"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

PANTSYRNYY, V. I., et al., Khimiya Geterotsiklicheskikh Soyedineniy, 5, May 1973, pp 653-658

can be satisfactorily described as first order. The effects of various experimental conditions were determined. The experimental data on the effect of the 5 and 8' groups were analyzed by multifactor analysis. The differences in rates could not be correlated with parameters describing the electronic effect of R and R'.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--INHIBITION OF DIMETHYLFORMAMIDE HYDROLYSIS -U-

AUTHOR-(04)-LYAKUMOVICH, A.G., PANTUKH, B.I., BAIBURINA, Z.S., ZAKHAROVA, N.V.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(3), 182-3

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--FORMIC ACID, AMIDE, HYDROLYSIS, AUTOCATALYSIS, FURFURAL, AMINE DERIVATIVE, HEXAMETHYLENETETRAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0825 STEP NO--UR/0064/70/046/003/0182/0183

CIRC ACCESSION NO--AP0126492

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

2/2 014 UNCLASSIFIED

CIRC ACCESSION NO--AP0124492 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HYDROLYSIS OF HCONME SUB2 IN THE PRESENCE OF 10PERCENT OF H SUB2 O AT 120DEGREES IS AUTOCATALYTIC AND THE CONCN. OF HYDROLYSIS PRODUCTS RAPIDLY INCREASES WITH TIME, TO SIMILAR TO 0.5 MOLE-L. AFTER 3 HR. THE ADDN. OF UROTROPINE (0.2PERCENT) TOGETHER WITH SOME METALLIC FE INHIBITS THE HYDROLYSIS OF HCONME SUB2 E.G., NO HCO SUB2 H IS FORMED IN THE SYSTEM AFTER UP TO 30 DAYS AT 125DEGREES; FURFURAL (AND TO A LESSER EXTENT BZH) ALSO INHIBIT THE HYDROLYSIS OF I, WHILE PHNO SUB2 AND OTHER NITRO COMPDS. ARE EFFECTIVE INHIBITORS.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

Electromagnetic Wave Propagation

USSR

UDC: 621.391.82:621.317.743

PANTYUKHIN, Yu. P., TUSHKANOV, V. F.

"Comparative Measurements of the Field Strength of Radio Interference in the UHF Band With Vertical and Horizontal Polarization"

Nauch. tr. Omsk. in-t inzh. zh.-d. transp. (Scientific Works. Omsk Institute of Railway Transportation Engineers), 1970, 119, pp 105-110 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A225)

Translation: The paper presents the results of comparative measurements of the quasi-peak value of the field strength of radio interference in the meter wave band with vertical and horizontal polarization. It is shown that there is a slight increase in the quasi-peak value of field strength with vertical polarization. This increase is most noticeable on low interference levels. Four illustrations, bibliography of one title. Resumé.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC: 621.391.82:625.1

PANTYUKHIN, Yu. P., TUSHKANOV, V. F.

"Investigation of Radio Interference in the UHF Band Under the Conditions of a Large Railway Terminal"

Nauchn. tr. Omsk. in-t inzh. zh.-d. transp. (Scientific Works. Omsk Institute of Railway Transportation Engineers), 1970, 119, pp 101-104 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A231)

Translation: The article raises the problem of evaluating radio interference arising under conditions of electrified railroads as a random process. Data are given from an experimental study of the fine structure of radio interference in the meter wave band arising under the conditions of a large rail terminal. Three illustrations, one table. Resumé.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 576.851.71.097.5

BARBAN, P. S., and PANTYUKHINA, A. N., Perm' Institute of Vaccines and Sera

"Preparation of Incomplete Fluorescent Antibodies Against Rickettsia prowazekii"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 4, 1973, pp 16-20

Abstract: One of the major complications encountered in immunofluorescent work is that of nonspecific fluorescence. In order to determine whether the technique could be improved by the use of monovalent antibody fragments, studies were conducted on equine antiserum against Rickettsia prowazekii from which monovalent fragments were obtained by papain digestion. The antibody-containing fraction was obtained by two precipitations with ammonium sulfate (to 34% saturation, pH 7.1). The resultant immunoglobulins were subjected to pepsin and papain digestion and the products, along with the whole antibodies, were labeled with fluorescein isothiocyanate. The antisera, isolated immunoglobulins, and products of enzymatic digestion were tested for antibody activity serologically. The results showed that pepsin completely destroyed antibody activity, while papain digestion yielded preparations that had lost complement fixing and

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

BARBAN, P. S. and PANTYUKHINA, A. N., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 4, 1973, pp 16-20

hemagglutinating activities, but did bind the antigen as indicated by passive hemagglutination and inhibition of complement binding. Immunofluorescent studies showed that the active product of papain digestion gave higher staining titers and less nonspecific fluorescence than undigested immunoglobulins. TLC on Sephadex G-200 showed that the active papain product had a molecular weight of about 53,000± 1750, and a sedimentation coefficient of 3.5 S.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

ENGINEERING
Aeronautical and Space

USSR

UDC 621.438.056(088.8)

SHEVCHENKO, A. M., YAZICK, A. V., DIDENKO, V. I., and PANURIN. V. M.

"The Effect of the Gas Distribution Arrangement on the Characteristics of the Gas Turbine Combustion Chamber"

Kiev, Vestn. Kiyev. Politekhn In-ta. Ser. Teploenerg. (Journal of the Kiev Polytechnical Institute. Series on Thermal Power) No. 8, 1971, pp 14-17 (from Referativnyy Zhurnal - Turbostroyeniye, No. 9, Sep 71, Abstract No. 9.49.117)

Translation: The effect of the gas delivery arrangement on the fundamental characteristics of the gas turbine combustion chamber of an aviation engine are considered. Characteristics covered include completeness of combustion, temperature field of the gas stream, temperature level of the hot pipe walls, ignition and stability of combustion. Tests were conducted with natural gas with four types of atomizers. The air speed at the chamber intake was approximately 120 meters per second, the temperature 80 degrees C. and the pressure approximately 1.3 bar. It is shown that in this chamber the tested arrangements of gas delivery primarily influence the completeness of combustion and the stability of the process. 3 illustrations, 2 tables, 3 bibliographic entries.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

Inorganic Compounds

USSR

UDC (537.311+621.317.412):549.31:546.19

PANUS, V. P., BORISOVA, Z. U.

"Relation Between Electric and Thermal Properties of Glasses of the As-Ge-Te System"

Leningrad, Vestnik Leningradskogo universiteta, No 10, Fizika i khimiya, No 2, May 71, pp 125-130

Abstract: A study of glasses of the As-Ge-Te system and other systems with three-dimensional structures and similar bonds shows nearly constant conductivity values and other physicochemical properties at the established softening temperatures. The regular interrelated variations of the electrical parameters and softening temperatures are independent of the conductivity of the glass; they appear to be governed by the nature of the thermal excitation of the corresponding bonds and the characteristics of the shortrange order for the atomic arrangement in the glass. Glasses with dissimilar three-dimentional structures (of the As-Se system) exhibit different conductivity values at softening temperatures. In order to compare the physicochemical properties of dissimilar systems, it seems appropriate to use temperatures

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

PANUS, V. P., et al, Vestnik Leningradskogo universiteta, No 10, Fizika i khimiya, No 2, May 71, pp 125-130

which are equally removed from the established softening temperatures.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR UDC: 62-187.4.65-01.122

YEVTEYEV, F. Ye. and PANUSHKIN, B. P., Leningrad Elect. Eng. Inst. imeni Lenin

"Statistical Modeling of the Output Rate for Good Hybrid Resistive Film Integrated Circuits"

Leningrad, Izvestiya VUZ -- Priborostroyeniye, No. 9, 1970, pp 108-111

Abstract: The subject of this paper is the determination, through statistical modeling, of the rate of assembly-line manufacture of good integrated circuits of this type. The initial data for such a modeling procedure are supplied by the distribution and correlation expressions of the parametric relationships in passive and active integrated circuits. In investigating the distribution of film-element parameters, one should not use the ergodic hypothesis that the statistical characteristics in one set of resistors on the same substrate will be the same as the corresponding charac-

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

equivalence circuit to the shift-end bus, connecting the readout bit lines in opposition through diodes to the nondestructive readout line of the register of associative memory elements, and connecting the write-enable and readout lines of this register through the shapers and rectifiers to the one-output and zero-output terminals of the flip-flop for the first digital place of the number shift register. The controlling inputs of the rectifiers are connected to the shift-end bus. The output number lines of the second section of the device are connected through the gating shapers to the gating inputs of the playback amplifiers in the first section of the device, the inputs of these amplifiers being connected to the output lines of the register of associative memory elements. These output lines are matched to the output number lines of the first section of the device, and the address decoder outputs in the second section of the device are connected to the gating shapers through the corresponding rectifiers, whose second inputs are connected to the associative interrogation-enable line.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC: 539.4

PANYAYEV, V. A., RUSINKO, K. N.

"On Deformations and Destruction of Semi-Brittle Bodies"

V sb. Deformatsiya neuprug. tela (Deformation of an Inelastic Body--collection of works), Frunze, "Ilim", 1970, pp 98-109 (from RZh-Mekhanika, No 4, Apr 71, Abstract No 4V977)

Translation: The paper presents the results of an experimental study of the process of deformation and destruction of semi-brittle materials based on the example of SCh 15-32 gray cast iron. Tests were done in a broad range of forms of the plane stressed state under proportional loading. It is noted that the shear modulus G determined at initial deformations depends on the form of the stressed state. Therefore a new argument of the function G is introduced which reflects this singularity. In this connection, the theoretical stress-strain diagrams are in satisfactory agreement with the experimental diagrams. For each test program, the relative volumetric disintegration at the instant of fracture is calculated. It is established that this quantity depends on the form of the stressed state. Bibliography of 25 titles. Authors' abstract.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 539.374

PANYAYEV, V. A., and RUSINKO, K. N.

"On Deformations and the Failure of Semibrittle Solids"

Frunze, Deformatsiya Neuprugogo Tela, 1970, pp 98—109

Abstract : Results of experimental investigation are presented of the deformation process and the failure of semibrittle materials on the example of grey pig iron mark SCh 15-32. The investigations were carried out in a wide range of types of the plane stressed condition by proportional loading. Relations presented in a previous publication of the authors ("Stress-Strain Relations for Semibrittle Solids", Technical Installation Trust, No 6, 1967) were used for description of the deformation. It is noted that the shear modulus G, determined by initial deformations, depends on the character of stressed condition. Therefore, a new argument of the function G is introduced which permits to reflect the mentioned peculiarity. In this case, theoretical stress-strain

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

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PANYAYEV, V. A. and RUSINKO, K. N., Deformatsiya Neuprugogo Tela, 1970, pp 98-109

diagrams are in good conformity with experimental data. The magnitude of the relative volume desintegration at the moment of failure was calculated for each test program and its dependence on the character of the stressed condition was established. Four illustr., eight formulas, one table, 25 biblio. refs.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

DEDIKOV, E. A., PANYSHEV, A. V. and TIKHENKO, A. Yu.

"The Statement of the Problem of Ordering of the Structure of an Information Model of Data Processing"

Obshch. Teoriya Sistem [General Systems Theory -- Collection of Works], Kiev, 1972, pp 37-42 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V753).

Translation: The task of ordering of the structure of an information model of data processing on the basis of graph G' = (X, M), called an ordered graph of graph G, is stated. Graph G is defined as the graph of the structure of the information flows in the set of indicators X. The task of ordering is reduced to production of an isomorphic graph G' = ($X^0X^1X^2,\ldots, X^m$, M) from graph G = (X, M). An algorithm is suggested to order graph G, using the matrix of incidences of graph G. An example is presented, illustrating the operation of the algorithm. Based on the definition of an ordered graph, the following statements are proven: 1) all points in the same layer of graph G' have the same order, 2) based on the property of transitiveness, the relationship < and the absence of closed paths in graph G', there is a layer X^m,

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USSR

Dedikov, E. A., Panyshev, A. V. and Tikhenko, A. Yu., Obshch. Teoriya Sistem, Kiev, 1972, pp 37-42.

consisting of at least one point with the maximum order in relationship to the other points of the graph.

T. Sidorova

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USSR

UDC 577.1.53.9:577.23

DOLGO-SABUROV, V. B., and PANYUKOV, A. N.

"Molecular Heterogeneity of Cholinesterases"

Moscow, Voprosy Meditsinskoy Khimii, Vol 16, No 1, Jan/Feb 70, pp 31-36

Abstract: Separation by agar electrophoresis indicated that cholinesterases are present in the blood serum and tissues (liver, striated thigh muscle, mycardium) of rats in multiple molecular forms, constituting isoenzymes. As indicated by a determination of activities on the electrophoregrams by means of acetylthicocholine and butyrylthicoholine, an individual spectrum of isoenzymes was exhibited by every tissue. Upon addition of tetraisopropylpyrophosphate, which acts as a cholinesterase inhibitor, to the tissue extracts before separation, the activity of individual cholinesterase isoenzymes was inhibited to different degrees against a background of partial inhibition of the overall cholinesterase activity of the extract.

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Acc. Nr: AP0037223

Ref. Code: UR 0301

PRIMARY SOURCE: Voprosy Meditsinskoy Khimii, 1970, Vol 16, Nr 1, pp31-36

THE MOLECULAR HETEROGENEITY OF CHOLINE ESTERASES

Dolgo-Saburov, V. B.; Panyukov, A. N.

By means of electrophoresis in agarose gel it was shown that in rabbit tissues and blood serum choline esterases presented as numerous molecular forms-isoenzymes. Each of the organs tested is characterized by the specific spectra of isoenzymes. The pronounced decreases in activity of several isoenzymes isolated from tissues and blood serum was noted after the addition of phosphoorganic inhibitor (tetraisopropylpyrophosphate) on the background of partial inhibition of total choline esterase activity.

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USSR P UDC 621.384.66

PAPADICHEV, V. A., and YAKOBI, Yu. A. (Novosibirsk)

"Measurement of Magnetic Field in Charged-Particle Accelerators by Paired Coil Method"

Novosibirsk, Avtometriya, No 3, May-Jun 70, pp 76-80

Abstract: In the variable magnetic field in the vacuum chamber of a charged-particle accelerator the field gradient can be measured by means of two induction coils whose axes are parallel and directed along the Z-axis. The article describes methods which assure the required accuracy even in the case of comparatively rough adjustment of the coil sensitivites and parallelism. These methods also permit the elimination of errors due to interference from the magnetic field source. One of the methods (the turn method) compensates for measurement errors by turning the sensor 180° about the Z-axis. The second method (the "effective distance" method) provides error compensation by replacing the quantity Δ_{z_0} (the distance between the axes of the coils) with the parameter Δz_{eff}. The latter is determined from measurement of the "median plane" separately for each coil.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/2 037 UNCLASSIFIED

TITLE--USE OF ISOTOPES IN CADMIUM AND ZINC VAPOR LASERS -U-

PROCESSING DATE--13NOV70

AUTHOR-(02)-RAPAKIN, V.F., SEM, M.F.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED. FIZ. 1970, 13(2), 117-118

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LASER, CADMIUM, ZINC, METAL VAPOR, ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0945

STEP NO--UR/0139/70/013/002/0117/0118

CIRC ACCESSION NO--AT0105814

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

2/2 037 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0105814

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INTENSITY OF VAPOR LASER BEAMS IS RAISED 3.5 TIMES BY USING PRIME112 CD INSTEAD OF ISOTOPE MIXTS. PRIME64 ZN IS ALSO ADVANTAGEOUSLY EMPLOYED.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--STUDIES ON RESPIRATION OF KANAMYCIN PRODUCING ORGANISM DURING BIOSYNTHESIS -U-

AUTHOR-(05)-BRINBERG, S.L., GRABOVSKAYA, O.Z., SMIRNOVA, L.V., PAPATSENKO, V.P., KALMYKOVA, G.V.

COUNTRY OF INFO--USSR

SOURCE--ANTIBIOTIKI, 1970, VOL 15, NR 6, PP 500-505

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BIOSYNTHESIS, KANAMYCIN, MICROORGANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1832 STEP NO--UR/0297/70/015/006/0500/0505

CIRC ACCESSION NO--AP0125443

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

2/2 018 UNCLASSIFIED

CIRC ACCESSION NO--AP0125443 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF CHANGES IN AERATION AND MIXING CONDITIONS ON RESPIRATION OF THE KANAMYCIN PRODUCING ORGANISM AND BIOSYNTHESIS OF THE ANTIBIOTIC WAS STUDIED. DURING INTENSIVE MIXING AN INCREASE IN THE AMOUNT OF AIR SUPPLIED WITHIN 1 TO 3 VOL-VOL DID NOT AFFECT THE ANTIBIOTIC BIOSYNTHESIS. AT LOW LEVELS OF MIXING TI SLIGHTLY INCREASED. A DECREASE IN THE INTENSITY OF MIXING MARKEDLY SUPPRESSED THE ANTIBIOTIC BIOSYNTHESIS. NATURAL CHANGES IN THE RESPIRATION LEVELS DEPENDANT ON THE MIXING CONDITIONS WERE PROBABLY ABSENT. THE MODE OF ACTION OF THE MIXING INTENSITY ON THE ANTIBIOTIC BIOSYNTHESIS MUST BE ATTRIBUTED TO LEVELLING OF THE CONCENTRATIONS OF THE NUTRIENTS AND METABOLITES NEAR THE CELL WALLS, AND NOT TO IMPROVEMENT OF THE AERATION CONDITIONS. FACILITY: ALL UNION INSTITUTE FOR ANTIOBIOTICS, MOSCOW,

UNCLASSIFIED

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 542.91+547.752

GABRIYELYAN, G. YE., and PAPAYAN, G. L., Institute of Fine Organic Chemistry Imeni A. L. Mndzhoyan, Academy of Sciences Armenian SSR (Yerevan)

"Indole Derivatives. XXXVII. Synthesis of Indole Compounds Containing a Furane Cycle"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol 26, No 9, 1973, pp 768-774

Abstract: Ethyl ester of 5-methoxy-3-(α-furyl)indole-2-carboxylic acid has been synthesized as well as its hydrazide, 1-benzyl derivative and corresponding acids, aminoesters, acyl derivatives, etc. with the goal of studying their biological properties. The synthesis was based on the reaction of furfurylacetoacetic ester with the diazonium salt of p-anisidine followed by Fisher cyclization of the hydrazone obtained to yield the indole product. No biological data are reported.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 547.752

PAPAYAN, G. L., and BADOYAN, YE. A., Institute of Fine Organic Chemistry imeni A. L. Midzhoyan, Academy of Sciences Armenian SSR

"Derivatives of Indole. Products of the Interaction of 3-Indolyl- and 1-Benzyl-3-indolylmethylidenemalonic Esters with Potassium Cyanide"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol 26, No 4, 1973, pp 306-310

Abstract: 1-Benzyl-3-indolylmethylidenemalonic acid diethyl ester (I; m. 78-80°) was prepared by reacting 1-benzylindole-3-aldehyde with diethyl malonic ester. Reduction of I with $LiAlH_4$ yielded 3-(1-benzyl-3-indolyl)-2-hydroxymethylallyl alcohol, while hydrolysis of I resulted in the formation of alpha-carboxy-beta-(1-benzyl-3-indolyl)acrylic acid (m. 216-18°). The reaction of I with KCN in EtOH did not result in the formation of an indolylsuccinic acid monoitrile, as in the case of 3-indolylmethylidenemalonic acid ester unsubstituted in the pyrrole ring (cf. A. Kalir and S. Szara, J. Med. Chem., 9, 793, 1966), but yielded the monoamide of (1-benzyl-3-indolyl) succinic acid (II; m. 140-1°), which presumably formed by hydrolysis of the corresponding mononitrile. The presence of a carboxy group in II was conversion of II into the monoethylester that formed the hydrazide of II (m. 205-6°) upon reacting with hydrazine hydrate.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 547.759.1

PAPAYAN, G. L., and GALSTYAN, L. S., Institute of Fine Organic Chemistry imeni A. L. Mndzhoyan, Acad. Sc. ArmenianSSR (Yerevan)

"Indole Derivatives. XL. Synthesis of N-Mono- and N,N-Dialkylsubstituted Tryptamines"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol 25, No 11, 1972, pp 963-968

Abstract: In order to study the effect of the substitution of hydrogen atoms of 1-benzyltryptamine with various alkyl groups on its biological properties, a series of N-alkyl and dialkyl derivatives of 1-benzyltryptamine with identical and mixed radicals was synthesized. Two routes were explored: iodoalkylation and formylation-acetylation of the NH_2 group followed by the reduction of formyl or acetyl groups with $LiAlH_4$ to the alkyl derivatives. The later method gives higher yields of the desired products. Several new derivatives of 1-benzyltryptamine were characterized.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/3 021 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--DERIVATIVES OF GAMMA AMINOBUTYRIC ACID. I. SYNTHESIS OF METHYL ESTERS OF N SUBSTITUTED ALPHA PHENYLAMINOACETIC ACIDS AND PRODUCTS OF

AUTHOR-(03)-DAVTYAN, S.M., PAPAYAN, G.L., ASRATYAN, S.N.

COUNTRY OF INFO--USSR

SOURCE--ARM. KHIM. ZH. 1970, 23(4), 251-7

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BUTYRIC ACID, AMINE, CHEMICAL SYNTHESIS, ESTER, PHARMACOLOGY, TEST METHOD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1814 STEP NO--UR/0426/70/023/004/0251/0257

CIRC ACCESSION NO--AP0123605

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

2/3 021 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123605

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SERIES OF TITLE ESTERS PHCHRCO SUB2 ME (I) AND ALCS. PHCHRCH SUB2 OH (II) WAS PREPD. AND PHARMACOL. TESTED. THUS, 14.6 G ET SUB2 NH WAS ADDED DROPWISE TO A MIXT. OF 22.9 G PHCHBRCO SUB2 ME, SMALL AMT. NAI, AND 100 ML C SUB6 H SUB6, AND THE MIXT. HEATED 2 DAYS TO GIVE 85.6PERCENT I (R EQUALS NET SUB2), B SUB3 123-9DEGREES, D PRIME20 1.0135, N PRIME20 SUBD 1.5040; HYDROCHLORIDE M. 153-4DEGREES. THE FOLLOWING I WERE PREPD. SIMILARLY (R, B.P. PER MM, D PRIME20, N PRIME20 SUBD, PERCENT YIELD, AND HYDROCHLORIDE M.P. GIVEN): NHME, 132-4DEGREES-2, 1.0718, 1.5152, 43, 114-15DEGREES; NHET, 128-30DEGREES-2, 1.0544, 1.5119, 59, 198-9DEGREES; NME SUB2, 122-4DEGREES-1, 1.0439, 1.5108, 80, 202-3DEGREES; 1,PYRROLIDINYL, 183-4DEGREES-4, 1.0743, 1.5220, 73, 182-3DEGREES; PIPERIDINO. 153-5DEGREES-7. 1.0674, 1.5279, 94, 184-5DEGREES: MORPHOLINO, 150-3DEGREES-4, 1.1099, 1.5310, 80, 199-200DEGREES: NHPH, MINUS (M. 72-3DEGREES), MINUS, MINUS, 57, 182-3DEGREES; NHCH SUB2 PH, 208-12DEGREES-5, 1.0990, 1.5630, 70, 178-9DEGREES.

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3/3 021 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123605

ABSTRACT/EXTRACT--LIALH SUB4 REDN. OF I GAVE THE FOLLOWING II (R, B.P.-MM, D PRIME20, N PRIME20 SUBD, PERCENT YIELD, AND HYDROCHLORIDE M.P. GIVEN): NET SUB2, 137-40DEGREES-5, 1.0394, 1.5381, 90, 135-60DEGREES; NHME, 115-20DEGREES-4, 1.0193, 1.5319, 65, MINUS; NHET, 125-30DEGREES-2, 1.0062, 1.5236, 76, 139-40DEGREES; NME SUB2, 130-50DEGREES-2, 1.0394, 1.5381, 85, 113-14DEGREES; 1,PYRROLIDINYL, 170-40DEGREES-7, 1.0681, 1.5502, 89, 186-7DEGREES; PIPERIDINO, 163-6DEGREES-5, 1.0556, 1.5486, 90, 153-4DEGREES; MORPHOLINO, 163-4DEGREES-2, 1.1061, 1.5136, 88, 158-9DEGREES; NHPH, 209-10DEGREES-4, MINUS, MINUS, 80, 143-4DEGREES; NHCH SUB2 PH, 213-15DEGREES-7 (M. 69-70DEGREES), MINUS, MINUS, 82, 229-30DEGREES. A SOLN. OF 50 G PHCHBRCO SUB2 ME AND A SMALL AMT. OF NAI IN C SUB6 H SUB6 SATD. WITH MENH SUB2 AND HEATED AT 120DEGREES IN AN AUTOCLAE FOR 4 DAYS GAVE 52PERCENT PHCH(NHME)CONHME, B SUB5 185-9DEGREES, M. 83-4DEGREES. FACILITY: INST. TONKOI ORG. KHIM., EREVAN, USSR.

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1/2 010 UNCLASSIFIED

TITLE--3,(INDOL,3,YL),5,PYRROLIDINONE -U- PROCESSING DATE--23OCT70

AUTHOR--PAPAYAN, G.L.

COUNTRY OF INFO--USSR

SOURCE--ARM. KHIM. ZH. 1970, 23(2), 200

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--INDOLE DERIVATIVE, HETEROCYCLIC NITROGEN COMPOUND, CATALYTIC HYDROGENATION, PYRROLIDINE, KETONE, CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1476 STEP NO--UR/0426/70/023/002/0200/0200

CIRC ACCESSION NO--AP0116913

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

2/2 010 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0116913

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HYDROGENATION OF ET 3,CYANO,3,(INDOL,3,YL),PROPIONATE OVER RANEY NI IN ABS. ETOH AT 80DEGREES-100 ATM UNEXPECTEDLY GAVE 50PERCENT TITLE COMPD. (I), M. 181-2DEGREES (H SUB2 O), INSTEAD OF THE EXPECTED AMINO ESTER.

FACILITY: INST. TONKOI ORG. KHIM., EREVAN, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 542.91+547.466.3

DAVTYAN, S. M., PAPAYAN, G. L., ASRATYAN, S. N., Institute of Fine Organic Chemistry, Yevevan, Academy of Sciences Armenian SSR

"Derivatives of γ-Aminobutyric Acid. I. Synthesis of Methyl Ethers of N-Substituted α-Phenylaminoacetic Acids and Products of Their Reduction"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol 23, No 3, 1970, pp 251-257

Abstract: γ-Aminobutyric acid and a number of its derivatives are very active biologically. To study the effect of substituents in the hydrocarbon chain and associated with the nitrogen atom, the authors synthesized compounds with a phenyl group in the γ-position and replaced of one or both hydrogen atoms in the amino group by various substituents Phenylacetic acid was brominated in the presence of red phosphorus. The resultant α-bromophenylacetic ester was condensed with amines. The esters of N-substituted α-phenylaminoacetic acids produced in this way (with the exception of the methyl ether of α-phenyl-phenylaminoacetic acid) are liquids which readily form crystallizable hydrochlorides. When methyl amine is interacted with the methyl ether of α-bromophenyl

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USSR

DAVTYAN, S. M., et al., Armyanskiy Khimicheskiy Zhurnal, Vol 23, No 3, 1970, pp 251-257

acetic acid, an amino acid amide is produced. Lithium aluminohydride reduction of the esters gives the corresponding aminoethanols (crystalline benzylaminoethanol). β-Dimethylamino-, β-piperidyl- and β-benzylamino derivatives are synthesized from these compounds. All alcohols form readily crystallizable hydrochlorides. The biological properties of hydrochlorides of esters of N-substituted α-phenylaminoacetic acids and the corresponding amino alcohols were tested on anesthesized cats. Various compounds raise blood pressure, increase respiration and intensify the adrenalin effect. The compounds were found to be ineffective in other biotests -- spasmolytic, anethetic, and peripheral M-choline-reactive structures.

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Pharmacology and Toxicology

USSR

UDC 615.785.3

PAPAYAN, G. L., ASRATYAN, S. N., and ALEKSANYAN, R. A., Institute of Fine Organic Chemistry, Academy of Sciences Armenian SSR

"The Effect of Preparation 2134 on the Curarizing Effect of Drugs with Depolarizing Action"

Yerevan, Biologicheskiy Zhurnal Armenii, Vol 23, No 5, May 70, p 107

Transaltion: It has been established in studies with narcotized and decerebrate cats that the new preparation 2134 (from furan derivatives) exerts an anti-curarizing effect when administered in minimum quantities. The drug especially restores skeletal muscles, which are weakened by the effect of the usual doses of relaxants of the depolarizing type (ditiline, listenone, and decamethonium); it almost completely restores the depressed respiration produced by these relaxants.

Initial introduction of preparation 2134 in a dose of 0.5 mg/kg prevents relaxation and depression of respiration produced by twice the dose of the aforementioned depolarizing relaxants.

Preparation 2134 does not exert a significant influence on the curarizing effect of relaxants of a competitive type of action (paramyon and diplacin).

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USSR

PAPAYAN, G. L., et al., Biologicheskiy Zhurnal Armenii, Vol 23, No 5, May 70, p 107

A broncho-spasmolytic effect is also observed. Administered in minimum doses to decerebrate cats with natural breathing occluded by opening of the chest, it reduces the bronchial spasm produced by intravenous introduction of proserine.

The results obtained in this study of preparation 2134 on the curarizing effect produced by curariform substances permit the conclusion that the preparation has a selective antagonistic effect with respect to depolarizing relaxants. The anticurarizing effect of the preparation is particularly pronounced when it is administered beforehand.

A similar property which is observed in compounds of the furan series should serve as a basis for directed synthesis of more effective anticurarizing preparations which counteract the effect of relaxants.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC: 535.853.673

PAPAYAN, G. V.

"Photoelectric Apparatus of a Dual-beam Recording Spectrophotometer"

Leningrad, Optiko-mekhanicheskaya Promyshlennost', No 8, Aug 72, pp 32-36.

Abstract: A description is presented of the photoelectric apparatus in a dual-beam recording spectrophotometer, operating by the electrical compensation method. Possible sources of errors are analyzed. The results of tests are presented, indicating high linearity, stability and sensitivity of the device. Zero drift in the amplifier is eliminated by fixation of the initial signal level using a diode fixing circuit. This greatly simplifies the amplifier of the spectrophotometer, increases its reliability and overcomes the shortcomings inherent in circuits which utilize a carrier frequency, such as loss of half the light flux and high requirements for output detector linearity. A schematic diagram of the device is presented. Ten spectrograms measured in sequence on the device with a rigidly fixed specimen differed by not more than 0.1%. This high accuracy results from the small zone of insensitivity of the tracking system and confirms the high stability of the device.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 535.243

AGROSKIN, L.S., PAPAYAN, G.V., and RAUTIAN, L.I.

"An Absolute Microspectroreflectometer"

Moscow, Doklady Akademii Nauk SSSR, Vol 197, No 1, Mar 71, pp 62-65

Abstract: Measuring the dispersion in reflectivity under a microscope is one of the basic diagnostic problems for any branch of science where the coefficients of mirror reflection must be determined for small objects or small segments of large samples. Although a formula exists for determining the spectral coefficients of reflection it is not applicable for use in ordinary microreflectometers and must be converted by using the known coefficients of a standard etalon. Since this complicates the computations and introduces a number of uncontrollable errors it seemed highly desirable that an absolute microspectroreflectometer be designed that would not involve the use of an etalon.

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USSR

AGROSKIN, L.S., et al, Doklady Akademii Nauk SSSR, Vol 197, No 1, Mar 71, pp 62-65

The authors describe and illustrate graphically the design of such an instrument. The specifics of the optical circuit make this instrument a reliable one that is free of the errors associated with ordinary instruments of this type.

They give graphs of the spectra of mirror reflection of various samples (Fig 2) and the spectra of reflection and transmission of a multilayer mirror film (Fig 3).

The article has 3 figures and a bibliography of 2 titles.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 533.69.01/533.662.013

PAPCHENKO, O. M.

"Approximate Method of Calculating the Downwash Behind a Straight Wing with Nonsteady Aerodynamic Motion at Subsonic Flight Velocities"

Samoletostr. i tekhn. vozd. flota. Resp. mezhved. nauchno-tekhn. sb. (Aircraft Construction and Air Fleet Engineering. Republic Interdepartmental Scientific and Technical Collection), 1970, No 19, pp 6-17 (from RZh-Mekhanika, No 10, Oct 70, Abstract No 10 B279)

Translation: In order to calculate the downwash behind a wing during steady-state motion, the latter is replaced by quasisteady-state motion with instantaneous variation of the kinematic parameters at discrete points in time. The eddy system of the wing is constructed from the eddy connected with circulation dependent on time the distribution of which with respect to scale is taken as midway between a trapezoid and an ellipse, a system of free eddies with constant circulation parallel to the span corresponding to the above-mentioned variations in the kinematic parameters and

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USSR

PAPCHENKO, O. M., Samoletostr. i tekhn. vozd. flota. Resp. mezhved. nauchno-tekhn. sb., 1970, No 19, pp 6-17

two longitudinal free eddies with circulation varying with respect to length and time. The downwashes are calculated in accordance with the adopted eddy system for discrete calculated points in time. It is proposed that the speed of the forward motion of the wing does not change with variation of the other kinematic parameters.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 621.771.23.001.5

KARPOV, M. I., PAPCHENKO, V. I., and FEDOSOV, N. M., Moscow Institute of Steel and Alloys

"Textures of Rolled Body-Centered-Cubic Metals"

Moscow, Izvestiya Vysshikh Uchebnykh Zavadeniy -- Chernaya Metallurgiya, No 9, 1970, pp 90-94

Abstract: A theoretical analysis was made of the occurence and development of texture in the cold rolling of body-centered cubic metal sheets. Theoretical texture pole figures were constructed for single crystals and polycrystal foils for various rolling conditions. The obtained pole figure for a single crystal agrees well with previous experimental data, although it contradicts the authors' conclusion regarding the stability of orientation. This orientation does not appear stable, and its variation with an increase in reduction is very small.

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USSR

UDC: None

POLYAKOV, S. V., AYZENBERG, Ya. M., and PAPELISHVILI, V. K.

"Multi-Story Earthquake-Proof Building"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 12, 1973, p 95, No 371335

Abstract: The unusual feature of this building is a set of panels fixed to the base supporting columns and detachable in seismic activity. These columns are horizontally flexible. An illustration is supplied.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 678:539.376

RABOTNOV, YU. N., PAPERNIK, L. KH., and STEPANYCHEV, YE. I., Moscow

"Description of the Creep of Composite Materials Under Tension and Compression"

Riga, Mekhanika Polimerov, No 5, Sep/Oct 73, pp 779-785

Abstract: A study was made of the possibility of applying a simplified variant of the non-linear hereditary theory to describe the creep under uniaxial tension and compression of anisotropic composite materials by means of a single equation. The equation characterizes the processes of active deformation in three principal directions of anisotropy (0°, 45°, and 90°). The direct and reverse creep of TS-8/3-250 glass textolite was investigated. The characteristics of the textolite can be used in calculating the supporting part of machine and structural elements made from this material. Four figures, 13 formulas, five bibliographic references.

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USSR

DERGYNOV, N. N., PAPERNIK, L. Kh., and RABOTNOV, Yu. N., Moscow

"Analysis of the Behavior of Graphite Based on the Theory of Nonlinear Heredity"

Novosibirsk, PMTF (Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki), No 2, 1971, pp 76-82

Abstract: The authors study the behavior of graphite, the description being based on the theory of nonlinear heredity, taking into consideration the temperature factor in the 20-3000°C range. The necessary characteristics are obtained from data on creep and stress-strain diagrams. An attempt is made to give the results a physical interpretation. Original article: two tables, four figures, 11 formulas, and nine bibliographic entries.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC: 551.596+534-143

YEMEL'YANENKO, I. V., LIBENSON, Ye. B., PALIY, A. F., and PAPERNO, A. I.

"Some Results of Experimental Investigations Into Sea Reverberation in the Radiation of Complex Signals"

Moscow, V sb. Tezisy dokl. 3-y Vses. shkoly--seminara po stat. gidroakustike, 1971 (Theses of Reports, Third All-Union School--Seminar on Statistical Hydroacoustics, 1971 -- collection of works) 1972, pp 343-347 (from RZh--Fizika, No 4, 1973, Abstract No 4Zh650)

Translation: Results are given of an experimental investigation in- to the degree of correlation of sea reverberation (R) and complex probing signals in mutual correlation processing. The presence of correlated components of sea R is detected in the near zone as well as in the far zone of the acoustical field. The experiments were conducted in the sea area at a depth of 3000-3500 m. The hydro- acoustical conditions of the experiments and the equipment used for recording and processing the signals are described. Examples are

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USSR

YEMEL'YANENKO, I. V., et al., Tezisy dokl. 3-y Vses. shkoly--seminara po stat. gidroakustike, 1971, (from RZh--Fizika, No 4, 1973, Abstract No 4Zh650)

given of the recorded envelopes and samples of received R. The correlograms obtained are analyzed in detail. The general idea here is the following: with an increase in frequency deviation, the level of the uncorrelated component of R is reduced and the level of the correlated components comparable with the maximum autocorrelation function of the probing signal is also reduced. It is noted that the expression for the correlated components of R varied only slightly although the number of responses with a relatively high correlation level dropped noticeably. On the basis of a comparison of the moments of appearance of correlation maxima with the depth of the locale and the radiation picture, it can be assumed that they are the result of reflections not only from the floor and surface but also from the scattering objects, the distance between which is small compared with the wavelength of the sound. L. V. Tikhomirova

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 539.4

ANDRONIKASHVILI, E. L., POLITOV, N. G., PAPERNO, I. M., RAZMADZE, A. K.

"Particularities of the Plastic Flow and Deformation Strengthening of Ionic Crystals"

Khar'kov, Fiz. Mekhanizmy Plastich. Deform. pri Nizkikh Temperaturakh -- Sbornik (Physical Mechanisms of Plastic Deformation at Low Temperatures -- Collection of Works) 1971, p 33 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2V1247 by L. I. Mirkin)

Translation: An investigation was made of the influence of irradiation in a reactor, mechanical loading, and cooling upon the properties of crystals. During the stretching of an irradiated crystal, failure takes place prior to the attainment of plasticity due to the high strength of fixation of the dislocations during irradiation. The irradiation of prestressed crystals permits the strength to be increased by a factor of 2, and the plasticity by a factor of 3. On the basis of the example of lithium fluoride crystals it was shown that irradiation fixes structural changes during loading. Lowering the irradiation temperature decreases the ultimate strength of nonloaded crystals and does not affect the ultimate strength of crystals under load. Decreasing the temperature to 77°K and x-ray irradiation brings about a threefold increase

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

BRINKIS, K. A., EYGUS, L. Ye., PAPERNO, L. B., Riga Polytechnical Institute

UDC 621.316.925

"A Device for Differential Directional Protection with an Ultrashort-Wave Communications Channel"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 8, 10 Feb 70, pp 49-50, Patent No 263721, Filed 23 Aug 68

Translation: This Author's Certificate introduces: 1. A device for differential directional protection with an ultrashort-wave communications channel for electrical transmission lines including those with branches. The unit contains a combination trigger which distinguishes symmetric and asymmetric short circuits, a measurement unit with keying module, and a comparator with output unit. The unit differs because to increase speed and reliability as well as selectivity in incomplete phase conditions, the measurement unit consists of current modules of forward and reverse sequence, and a common pulse shaper transformer whose primary winding is connected through the trigger outputs to the current modules, while the secondaries are connected to the ultrashort-wave transmitter and the comparator. The comparator takes the form of an AND gate based on dynistors connected in

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USSR

BRINKIS, K. A., et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 8, 10 Feb 70, pp 49-50, Patent No 263721, Filed 23 Aug 68

the collector circuit of a blocking triode controlled from the current modules and from the ultrashort-wave receiver. The comparator is connected in turn to the output unit which takes the form of a kipp oscillator with positive feedback. 2. A modification of this device which differs because the effect of transient processes in the primary circuit and in the secondary circuits of the current transformers is reduced by incorporating a saturable transformer in the current modules of the measurement unit. The primary winding of a transreactor is connected through a high-harmonic filter and a resistor to the secondary winding of the saturable transformer, while the secondary winding of the transreactor is connected at one end through a diode to the primary winding of the shaper transformer, and at the other end to the collector of a transistor which has its emitter junction connected to the above-mentioned resistor. This end of the winding is also connected to the base of the resolving transistor whose collector is connected through a follower.

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AN0036652

UR9007

AUTHOR-- PAPERNO, M.

TITLE-- "YAK-40" CONQUERS THE SKIES

NEWSPAPER-- KOMSOMOL,SKAYA PRAVDA, APRIL 12, 1970, P 2, COLS 3-4

ABSTRACT-- A. S. YAKOVLEV, YE. G. ADLER, M. G. BENDERSKIY, K. M. VALIK, AND K. S. KIL,DISHEVA, A TEAM OF DESIGNERS RESPONSIBLE FOR THE DEVELOPMENT OF THE "YAK-40" AIRCRAFT, HAVE BEEN NOMINATED FOR THE LENIN PRIZE BY THE MINISTRY OF AVIATION INDUSTRY.

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USSR

PAPERNOV, A. A., GARANINA, O. I. UDC 8.74

"Multiple Computer Computation System with a Common Memory Field"

V sb. Vychisl. sistemy (Computation Systems--collection of works), Vyp. 48, Novosibirsk, 1971, pp 48-63 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V417)

Translation: A study was made of the structure of a multiprogram multiprocessor computation system with a common information field and a multilevel virtual memory. The system is designed for joint processing of a set of problems some of which are interrelated and process data from different external sources. The dispatcher program included in any processor of the system organizes and controls the operation of the entire computation system. The dispatcher must enter into the organization of exchange between the different memory levels, consideration of utilization of the ready-access memory and its dynamic distribution, the resolution of conflicting situations during exchange with external sources and also reaction to breakdowns and failures of the equipment.

During the process of developing the computation system, the operation of the dispatcher was simulated and the output capacity of the system as a whole was evaluated. By the results of the simulation of the operation of the dispatcher 17% of the output capacity of a four-processor system is expended on the dispatcher functioning. It is also demonstrated that as a result of interference of the requests for common system equipment, the total output capacity of the computation system decreases by 17.3%.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

PAPERNOV, B. A.

UDC: 51

"Equivalent Flow Networks"

Moscow, V sb. Vopr. kibernetiki (Problems of Cybernetics--collection of works) 1973, pp 114-120 (from RZh--Matematika, No 1, 1974, Abstract No 1V480)

Translation: The author applies the term k-network to the system $M = (X,Z,V,A)$; where $X = X(M)$ is a set of vertices in M; $Z = Z(M) \subset X(M)$ is a set of numbered terminals of M; $V = V(M)$ is a set of arcs in M, where the weight of $a(v) = a_{ij} = a_{ij}(M) \geqslant 0$, interpreted as the transmissivity of the arc v, is attributed to each arc going from vertex x_i to vertex x_j; $A = (a_{ij})$ is a square matrix of order $|X|$. The vertices of $x \in X(M) \setminus Z(M)$ are called the inner vertices of the network M.

The network M for each $Y \subset X(M)$ determines the square matrix $B_Y(M) = (b_{ij})$ of order $|Y|$, where $b_{ij} = b_{ij}(M)$ is the value of the maximum flow that can pass into M from the vertex $x_i \in Y$ to

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

PAPERNOV, B. A., Vopr. kibernetiki, 1973, pp 114-120

the vertex $x_i \in Y$. The parallel connection operation of the k-networks M_1 and M_2 is introduced: $M = M_1 * M_2$, where M is obtained from M_1 and M_2 in paired splicing of terminals with the same number. The two k-networks M_1 and M_2 are said to be equivalent if for each k-network there is the relationship

$$B_{X(M)}(M_1 * M) = B_{X(M)}(M_2 * M).$$

The introduced equivalence of the networks is compared with the weaker flow equivalence in the sense of Xy, considered in the last chapter of the book by L. R. Ford and D. R. Falkerson (RZhMat, 1966, 11V249K).

The concept of the equivalence of networks is analyzed, and some equivalent transformations of networks that do not violate their equivalence are introduced. The problem of the choice among all networks equivalent to the one given or to the simplest--i.e., with the least number of inner vertices--is examined.
Ye. Levner.
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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

PAPERNOV, B. A.

"The Method of Equivalent Multipoles"

Issled. po diskretnoy mat. [Studies in Discrete Mathematics -- Collection of Works], Moscow, Nauka Press, 1973, pp 159-177 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract 8 V373 by V. Yevstigneyev)

Translation: The concept of a multipole, a weighted graph with separated poles, is introduced. The set of all multipoles with fixed set of weights W is represented by Q_W. Suppose $\phi:Q_W \to W$. Then the system $M_\phi=(Q_W,\phi)$ is called a class of f-poles. Nine classes of multipoles are studied: M_{pot} of flow multipoles, M_{sl} of random multipoles, M_{el} of electrical multipoles, M_{metr} of metric multipoles, M_{eul} of Euler multipoles, M_{ham} of Hamilton multipoles, M_{mag} of main-line multipoles and combinatorial multipoles.

The equivalency, weak equivalency and differentialability of multipoles are determined, as well as the representativeness of a class of multipoles.

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USSR

PAPERNOV, B. A., Issled. po diskretnoy mat., Moscow, Nauka Press, 1973, pp 159-177

This article explains the expediency of studying such objects as multipoles and studies the classes M_{metr}, M_{mag}, M_{sl}, M_{pot} multipoles from the standpoint of determination of the properties listed above. Construction algorithms are presented in the class of equivalent multipoles.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

Acc. Nr AP0101688 Abstracting Service: CHEMICAL ABST. 6-70 Ref. Code UR0449

115923g **Radiation perturbation in copper-doped gallium arsenide.** Papeko, A. S.; Radovskii, E. E.; Stel'makh, V. F.; Tkachev, V. D. (Belorussk. Gos. Univ. im. Lenina, Minsk, USSR). *Fiz. Tekh. Poluprov.* 1979, 4(1), 142-4 (Russ). The effect of radiation with fast reactor neutrons (10^{12}-3×10^{17} neutrons/cm^2) on the properties of GaAs doped with Cu was studied. The single crystals were grown by directed crystn. ($n_0 = 1.2 \times 10^{17}$/cm^3, $\mu = 3300$ cm^2/V-sec) and were purified by floating zone melting ($n_0 = 8.5 \times 10^{13}$/cm^3, $\mu = 4400$ cm^2/V-sec). Diffusion of Cu was carried out at 800° from electro-deposited surface layers under equil. pressure of As vapor. The exptl. and theoretical curves for the electron concns. in the original GaAs specimens, subjected to floating zone melting, as a function of temp., indicated the presence of 2 main donor levels. Photocond. measurements showed the deep level to be at E_c − 0.25 eV. This level may well be assocd. with inherent structural lattice defects arising during floating zone melting. After 2 hr diffusion of Cu, low-resistance p-type specimens were obtained. The relation between the concn. of holes and the temp., and also the data on photocond. spectra indicate the presence of a basic acceptor level, $E_A = E_V + 0.15$ eV, assocd. with the 1st ionization state of Cu, i.e. Cu^-. After irradn. of such specimens at 10^{16} neutrons/cm^2 the photocond. spectra exhibited the levels $E_c - 0.14$, $E_c - 0.4$, $E_c - 0.67$, $E_c - 0.75$, $E_v + 0.4$, $E_v + 0.3$, $E_v + 0.2$, and $E_v + 0.15$ eV, assocd. with residual and radiation-induced disturbances of the structure. The relation between

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Acc. Nr.
AP0101688

the hole concn. and the temp. indicates the high degree of compensation of the Cu^- acceptor. ($E_v + 0.15$ eV.) On irradn. of a specimen obtained by directed crystn. at 10^{16} neutrons/cm^2 under the same conditions as for the above specimens, a transition from n-type to p-type GaAs is obsd. Another illustration of the conversion of n-type GaAs doped with Cu into p-type material is given by the change in sp. resistance of specimens of various impurity levels on increasing the neutron flux. This change is probably due to an increase in the concn. of elec. active components in the Cu.

F. N. Standen

C.K.

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REEL/FRAME
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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/2 020 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--COMPLEX PROTECTIVE RELAY OPERATION SIGNALLING APPARATUS USING NON CONTACTING COMPONENTS -U-

AUTHOR-(04)-PAPERNO, L.B., ARONSON, V.N., POROTSKIY, B.S., VENTSLOVAS, V.I.

COUNTRY OF INFO--USSR

SOURCE--ELEKT. STANTSII (USSR), VOL. 41, NO. 3, P. 56-9 (1970)

DATE PUBLISHED--------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ELECTRIC RELAY, THYRATION, SIGNAL ELEMENT, COLD CATHODE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/0505 STEP NO--UR/0104/70/041/003/0056/0059

CIRC ACCESSION NO--AP0135968

UNCLASSIFIED

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

2/2 020 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0135968

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DESCRIPTION IS GIVEN OF THE BASIC PRINCIPLE OF COMPLEX PROTECTIVE RELAY OPERATION SIGNALLING EQUIPMENT EMPLOYING NON CONTACTING COMPONENTS WHICH HAS BEEN UNDER TEST IN THE LITORSK STATE REGIONAL POWER STATION. THE EQUIPMENT CONSISTS OF COLD CATHODE THYRATRON SIGNALLING ELEMENTS, A CENTRAL ACOUSTIC WARNING CIRCUIT AND A CENTRAL VISUAL WARNING CIRCUIT FOR UNRECORDED SIGNALS.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/3 031 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--A DEVICE FOR DIFFERENTIAL DIRECTIONAL PROTECTION WITH AN ULTRA-SHORT WAVE COMMUNICATIONS CHANNEL -U-

AUTHOR--BRINKIS, K.A., EYGUS, L.YE., PAPERNO, L.B.

P

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 263721

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI NO 8,

DATE PUBLISHED--10FEB70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., ENERGY CONVERSION (NON-PROPULSIVE)

TOPIC TAGS--PATENT, COMMUNICATION CHANNEL, ELECTRIC POWER TRANSMISSION, TRANSMISSION LINE, TRIGGER CIRCUIT, COMPARATOR, PULSE SHAPER, ELECTRIC TRANSFORMER, TRANSISTOR, ELECTRIC PROTECTIVE EQUIPMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1088 STEP NO--UR/0432/70/000/000/0000/0000

CIRC ACCESSION NO--AA0112212

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

2/3 031 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AA0112212

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS AUTHOR'S CERTIFICATE INTRODUCES: 1. A DEVICE FOR DIFFERENTIAL DIRECTIONAL PROTECTION WITH AN ULTRASHORT WAVE COMMUNICATIONS CHANNEL FOR ELECTRICAL TRANSMISSION LINES INCLUDING THOSES WITH BRANCHES. THE UNIT CONTAINS A COMBINATION TRIGGER WHICH DISTINGUISHES SYMMETRIC AND ASYMMETRIC SHORT CIRCUITS, A MEASUREMENT UNIT WITH KEYING MODULE, AND A COMPARATOR WITH OUTPUT UNIT. THE UNIT DIFFERS BECAUSE TO INCREASE SPEED AND RELIABILITY AS WELL AS SELECTIVITY IN INCOMPLETE PHASE CONDITIONS, THE MEASUREMENT UNIT CONSISTS OF CURRENT MODULES OF FORWARD AND REVERSE SEQUENCE, AND A COMMON PULSE SHAPER TRANSFORMER WHOSE PRIMARY WINDING IS CONNECTED THROUGH THE TRIGGER OUTPUTS TO THE CURRENT MODULES, WHILE THE SECONDARIES ARE CONNECTED TO THE ULTRASHORT WAVE TRANSMITTER AND THE COMPARATOR. THE COMPARATOR TAKES THE FORM OF AN AND GATE BASED ON DYNISTORS CONNECTED IN THE COLLECTOR CIRCUIT OF A BLOCKING TRIODE CONTROLLED FROM THE CURRENT MODULES AND FROM THE ULTRASHORT WAVE RECEIVER. THE COMPARATOR IS CONNECTED IN TURN TO THE OUTPUT UNIT WHICH TAKES THE FORM OF A KIPP OSCILLATOR WITH POSITIVE FEEDBACK. 2. A MODIFICATION OF THIS DEVICE WHICH DIFFERS BECAUSE THE EFFECT OF TRANSIENT PROCESSES IN THE PRIMARY CIRCUIT AND IN THE SECONDARY CIRCUITS OF THE CURRENT TRANSFORMERS IS REDUCED BY INCORPORATING A SATURABLE TRANSFORMER IN THE CURRENT MODULES OF THE MEASUREMENT UNIT.

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3/3 031 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AA0112212

ABSTRACT/EXTRACT--THE PRIMARY WINDING OF A TRANSREACTOR IS CONNECTED THROUGH A HIGH HARMONIC FILTER AND A RESISTOR TO THE SECONDARY WINDING OF THE SATURABLE TRANSFORMER, WHILE THE SECONDARY WINDING OF THE TRANSREACTOR IS CONNECTED AT ONE END THROUGH A DIODE TO THE PRIMARY WINDING OF THE SHAPER TRANSFORMER, AND AT THE OTHER END TO THE COLLECTOR OF A TRANSISTOR WHICH HAS ITS EMITTER JUNCTION CONNECTED TO THE ABOVE MENTIONED RESISTOR. THIS END OF THE WINDING IS ALSO CONNECTED TO THE BASE OF THE RESOLVING TRANSISTOR WHOSE COLLECTOR IS CONNECTED THROUGH A FOLLOWER.

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Papernov, A. A.

Logical Principles of Digital Computers and Programming (Logicheskiye osnovy tsifrovykh mashin i programmirovaniya) 2nd Ed. Moscow, Nauka, 591 pp (SL:490)

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1946 0148

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

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UDC 621.762:669.018.5(088.8)

AMOSOV, V. M., KARELIN, B. A., KITAYEV, B. L., SAVICHEVA, M. A., GUSEV, A. M., PAPILOV, V. P., and STEPANOVA, T. I.

"Powder Metal Alloy"

USSR Author's Certificate No 254092, filed 12 Jun 69, published 20 Mar 70 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11G357 P)

Translation: A powder metal electrode alloy based on W is proposed for spark gaps. To stabilize the emission properties and to increase the rate of electrode atomization barium zirconate is introduced into the alloy composition. The barium zirconate possesses stable properties under the conditions of exploitation and does not interact with the remaining components of alloy during sintering in the temperature interval 1550-1600°. The alloy is of the following composition: 0.5-4% Ni, 4-5% barium zirconate, and the remainder -- W. The alloy structure is in the form of fine-grain W, coated with solid W solution in Ni, and dispersed particles of barium zirconate uniformly distributed in grains and along grain boundaries.

V. Chelnokov

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 621.371:551.510.535

OSTROVSKIY, L. A. and PAPILOVA, I. A.

"Tilt in Propagation of FM Pulses in an Ionosphere Layer"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 1 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 1--collection of works) "Nauka," 1972, pp 334-340 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A331)

Translation: The characteristics of tilted propagation of FM signals are investigated in a nonuniform ionosphere layer through the methods of geometrical optics. "Quasi-optical" corrections are estimated to permit finding the intensity and duration of the focal point. In a similar approximation, the influence of nonlinear effects in dispersion compression is taken into account. Three illustrations, bibliography of five. A. L.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

UDC 621.357.5:669.715 (088.8)

BUBYALIS, YU. S., BYARNOTAS, A. K., KANSHEPEDAS, Z. P., PAPIL'SKIS, I. M., and ESTULIN, I. YA., Institute for Chemistry and Chemical Technology, Academy of Sciences, Latvian SSR

"Process for Preparing the Surface of Aluminum and Aluminum Alloys for the Application of a Galvanized Coat"

Avt. sb. SSSR, kl. (USSR Authors' Certificate kl. [expansion unknown]) C 23 b 5/00, C 23 c 3/00, No 336375, applied 26/01/70, published 19/05/72 (from Referativnyy Zhurnal -- Khimiya, No 7, 1973, Abstract No 7L356P)

Translation: A process is patented for the preparation of the surface of Al and its alloys for galvanization by treating the surface in a solution containing the fluoroborates of zinc and ammonia followed by cathodic treatment in the same solution. The process is distinguished in that nickel fluoroborate is added to the solution, the formation of the Ni-Zn alloy on the surface of the Al providing an increase in the durability of the adhesion of the subsequent galvanic film to the substrate. The reaction proceeds at a temperature of 20-30°C and a current density of 0.5-1.5/decimeter^2 in a solution containing the following (in g/l: $Zn(BF_4)$, 40-80; $Ni(BF_4)_2$, 100-250; NH_4BF_4, 5-40. For example, parts made of Al or one of its alloys are degreased in an organic

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

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BUBYALIS, YU. S., et al., Avt. sb. SSSR, kl (from Referativnyy Zhurnal -- Khimiya, No 7, 1973, Abstract No 7L356P)

solvent and then treated in a solution containing Na_2CO_3 (56 g/l) and Na [sic] (56 g/l) at 70°C for 5 minutes. Then the parts are treated in a 5% solution of NaOH at 20°C for 5 minutes. After washing in water the Al parts are treated for 30-60 seconds dilute (1:1)HNO_3. For parts made of the Al alloy D-16, however, 30 g/l of NH_4F is added to the HNO_3 solution before treatment. The parts are washed again with water and treated for 10-60 seconds in a solution -- having pH 3.5-4.5 and a temperature of 20-30°C -- containing the following: $Zn(BF_4)_2$, 40-8- g/l; $Ni(BF_4)_2$, 100-250 g/l; and NH_4BF_4, 5-40 g/l. After this the parts are cathodically processed in this same solution for 10-30 seconds at a current density of 0.5-1.5 amps/decimeter^2 and transferred to a bath for the application of the galvanizing coat.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/2 024 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--THERMODYNAMIC ANALYSIS OF SOME METAL OXYGEN CARBON SYSTEMS -U-

AUTHOR-(03)-RYABCHIKOV, I.V., KHRUSHCHEV, M.S., PAPIN, G.G.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MET. 1970, 13(2), 20-3

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--ZIRCONIUM COMPOUND, THORIUM COMPOUND, THERMODYNAMIC ANALYSIS, OXYGEN, CARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/1032 STEP NO--UR/0148/70/013/002/0020/0023

CIRC ACCESSION NO--AT0121628

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

2/2 024 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0121628

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD FOR THE THERMODYNAMIC ANAL. OF A 3 COMPONENT SYSTEM M,O,C WAS DEVELOPED AND APPLIED TO SYSTEMS IN WHICH M EQUALS ZR AND TH. THE REGIONS AT WHICH CONDENSED PHASES EXIST AT DIFFERENT TEMP. AND GAS COMPN. WERE DETD. FROM DIAGRAMS LOG P SUBMO-P SUBCO AND LOG (P SUBMO PLUS P SUBCO) VS. 1-T. FACILITY: SIB. MET. INST., NOVOKUZNETSK, USSR.

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/2 018 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--STANDARD ENTHALPY OF VINYL FLUORIDE FORMATION -U-

AUTHOR-(02)-KOLESOV, V.P., PAPINA, T.S.

P

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(4), 1101-3

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ENTHALPY, ORGANIC SYNTHESIS, FLUORINATED ORGANIC COMPOUND, VINYL COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1968 STEP NO--UR/0057/70/044/004/1101/1103

CIRC ACCESSION NO--AP0132229

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

2/2 018 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132229

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CALORIMETRICALLY DETD. ENTHALPY OF COMBUSTION OF CH SUB2:CHF IS MINUS 300.2 PLUS OR MINUS 0.4 KCAL-MOLE. THE STD. ENTHALPY OF FORMATION OF CH SUB2:CHF (G) IS MINUS 32.4 PLUS OR MINUS KCAL-MOLE. FACILITY: KHIM. FAK., MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

UDC 621.224.7.001.5

USSR

PAPIR, A.N.

"On the Divergence of Optimum Pressures by Turbine and Pump Works of Reversible Hydraulic Machines"

Tr. Leningr. Politekhn. In-ta [Works of the Leningrad Polytechnic Institute], 1972, No 323, pp 109-111 (from Referativnyy Zhurnal, No 6, Jun 72. 49. Turbostroyeniye. Abstract No 6.49.151)

Translation: The optimum pressure of a reverse hydraulic machine is by turbine work always higher than by pump work. The divergence of optimum pressures results from energy losses of the operating hydraulic machine; it increases with increasing losses in any of its parts and under any working conditions. The losses in the pressure duct of the block of the hydraulic machine affect mostly both, the magnitude of maximum efficiency (particularly when pumping) and the divergence of pressure. An approach of optimum pressures is possible only by decreasing of the energy losses in any of operating conditions; this coincides with the general problem of the efficiency increase of the unit. Two illustr., three biblio. refs.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/2 005 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--WATER JET ENGINES OF SMALL SHIPS -U-

AUTHOR--PAPIR, A.N.

COUNTRY OF INFO--USSR

SOURCE--(VODOMETNYYE DVIZHITELI MALYKH SUDOV) LENINGRAD, SUDOSTROYENIYE, 1970, 253 PP

DATE PUBLISHED--------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--WATER JET PROPULSION, MARINE PROPULSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0247 STEP NO--UR/0000/70/000/000/0001/0253

CIRC ACCESSION NO--AM0132510

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

2/2 005 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AM0132510

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FROM THE AUTHOR 3. BASIC SYMBOLS 5. CHAPTER 1 WATER JET ENGINE AND ITS ELEMENTS 8. 2 WATER JET PUMP 27. 3 CONNECTION BETWEEN THE OPERATION OF A WATER JET ENGINE AND ITS PUMP 66. 4 DEVELOPMENT OF THE ENGINE 74. 5 DEVELOPMENT OF THE PUMP 92. 6 STANDARD ELEMENTS OF ENGINES 153. 7 TESTS OF A WATER JET LAUNCH 176. 8 AN EXAMPLE FOR CALCULATION OF A WATER JET ENGINE 190. APPENDIX 231. BIBLIOGRAPHY 250. THE BOOK DEALS (WITHOUT THE USE OF METHODS OF HIGHER MATHEMATICS) WITH PHYSICAL OPERATING PRINCIPLES OF WATER JET ENGINES OF SMALL CRAFTS. THE BOOK WAS WRITTEN FOR SPECIALISTS WORKING ON THE DEVELOPMENT OF WATER JET ENGINES AND AXIAL PUMPS, STUDENTS, AS WELL AS MOTOR BOAT SPORTSMEN.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/2 010 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--PYRAZOLIDINE CHEMISTRY. XIV. EFFECT OF ENOLIZATION -U-

AUTHOR-(03)-MOLDAVER, B.L., ARONZON, M.YE., PAPIRNIK, M.P.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (3), 407-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--BENZENE DERIVATIVE, ORGANIC AZOLE COMPOUND, ORGANIC OXYGEN COMPOUND, MOLECULAR STRUCTURE, CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/0443 STEP NO--UR/0409/70/000/003/0407/0409

CIRC ACCESSION NO--AP0128013

UNCLASSIFIED

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UNCLASSIFIED

CIRC ACCESSION NO--AP0128013 PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FOLLOWING I WERE OBTAINED BY KNOWN METHODS (4, R PRIME1, AND M. P. GIVEN): H, H, 178DEGREES; ET, H, 108DEGREES; BU, H, 104-5DEGREES; PH, H, 184-5DEGREES; ME SUB2 NCH SUB2 CH SUB2, H (II), 228-30DEGREES; PHCH SUB2, H, 133-4DEGREES; AND BU, ME (III), 112DEGREES. ALSO PREPD. WAS IV, M. 84-5DEGREES. I AND IV WERE HYDROGENATED 3 HR OVER RANEY NI AT ROOM TEMP. TO YIELD PHNHCOCRR PRIME1 CONHPH (V). II (0.25 G) REFLUXED 3 HR IN 20 ML ETOH WITH 1 G RANEY NI GAVE 0.2 G V (R EQUALS H, R PRIME1 EQUALS CH SUB2 CH SUB2 NET SUB2), M. 152-3DEGREES. SIMILARLY, III GAVE V (R EQUALS ME, R PRIME1 EQUALS BU), M. 195-6DEGREES. III (1.25 G) WAS HYDROGENATED 3 HR IN ALK. ETOH SOLN. OVER 4 G RANEY NI AT 20DEGREES TO GIVE PHNHCOCMEBUCO SUB2 H, M. 108-9DEGREES.

FACILITY: LENINGRAD. KHIM.-FARM. INST., LENINGRAD, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

Single Crystals

UDC 669.725:621.785.78

GINDIN, I. A., LAPTEV, I. N., NEKLYUDOV, I. M., PAPIROV, I. I., and TIKHINSKIY, G. F., Physicotechnical Institute of the Academy of Sciences UkrSSR

"Change of the Anisotropy of the Resistance to Plastic Deformation of Beryllium Single Crystals After Program Loading"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 4, Oct 73, pp 808-814

Abstract: A study was made of the effect of preliminary programmed loading along the c-axis on the crystal shear stresses in different crystallographic planes of beryllium single crystals. Results of the investigation of the influence of annealing under continuously progressive loading on the anisotropy of the resistance to plastic deformation indicate that program loading lowers the strength of crystals in their tests along the c-axis; but the critical shear stresses on the basal planes, on the other hand, increase approximately by 50%. As a result of the non-additive reaction of the program loading on the shear stresses in different crystallographic planes, the anisotropy of the resistance

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

GINDIN, I. A., et al., Fizika Metallov i Metallovedeniye, Vol 36, No 4, Oct 73, pp 808-814

to plastic deformation of beryllium single crystals decreases. The process of disproportionation of point defects, which is assumed to take place in single crystals by annealing under continuously increasing loading applied along the c-axis, goes in two directions: a) diffusion of admixed and intermodal atoms with their separation along basal planes and on a-dislocations, and b) diffusion of vacancies generatable by creeping of a-dislocations with formation of prismatic loops of c-dislocations. Three figures, 13 bibliographic references.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR UDC 546.45:538.311.33

PAPIROV, I. I., STOYEV, P. I., and TARANENKO, I. A., Physicotechnical Institute, Academy of Sciences Ukr SSR

"Kinetics of Electrical Resistance Change in Deformed Beryllium During Annealing"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 6, Jun 73, pp 1241-1247

Abstract: This work is a continuation of a previously published work (PAPIROV, I. I., et al, Fizika Metallov i Metallovedeniye, Vol 34, p 1022, 1972) and pursues the goal of studying the effect of deformation degree of beryllium during rolling on the nature of its electrical resistance recovery. Beryllium ingots of 99.9% purity were rolled at 400°C with 30, 70, and 90% degrees of reduction. Samples measuring 0.4 x 0.4 x 50 mm were cut along the rolling axis by the electric spark method and electrical resistance was measured by the compensation method with an R-348 potentiometer. It was established that the electrical resistance recovery kinetics for beryllium is controlled by a thermally active process of dislocation annihilation as the dislocations moved in a field of peak internal stresses. A proposed equation for recovery of electrical resistance makes it possible to determine the average peak values of the athermal

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

PAPIROV, I. I., et al., Fizika Metallov i Metallovedeniye, Vol 35, No 6, Jun 73, pp 1241-1247

component of stresses for a known activation volume. Observed anomalies in electrical resistance recovery were associated with the complex and nonuniform substructure of polycrystalline beryllium after deformation. 5 figures, 1 table, 15 bibliographic references.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

Beryllium

USSR UDC 535.211:539.37

PAPIROV, I. I., AVOTIN, S. S., KRIVCHIKOVA, E. P., and KORNIYENKO, L. A.

"Deformation of Single Beryllium Crystals Subjected to Laser Radiation"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar/Apr 73, pp 147-148

Abstract: Samples were produced by zone melting, and after grinding and electropolishing were subjected to laser pulses of $\sim 10^{-3}$ sec. duration at 0.6940 μ wavelength. The irradiation surface had orientation (0001) and $(11\bar{2}0)$. Optical and electron microscope analysis showed extensive plastic deformation around the crater produced by a focused laser beam. The plastic deformation was characterized mainly by presence of twin crystals oriented at 60 and 120° with respect to the circular zone (0.5-1 mm wide) formed around the crater. The presence of tetrahedral twin crystals indicates the complex nature of the plastic deformation. Dendrite structure was also observed around the crater, and it was formed mainly by twin crystals of various sizes. A transverse glide of dislocations from the basal plane (0001) to the prismatic (1010) was also observed. There were many small craters around the large crater, the nature of which remains unexplained. The whole picture of deformation differed markedly from that observed during a static deformation.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

Beryllium

USSR UDC 669.725:621.785.78

AVOTIN, S. S. and PAPIROV, I. I., Physicotechnical Institute, Academy of Sciences Ukrainian SSR

"Aging of Beryllium Single Crystals"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 2, 1972, pp 77-78

Abstract: The microhardness of hardened and aged beryllium of various degrees of purity has been studied. The measurements were made at room temperatures on single crystals grown by zone melting (about 99.8% pure) and slow cooling of the melt in a BeO crucible (about 99.7% pure). The heating for hardening at 1000°C for 1 hr and the aging at 570-750°C for 0.5-50 hrs were done in vacuum at about $1 \cdot 10^{-6}$ mm Hg. The results of the study indicate that the microhardness anisotropy increases with the purity of beryllium. A similar dependence of hardness anisotropy was also observed with an increase in test temperatures. Thus, the change in the ratio of $H_{50\perp}/H_{50\parallel}$ as a result of increasing the purity of monocrystals will be equal to that produced by increasing the aging temperature by 200-300°C. (1 illustration, 1 table, 3 bibliographic references).

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

Beryllium

USSR UDC 669.725:539.374

FINKEL', V. A., PAPIROV, I. I., and PALATNIK, M. I., Physicochemical Institute of the Academy of Sciences, Ukrainian SSR

"X-Ray Study of the Plastic Deformation of Beryllium Single Crystals"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 32, No 2, Aug 71, pp 377-384

Abstract: Changes of the substructure and periods of the crystal lattice by deformations of beryllium single crystals at the expense of basal plane sliding were experimentally investigated. The investigation results discussed include differences in the behavior of single crystals under similar deformation conditions, development of new intensity peaks at the beginning of deformation, and vibrations of individual fragments in the course of deformation. It was found that the change of the substructure by deformation depends on the quantity of fragments and their integral disorientation. New fragments develop, previous fragments combine, and turns and vibrations of fragments take place during deformation. The angular distribution of fragments and their density changes with increasing pressure were determined. The dependence was established of periods of the crystalline lattice on the compression stress of beryllium single crystals with two orientations. The periods of the crystalline lattice were found to be susceptible to plastic deformation. Seven illustr., ten biblio. refs.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

Beryllium

USSR

UDC 669.725:539.377

AVOTIN, S. S., PAPIROV, I. I., TIKHINSKIY, G. F., KORNIYENKO, L. A., and NIKOLAYENKO, A. A., Physicotechnical Institute, Academy of Sciences, Ukrainian SSR

"Bend Tests on High-Purity Beryllium"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 32, No 1, Jul 71, pp 123-130

Abstract: An investigation of beryllium single crystal plastic deformation was carried out by bending in the temperature region of 77-300°K. The nature of the stressed state in bend depends essentially on the ratio of sample width to thickness (b/h) and on the geometrical conditions of testing. Single crystals of beryllium with b/h = 2 with three orientations (force parallel to a-axis, force parallel to b-axis, and force parallel to c-axis for hexagonal beryllium) were subjected to a force with a load rate of 0.2 mm/min; the distance between supports was 10 mm. The crystals were produced by zone melting and cut by a electric arc. Relative residual electrical resistance of a single crystal was $\rho_{4.2K}/\rho_{300K}$ = 0.005-0.006 and for polycrystalline beryllium--0.004. The samples were mechanically polished, and annealed in a vacuum of 10^{-6} torr at 700°C (polycrystals) and at 1200°C (single crystals) for 20 minutes. This study permitted explanation of the slip of screw dislocations with a Burgers vector c and dislocation type (c+a). For

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

AVOTIN, S. S., et al., Sverdlovks, Fizika Metallov i Metallovedeniye, Vol 32, No 1, Jul 71, pp 123-130

ordinary forms of strain (tension and compression) and low temperatures the indicated forms of strain were not previously observed. A study of the temperature relationship of bending ductility showed that single crystals with a b-axis orientation of force (force parallel to b-axis) have a bend angle greater than 90° down to 77°K while the most ductile single crystals were those with the force applied along the a-axis. An anomaly was observed in the temperature relationship of yield strength in single crystals with the force applied along the c-axis. On the basis of the change in strain with temperature, the conclusion was made that there is a change in transverse slip with temperature. Six figures, 24 bibliographic references.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/2 030 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--EFFECT OF PRIOR PLASTIC DEFORMATION ON THE DEFORMED FINE GRAIN BERYLLIUM -U-

AUTHOR-(02)-PAPIROV, I.I., TIKHINSKIY, G.F.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, VOL. 29, MAY 1970, P. 1057-1060

DATE PUBLISHED----MAY70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PLASTIC DEFORMATION, BERYLLIUM, TENSION, THERMAL EFFECT, METAL MECHANICAL PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605002/F01 STEP NO--UR/0126/70/029/000/1057/1060

CIRC ACCESSION NO--AP0139489

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

2/2 030 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0139489

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF EXPERIMENTS IN WHICH FINE GRAINED BERYLLIUM WAS OBTAINED BY PROGRAMMED VARIOUSLY DIRECTED DEFORMATION OF PURE CAST BERYLLIUM. THE MECHANICAL PROPERTIES OF THE FINE GRAINED BERYLLIUM ARE DETERMINED UNDER TENSION AT TEMPERATURES FROM 20 TO 1000 C. A TENSILE STRENGTH OF 56.5 KGF-SQ MM WITH 7.5PERCENT ELONGATION, AND A COMPRESSION STRENGTH OF UP TO 150 KGF-SQ MM ARE OBTAINED AT ROOM TEMPERATURE, WITHOUT THE OCCURRENCE OF BREAKDOWN WHEN DEFORMATION AMOUNTS TO ABOUT 50PERCENT. THE HIGHLY ATTRACTIVE MECHANICAL PROPERTIES OF THE BERYLLIUM ARE LINKED TO THE SMALL SIZE OF THE GRAINS AND A LOW IMPURITY CONTENT. FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, FIZIKO-TEKHNICHESKII INSTITUT, KHARKOV, UKRAINIAN SSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/2 030 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--EFFECT OF PRIOR PLASTIC DEFORMATION ON THE DEFORMED FINE GRAIN BERYLLIUM -U-

AUTHOR-(02)-PAPIROV, I.I., TIKHINSKIY, G.F.

P

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, VOL. 29, MAY 1970, P. 1057-1060

DATE PUBLISHED----MAY70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PLASTIC DEFORMATION, BERYLLIUM, THERMAL EFFECT, METAL MECHANICAL PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605002/D06 STEP NO--UR/0126/70/029/000/1057/1060

CIRC ACCESSION NO--AP0139454

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

2/2 030 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0139454

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF EXPERIMENTS IN WHICH FINE GRAINED BERYLLIUM WAS OBTAINED BY PROGRAMMED VARIOUSLY DIRECTED DEFORMATION OF PURE CAST BERYLLIUM. THE MECHANICAL PROPERTIES OF THE FINE GRAINED BERYLLIUM ARE DETERMINED UNDER TENSION AT TEMPERATURES FROM 20 TO 1000 C. A TENSILE STRENGTH OF 56.5 KGF-SQ MM WITH 7.5PERCENT ELONGATION, AND A COMPRESSION STRENGTH OF UP TO 150 KGF-SQ MM ARE OBTAINED AT ROOM TEMPERATURE, WITHOUT THE OCCURRENCE OF BREAKDOWN WHEN DEFORMATION AMOUNTS TO ABOUT 50PERCENT. THE HIGHLY ATTRACTIVE MECHANICAL PROPERTIES OF THE BERYLLIUM ARE LINKED TO THE SMALL SIZE OF THE GRAINS AND A LOW IMPURITY CONTENT. FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, FIZIKO-TEKHNICHESKII INSTITUT, KHARKOV, UKRAINIAN SSR.

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USSR

UDC 669.72.620.17

PAPIROV, I. I., and TIKHINSKIY, G. F., Physicotechnical Institute, Academy of Sciences Ukrainian SSR

"Structure and Mechanical Properties of Fine-Grained Formed Beryllium"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 29, No 5, May 70, pp 1057-1060

Abstract: The method of programmed variably directed forming of cast beryllium with a purity of over 99.9% (0.004 wt.% Fe; 0.004 Mn; 0.005 Mg; 0.002 Ni; 0.01 Al; 0.003 Cu; 0.002 Ca and 0.004 Cr) was used to produce a metal with a grain size of 13 micron. The mechanical properties during elongation in the temperature range from 20 to 1000°C were determined. At room temperature the tensile strength was 56.5 kg/mm^2 and the relative elongation 7.5%. In compression tests the strength reached 150 kg/mm^2 and no rupture took place at a deformation of $\sim$50%. The high mechanical properties of the beryllium are explained by its small grain size and low impurity content. Its mechanical properties over a wide temperature range surpass the characterisitcs of a technically quasiisotropic metal.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/2 024 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--RECRYSTALLIZATION OF ROLLED BERYLLIUM -U-

AUTHOR-(04)-KORNIYENKO, L.A., NIKOLAYENKO, A.A., PAPIROV, I.I., TIKHINSKIY, G.F.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL. METALLOVED. 1970, 29(1) 138-42

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--METAL RECRYSTALLIZATION, BERYLLIUM ALLOY, METAL ROLLING, CRYSTAL DISLOCATION, METAL DEFORMATION, GRAIN GROWTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0689 STEP NO--UR/0126/70/029/001/0138/0142

CIRC ACCESSION NO--AP0105665

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CIRC ACCESSION NO--AP0105665 PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF RECRYSTN. AND GRAIN GROWTH WERE STUDIED IN DEFORMED BE AS RELATED TO THIN STRUCTURE. INVESTIGATED WAS THE DISLOCATION STRUCTURE OF BE ROLLED AT 400, 600, AND 800DEGREES WITH THE DEGREE OF DEFORMATION OF 88PERCENT, AS WELL AS OF BE ANNEALED AT 700-1000DEGREES FOR 15 SEC TO 24 HR. THE ACTIVATION ENERGIES OF NEW GRAIN FORMATION AND THEIR GROWTH WERE 75 AND 51 KCAL-G-MOLE, RESP. THE HIGH ACTIVATION ENERGY VALUES ARE EXPLAINED ON THE BASIS OF THE DISLOCATION STRUCTURE OF THE DEFORMED METAL. THE FUNDAMENTAL ELEMENT OF THE DISLOCATION STRUCTURE IS THE PILING UP OF DISLOCATIONS INTO WALLS OR CLOUDS, FORMED BY COMPLEX INTERLACING OF LINEAR DEFECTS. THE CELLULAR STRUCTURE APPEARS BUT RARELY. DISLOCATION NETWORKS ARE FORMED ESP. AT HIGH DEFORMATION TEMPS. (800DEGREES). NEAR THESE NETWORKS THERE ARE FREQUENTLY SEEN CHARACTERISTIC INDIVIDUAL DISLOCATIONS. BESIDES SUCH CLUSTERS OF DISLOCATIONS, MATRIX SECTIONS 10 20 MU IN SIZE ARE OBSD. WHICH DO NOT CONTAIN A LARGE NO. OF IMPERFECTIONS PRESENT, WITH THE EXCEPTION OF PERHAPS A FEW DISLOCATION LOOPS. THE KINETICS OF THE PROCESSES TAKING PLACE DURING ANNEALING OF BE IS DETD. BY THE STRUCTURE OF THE DEFORMED METAL, WHICH IN TURN DEPENDS ON THE TEMP. AND THE DEGREE OF DEFORMATION.

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Beryllium

USSR UDC 669.725:548.53

KORNIYENKO, L.A., NIKOLAYENKO, A.A., BARTNOV, L.L., and TIKHINSKI, G.F.,
Physicotechnical Institute, Academy of Sciences, Ukr SSR

"Recrystallization of Rolled Beryllium"

Sverdlovsk, Akademiya Nauk SSSR, Fizika Metallov i Metallovedeniye, Vol 29, No 1, Jan 70, pp 138-142

Abstract: An investigation was made of the kinetics of recrystallization and growth of grains in strained beryllium as a function of its thin structure. The procedure for the preparation of the experimental samples is described. The dislocation structure of strained beryllium hot rolled at 400,600, and 800°C, with 88% deformation was investigated by optical and electron microscopy. Photographs of the dislocation structures of strained beryllium at various temperatures are presented and analyzed. The kinetics of new grain formation at primary recrystallization and their growth with collective recrystallization are studied. The results show that at high annealing temperature (950-1000°C) the growth rate slows down, and that the time prior to recrystallization depends exponentially on the inverse value of the annealing temperature.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

USSR

KORNIYENKO, L.A., et al, Akademiya Nauk SSSR, Fizika Metallov i Metallovedeniye, Vol 29, No 1, Jan 70, pp 138-142

The activation energies of the primary recrystallization of grains and their growth with collective recrystallization are 75±5 and 51±4 Kcal/g x mol, respectively. The dependence of the average grain size on annealing time with collective recrystallization is satisfactorily described by the formula $D = D_0 \tau^n$ and is presented in graphs for various rolling temperatures. The values of n for definite temperatures are given in a table. The high values of activation energies are explained on the basis of the dislocation structure of the deformed metal.
Orig. art. has: 4 figures, 3 formulas, and 1 table.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

1/2 040 UNCLASSIFIED PROCESSING DATE--23OCT7

TITLE--PROPERTIES OF IRRADIATED BERYLLIUM -U-

AUTHOR-(04)-KORNIYENKO, L.A., PAPIROV, I.I., TIKHINSKIY, G.F., DAVIDENKO, A.S.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. 1970, 28(2), 155-7

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--BERYLLIUM, MECHANICAL PROPERTY, NEUTRON IRRADIATION, ANNEALING, COMPRESSIVE STRENGTH, GRAIN SIZE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1544 STEP NO--UR/0089/70/028/002/0155/0157

CIRC ACCESSION NO--AP0120323

UNCLASSIFIED

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2/2 040 UNCLASSIFIED PROCESSING DATE--23OCT7

CIRC ACCESSION NO--AP0120323

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NEUTRON (N) IRRADN. OF BE (WITH A MEAN GRAIN SIZE OF 120 MU AND A BEO CONTENT OF 0.1-0.3PERCENT) WITH AN INTEGRATED FAST N (LARGER THAN 1 MEV) FLUX OF 1.2 TIMES 10 PRIME20 N-CM PRIME2 AT 280DEGREES INCREASED THE HARDNESS H SUBGAMMA FROM 130 TO 160 KG-MM PRIME2 BUT REDUCED THE COMPRESSIVE STRENGTH SIGMA SUBLIM FROM 106 TO 90 KG-MM PRIME2; SUBSEQUENT ANNEALING AT 850DEGREES REDUCE H SUBGAMM TO 130 KG-MM PRIME2 AND INCREASED SIGMA SUBLIM TO 98 KG-MM PRIME2. THE H SUBGAMMA AND SIGMA SUBLIM INCREASED (FOR BOTH IRRADIATED AND NONIRRADIATED SAMPLES) WHEN THE GRAIN SIZE WAS REDUCED TO 25 MU AND THE BEO CONTENT WAS INCREASED TO 1-5PERCENT; MOREOVER, SAMPLES OF LOWER GRAIN SIZE AND HIGHER BEO CONTENT WERE AFFECTED TO A LESSER EXTENT BY THE IRRADN. THE IRRADN. AND SUBSEQUENT ANNEALING AT 600-850DEGREES CAUSED NO CHANGE IN THE D. OF THE SAMPLES, WHILE ANNEALING AT 1000DEGREES INCREASED THE VOL BY 0.15-1PERCENT (THE SWELLING WAS LESS PRONOUNCED IN SAMPLES OF SMALLER GRAIN SIZE). DISLOCATION LOOPS OF SIZ 200-500 ANGSTROM AND AAT A D. OF 5 TIMES 10 PRIME13-10 PRIME14 LOOPS-CM PRIME3 WERE OBSD. AFTER THE N IRRADN., WHILE SUBSEQUENT ANNEALING AT 600DEGREES ANNIHILATED THE LOOPS AND LED TO THE FORMATION OF 150-200 ANGSTROM BUBBLES (LOCATED ON THE DISLOCATION LINES) WHOSE SIZE INCREASE WITH INCREASING ANNEALING TEMP., E.G., TO 1000-1500 ANGSTROM AT 850DEGREES AND 1-2 MU AT 1000DEGREES.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202320020-8

UNCLASSIFIED PROCESSING DATE--20NOV70

1/2 032

TITLE--FORMATION OF A POLYGONIZED AND A CELLULAR STRUCTURE IN BERYLLIUM -U-

AUTHOR-(05)-KORNIYENKO, L.A., TARANENKO, I.A., TIKHINSKIY, G.F., SIKLIAYENKO, A.A., PAPIROV, I.I.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, VOL. 29, MAR. 1970, P. 619-624

DATE PUBLISHED----MAR70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--BERYLLIUM ALLOY, METAL MICROSTRUCTURE, BIBLIOGRAPHY, HIGH PURITY METAL, METAL DEFORMATION, ANNEALING, THERMAL EFFECT, STRAIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0126/70/029/000/0619/0624

PROXY REEL/FRAME--3001/0070

CIRC ACCESSION NO--AP0125905

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE EFFECTS OF TEMPERATURE, DEGREE OF STRAIN, ANNEALING CONDITIONS, AND MATERIAL PURITY ON THE FORMATION OF POLYGONIZED AND CELLULAR STRUCTURES OF BERYLLIUM. IT IS FOUND THAT THE POLYGONIZATION OF BERYLLIUM IS MOST PRONOUNCED IN METAL ROLLED AT A SMALL REDUCTION AT TEMPERATURES RANGING FROM 600 TO 700 DEG C. FOR OBTAINING A CELLULAR STRUCTURE, HEAVILY DEFORMED BERYLLIUM SHOULD BE ANNEALED FOR ABOUT 1 MIN AT TEMPERATURES RANGING FROM 850 TO 900 DEG C. FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, FIZIKO-TEKHNICHESKII INSTITUT, KHARKOV, UKRAINIAN SSR.

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