by compression and annealing at 1200°C. The period of glowing for $NiCr_2O_4$ was 150 hours, that for $NiAl_2O_4$ 300 hours. The specific weight of $NiCr_2O_4$ varied between 3,2 - 3,5 g/cm³ and of $NiAl_2O_4$ between 1,9 - 2,2 g/cm³.
Radioactive iron or chromium respectively was laid on the samples by evaporation and subsequent condensation in vacuum. The diffusion took place in vacuum at 10^{-2} to 10^{-3} mm mercury column. The temperatures at which the diffusion

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took place were 900, 1000 and 1100°C in the case of chromium, whereas 1000, 1100 and 1200°C in the case of iron. By counting the radioactivity in the series according to layers skimmed off the single samples the diffusion could be determined. The following values were obtained:

	Q cal/Mol	Do in cm^2/sec
Diffusion of Cr in $NiCr_2O_4$	44800	$2,03 \cdot 10^{-5}$
$NiAl_2O_4$	50000	$1,17 \cdot 10^{-3}$
Diffusion of Fe in $NiCr_2O_4$	61000	$1,35 \cdot 10^{-3}$

There are 2 figures, and 1 table.

SUBMITTED: November 15, 1957

Card 2/2 1. Iron-Diffusion processes 2. Chromium-Diffusion processes 3. Spinels-Applications

AUTHORS: Korobkov, I. I., Ignatov, D. V. SOV/20-120-3-25/67

TITLE: Electron Diffraction Investigation of Zirconium Dioxide Polymorphism in Thin Films (Elektronograficheskoye issledovaniye polimorfizma dvuokisi tsirkoniya v tonkikh plenkakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 120, Nr 3, pp.527-530 (USSR)

ABSTRACT: This investigation was conducted for the first time and was initiated on the one hand by contradictory results, on the other hand by the uncertain structure of zirconium-oxide films in the corrosion in oxidizing media. The various possible modifications of ZrO_2 were discussed by Lustman (Lastmen, Ref 1). From other papers proceeds (Refs 2 - 5) that undoubtedly two forms of ZrO_2 exist: a monoclinic and a tetragonal, which interchange reversibly at from 1000 to 1100°. The authors investigated ZrO_2 films with a thickness of from 400 - 600 Å electronographically on going through. A special device permitted the observation of structural modifications of ZrO_2 in dependence on temperature and on the heating period directly in the electronograph, and that

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Electron Diffraction Investigation of Zirconium Dioxide Polymorphism in Thin Films

without cooling the sample. This device is described. These experiments showed that in the evaporation a very careful procedure must be adopted. Special attention must be paid to the vacuum in the system, as Zr reacts actively with the residual gases in melting, and produces partially oxidized films in an insufficient vacuum (10^{-5} of mercury column). The results are given as electronographs (Tables 1 and 2 and Fig 2). From the electronograph 2a for a thin Zr-layer and from the corresponding Table 1 can be seen that the values of interplanar spacing of the crystal lattice of this layer correspond to α-zirconium. They are however, greater by from 2 - 3 % in comparison to the X-ray data. The increase of the lattice constant is apparently connected with the dissolution of oxygen in the zirconium film. The analysis of the electronograph (Fig 2 and Table 2) for a zirconium film, which was heated thoroughly up to 300°, shows a complete oxidation. The diffraction pattern corresponds to the cubic modification of ZrO_2, . The value of the lattice constant of this modification a = 5,10 Å corresponds well with the value determined by X-ray methods. (Ref 1). At a heating up to from 300 to 600° the interference rings in

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the electronograph become sharper and correspond to the mentioned cubic modification. From 650° upwards some of the rings begin to double, which indicates the appearance of a new ZrO_2-modification in the layer. It shows a tetragonal lattice (Fig 2c for 700°) It is difficult in this case to speak of the existence of two forms of ZrO_2 (a cubic and a tetragonal one) as the transition from one to another apparently takes place gradually. Between 750 and 800° lines of the monoclinic modification appear besides the lines of the tetragonal modification. They increase in intensity until at 1100° the tetragonal modification is completely displaced. The monoclinic modification is maintained up to 1300°. These transformations were observed in a vacuum, in oxygen and in air. The polymorphous transformations are therefore not the result of the oxygen dissolution or of the arrival of ZrO_2 at an exact stoichometrical composition. There are 2 figures, 2 tables, and 6 references, 1 of which is Soviet.

SOV/2o-12o-3-25/67

Electron Diffraction Investigation of Zirconium Dioxide Polymorphism in Thin Films

PRESENTED: January 21, 1958, by I. P. Bardin, Member, Academy of Sciences, USSR

SUBMITTED: December 26, 1957

1. Zirconium oxide--Electron diffraction analysis
2. Zirconium oxide films--Structural analysis 3. Crystals --Lattices

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IGNATOV, D.V.

18(7) PHASE I BOOK EXPLOITATION SOV/3355

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

Issledovaniya po zharoprochnym splavam, t. IV (Studies on Heat-resistant Alloys, vol. 4), Moscow, Izd-vo AN SSSR, 1959. 400 p. Errata slip inserted. 2,200 copies printed.

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

PURPOSE: This book is intended for metallurgists concerned with the structural metallurgy of alloys.

COVERAGE: This is a collection of specialized studies of various problems in the structural metallurgy of heat-resistant alloys. Some are concerned with theoretical principles, some with descriptions of new equipment and methods, others with properties of materials. Various phenomena occurring under specified conditions are studied and reported on. For details, see Table of Contents. The articles are accompanied by a number of references, both Soviet and non-Soviet.

SOV/3355

Studies (Cont.) SOV/3355

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IGNATOV, Daniil Vasil'yevich

"Electron Diffraction Method for the Study of Structure and Chemical Transformation in Thin Metal and Alloy Films"

a report presented at Symposium of the International Union of Crystallography Leningrad, 21-27 May 1959