USSR

UDC 537.533.8:539.216.2

KRYN'KO, YU.N., KOVAL', I.F., MEL'NIK, P.V., NAKHODKIN, N.G., SHALDERVAN, A.I.

"Effect Of Film Structure On The Characteristics Of Secondary Electron Emission"

Vol. 17, p. 12, 1972 [sic] (from RZh:Elektronika i yeye primeneniye, No 7, July 1972, Abstract No 7A12)

Translation: The paper studies the effect of the structure of Ge and Be films, condensed at oblique and normal incidences of an atomic beam at a substrate, on the coefficient of secondary electron emission σ and the inelastic reflection η. With the aid of an electron microscope it is shown that the profile of Ge and Be films consists of needle-like crystals, the axes of which are directed to the side of the beam incidence. Such a structure effects the dependence of σ and η on the angle of incidence of the primary electron beam. The absolute values of σ and η for oblique-deposited films are smaller than for normally deposited films. The greatest difference is observed in the case when the primary electrons are incident upon the target along the direction of the needle. With an increase of the energy of the primary beam, the difference of σ and η normally and of oblique-deposited films is decreased. 4 ill. 7 ref. Author's abstract.

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1/2 016 UNCLASSIFIED PROCESSING DATE--090CT70

TITLE--REACTION OF NEURONS OF THE UPPER NECK SYMPATHETIC GANGLION ON THE CONDITIONS OF CULTURE "IN VITRO" -U-

AUTHOR--KOVAL, L.M.

COUNTRY OF INFO--USSR

SOURCE--FIZIOLOGICHNIY ZHURNAL, 1970, VOL 16, NR 3, PP 357-362

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NEURON, GANGLION, CELL CULTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1119 STEP NO--UR/0238/70/016/003/0357/0362

CIRC ACCESSION NO--AP0115138

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0115138

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CULTIVATION OF GNSG IN ADULT CATS SHOWED, THAT ON THE 8-9TH DAY SOME SHORTPROCESS MULTIPOLAR NEURONS OF THE GANGLION DO NOT DIE, SURVIVING UNDER GIVEN CONDITIONS. THEIR UNCHANGEABLE SYNAPSES ARE DETECTED IN THE NEUROPILE ON THE BODIES AND PROCESSES OF DYING NEURONS. ONLY THOSE NEURONS MAY SURVIVE UNDER THESE CONDITIONS THE PROCESSES OF WHICH WERE NOT CUT OFF WHEN THE GANGLION WAS EXPLANTED. THEREFORE THEIR AXONES AND DENDRITES DO NOT COME OUT OF THE GANGLION BUT FORM INTRAGANGLIONIC INTERNEURONAL CONNECTIONS. THE INTERNUNCIAL NEURONS MAY BE SUCH ONE. IN CYTOPLASM OF SOME SURVIVING NEURONS CHROMAFFINE GRANULES ACCUMULATE, WHICH DISTRIBUTE INTO THE PROCESSES. ONLY SLIGHTLY DIFFERENTIATED NERVE GANGLIONIC ELEMENTS MOVE INTO THE GROWTH ZONE. FACILITY: LABORATORY OF MORPHOLOGY OF THE NERVOUS SYSTEM, THE A. A. BOGOMOLETZ INSTITUTE OF PHYSIOLOGY, ACADEMY OF SCIENCES, UKRAINIAN SSR, KIEV.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--

1/2 011

TITLE--TNB 2 APPARATUS USED FOR CARBONATE SAPONIFICATION OF OXIDIZED PARAFFINS IN THE PRODUCTION OF SYNTHETIC FATTY ACIDS -U-

AUTHOR-(05)-YEFIMOV, V.T., NAZARYAN, M.M., MOSKVIN, V.D., GOLOTIN, I.N., KOVAL, L.P.

COUNTRY OF INFO--USSR

SOURCE--MASLO-ZHIR, PROM. 1970, 36(3), 21-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CARBONATE, SAPONIFICATION, ALKANE, FATTY ACID, CHEMICAL PLANT EQUIPMENT, CHEMICAL REACTOR/(U)TNB2 CHEMICAL EQUIPMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/9085/70/036/003/0021/0025

PROXY REEL/FRAME--1997/0550

CIRC ACCESSION NO--AP0119469

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--23OCT7C

CIRC ACCESSION NO--AP0119469

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OPTIMUM OPERATING PARAMETERS WERE DETD. FOR THE TITLE APP. THE APP. CONSISTED OF A MIXER AND A CASCADE OF 4 SEQUENTIALLY CONNECTED REACTORS. THE EFFECTS OF TEMP. OF THE NA SUB2 CO SUB3 SOLN. USED AND OF THE OXIDIZED PARAFFIN, THE CONCN. OF THE NA SUB2 CO SUB3 SOLN., THE SAPON. TEMP. OF THE CARBONATE MASS, THE PRODUCTIVITY OF THE APP., AND THE H SUB2 O CONSUMPTION DUE TO MIXING AND CO SUB2 STRIPPING WERE DETD. THE DEPENDENCE OF THE ACID NO. OF THE CARBONATE MASS ON THE RESIDENCE TIME IN THE APP. WAS PLOTTED FOR VARIOUS PARAFFIN-NA SUB2 CO SUB3 RATIOS (1:0.21-0.26) AND TEMPS. (50-100DEGREES). THE NA SUB2 CO SUB3 DECOMPN. RATES AT VARIOUS TEMPS. OF THE OXIDATE AND OF THE NA SUB2 CO SUB3 WERE ALSO DETD. THE APP. DESCRIBED IS THE MOST SUITABLE ONE FOR THE ABOVE CARBONATE SAPON. BECAUSE IT PROVIDES COMPLETE REMOVAL OF CO SUB2 AND A HIGH DEGREE OF NA SUB2 CO SUB3 DECOMPN. FACILITY: KHAR'KOV. POLITEKH. INST. IM. LENINA, KHARKOV, USSR.

UNCLASSIFIED

USSR UDC 62.-752.4:53.082.52

KOVAL', S. T., Candidate of Scienes, KLIMCHUK, L. S., OSMOLOVSKIY, Yu. F., SIGIDA, Yu. A.

"Influence of Rotary Picture on the Accuracy of a Photoelectric Angle Meter in a Nongimbal Electrostatic Gyroscope"

Optiko Mekhanicheskaya Promyshlennost', No 12, 1972, pp 8-11.

Abstract: The use of the so-called "exotic" gyroscopes is primarily related to the problem of coupling of the body of the gyroscope to an isolated spherical rotor, which can be successfully solved using photoelectric devices. Among the many photoelectric devices for determination of information on the relative position of the axis of rotation of the spherical rotor in a non-gimbal gyroscope, pulse-width systems provide comparative simplicity of determination of the direction cosines cos λ, cos μ and cos ν. This article produces a general formula which can be used to determine the accuracy of a photoelectric system. Various rotor pictures are analyzed using this formula. With otherwise equivalent conditions, the minimum error in calculation of the latitude angle is provided where $\cos\lambda = t_\lambda/T$, $F(\lambda) = -1/T$, $V_\lambda = 1/\sqrt{1 + 4\pi^2 \sin^4\lambda}$, $\Delta\cos\lambda = \tau k/\rho T \sqrt{1 + 4\pi^2 \sin^4\lambda}/\sin\lambda$.

1/1

USSR

KOVAL', V. B.

"Algorithm for Solution of Boundary Problems for an Elliptical-Type Equation in an Arbitrary Two-Dimensional Area with a Piecewise-Smooth Boundary"

Algoritmy i Algoritmich. Yazyki [Algorithms and Algorithmic Languages -- Collection of Works], No 5, Moscow Acad. Sci. USSR Computer Center, 1971, pp 3-5, (Translated from Referativnyy Zhurnal, Kibernetika, No 5, 1972, Abstract No 3 V543 by the author).

Translation: A program is presented for the solution of boundary problems for elliptical-type equations in an arbitrary area. The area must be fixed using an approximating polygon. The program is written in ALGOL-60 using certain properties of the Alpha system. An algorithm for solution of the problem is presented.

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USSR

1/2 032 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--BINDERS BASED ON MODIFIED DIENOL S -U-

AUTHOR-(02)-TREPELKOVA, L.I., KOVAL, V.G.

COUNTRY OF INFO--USSR

SOURCE--PLAST. MASSY 1970, (3), 15-17

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--POLYMER BINDER, EPOXY RESIN, MALEIC ANHYDRIDE, LAMINATED PLASTIC, COPOLYMERIZATION, STYRENE, ORGANIC PEROXIDE, INSULATING MATERIAL/(U)ED5 EPOXY RESIN, (U)DIENOL S RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0666 STEP NO--UR/0191/70/000/003/0015/0017

CIRC ACCESSION NO--AP0119574
UNCLASSIFIED

2/2 032 UNCLASSIFIED PROCESSING DATE--23OCT7C

CIRC ACCESSION NO--AP0119574

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS WERE STUDIED OF MODIFYING A DIENOL-S (I) WITH AN ED-5 EPOXY RESIN AND MALEIC ANHYDRIDE ON THE PROPERTIES OF HARDENED CASTING RESINS AND LAMINATED INSULATING PLASTICS. THE HARDENING TIME AND TEMP. WERE MARKEDLY REDUCED BY INITIATING THE COPOLYMN. OF I WITH STYRENE IN THE PRESENCE OF BZ SUB2 O SUB2 AND DICUMYL PEROXIDE.

UNCLASSIFIED

UDC 532.5:621.22

USSR

KOVAL', V. P., KOZHEVNIKOV, S. N., MANZIY, V. S., PANCHISHIN, V. I.

"Derivation of the Equations for Non-Steady-State Motion of an Aircraft Turbo-starter With a Hydrodynamic Clutch"

V sb. Nekotor. vopr. prikl. mat. Vyp. 5 (Certain Problems of Applied Mathematics. No. 5 -- Collection of Works), Kiev, 1971, pp 288-297 (from RZh-Mekhanika, No 12, Dec 71, Abstract No 12B998)

Translation: It is noted that in transfer processes in a drive with a hydraulic clutch there occur oscillations in the moment and velocity of the drive shaft which make the process of acceleration of the machine difficult. The equations of motion of the drive with a hydraulic clutch and transfer regimes are derived on the basis of Bernoulli's equation for non-steady-state motion of a liquid. This equation is convenient in the analysis of the rise of unstable operation of the drive. In solving this equation the circulation component of the moment transmitted by the clutch is determined by the Euler equation for a turbine wheel. It is emphasized that one can find the laws for the change in angular velocities of the rotation of the driving and driven shafts of the hydraulic clutch in non-steady-state motion. The startup of a turbojet engine is considered as an example of the analysis. B. N. Chumachenko.

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UDC 681.327

USSR

FINOGEYEVA, G. G., KOVAL', Ye. N., and KUZNECHENKOV, V. P.

"Memory Element with 2-Aperture Transfluxor"

USSR Author's Certificate No 275142, Filed 7/02/69, Published 6/10/70
(Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 5, 1971, Abstract No 5B286P)

Translation: Memory elements with 2-aperture transfluxors made of material with a rectangular hysteresis loop, operating in the mode of partial switching, are well known. The basic shortcoming of these elements is the low linearity of the accumulation characteristic U=f(N) (U is the amplitude of the pulse taken from the output winding of the transfluxor, N is the number of pulses recorded), which occurs as a result of the non-ideal rectangularity of the hysteresis loop of the magnetic material, the finite dimensions of the transfluxor, and other factors. The memory elements suggested differ in that the output winding of the transfluxor is connected to its load through a quadrupole which is made as an integrating RC circuit with changing time constant. This allows linearization of the accumulation characteristic. 3 figs.
1/1

UDC:629.78.015:536.24

USSR

LEGKIY, V. M., MAKAROV, A. S., KOVAL', Yu. D.

"Experimental Study of Local Heat Transfer of a Plate in the Area of Transition from Laminar Boundary Layer to Turbulent"

Teplofiz. i Teplotekhnika. Resp. Mezhved. Sb. [Heat Physics and Heat Engineering. Republic Interdepartmental Collection], 1973, No 25, pp 106-109 (Translated from Referativnyy Zhurnal Raketostroyeniye, No 11, 1973, Abstract No 11.41.88 by T. A. Ye.)

Translation: The heat exchange of a longitudinally washed smooth plate is studied with mixed motion in the boundary layer. It is indicated that the recommendations for calculation of heat exchange in a boundary layer need experimental confirmation. In order to accumulate experimental data and refine the method of calculation of the transition zone, the local heat transfer of a plate with mixed motion in the boundary layer is studied. The experiments are set in a closed wind tunnel with a square working cross section of 0.28×0.28 m^2. The experimental technique and results are described.

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USSR UDC 548.7

KOVAL', YU. N., TITOV, P. V., and KHANDROS, L. G., Institute of Metal Physics, Academy of Sciences Ukr SSR

"Change in the State of Hardened Steel at Low Temperatures"

Kiev, Metallofizika, No 32, 1970, pp 85-88

Translation: The relationship among processes occurring in manganese steel over various temperature ranges from -196 to 20°C with a change in electric resistance and magnetization is examined. The effect of the carbon content on these processes is evaluated. A comparison is made of the amount of energy for activating the process of lowering electric resistance at various stages of isothermal holding. The temperature dependence of the initial rate of change in electric resistance over the range from -100 to 100°C is studied.

It is shown that the martensite transformation increases electric resistance. A reduction in electrical resistance above 100°C is connected with the order or carbon, its interaction with defects, and relaxation of strain.

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1/2 017 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--CHANGE IN THE ELECTRICAL RESISTANCE OF HARDENED RHENIUM STEEL AT TEMPERATURES BELOW ROOM TEMPERATURE -U-

AUTHOR-(03)-KUVAL, YU.N., TITOV, P.V., KHANDROS, L.G.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL METALLOVED. 1970, 29(3), 649-51

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ELECTRIC RESISTANCE, RHENIUM CONTAINING ALLOY, MANGANESE STEEL, MARTENSITE, ORDERED ALLOY, AUSTENITE, STEEL QUENCHING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0342 STEP NO--UR/0126/70/029/003/0649/0651

CIRC ACCESSION NO--AP0126098

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--20NOV70

2/2 017

CIRC ACCESSION NO--AP0120098

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MN STEELS AND RE STEELS (CONTG. C 1.8, AND RE 6 WT. PERCENT, MARTENSITIC POINT NEGATIVE 80DEGREES), WHEN RAPIDLY QUENCHED FROM THE AUSTENITIC STATE TO NEGATIVE 196DEGREES, UNDERGO FORMATION OF MARTENSITE WITH ANOMALOUS TETRAGONALITY, WHICH ON WARMING UP TO ROOM TEMP. ASSUMED NORMAL TETRAGONALITY. IN MN STEELS THIS EFFECT WAS ACCOMPANIED BY INCREASED ELEC. RESISTANCE (BY SIMILAR TO 2PERCENT) OF MARTENSITE WITH ANOMALOUS TETRAGONALITY, AND THE RETURN TO THE NORMAL VALUE OF ELEC. RESISTANCE WHEN MARTENSITE ASSUMED NORMAL TETRAGONALITY. SPECIMENS OF RE STEEL WERE HELD ABOVE THE SURFACE OF LIQ. N AND THERE WAS A TEMP. DROP ACROSS THE THICKNESS OF THE SPECIMEN OF SIMILAR TO 1DEGREE, AND THE EMF REACHED SIMILAR TO 0.01 MV. THE OBSD. INCREASE OF ELEC. RESISTANCE IN RE STEELS IS BELIEVED TO RESULT FROM THE INCREASED AMT. OF MARTENSITE, WHILE THE LOWERING OF ELEC. RESISTANCE ON WARMING UP IS CAUSED BY THE ORDERING PROCESSES IN MARTENSITE. FACILITY: INST. METALLOFIZ., KIEV, USSR.

UNCLASSIFIED

UDC: 621.315.592

USSR

KOVAL', Yu. P., MORDKOVICH, V. N., TEMPER, E. M., and KHARCHENKO, V. A.

"Optical Characteristics of Silicon Irradiated With Neutrons"

Leningrad, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp 1317-1322

Abstract: This paper considers infrared absorption by silicon irradiation and consequent isochronal annealing. The silicon was n-type, with a resistivity of 200 ohm·cm and an oxygen concentration of $3-4 \cdot 10^{17}$/cc. Part of the crystals were bombarded with neutrons without special cooling, with a temperature of 250° C, the other part being bombarded while in water. The annealing was done in a range of 100-800° C, in steps of 50°, for 30 minutes at each step. For the specimens irradiated in water, at a temperature of less than 60° C, very strong absorption of infrared rays of 2-4 μ wavelength was observed. High absorption of 17-25 μ wavelengths was also seen in these specimens. The silicon crystals irradiated at 250° C, on the other hand, were transparent to the 2-4 μ as well as the 17-25 μ wavelengths. Curves are plotted for the absorption of the crystals as functions of the wavelength and the annealing

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KOVAL', Yu. P., et al, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp 1317-1322

temperature. Differences in absorption displayed by crystals of different growth methods are also discussed. The authors express their gratitude to V. G. Goryachev and S. P. Solov'yeva for their interest in the work and their comments on the results.

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USSR

UDC 621.762.55:669.018.4

KOVAL'CHENKO, M. S., BOGOMOL, I. V., SEREBRYAKOVA, T. I., Institute of Problems of Material Science, Academy of Sciences Ukr SSR

"Studies of Kinetics of Hot Pressing of Alloys of Titanium and Tungsten Carbides Cemented with Niobium"

Kiev, Poroshkovaya Metallurgiya, No 6, Jun 72, pp 15-21.

Abstract: The kinetics of the process of sintering of alloys containing the carbides of titanium and tungsten and cemented with niobium by hot pressing is studied. The influence of the hot pressing parameters (temperature, pressure and holding time) on the density of the cermets is studied to determine the optimal technological modes for production of high density alloys, and also to reveal the regularities of the kinetics of the process of compacting during sintering. The content of the metal component was varied from 25 to 75 at.%. It was found that compacting during sintering of cermets is controlled by processes of unstable creep in the initial stage of hot pressing and of stable creep in later stages. The greatest relative density (0.95-0.97%) was achieved at 2,100-2,375°C under a pressure of 300 kg/cm^2, time 10-15 minutes.

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UDC 669.018.4:539.2:669.01

USSR
KOVAL'CHENKO, M. S., ROGOVOY, Yu. I., KELIM, V. D.

"Change in Structure in Properties of Titanium Carbide Under Neutron Bombardment"

Atomnaya Energiya, Vol 32, No 4, Apr 72, pp 321-323.

Abstract: An experimental study was performed of the change in microstructure, lattice parameter, electrical resistance and microhardness of titanium carbide under the influence of neutron bombardment with integral doses of $1.0 \cdot 10^{19}$, $3.7 \cdot 10^{19}$, $7.5 \cdot 10^{19}$ and $1.5 \cdot 10^{20}$ thermal neutrons per square centimeter (flux ratio of thermal neutrons to fast neutrons 8:1) at about 50°C and with subsequent annealing in a vacuum of 10^{-4} mm h.g. at 100-1,000°C at intervals of 100°C for 1 hour. Metallographic studies showed no change in mean grain size. Bombardment with the largest dose caused an increase in specimen volume of 0.3-0.5%. Bombardment caused a significant increase in resistance and lattice parameter. A regular shift in diffraction peaks toward lower angles with simultaneous decreases in intensity was observed, as well as improvement in the degree of resolution of the α doublet on the (333) line. Annealing at 100°C increased the lattice parameter, while annealing at 200-800°C decreased the lattice parameter. The experimental data indicated that there are two stages of recovery in annealing, at 350 and 600°C. The similarity of the mechanisms

USSR

KOVAL'CHENKO, M. S., ROGOVOY, Yu. I., KELIM, V. D., Atomnaya Energiya, Vol 32, No 4, Apr 72, pp 321-323.

of annealing in both stages is confirmed by the similarity of kinetic coefficients and activation energies.

UDC 620.172

USSR

KOVAL'CHUK, B. I., LEBEDEV, A. A., Institute of Problems of Strength, Academy of Sciences UkrSSR, Kiev

"Fluidity and Breakdown of the D16T Alloy at Low Temperatures Under a Complex Stress State"

Kiev, Problemy prochnosti, No. 5, May 72, pp 36-39

Abstract: The purpose of this research was to study the effect of low temperatures on the fluidity and breakdown of the D16T aluminum alloy under a plane stress state. This alloy is widely used in instrument building, the aircraft industry, and in cryogenic technology. Previous studies showed that the alloy has considerable anisotropy in mechanical properties as furnished by the supplier. The strength of the alloy can be increased by appropriate heat treatment, such as by tempering with subsequent natural aging. Large residual stresses then arise in the metal which can have a considerable effect on the anisotropy of the alloy and also on its deformation and breakdown characteristics when subject to a complex stress state. The strength properties of the D16T alloy has been insufficiently studied despite the wide application of the alloy in the fabrication of machine parts that operate under a complex stress state at low temperatures. Tests were made on thin-walled tubes of samples (δ/D = 1/27)

USSR

KOVAL'CHUK, B. I., LEBEDEV, A. A., Problemy prochnosti, No. 5, May 72, pp 36-39

made from a rod of diameter 45 mm. The blanks were subjected to annealing at a temperature of 350°C. The samples were aged naturally for 6 months after fabrication of the sample. The chemical composition of the metal in percent is as follows: Cu -- 3.62, Mg -- 1.74, Mn -- 0.72, Al -- 93.74. The tests measured the longitudinal and transverse deformation of the sample using a special tensometer. The radial deformation was found by assuming an elastic change in the volume. The anisotropy of the strength properties of the alloy in the annealed state and the effect of low temperatures on it were determined by tests for pure stress in the axial and tangential directions at three temperature levels: +20, -100, and -180°C. Tests conducted at normal temperature show that the alloy in the annealed state is isotropic. The breaking point in the axial direction was 37% higher than in the tangential direction. A drop in temperature leads to an increase in the breaking point in both the axial and tangential directions. There is an intense rise in strength in the tangential direction characterized by lower strength characteristics than at normal temperature. In the case of a temperature drop to -180°C from normal, the breaking point in the axial direction increased by 21% and by 36.4% in the tangential direction. The yield point increased by 47 and 50.5%,

USSR

KOVAL'CHUK, B. I., LEBEDEV, A. A., Problemy prochnosti, No. 5, May 72, pp 36-39

respectively. It follows from the data that the initial anisotropy of the strength properties of the alloy decreases with a drop in temperature. Destruction tests of samples showed that breakdown in all cases occurred along the planes of action of maximum tangential stresses.

KOVAL'CHENKO, M. S.

(23)

JPRS 59923

23 August 1973

TECHNOLOGY OF PRODUCING NEW MATERIALS

Translation of Russian-language Collection: Tekhnologiya Polucheniya Novykh Materialov, 1972, Kiev.

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[I - USSR - I]

UDC 621.77.2

USSR

KOVAL'CHENKO, M. S., and MAY, M. M., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Creep During Hot Extrusion of Titanium Diboride Powder"

Kiev, Poroshkovaya Metallurgiya, No 8, Aug 73, pp 23-27

Abstract: The a process of hot extrusion of titanium diboride powders with a varying particle size and varying content of iron impurity was investigated and an analysis of the phenomenon of creep during powder compaction was made. The powders contained 0.1 and 0.4 mass % Fe. The powder with 0.4 mass % Fe was put into a vibration grinder for three hours, after which its iron content was increased to 1.5 mass % Fe and the average particle size was less than one micron. Chemical Composition of the Titanium Diboride powders was (in Mass %):

	Ti	B	C	Fe
Technically pure	69.0	30.1	0.32	0.1
Batch 1	68.0	30.8	0.54	0.4
Batch 2				
1-micron powder	67.7	30.3	0.3	1.5

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USSR

KOVAL'CHENKO, M. S., and MAY, M. M., Poroshkovaya Metallurgiya, No 8, Aug 73, pp 23-27

The relationship between relative density of the extruded powders and temperature, time, and applied load was established and it is shown that the process of compacting TiB_2 powders can be described by an equation for the volumetric viscous flow of a porous body which includes the equation of kappa-creep. The derived creep rates of the solid phase in the compacting process were determined and the proportionality of their cube of pressure for the technically pure powder was established along with the fourth degree of pressure for the powder with 1.5 mass % Fe. The magnitudes of Laplace pressure and creep activation energies were evaluated. It was established that upon increasing the Fe content in the titanium diboride powder there is a substantial increase in the rate of compaction and grain growth, a lowering of activation energy and stopping of compaction in the last stage of hot extrusion. Three figures, one table, nine bibliographic references.

2/2

USSR UDC 669.018.25.531.44

KOVAL'CHENKO, M. S., ALEKSEYEV, V. I., and SEREDA, N. N., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Friction of Hard Alloys in a Vacuum at Low Temperatures"

Kiev, Poroshkovaya Metallurgiya, No 5, May 73, pp 88-93

Abstract: The effect of cooling (down to 98°K) on friction and wear characteristics was studied for hard alloys when extremely severe test conditions -- friction with seizure -- are created. Alloys tested were the VK15 and TiC-[illegible] (33% by weight). The lowered temperature reduces the friction coefficient for hard alloys which was associated with increased resistance to the mutual rubbing of contacting micro-roughnesses due to increased aggregate hardness of the materials upon cooling and a decreased area of actual contact of the working materials. The presence of a plastic lubricant in the VK15 hard alloy promotes the origination of nodules on the contacting surfaces, causing local non-uniform wear which can be observed during friction at 98°K. Cermets are distinguished by the antifriction properties from the initial components, which can be explained by the heterogeneity of their structure and phase composition. The quality of the friction surface and the wear resistance of the material depend on the material's tendency to become brittle when cooled, and is determined by the phase composition of the hard alloy. 3 figures, 1 table, 9 bibliographic references.
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UDC 669.534.8.621.762.4

USSR

POKRYSHEV, V. R., KOVAL'CHENKO, M. S., and MARCHENKO, V. I., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Vacuum Hot Forming of Metal Powders Using Ultrasonic Vibrations"

Kiev, Poroshkovaya metallurgiya, No 10, Oct 71, pp 32-37

Abstract: Analysis of the process of powder compaction within the scope of the theory of volume viscous flow indicates an increase in effective pressure of hot forming with the application of ultrasonic vibrations. Application of ultrasound at steady-state stage of creep of the powder particles during hot forming appears to promote the creep and temporarily disturbs the steady-state flow. In hot forming the creep rate of Fe and Ni particles is proportional to the square of stress; creep appears to be controlled by the climb of dislocations. The effectiveness of ultrasonic vibrations decreases with increased temperatures. (6 illustrations, 7 bibliographic references)

USSR

UDC 531.43

KOVAL'CHENKO, M. S., TKACHENKO, Yu. G., PILYANKEVICH, A. N., and KRYACHENKO, V. I., Institute of Problems of Material Science, Academy of Sciences UkrSSR

"Temperature Dependence of Wear and the Character of Titanium and Niobium Carbide Destruction"

Kiyev, Poroshkovaya Metallurgiya, No 6, (102), Jun 71, pp 74-78

Abstract: The temperature dependence of wear and the character of destruction and plastic deformation of surface layers of titanium and niobium carbides at temperatures of 20-1600°C were investigated on specimens prepared by the powder pressing method. The results, presented as curves of the linear wear intensity vs. temperature, demonstrate a linear wear increase with increasing temperature. The maximum increase of wear intensity takes place in the temperature interval of 500-1200°C, after which the increase slows down. The destruction character of niobium carbide friction surfaces, investigated electron-microscopically within the temperature range of 20-1600°C, is shown. Two illustr., seven biblio. refs.

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USSR UDC 541.45:621.984.5/.8

SAMSONOV, G. V., PETRYKINA, R. Ya., and KOVAL'CHENKO, M. S., Institute of the Problems of Material Science, Academy of Sciences Ukrainian SSR

"Hot Pressing of Transition Metal Oxides"

Moscow, Neorganicheskiye Materialy, Vol 7, No 9, Sep 71, pp 1606-1611

Abstract: The caking principles in the hot pressing of oxides of transition metals TiO_2, ZrO_2, HfO_2, Cr_2O_3, and Nb_2O_5 were experimentally investigated. In order to get conditions which are close to the ideal case of isothermal and isobaric caking, which is necessary for rating the curves of density depending on the caking time by hot pressing, the mold with the powder was heated up to the nominal temperature of hot pressing without loading and then the loading was applied instantaneously. From determined values of the shear ductility, depending on temperature and caking stages by hot pressing, the activation energies of caking by hot pressing (90 and 130 kg/cm^2) of oxides were derived. The investigation results are discussed by reference to diagrams showing the relative densities of investigated transition metals as function of the caking time, the character of

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USSR

SAMSONOV, G. V., et al., Neorganicheskiye Materialy, Vol 7, No 9, Sep 71, pp 1606-1611

the activation energy of the caking process, and the shear ductility depending on the caking time by hot pressing of ZrO_2. The caking activation energy by hot pressing was found to be determined mainly by that energy which is required for the activation of transition metals. Seven illustr., four tables, 16 biblio. refs.

2/2

USSR

UDC 621.891.22

KOVAL'CHENKO, M. S., TKACHENKO, Yu. G., YURCHENKO, D. Z., KLOCHKOV, L. A.,

Institute of Material Science Problems, Academy of Sciences, Ukrainian SSR, Kiev

"The Influence of Temperature on the State of the Surface Layer of Niobium Carbide During External Friction"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 7, No 4, 1971, pp 45-48

Abstract: A study was made of the microhardness of the surface layer of niobium carbide after tests for friction and wear under conditions of high temperatures and a vacuum. These tests were made on samples of niobium carbide obtained by means of the pressing of powders with subsequent sintering. The composition of the samples was close to stoichiometric, the residual porosity comprised 10 to 12%. Some weakening was observed in the surface layer. As the temperature of the tests increases, the degree of weakening and the depth of the weakened layer increased. 2 figures. 1 table. 10 references.

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USSR UDC 669.017:539.16.04

KOVAL'CHENKO, M. S., and OGORODNIKOV, V. V., Kiev

"Change in the Structure and Properties of Metallides Under the Action of Nuclear Radiation"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 4, Jul-Aug 71, pp 14-22

Abstract: This article consists of a survey of work on the effect of reactor radiation on the properties of metallides. The work was presented at the Symposium on Metallurgy and Metals Science which was devoted to the 100th anniversary of the discovery of iron polymorphism by D. K. Chernovyy. Materials studied were carbides of Ti and Cr and borides of Ti, Zr, Cr, and La. Basic conclusions made from studies of boride and carbide radiation tests were that under the action of penetrating radiation in metallides there is damage to the crystal (atomic) structure which leads to changes in their physical properties. Formation of dumbbell-like configurations is the most probable type of interstitial atoms. For a radiation dose of approximately 10^{20} neutron/cm^2 the concentration of dumbbells is on the order of fractions of a percent. Radiation defects were stable at low temperatures. During radiation of metallides containing elements which undergo nuclear transformations, disturbances in the crystal structure are deeper. This

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USSR

KOVAL'CHENKO, K. S., and CGORODNIKOV, V. V., Fizika i Khimiya Obrabotki Materialov, No 4, Jul-Aug 71, pp 14-22

leads to an intense and nonuniform change in the volumetric properties of the materials. Formation of new elements during radiation can lead to the formation of new compounds. Five tables, 24 bibliographic references.

2/2

USSR UDC 620.178

DZHEMELINSKIY, V. V., KOVAL'CHENKO, M. S., BORISENKO, V. A., and MAKARENKO, G.N.

"Identers for Measuring the Hardness of Materials at High Temperatures"

V sb. Tugoplavk. karbidy (The Refractory Carbides -- Collection of Works), Kiev, "Nauk. Dumka," 1970, pp 233-236 (from RZh_metallurgiya, No 3, Mar 71, Abstract No 3I916 by authors)

Translation: The article investigates the possibility of using hot-pressed specimens of boron carbide and titanium diboride as material for an indenter for measuring the hardness of tungsten carbide at high temperatures. It is shown that an indenter made of titanium diboride flattens at 1770° K due to the decline in TiB_2 hardness at this temperature. An indenter made of boron carbide can be used repeatedly to measure the hardness of tungsten carbide up to 2170° K without traces of chemical interaction between the material of specimen and indenter, and without failure of the latter. Three illustrations. Bibliography with eight titles.

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USSR

UDC 539.538.669.018.45

BEZYKORNOV, A. I., BOGOMOLOV, N. I., and KOVAL'CHENKO, M. S., Institute of Problems of Material Sciences, Academy of Sciences UkrSSR

"Investigation of the Wear Resistance of Refractory Compounds During Continuous Microcutting of Titanium and Nickel"

Kiev, Poroshkovaya Metallurgiya, No 11, Nov 70, pp 77-83

Abstract: A study is made of the wear resistance of a number of refractory compounds during continuous microcutting of titanium and nickel under conditions of facing. It is established that wear resistance during high-speed cutting depends to a great extent on the degree of physico-chemical interaction of contact pairs, and at low speeds is basically determined by their mechanical properties. The experiments were carried out on a 1K62 lathe. Continuous microcutting speed was 0.2 to 34.4 m/sec, the pressure on the microcutting tool was 0.2 kg and longitudinal feed was 0.07 mm/revolution. Hafnium and tungsten carbides posses the highest wear resistance and refractoriness during microcutting of titanium, while during the microcutting of nickel and iron, aluminum oxide and tungsten carbide display the best wear resistance.

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Refractory Materials

UDC 669.018.25

USSR

BEZYKORNOV, A. I., BOGOMOLOV, N. I., and KOVAL'CHENKO, M. S., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Study of the Cutting Properties of Refractory Compounds in Intermittent Microcutting of Titanium and Nickel

Kiev, Poroshkovaya Metallurgiya, No. 10, Oct 70, pp 66-72

Abstract: Data are presented on the wear of certain refractory compounds in intermittent cutting of metals having different properties, namely titanium and nickel under conditions similar to those for polishing. The microcutting was performed on a 3G71 surface grinder at a cutting rate of 35 m/sec. The heat release in the cutting zone and the emerging temperature gradient from the cutting zone toward both the cutting material and the material being machined appears to cause high thermal stresses and brittle cleavage of individual grain sections. In addition to brittle failure, which to some extent causes grain wear, there appears to be a

USSR

BEZYKORNOV, A. I., et al, Poroshkovaya Metallurgiya, No. 10, Oct 70, pp 66-72

physicochemical interaction between both materials. The refractory compounds which interact to a lesser extent with the metal being machined show better wear properties at higher cutting rates. In microcutting titanium, metal-like refractory compounds exhibit higher wear resistance than does aluminum oxide. Some of these refractory compounds compare to silicon carbide. In microcutting nickel and iron, the best results were shown by aluminum oxide.

USSR

UDC 621.912-492.2

BEZYKORNOV, A. I., BOGOMOLOV, N. I., GURINCHUK, I. I., KOVAL'CHENKO, M. S. KONOVALOVA, Ye. S., and PADERNO, Yu. B., Institute of Problems of Material Science, Academy of Sciences Ukr SSR

"Investigation of the Form, Durability, and Abrasive Ability of Grains of Refractory Compound Powders"

Kiev, Poroshkovaya metallurgiya, No 5, May 71, pp 65-69

Abstract: The results are presented of an investigation of the form, strength, and abrasive properties of powders of fused titanium and niobium carbides and calcium boride, in comparison with certain data on synthetic corundum. The results show that the deviation from grain isometricity of niobium carbide is larger than that of titanium carbide; that the strength of niobium and titanium carbides with a grain size of more than 250 μ is higher than that of calcium boride and white synthetic corundum grains, while at smaller grain sizes the opposite is true. The compounds considered here may be ordered with respect to their increasing abrasive power, beginning with synthetic corundum: EB-NbC-TiC-CaB_6 = 1-1.18 - 1.36 - 1.88.

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USSR

UDC 621.762.53

YURCHENKO, A. G., PUGINA, I. I., and KOVAL'CHENKO, M. S., Institute of Problems of Material Science, Academy of Sciences, Ukrainian SSR

"Hot Pressing of Materials With High Graphite Content"

Kiev, Poroshkovaya Metallurgiya, No 2, Feb 71, pp 37-39

Abstract: The purpose of this work was to study the process of hot pressing of metal-graphite compositions based on an iron-nickel alloy with 30 vol.% graphite and to determine the optimal technological modes for this process. Hot pressing of mixtures of powders of iron, nickel, and graphite was performed using a lever mechanical press in graphite molds at 1000 and 1100°C under pressures of 100, 150, and 200 kg/cm^2. It was established that the optimal hot pressing mode is 1100°C, 150 kg/cm^2. Use of this mode allows specimens with densities of 93-94% to be achieved. It is demonstrated that the compacting of materials in hot pressing can be described by volumetric viscous flow.

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1/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--PRODUCTION OF REFRACTORY COMPOUND POWDER GRINDING MATERIALS -U-

AUTHOR-(04)-BEZYKORNOV, A.I., DOBROVOLSKY, A.G., KOVALCHENKO, M.S., FOMIN, L.M.
COUNTRY OF INFO--USSR

SOURCE--POROSHKOVAYA MET., FEB. 1970, (2), 108-110

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--INDUSTRIAL PRODUCTION, REFRACTORY MATERIAL, GRINDING, TUNGSTEN CARBIDE, ZIRCONIUM CARBIDE, BORIDE, SINTERING FURNACE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0135 STEP NO--UR/0226/70/000/002/0104/0110

CIRC ACCESSION NO--AP0123907
UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123907

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SIMPLE METHODS OF OBTAINING FINE GRAINED BC, ZRC, AND W SUB2 B SUB5 POWDERS FOR THE MANUFACTURE OF GRINDING WHEELS AND ABRASIVE CLOTH ARE DESCRIBED. THE ORIGINAL COMMERCIALLY PURE MATERIALS ARE PRESSED INTO BLOCKS IN A HYDRAULIC PRESS AND SINTERED; THESE ARE LATER CRUSHED AND THE GRAINS ARE GRADED BY SIZE (TYPICAL YIELD 20PERCENT 400-500 AND 15PERCENT 120-160 MU M). THE MICROHARDNESS OF THE GRAINS ARE SIMILAR TO 2000-3000 KG-MM PRIME2, DEPENDING ON THE PRECISE METHOD OF PROCESSING. REPEATED PROCESSING OF ABRASIVE POWDER WASTE MAY LEAD TO A DISADVANTAGEOUS CHANGE IN CHEMICAL COMPOSITION.

UNCLASSIFIED

USSR

UDC 612.014.44:612.825.251

BOGOSLOVSKIY, A. I., ZHDANOV, V. K., KOVAL'CHUK, A. G., SEMENOVSKAYA, Ye. N. and SHAMSHINOVA, A. M., Moscow Scientific Research Institute of Eye Diseases imeni Helmholz

"Light-Induced Visual Cortical Potentials in Man"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 3, 1971, pp 721-723

Abstract: In an investigation performed on 49 healthy men and women, evoked potentials were recorded from the visual cortex (one electrode over the area representing the macula lutea and the other electrode 3 cm higher along the median line) while the subjects looked at intermittent flashes of photopic and scotopic light. Averaged EEG records revealed the presence of evoked potentials in response to not only photopic but also scotopic stimuli, although in the latter case the evoked potentials were less numerous and had a different pattern and a longer latent period. Simultaneous auditory stimulation (800 cyc/sec, 85 db) reduced the amplitude of the potentials evoked by scotopic stimuli but did not change the potentials evoked by photopic stimuli. The exact mechanism of action and the significance of the findings remain to be elucidated.

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USSR

UDC 632.954.2:628.35

DUDNIKOVA, R. V., IOAKIMIS, E. G., KOVAL'CHUK, A. N.

"Biochemical Purification of the Waste Water from Pesticide Production"

Moscow, Khimicheskaya Promyshlennost', No 5, 1971, pp 340-344

Abstract: An industrially feasible system for effectively purifying the waste water from the production of some pesticides is outlined. It utilizes areation and biochemical action to lower the biological consumption of oxygen rating from about 600 to about 20 mg of oxygen per liter. The process is currently in operation in a plant which produces 2,4,-dichlorophenoxyacetic acid, its esters and amine salts, copper trichlorophenoxide, hexachlorobutadiene, 2,4,5-trichlorophenoxyacetic acid, 2-methyl-4-chlorophenoxyacetic acid, and others.

USSR

UDC 616.921.5:616.15-07

KOVAL'CHUK, A. N., SAFONOVA, L. G., and DOROFEYEVA, R. P., Voroshilovograd Medical Institute, Voroshilovograd

"The State of the Blood Coagulation and Anticoagulation System in Influenza Patients"

Kiev, Vrachebnoye Delo, No 3, 1972, pp 141-144

Abstract: A thromboelastographic study of 87 patients with A_2 and B influenza revealed complex changes in the blood coagulation system, mainly of a hypocoagulation nature. Most of the blood coagulation disorders were related to influenza severity. The coagulation of blood was slow in influenza patients during an acute period of the disease, the thromboplastin constant was 9.3 (control 8,2). At the same time the concentration of free heparin thrombinogenesis time increased. The thrombus-forming constant was 4.5 as opposed to 2.6 in healthy individuals. While the concentration of heparin was high in a majority of patients (12.5 sec. and only 7.4 sec. in control individuals), the fibrinolysis time increased to 202 from 311 min. in control patients. This means that the fibrinolytic activity was high. The consumption constant of prothrombin was 2.5 (normal 3.0) during the acute stage of the influenza. The specific coagulation constant was 1.36 (normal 10.6), the biological

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USSR

KOVAL'CHUK, A. N., et al., Vrachebnoye Delo, No 3, 1972, pp 141-144

syneresis constant was 18.3 (normal 15.4 min). The constant of total blood clotting in influenza patients was 28.2 min., as opposed to 23.6 min. in healthy individuals. Normalization of the above factors took place in a majority of patients with mild influenza during the convalescent period. However, in severe forms of influenza these factors did not normalize after a long convalescent period.

2/2

USSR UDC: 8.74

KOVAL'CHUK, B. G., ORLOV, O. N.

"Use of COBOL in Problems of Formation of Search Files"

Nauch.-tekhn. Inform. Sb. Vses. In-t Nauch. i Tekhn. Inform [Scientific and Technical Information, Collection of All-union Institute for Scientific and Technical Information], 1972, Ser 2, No 4, pp 31-33 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V544, by the author)

Translation: The use of COBOL for programming of information search problems is studied. Procedures are described which realize the algorithm of formation of a search file with direct or reverse organization, examples of the structures and methods of description of files are presented. The advantage of an algorithmic language for programming of information logic problems is demonstrated.

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USSR UDC 539.4

PISARENKO, G. S., LEBEDEV, A. A., KOVAL'CHUK, B. I., and LAMASHEVSKIY, V. P.

"Anistropy of the Mechanical Properties of Metal at Low Temperatures"

Khar'kov, Fiz. Mekhanizmy Plastich. Deform. pri Nizkikh Temperaturakh -- Sbornik (Physical Mechanisms of Plastic Deformation at Low Temperatures -- Collection of Works), 1971, p 55 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2V1252, Summary)

Translation: The article presents a discussion of the results of an experimental investigation of the influence of low temperatures upon the anisotropy of the mechanical properties of alloys AL19, D16T, and carbon steel type 45. On the basis of microstructural analysis data, the anisotropy of the aluminum alloys has both a homogeneous and an inhomogeneous nature. The anistropy of carbon steel (of the heterogeneous type) was attained by plastic deformation by means of elongation at normal temperature to $\varepsilon_{res} = 2\%$. The characteristics of the mechanical properties in the direction of the main axes of anisotropy were obtained at normal temperature and at temperatures of -100 and -180°. It is shown that as the temperature decreases, change of the plastic, strength, and deformation properties in the direction under consideration takes place unequally,

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USSR

UDC 669.018.2:669-974

PISARENKO, G. S., LEBEDEV, A. A., KOVAL'CHUK, B. I., and LAMASHEVSKIY, V. P.

"Anisotropy of Mechanical Properties of Metals at Low Temperatures"

V sb. Fiz. mekhanizmy plastich. deform. pri nizk. temperaturakh (Physical Mechanisms of Plastic Deformation at Low Temperatures -- Collection of Works), Khar'kov, 1971, p 55 (from RZh-Metallurgiya, No 1, Jan 72, Abstract No 1I725 by I. Yeroshenkova)

Translation of Abstract: The authors investigated the effect of low temperatures (-100 and -180°) on the anisotropy of mechanical properties of AL19 and D16T Al alloys and carbon steel 45. Variations in elastic, strength, and deformation properties occur nonuniformly in different directions with a decline in temperature. More intense growth occurs in the direction which at normal temperature is characterized by fewer high parameters. Anisotropy of the metals declines on cooling, which is characteristic of a large group of metals.

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USSR

UDC 620.172.251.12

PISARENKO, G. S., KOVAL'CHUK, B. I., LEBEDEV, A. A., (Kiev)

"Plasticity of D16T Aluminum Alloy During Double Extension Under Low Temperature Conditions"

Kiev, Problemy prochnosti, No. 1, 1971, pp 45-59

Abstract: Results are presented from an experimental study of the influence of low temperatures on the deformation properties of D16T aluminum alloy in the planar stressed state. The tests were performed at + 20, - 100 and - 180°C by loading thin-walled tubular specimens with both axial tension and internal pressure. It was determined that the alloy has anisotropic elastic and plastic properties in the annealed state. The plasticity of the alloy is 45% higher, the Young modulus 0.5% lower in the direction of rolling than in the perpendicular direction. As the temperature drops, the anisotropy of both elastic and plastic properties decreases. The deformation ability of the alloy depends on the stressed state and temperature. As the temperature drops, plasticity increases. At normal and low temperatures, the minimum plasticity is observed when the ratio between primary stresses $\sigma_2/\sigma_\theta = 0.5$. The deformation curves

USSR

UDC 620.172.251.12

PISARENKO, G. S., KOVAL'CHUK, B. I., LEBEDEV, A. A., (Kiev), Kiev, Problemy prochnosti, No. 1, 1971, pp 45-59

$\sigma_i = \Phi(\varepsilon_i)$, $\tau_{max} = f(\gamma_{max})$ are not invariant to the form of the stressed state. Decreasing the test temperature to - 180°C has no significant influence on the divergence of the curves.

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Instrumentation and Equipment

USSR

UDC 620.171.251.1

NOVIKOV, N. V., ALEKSYUK, M. M., VOYNITSKIY, A. G., KOVAL'CHUK, B. I., MITLIKIN, M. D., and ZARUBIN, L. I., Kiev

"Specifics of Mechanical Tests of Structural Materials Over a Broad Range of Low Temperatures"

Kiev, Problemy Prochnosti, No 4, Apr 71, pp 20-26

Abstract: Methods and equipment for mechanical testing at low temperatures used at the Institute of Problems of Strength of the Academy of Sciences Ukrainian SSR are described. The equipment is used to study the temperature dependence of the mechanical properties of steels, aluminum, and titanium alloys. Equipment illustrated includes a device for maintenance of temperatures from 0 to -196°C, multiposition clamps for circular and flat specimens, the UN-30 tensile testing device, allowing loads of up to 30 tons to be applied at temperatures down to -269°K, a miniature semiconductor thermometer, the SZP-1 tensile testing machine, equipped with a chamber for testing at down to -269°C, and an electromechanical tensometer for measurement of linear and angular displacements.

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USSR

UDC 621.37/39+631.004

NEKRASOV, M. M., LAVRINENKO, V. V., OSADCHUK, V. S., KUTTKA, N. A., KOVAL'CHUK, B. M.

"Low-Frequency Dielectric Transformers"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No 6, 1971, pp 69-70

Abstract: A study is made of the problems of creating low-frequency dielectric transformers. Several versions of the designs of such transformers are investigated, and data are presented for individual specimens. Conclusions are drawn regarding the prospects of utilization of low-frequency dielectric transformers. In the transformers, the transformation coefficient depends to a significant extent on the magnitude of the input signal. With a load of 10^6 ohms and an input voltage of 0.1 volts, it reaches values on the order of 20 for one of the investigated transformers manufactured on the basis of the type TsTS-23 ceramic. A formula is presented showing that the basic parameters affecting the resonance frequency of piezotransformers of the flexible type are the length and thickness of the plates. The parameters of several designs of piezotransformers and their operating frequencies are presented in a table.
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USSR UDC 621.37/39+621.004

NEKRASOV, N. N., LAVRINENKO, V. V., OSADCHUK, V. S., IVITSA, N. A., and KOVAL'CHUK, B. M.

"Low-Frequency Dielectric Transformers"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No. 6, 1971, pp 69-70

Abstract: This short informative article amounts to an introductory treatment of the development of piezoelectric transformers with an operating frequency of 50 and 400 Hz, of the type widely used in technology. A schematic diagram of piezoelectric transformers of the bending type is shown and explained; it consists of two dielectric plates glued together with epoxy resin, and connected through copper or silver electrodes to the external circuit. The theory of operation of the transformer is explained in qualitative terms, and a formula for the fundamental frequency of the bending oscillations is given in terms of the Young's modulus, the density, the thickness, and the length of the second -- i.e., the output or bending -- plate of the transformer. Curves are plotted for the transformer characteristic as a function of the bending magnitude; they indicate that the transformation characteristic depends essentially on the

USSR

NEKRASOV, M. M., et al., Poluprovodnikovaya tekhnika i mikroelektronika, No 6, 1971, pp 69-70

input signal amplitude and the applied voltage. The data was taken for transformer type No 3, made from ceramics of the TsTS-23 brand. The authors are with the Kiev Polytechnical Institute.

KOVAL'CHUK, B. M.

USSR

Vestnik Vysshey Shkoly, No 9, 1969, pp 63-64

Candidate of Physicomathematical Sciences and Instructor at Moscow University V. A. Zorich was awarded the Leninist Komsomol Prize for proving M. A. Lavrent'yev's theorem concerning quasiconformal mapping of space. The author established that quasiconformal mapping of space is mutually equivalent.

Candidate of Physicomathematical Sciences A. V. Kalinin, an [illegible] at Moscow University, and senior engineer at the University V. V. Kalinin were awarded the prize. They created an acoustic seismic station with a source of oscillations of the nonexplosive type. They also worked out a method of studying water areas. Acoustic seismic studies were organized on the Black Sea, the Caspian Sea, and the Baltic Sea, as well as on the Ob River under their supervision.

Doctor of Technical Sciences G. A. Mesyats, senior scientific associate at the Scientific Research Institute of Nuclear Physics, Electronics, and Automation of the Tomsk Polytechnical Institute, and Candidates of Technical Sciences at the same scientific research institute [illegible] P. Bugayev, B. M. Koval'chuk, and V. V. [illegible] received a prize for research in the field of the generation of [illegible]

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USSR

UDC: 621.791.06:620.181.5

KOVAL'CHUK, G. Z., YEREMEYEV, A. M., and BAGNYUK, L. N., Institute of Ferrous Metallurgy

"Isothermal Decay of Austenite in Welded Specimens of St. 5sp and 35GS Steels"

Moscow, Izvestiya VUZ--Chernaya Metallurgiya, No. 8, 1971, pp 145-149

Abstract: For this study of the isothermal decay of austenite in the zone of the welding seam, small specimens of St. 5sp and 35GS steel measuring 10 X 5 X 4 mm cut from butt-welded samples were investigated. The isothermal decay of the supercooled austenite was realized by the tempered-microstructure method. The specimens were austenized for 20 minutes at a temperature of 850° C, and curves of the austenite decay were plotted for a large number of them from the data derived from the experiment. These curves are reproduced. Also reproduced are photomicrographs of the welding seam and the basic metal structure at various temperatures and durations of the welding process. It is found that the structural differences resulting from the chemical changes in the welding zone are minor, except for sections of the seam with high decarbonization, with earlier separation of the ferrite in the decay of low-carbon austenite.

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USSR UDC 669.127

GESHELIN, V. G., KOVAL'CHUK, G. Z., and PARKHOMENKO, P. A., Institute of Ferrous Metallurgy

"Investigation of the Fatigue Breakdown of Carbon Steel Treated With Ferrocerium"

Kiev, Metallofizika, No 31, 1970, pp 157-160

Translation: Round specimens from industrially melted high-grade carbon steel 60 were tested for fatigue limit under conditions of symmetrical cycle tension -- compression for the purpose of clarifying the effect of cerium additives on the steel's fatigue strength. Ferrocerium was injected when the metal was cast into an ingot mold in terms of 1.5 kg per ton of steel. The effect of the form of nonmetallic inclusions on cracking during fatigue tests was investigated. It is shown that the replacement of nonmetallic inclusions drawn in the direction of rolling after the modification of the steel with cerium with compact, nondeformed inclusions is accompanied by an increase in the steel's fatigue strength. On the basis of laboratory tests made on cable a conclusion was drawn on the possibility of increasing their life by approximately 40% provided the steel is additionally deoxidized with an optimum amount of ferrocerium. Bibliography: 7 entries, Illustrations: 4.
1/1

1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--STRUCTURE OF CAST CARBON STEEL CONTAINING NIOBIUM -U-

AUTHOR-(03)-MALINOCHKA, YA.N., KOVALCHUK, G.Z., BALAKINA, N.A.

COUNTRY OF INFO--USSR

SOURCE--METALLOVEDENIE I TERM. OBRABOT. METALLOV, 1970, (3), 58-59

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CARBON STEEL, CAST STEEL, NIOBIUM CONTAINING ALLOY, GRAIN SIZE, CARBIDE, EUTECTIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0927 STEP NO--UR/0129/70/000/003/0058/0059

CIRC ACCESSION NO--AP0133016

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0133016

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF TRACES OF NB ON THE STRUCTURE OF CAST C STEEL WAS STUDIED. THUS THE ADDITION OF NB REDUCED THE GRAIN SIZE, PREVENTED GRAIN GROWTH AT HIGH TEMP., AND RAISED THE SOFTENING TEMP. AND HEAT RESISTANCE. IN HYPOEUTECTOID STEELS CONTG. NB GREATER THAN 0.1PERCENT A CARBIDE EUTECTIC OF THE AUSTENITE-NBC TYPE FORMED BETWEEN THE BRANCHES OF THE DENDRITES. THE FORMATION OF THIS EUTECTIC WAS PARTICULARLY PROMOTED BY REDUCING THE COOLING RATE AND INCREASING THE C CONCENTRATION. THE PRACTICAL IMPORTANCE OF THIS AND RELATED EFFECTS IS CONSIDERED.

UNCLASSIFIED

1/2 038 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--ON SOME CHANGES IN RESPIRATORY PROPERTIES OF BLOOD AND ITS COPPER CONTENT IN TRAUMATIC SHOCK -U-
AUTHOR--SHEREMET, P.F., KOVALCHUK, I.A.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK KHIRURGII IMENI I. I. GREKOVA, 1970, VOL 104, NR 2, PP 65-66
DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BLOOD CHEMISTRY, COPPER, RESPIRATION, TRAUMATIC SHOCK, OXYGEN, CARBON DIOXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/1729 STEP NO--UR/0589/70/104/002/0065/0066

CIRC ACCESSION NO--AP0101781

UNCLASSIFIED

2/2 - 038 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0101781

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE WORK DEALS WITH AN ACTUAL PROBLEM OF STUDYING THE CHANGES OCCURRED IN TRAUMATIC SHOCK. IN THE PAPER CHANGES IN GAS AND COPPER CONTENT OF BLOOD ARE PRESENTED. THE RESULTS OF THIS INVESTIGATION HAVE DEMONSTRATED THAT DURING TRAUMATIC SHOCK MARKED DISTURBANCES IN RESPIRATORY PROPERTIES OF BLOOD OCCUR REDUCED OXYGEN CONTENT IN VENOUS AND ARTERIAL BLOOD, INCREASED UTILIZATION OF OXYGEN BY TISSUES, CONSIDERABLE CHANGES IN THE AMOUNT OF CARBON DIOXIDE IN VENOUS AND ARTERIAL BLOOD. SIMULTANEOUSLY, MARKED INCREASE OF THE COPPER CONTENT IN BLOOD WAS NOTED THAT COULD BE REGARDED AS A COMPENSATORY AND ADAPTATION ACT OF THE ORGANISM IN TRAUMATIC SHOCK.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--FREE RADICALS AND ENERGY EXCHANGE IN LEUKOCYTES DURING LEUKOSES -U-

AUTHOR--KLOCHKO, E., KOVALCHUK, L., KRUGLYAKOVA, K., SEITS, I., LUGANOVA, I.
COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(2), 476-9

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--LEUKOCYTE, EPR SPECTRUM, RESPIRATION, PHOSPHORYLATION, FREE RADICAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/1800 STEP NO--UR/0020/70/190/002/0476/0479

CIRC ACCESSION NO--AT0101847

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--11SEP70
CIRC ACCESSION NO--AT0101847
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHANGES IN CONCN. OF FREE RADICALS WERE FOLLOWED BY EPR SPECTRA IN HUMAN LEUKOCYTES DURING LEUKOSES. AN INCREASED CONCN. OF FREE RADICALS IN LEUKOSIS WAS CONNECTED WITH A DISTURBED SYSTEM OF COUPLING BETWEEN RESPIRATION AND PHOSPHORYLATION REACTIONS.

UNCLASSIFIED

Acc. Nr. AP0045168 Abstracting Service: CHEMICAL ABST. 5-70 Ref. Code UR0489

91222z **Residual stresses in paper-plastic laminates bonded to plywood.** Koval'chuk, L. M.; Senchilo, Yu. Ya. (USSR). *Derevoobrab. Prom.* 1970, 19(1), 11-13 (Russ). Paper-plastic laminates (I) were bonded to a plywood panel (250 × 400 × 10 mm) with MF urea-HCHO adhesive and KB-3 PhOH-HCHO adhesive at 80-130° in order to det. the effects of the cooling rate on the residual stresses in I. The magnitude of residual stresses increased with the bonding temp. The more rapid the cooling rate the higher was the residual stress, particularly during the 1st 3 days following bonding. Bonding without heating also gave rise to stresses (though markedly smaller than during heating), presumably due to shrinkage of the adhesive interlayer. The stresses were mostly concd. in the corners and along the perimeter, and declined by ~50% after 7 days cooling. CKJR

REEL/FRAME
19780068

USSR UDC 621.378.325

KOVAL'CHUK, L.Y., SVENTSITSKAYA, N.A.

"Methods Of Adjustment Of Lasers With Unstable Resonators"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11),1972,pp [illegible]

Abstract: The necessary precision of arrangement of the elements of unstable resonators is discussed. Two methods of adjustment adopted in laboratory practice are described -- the autocollimation method and the method of multiple reflections. The scheme of a resonator with an adjustment device is shown for each method. The authors thank Yu. A. Anan'yev for the idea of the proposed method of multiple reflections and for his constant attention to the work, and also V.A. Shorokhov for useful council. 4 fig. 5 ref. Received by editors, 11 Oct 1971.

1/1

USSR

UDC: 621.375.826

ANAN'YEV, Yu. A., GRISHMANOVA, N. I., KOVAL'CHUK, L. V., SVENTSITSKAYA, N. A., SHESTOBITOV, V. Ye.

"On the Feasibility of Controlling the Emission From Lasers With Telescopic Cavities"

Moscow, Kvantovaya Elektronika, Shornik Statey, No 2(8), 1972, pp 85-88

Abstract: An experimental study is made of the possibility of controlling emission from a laser with a telescopic cavity by injecting a signal from an external source into the central zone of the cavity. The necessary average power of the external signal is determined for the case where it is comprised of "spikes" of emission randomly distributed in time. Four illustrations, bibliography of nine titles.

1/1

USSR

UDC 621.375.82

ANAN'YEV, Yu. A., GRISHMANOVA, N. I., KOVAL'CHUK, L. V., SVENTSITSKAYA, N. A., SHERSTOBITOV, V. Ye.

"On the Possibility of Laser Radiation Control With Telescopic Resonators"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No. 2, Moscow, "Sov. radio", 1972, pp 85-88 (from RZh-Fizika, No 10, Oct 72, Abstract No 10D1019)

Translation: The possibility of controlling laser radiation with a telescopic resonator by introducing a signal from an external source into the central zone of the resonator was investigated experimentally. The necessary average power of the external signal when it consists of randomly distributed subpulses of radiation over time was determined. 9 ref. Authors abstract.

1/1

USSR

UDC 577.391:612.016.1

PETROV, R. V., KOVAL'CHUK, L. V., and CHEREDEYEV, A. N., Institute of Biophysics, Ministry of Health USSR, Moscow

"Quantitative Aspects of Present-Day Radiation Immunology and the Action of Radiation on Intercellular Cooperative Processes"

Moscow, Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 483-494

Abstract: During the past 15-20 yrs a considerable amount of research has been done on the effects of irradiation on immunity. This research was done principally on the level of changes in the immunity of the entire organism; relatively few studies have been concerned with quantitative aspects of the action of radiation on immunocompetent cells. For a number of years, systematic research has been conducted at the authors' laboratory on the effects of sublethal irradiation of mice with gamma-rays upon the dynamics of changes in cells of the lymph system. In this research quantitative estimates were made for 2 mos after irradiation of the number and functional activity of lymphocytes, immunocompetent precursors, stem hemopoietic cells, and antibody-forming cells. This work is reviewed. The results showed that changes in the immunological response of the irradiated organism were not due solely to a shortage of cells participating in this response (principally precursors

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002201520011-7"

USSR

PETROV, R. V., Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 483-494

of antibody-forming cells and immunocompetent cells exhibiting homotransplantation activity); there were also radiation-produced deficiencies in intracellular cooperative processes necessary for immunological effects. Specifically, disturbance in the cooperation between lymphoid cells and stem hemopoietic cells could be assumed. Stem hemopoietic cells, in the absence of lymphocytic stimulation in the direction of immuno- and lymphopoiesis, differentiated towards hemopoiesis. One of the aims of the research being conducted is development of methods for restoration of the immunological reactivity of the irradiated organism by transplantation of one or several types of cooperating cells.

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002201520011-7"

Acc. Nr: AP0043766 KOVALCHUK Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 3, pp 786-793

TELESCOPIC RESONATOR LASER

Anan'yev, Yu. A.; Vinokurov, G. N.; Koval'chuk, L. V.; Sventsitskaya, N. A.; Shertsobitov, V. Ye.

The properties of an unstable resonator laser with large Fresnel numbers and radiative losses are considered. The feasibility of describing some properties of such lasers in the geometric optics approximation without applying the diffraction theory of open resonators is discussed. Results are presented of an experimental study of a generator with an unstable resonator formed by a telescopic system of mirrors.

1/1

REEL/FRAME
19770173

4 Figs, 21

K

USSR UDC: 577.3

KLOCHKO, E.V., KOVAL'CHUK, L.V., KRUGLYAKOVA, K.YE., SEYTS, I.F., LUGANOVA, I. S., BLINOV, M.N., and EMANUEL', N.M., Academician, Institute of Chemical Physics, Academy of Sciences USSR

"Free Radicals and Metabolism in Leukocytes During Leukoses"

Moscow, Doklady Akademii Nauk, Vol 190, No 2, 1970, pp 476-479

Abstract: The content of free radicals in leukocytes from chronic lymphatic leukosis and chronic myeloid leukosis patients was studied after the cells were incubated with various metabolic poisons - monobromoacetate, sodium fluoride, 2,4-dinitriphenol, and oligomycin. The concentration of free radicals decreased by 50% after "leukemic" leukocytes were exposed to 2,4-dinitrophenol, an uncoupler of oxidative phosphorylation in the early stages. The use of oligomycin, an uncoupler of oxidative phosphorylation in the later stages, did not have an appreciable effect on the level of free radicals. The incubation of healthy leukocytes with 2,4-dinitrophenol or oligomycin likewise had no effect on the concentration of free radicals. The level of free radicals in the leukocytes of both leukotic patients and healthy persons was not affected either during inhibition of glycolysis with sodium fluoride or stimulation during anaerobiosis. Monobromoacetate, which blocks glycolysis, had a more pronounced effect. It would appear that the high content of free radicals in leukocytes during leukosis signifies a disturbance of oxidative phosphorylation.

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USSR UDC: 629.735.33.072.8--515

ARTYUSHENKO, M. V. and KOVAL'CHUK, O. I.

"Storage and Transmission of Sequences of Moving Images"

Kiev, Izvestiya VUZ SSSR--Radioelektronika, No 9, 1972, pp 1160-1165

Abstract: A method is proposed for storing and producing information regarding changes in the shape of objects with less redundancy than television or cinematic frames. The method makes use of the theory of continuous groups for the practically important problem of compressing preserved and perceived information in a form similar to the succession of images shown in aviation training devices. To attain this end, the authors examine the physics of the connection between the images. A description of the set of homeomorphic images is obtained through a single specified element of that set and the set of transformation functions of the image plane, and it is shown that the description can be further simplified through a more detailed examination of the set of transformation functions. Expressions are found for the homeomorphism between transformation groups. The expressions obtained for shortening the amount of

USSR UDC: 629.735.33.072.8--515

ARTYUSHENKO, N. V., et al, Izvestiya VUZ SSSR--Radioelektronika, No 9, 1972, pp 1160-1165

stored images were subjected to modeling on the E.SM-6 computer, and the block diagram for the modeling procedure is shown.

2/2

USSR UDC 51:621.391

KOVAL'CHUK, P. I.

"Model of an Automaton With a Recognition System and Study of Its Behavior in a Random Medium"

Kiev, Teor. kibernetika--Sbornik (Theoretical Cybernetics -- Collection of Works), No 4, 1970, pp 68-87 (from Referativnyy Zhurnal -- Matematika, No 6, June 71, Abstract No 6V427)

Translation: The model of an automaton functioning in a composite and stationary random medium with multiparametric signals and capable of solving approximately the same problems as an automaton with linear tactics is examined. Its conversion function uses the algorithm of image recognition described in the work by the author and V. I. Neskhodovskiy (Avtomatika [Automation], No 1, 1970). It is shown that the automaton's behavior is characterized by a homogeneous Markov chain with a finite number of states, and for the case of a stationary random medium, semi-Markov chains can be used to determine the main characteristics of the automaton. Choice of the automaton parameters aimed at minimizing mathematical expectation of the penalty

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USSR

KOVAL'CHUK, P. I., Teor. kibernetika--Sbornik (Theoretical Cybernetics -- Collection of Works), No 4, 1970, pp 68-87 (from Referativnyy Zhurnal -- Matematika, No 6, June 71, Abstract No 6V427)

reduces to solving a nonlinear programming problem. In the example of a specific algorithm realized by the automaton, it is shown that it has rational behavior. Conditions of its asymptotic rationality are investigated.

2/2

UDC 51:621.391

USSR

KOVAL'CHUK, P. I.

"Model of an Automaton with Recognition System and Investigation of Its Behavior in a Random Medium"

Teor. Kibernetiki. vyp 4 [Theory of Cybernetics, No 4 -- Collection of Works], Kiev, 1970, pp 68-87, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V427).

Translation: A model of an automaton functioning in a composite and stable random medium with multiparameter signals and capable of solving approximately the same problems as an automaton with linear tactics is studied. Its transfer function uses a pattern recognition algorithm described in a work of the author and V. I. Neskhodovskiy (Avtomatika, No 1, 1970).

It is demonstrated that the behavior of the automaton is characterized by a homogeneous Markov chain with a finite number of states, and that semi-Markov chains can be used in the case of a stable random medium for determination of the basic characteristics of the automaton.

The selection of parameters of the automaton in order to minimize the mathematical expectation of a penalty is reduced to solution of problems in nonlinear programming. Using the example of a specific algorithm realized by the automaton, it is demonstrated that it has expedient behavior. Conditions of its asymptotic expediency are studied.

1/1

USSR

UDC 622.24.053.6

NEL'NIKOV, V. I., ZHIDOVTSEV, N. A., LEVCHENKO, A. T., STARKOV, V. N., DENCHUK, M. N., KOVAL'CHUK, P. P., and PODOBANYY, I. F.

"Test Results of a Wave Reflector"

Moscow, Bureniye -- Referativnyy Nauchno-Tekhnicheskiy Sbornik (Drilling -- Scientific and Technical Reference Collection of Works), No 1, 1973, pp 7-11

Abstract: Results are presented of tests conducted on a special arrangement of the botton part of a drilling column, which possesses the capacity of reflecting the vibratory energy generated by the cutting bit. This arrangement, which constitutes an independent structure, is called a superbit wave reflector. The basic configurations of the design and operation of the reflector are described. The existence of the theoretically calculated resonance regime and entiresonance regime was confirmed experimentally. Results of operational tests demonstrated an improvement of drilling parameters in hard rock as a result of application of the reflector. 3 figures, 1 table, 2 references.

1/1

USSR UDC 631.547.04

KOVAL'CHUK, S. I., Candidate of Agricultural Sciences, Kamenets-Podol'sk Agricultural Institute, MATKOVSKIY, A. A., Yarmolinetsk Production Administration of Agriculture

"Application of Maleic Acid Hydrazide for Retarding the Sprouting of Sugar Beet Roots and Lowering the Sugar Losses in Storage"

Moscow, Khimiya v sel'skom khozyaystve, No 11, 1972, pp 57-60

Abstract: A study was made to determine the optimal concentration of maleic acid hydrazide and study its effects on the sugar beet root harvest, the dynamics of the sugar content in the roots and the weight losses in storage. A phytopathological evaluation of the root crops after storage in pits was also made. Spraying the sugar beet plants 20 to 30 days before gathering the harvest with a 0.6% aqueous solution of maleic acid hydrazide with the addition of OP-10 wetting agent promotes an increase in the sugar content of the roots and a decrease in their sprouting during prolonged storage. The roots of the maleic acid hydrazide treated plants store better in pits than the control roots (lower sugar and weight losses), and they are less subject to rotting.

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USSR UDC 615.831.4.015.45:612.419:612.398.145.1.015.36

BOGUTSKIY B. V. and KOVAL'CHUK, S. I., Institute of Physical Methods of Treatment and Medical Climatology imeni I. M. Sechenov, Yalta

"The Effects of Ultraviolet Rays on DNA Biosynthesis in Myeloid Cells"

Moscow, Voprosy Kurortologii Fizioterapii i Lechebnoy Fizicheskoy Kul'tury, Vol. 36, No 1, 1971, pp 52-54

Abstract: Since it is known that sunburn may be accompanied by temporary hemolysis, an investigation was performed to check the effects of ultraviolet rays on the hematopoietic tissue in bone marrow. The tests were done on 75 mice which were topically irradiated with a quartz lamp over a 6 cm^2 large depilated skin area on the back, for 1, 2, 10, 30, and 60 min. Bone marrow samples were taken 2, 6, 12, and 24 hours after irradiation and analyzed for DNA according to the method described. The first histological signs of erythema appeared after a 5 min exposure. Staining intensity, indicative of the intensity of DNA synthesis

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USSR

BOGUTSKIY, B. V., and KOVAL'CHUK, S. I., Voprosy Kurortologii Fizioterapii i Lechebnoy Fizicheskoy Kul'tury, Vol 56, No 1, 1971, pp 52-54

significantly increased 6 hours after exposure and returned to normal within 24 hours. The same was true of longer exposures, except an exposure of 60 minutes, after which the intensity of staining increased on the 2nd hour, decreased on the 6th hour, and subsequently increased again. Since the rays had a low penetrating power and therefore could not act directly on the bone marrow, it was concluded that the reaction was mediated by a neurohumoral mechanism. Tissue injury caused by ultraviolet rays and the breakdown products circulating in blood stimulate DNA synthesis. However, when the concentration of the breakdown products exceeds a certain level, bone marrow activity is suppressed.

2/2

1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EFFECT OF ULTRAVIOLET RAYS ON DNA BIOSYNTHESIS IN THE EPIDERMIS -U-

AUTHOR-(02)-BOGUTSKIY, B.V., KOVALCHUK, S.I.

COUNTRY OF INFO--USSR

SOURCE--RADIOBIOLOGIYA 1970, 10(1), 25-7

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--UV RADIATION BIOLOGIC EFFECT, MOUSE, DNA, BIOSYNTHESIS, SKIN PHYSIOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0451 STEP NO--UR/0205/70/010/001/0025/0027

CIRC ACCESSION NO--AP0121125
UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0121125
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SKIN (6 CM PRIME2) OF MICE C57B1XCBA WAS DEPILATED AND UV IRRADIATED (HG QUARTZ LAMP PRK-2, DISTANCE 50 CM) FOR 1, 2, 5, 10, 30, 60, 120, AND 300 MIN AND THE ANIMALS WERE DECAPITED 2, 5, 12, 24, 72, AND 168 HR AFTER THE IRRADN. THYMIDINE PRIME3 H (1 MUCI-G BODY WT.) WAS INJECTED 2 HR BEFORE DECAPITATION. DNA BIOSYNTHESIS IN THE IRRADIATED EPIDERMIS WAS EVALUATED BY HISTORADIOAUTOGRAPHY (NUCLEAR EMULSION "M", EXPOSURE 2 WEEKS AT 4DEGREES). THE 1ST HISTOL. FEATURES OF THE ERYTHEMA REACTION WERE OBSD. AFTER UV IRRADN. FOR 5 MIN. THE IRRADN. BY SUBERYTHEMA DOSES (IRRADN. SHORTER THAN 5 MIN) RESULTED IN A DECREASED DNA SYNTHESIS FOR THE FIRST 12 HR AND THEN AN INCREASED DNA BIOSYNTHESIS APPEARED WITH SUBSEQUENT NORMALIZATION. IRRADN. BY SUPERERYTHEMA DOSES (10 MIN AND LONGER) RESULTED IN THE COMPLETE BLOCKING OF DNA SYNTHESIS FOR VARIOUS TIME INTERVALS WITH SUBSEQUENT ACTIVATION OF DNA SYNTHESIS. THE IRRADN. FOR 60 AND 120 MIN RESULTED IN THE BLOCKING OF DNA SYNTHESIS FOR 3-7 DAYS. FACILITY: NAUCH.-ISSLED. INST. FIZ. METOD. LECH. MED. KLIMATOL. IM. SECHENOVA, YALTA, USSR.

UNCLASSIFIED

AA0038813

UR 0482

3-76

Soviet Inventions Illustrated, Section I Chemical, Derwent,

238133 WELDING PLASTICS is based on maintaining an interelectrode gap which varies according to cosine law. Due to wave-type propagation of the h.f. energy, and on account of forming standing electromagnetic waves in the material the voltage across the capacitor and the field intensity are a function of the gap. 27.4.66. as 1072314/25-27, KOVAL'CHUK, V.A. et al. New Structural Materials Res. Inst. (1.7.69.) Bul. 9/20.2.69. Class 39a^2 Int. Cl. B 29c.

AUTHORS: Koval'chuk, V. A.; Drozdov, V. M.; and Dolgopolov, N. N.

Vsesoyuznyy Nauchno - Issledovatel'skiy Institut Novykh Stroitel'nykh Materialov

19740023

1/2 026 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--REDUCTION OF A HAFNIUM MOLYBDENUM HETEROPOLY ACID BY VARIOUS REDUCING AGENTS DURING THE PHOTOMETRIC DETERMINATION OF HAFNIUM -U-

AUTHOR-(04)-SHARKOVA, Z.F., SEMENOVSKAYA, YE.N., SOKOVIKOVA, N.K., KOVALCHUK, V.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(3), 490-4

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--HAFNIUM, MOLYBDENUM, SPECTROPHOTOMETRIC ANALYSIS, METAL CHEMICAL ANALYSIS, CHEMICAL REDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0479 STEP NO--UR/0075/70/025/003/0490/0494

CIRC ACCESSION NO--AP0126231
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--20NOV70

2/2 026

CIRC ACCESSION NO--AP0126231

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONDITIONS FOR THE REDN. OF MO-MO HETROPOLYACID (I) BY ASCORBIC ACID, SNCL SUB2 AND STANNOUS OXALATE, A MO(V) SALT SOLN., AND METALLIC MO WERE STUDIED SPECTROPHOTOMETRICALLY. ALL THE REDUCING AGENTS REDUCE I GIVING IDENTICAL REDN. PRODUCTS; THEIR ABSORBANCE MAX. IS AT 720-40 NM. SN (II) OXALATE IS THE BEST REDUCING AGENT. AFTER 2 HR THE REDN. IS COMPLETE. A DIRECT DEPENDANCE EXISTS BETWEEN THE ABSORBANCE AND HF CONCN. IN THE 80 MUG MO-ML RANGE, WHICH CAN BE USED FOR HF DETN. AS ITS REDUCED I COMPLEX. CONDITIONS FOR THE EXTN. OF REDUCED I WERE FOUND. BUOH, ISOAMYL ALC., MECOET, AND THEIR MIXTS. WHICH C SUB6 F SUB6 EXT. I AND ITS SALTS FROM ACIDIFIED AQ. SOLNS; ALCS, EXT. I FROM 0.7N SOLNS., BUT KETONES AND THE MIXTS. NEED MORE ACID SOLNS. A METHOD WAS SUGGESTED FOR THE DETN. OF MO IN PURE SOLNS. BY USING SN OXALATE AS REDUCING AGENT IN AN AQ. AND AN EXTN. METHOD (MOLAR ABSORPTIVITY EQUALS 6.7 TIMES 10 PRIME3 AND 7.7 TIMES 10 PRIME3, RESP.). FACILITY: MOSCOW STATE UNIV., MOSCOW, USSR.

UNCLASSIFIED

UDC 546.791.4.221

USSR

DUNAYEVA, K. M., DUBROVIN, A. V., KOVAL'CHUK, V. Yu., and IPPOLITOVA, Ye. A.

"Study of the Oxidation Kinetics of Uranium Oxysulfide"

Leningrad, Radiokhimiya, Vol 15, No 6, 1973, pp 869-870

Abstract: The area of the specific surface of starting uranium oxysulfide sample has a definite effect on the oxidation rate constant indicating that the oxidation process takes place on active centers, the number of which increases with increasing specific surface. The apparent activation energy is almost independent of the specific surface. In respect to the oxygen pressure, it was found that above 0.206 atm the reaction is independent of the pressure. The oxidation process may be viewed as one being limited by the diffusion of oxygen through the layer of the reaction product.

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UDC 621.793.72:533.9

USSR

ZEMSKOV, G. V., KOVAL'CHUK, YU. M., SHARIVKER, S. YU., and TOLOK, V. K., Odessa Polytechnical Institute, Kiev Institute of Civil Aviation Engineers, Institute of Problems of Material Science, Academy of Sciences UkrSSR

"Use of Substrata to Increase the Bonding Strength of Plasma Antifriction Coatings with the Base"

Kiev, Poroshkovaya Metallurgiya, No 12, Dec 73, pp 24-27

Abstract: The authors studied the influence of substrata of molybdenum and nickel aluminide on the bond strength of plasma coatings containing a solid lubricant with the base. The initial material used to apply the sublayer was molybdenum powder or a composite Al-Ni powder produced by chemical deposition of nickel on aluminum particles. It was found that the use of a substratum of nickel aluminide during plasma atomization of antifriction coatings containing molybdenum disulfide as the solid lubricant increased the bond strength by ~30%.

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UDC: None

USSR

KOVALENCHIK, D. I., LEONT'YEV, A. I., TIKHOMIROV, D. A., ZHMUROVA, S. V., and YURCHENKO, A. I.

"Memory Device"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 14, 1973, p 145, No 373717

Abstract: This analog-type memory device using a selsyn pickup has the distinguishing feature of having the program carrier fixed to the selsyn shaft, with the perforator and counting element on the opposite side of the carrier disc. The effect of this arrangement is to simplify the device.

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UDC 911.3.616.986.7(571.14)

USSR

CHULOVSKIY, I. K., RAYKHLIN, M. I., and KOVALERCHIK, E. Ya.

"Leptospirosis in Novosibirskaya Oblast"

V sb. Vopr. infekts. patol. (Problems of Infection Pathology -- collection of works) Vyp. 2. Omsk, 1970, pp 144-147 (from RZh-Meditsinskaya Geografiya, No 4, Apr 71, Abstract No 4.36.87)

Translation: Over a 20-year period (1946-1965) there were 901 cases of leptospirosis registered in the oblast. In 1946-1957 Leptospira hebdomadis and grippotyphosa sero-groups prevailed. Later L. pomona prevailed with concurrent increase in the role of anthropurgic foci.

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UDC: 621.791.621.785.18

USSR

NIKITIN, D. G., KOVALENKO, A. A.

"Weldability of Corrosion-Resistant Thin-Sheet Steels with Reduced Nickel Content"

Kiev, Avtomaticheskaya Svarka, No 8, Aug 73, pp 47-49.

Abstract: This work studied the weldability of thin-sheet steels types OKh22N5T, OKh18G8N2T and Kh18AN5, chemical compositions as follows:

TYPE	Content, % C	Si	Mn	Cr	Ni	Ti	N	S	P
OKh22N5T	0.080	0.37	0.57	21.64	5.27	0.41	--	0,010	0.030
OKh18G8N2T	0.089	0.23	7.78	18.02	2.01	0.35	--	0.008	0.250
Kh18AN5	0.065	0.60	1.45	18.32	5.08	--	0.2	0.012	0.029

The steels were found not to be inclined to the formation of hot cracks during welding. Additive wire types are recommended for argon-arc welding with a tungsten electode. The thermal cycle of welding causes grain growth, slightly decreasing the ductility of the welded joints. Ductility can be increased for types OKh22N5T and OKh18G8N2T steels by heat treatment at 850° C.

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UDC 632.95

USSR

MOSKOVETS, S. N., KOVALENKO, A. G., CHERNETSKIY, V. P., Institute of Microbiology and Virusology imeni Academician D. K. Zabolotnyy

"A Method of Synthesizing a Complex of Physiologically Active Substances and Yeasts"

USSR Author's Certificate No 302368, filed 19 Jan 70, published 7 Oct 71 (from RZh-Khimiya, No 11, Jun 72, Abstract No 11N443)

Translation: To obtain a complex of physiologically active substances from yeasts which is better than Candida tropicalis 1b and C. arborea NAN-1 in inhibiting the tobacco mosaic virus and the X-virus of potatoes, a culture fluid which has been pre-treated to remove yeast cells or yeast extract is concentrated to 1/10 the initial volume by vaporization under vacuum at 45°C or less and then centrifuged for 3-4 hours. The precipitate is discarded, and matter is precipitated from the supernatant liquid with 60% ethanol. The precipitate dissolved in water at 45°C or less is treated with ribonuclease (30 μg/ml in 100 M NaCl, 2 hours at 25°C), then for 30 minutes with phenol (1:1) or with a phenol-chloroform mixture (9:1). The reaction mixture is centrifuged at 3000 G for 45-50 minutes, the phenol phase is discarded, and the aqueous phase is dialyzed through cellophane against water for more than 48

1/2

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MOSKOVETS, S. N., et al., USSR Author's Certificate No 302360, filed 19 Jan 70, published 7 Oct 71

hours. The inhibitor is reprecipitated from the dialyzer 2-3 times with 80% ethanol, and then with anhydrous ethanol, washed with an ethanol-ether mixture (1:1), and with ether, and then dried under vacuum.

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TITLE--HYDROGEN DIFFUSION IN MOLTEN IRON -U-

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SENSITIVITY AND THE ACCURACY OF THE VOLUMETRIC METHOD USED IN THE STUDY OF H DIFFUSION IN MOLTEN FE WERE INCREASED BY THE SUBSTITUTION OF A RING GAP FOR THE CAPILLARY. THE ANNULAR SPACE WAS FORMED BY 2 CONCENTRIC TUBES. AT 1560-1650DEGREES, THE WIDTH OF THE GAP FILLED WITH MOLTEN FE DID NOT AFFECT THE DIFFUSION COEFF., D SUBH. THE AMT. OF H ABSORBED, V SUBH, INCREASED LINEARLY WITH TAU PRIMEONE HALF, WHERE TAU IS TIME. EXPTL. D SUBH EQUALS 5.21 TIMES 10 PRIME NEGATIVE2 EXP(MINUS 10,000-RT). THE ACTIVATION ENERGY IS 10.0 KCAL PER MOLE. THE D SUBH IS LARGER THAN D SUBN AND D SUBD. DIFFUSION IS AN ADDITIVE CHARACTERISTIC DUE TO THE EXISTENCE IN THE MOLTEN FE CLUSTERS, PSI SUBCL, AND DISORDERED, PSI SUBDIS, REGIONS, WHERE PSI SUBCL PLUS PSI SUBDIS EQUALS 1. D EQUALS PSI SUBCL D SUBCL PLUS PSI SUBDIS D SUBDIS. FACILITY: DONETSK. FIZ.-TEKH. INST., DONETSK, USSR.

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A70-24271 # **Effect of nonmetallic inclusions on the viscosity of metallic melts (Vliianie nemetallicheskikh vkliuchenii na viazkost' metallicheskikh rasplavov).** V. I. Arkharov, G. S. Ershov, L. A. Novokhatskii, and A. M. Kovalenko (Akademiia Nauk Ukrainskoi SSR, Fiziko-Tekhnicheskii Institut, Donetsk; Ukrainskii Nauchno-Issledovatel'skii Institut Spetsial'nykh Stalei, Kharkov, Ukrainian SSR). *Akademiia Nauk SSSR, Doklady*, vol. 190, Jan. 11, 1970, p. 366-368. 6 refs. In Russian.

Study of the kinematic viscosity of molten steel of a single composition containing various amounts of nonmetallic oxide (mainly corundum) inclusions in the temperature range from 1600 to 1825 C. The viscosity values were determined by the method of torsional vibrations of a crucible containing liquid metal in an inert atmosphere. It is found that the viscosity of liquid steel increases substantially with an increase in the quantity of corundum dispersed in it. This relative increase in viscosity due to the presence of nonmetallic inclusions decreases with an increase in temperature.

A.B.K.

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KOVALENKO, A. N.

"Near-Goman Transfer with Fixed Accuracy"

Probl. Mekh. Upravlyayemogo Dvizheniya [Problems of the Mechanics of Controlled Motion -- Collection of Works], No 1, Perm', 1972, pp 135-154 (Translated from Referativnyy Zhurnal Raketostroyeniye, No 7, Moscow, 1973, Abstract No 7.41.76, from the Resume).

Translation: A mixed functional was minimized, including the characteristics of energy expenditures and a quantity and order of magnitude less, characterizing the accuracy of the transfer. With some increase in energy expenditure (in comparison to the problem without consideration of accuracy), a decrease is observed in the dispersion of a number of values in the final orbit. There is therefore interest in connecting the energy expenditures and accuracy in this problem not in the form of a common functional, but by another method -- by placing limitations on the dispersion of the spherical variables in the final orbit, then seeking the energetically optimal solution. This problem is solved for coplanar slightly elliptical orbits, and the solution produced is compared with results produced earlier. 10 biblio. refs.

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UDC: 629.78.076.6

KOVALENKO, A.N.

"Optimum Passage Between Low-Ellipticity Orbits With Additional Requirement on Accuracy and Accounting for Nonsphericity"

Leningrad, Sb. Mekh. Upravlyayem. Dvigheniya i Probl. Kosmich. Dinamiki (Symposium on Guided Motion Mechanics and Cosmic Dynamics Problems), Leningrad University, 1972, pp 29-41 (from Referativnyy Zhurnal-Raketostroyeniye, 1973, Abstract No 4.41.125)

Translation: The system of equations describing an energetically optimum double-impulse passage between elliptical orbits in the equatorial plane of an axisymmetric planet is used as a basis. This system is convenient for obtaining solutions in the vicinity of known model optimum passage. Gohman ellipse is considered as such a model passage, selection of solution in its vicinity is determined: firstly, by introducing into the minimizing functional of a term characterizing the passage accuracy and sensitivity to errors in correcting impulses, secondly, by taking into account the nonsphericity in the

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KOVALENKO, A. N., Sb. Mekh. Upravlyayem. Dvigheniya i Probl. Kosmich. Dinamiki, 1972, pp 29-41

equatorial plane of the axisymmetric planet, thirdly, by selecting low-ellipticity orbits as boundaries. The analytical solution is investigated with respect to dependence of passage dispersion on various above mentioned factors. 8 references. Author's resume.

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