

USSR

MIROSHIN, R. N., Vestn. Lennigr. Un-ta., 1972, No 19, pp 106-112.

for the maximum value of N_2 is presented. The class of processes limiting for the $(2, \beta)$ process as $\beta \rightarrow 0$ is introduced, and the asymptote of N_2 is also found for it. The results are used to estimate the correlation factor between intersections of $kt + a$ and ξ_t from the top downward and from the bottom upward.

2/2

- 13 -

1/2 007 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--TESTING RIG 3/B,58,300 ON WELL NO 2,SG, BIIKZHAL -U-
AUTHOR--(02)-SKVORTSOV, D.S., MIROSHKHIN, D.S.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, BURENIYE, NO 4, 1970, PP 36-37
DATE PUBLISHED-----70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--WELL DRILLING MACHINERY, EARTH DRILLING MACHINERY, PETROLEUM
PROSPECTING/(U)3VB58300 DRILLING RIG
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3007/1901 STEP NO--UR/0437/70/000/004/0036/0037
CIRC ACCESSION NO--AP0137098
UNCLASSIFIED

2/2 007

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0137098

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DRILL RIG FOR 7 KM WELL TESTED. THE SUCCESSFUL TESTING OF DRILLING RIG 3VB,58,300 IS REPORTED. THE RIG WAS SET UP ON WELL NO 2 SG AT BIIKZHAL (KAZAKH SSR) WHICH HAS A PLANNED DEPTH OF 7,000 METERS. THE RIG HAS A LOAD LIFTING CAPACITY RATED AT 300 TONS.

UNCLASSIFIED

USSR

MIROSHKHINA, E. A.

"Strategy for Solution of Verbal Problems with Varying Participation of Semantics"

Lingvist. Probl. Avtomatiz. Inform. Poiska [Linguistic Problems of the Automation of Information Retrieval -- Collection of Works], Kiev, 1972, pp 102-110 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V830).

Translation: This article describes experiments performed to study processes of adoption of strategies for solution of problems with clearly expressed semantic components, namely anagrams. The primary purpose of the experiments was to determine the role of semantic limitations in the conditions of the problem.

1/1

172 027 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--STRUCTURE OF OXIDE FILMS AND SCALE RESISTANCE OF AUSTENITIC
CHROMIUM MANGANESE STEEL 45KH15G14YUS -U-
AUTHOR-(04)-PROKOFYEV, D.I., BANNYKH, O.A., ZUDIN, I.F., MIROSHKINA, M.I.
COUNTRY OF INFO--USSR
SOURCE--IZVEST. AKAD. NAUK SSSR, METALLY, MAR.-APR. 1970, (2), 235-241
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--SPINAL, METAL OXIDE, CHROMIUM MANGANESE STEEL, AUSTENITIC
STEEL, SURFACE PROPERTY, CHEMICAL STABILITY, CHROMIUM STEEL, OXIDE
FILM/(U)45KH15G14YUS AUSTENITIC STEEL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1452 STEP NO--UR/0370/70/000/002/0235/0241
CIRC ACCESSION NO--AP0130385

UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0130385

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SCALE RESISTANCE OF A NUMBER OF MELTS OF AUSTENITIC CR-MN STEEL WAS STUDIED IN RELATION TO THE STRUCTURE OF THE OXIDE FILM. IN ALL CASES GOOD SCALE RESISTANCE WAS RETAINED UP TO 900DEGREESC. THE SCALE FORMED AT 900DEGREESC COMPRISED A NUMBER OF LAYERS INCORPORATING FE SUB2 O SUB3 AND MN SUB2 O SUB3, SPINELS OF COMPLEX STRUCTURE, CR SUB2 O SUB3, AND THIN LAYERS OF OXIDES CONTG. A HIGH PROPORTION OF SI. THE RATE OF OXIDATION GRADUALLY SLOWED AFTER 1500 H AT 900DEGREESC; THIS WAS ATTRIBUTED TO THE CR SUB2 O SUB3.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--PREPARATION OF BASE CASTINGS FROM LOW ALLOY CAST IRON -U-

AUTHOR--(05)-SKAZHENNIK, V.A., SFLYAKOV, B.P., MIRDASHNICHENKO, A.I.,
BABYACHENKO, B.D., BUT, YU.G.
COUNTRY OF INFO--USSR

SOURCE--LITEINOE PROIZVOD. 1970, (1), 40

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CAST IRON, TITANIUM CONTAINING ALLOY, COPPER CONTAINING ALLOY,
NICKEL CONTAINING ALLOY, CHROMIUM CONTAINING ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/F-RAME--1995/1387

STEP NO--UR/0128/70/000/001/0040/0040

CIRC ACCESSION NO--AP0116836

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0116836

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IMPROVEMENT OF HARDNESS, STRUCTURE, AND DURABILITY OF CASTINGS FOR DENTAL EQUIPMENT WAS ACHIEVED THROUGH THE ADDN. OF NATURALLY ALLOYED CR-NI AND TI-CU CAST IRONS TO THE PRODUCTION FOUNDRY CAST IRON. THE OPTIMAL AMTS. WERE: CR-NI 10-12 AND TI-CU CAST IRONS 7-8PERCENT WITH RESULTING CHEM. COMPN. OF THE FOUNDRY CAST IRON: C 3.0-3.35, SI 1.4-1.7, MN 0.7-0.9, CR 0.2-0.35, CU 0.2-0.35, NI 0.1-0.26, TI 0.1-0.15, P SMALLER THAN OR EQUAL TO 0.3, AND S SMALLER THAN OR EQUAL TO 0.12 WT. PERC. TENSILE STRENGTH 20 KG-M PRIM, HARDNESS 187-0. THE MICROSTRUCTURE CONSISTED OF ONLY PEARLITE WITH INCLUSIONS OF GRAPHITE HAVING LENGTH OF 220 MU.

UNCLASSIFIED

USSR

UDC 669.24:538.653

KARASYUK, N. P., MIROSHNICHENKO, F. D., and GAYTOTA, G. I.,
Zaporozh'ye Pedagogical Institute

"Magnetostriction of Heat-Resistant Nickel-Base Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 4,
Oct 73, pp 887-890

Abstract: The magnetostrictions of complex-alloyed heat-resistant alloys (KhN77TYuR, ZhS6K, ZhS3LS, and VZhL8) of different chemical composition, depending on their method of thermal and mechanical treatment, were investigated. These alloys are paramagnetic in the temperature range of room temperature — 700 to 800°C. Their measured magnetostrictions, in dependence on the outer magnetic field intensity H , were found to be negative. The appearance of the negative magnetostriction and its magnitude is explained by the percentage content of the hardening μ -phase of $Ni_3(Al, Ti)$ -type in the first alloy and by the quantity of the same phase, but of more complex chemical composition, in the other 3 alloys. The magnitude of the magnetostriction depends on

1/2

- 69 -

USSR

KARASYUK, N. P., et al., Fizika Metallov i Metallovedeniye, Vol 36, No 4, Oct 73, pp 887-890

the chemical composition of the alloys, the kind of their thermal treatment, and also on their mechanical surface treatment. The presence of magnetostriction in the investigated alloys can be considered related to the γ' -phase, separated during aging, and its magnitude of magnetostriction can be considered related to the percentage content of this phase. Three figures, two tables, two bibliographic references.

2/2

USSR

UDC 669.14.018:583

MIROSHNICHENKO, F. D., and PROKOPCHENKO, Ye. A., Zaporozh'ye
Pedagogical Institute

"On the Effect of Nickel Films on Magnetic Properties of Iron
Silicide Alloy"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 6,
Jun 71, pp 1191 -1197

Abstract: The effect of nickel films on magnetic properties of iron silicide alloy was experimentally investigated. It was found that nickel films of supercritical thickness, deposited by galvanization on specimens of iron silicide alloy, changed the domain structure of the alloy involving a substantial change of its magnetic properties. A method of calculating the main magnetic parameters of specimens covered with a nickel film of supercritical thickness is demonstrated. Calculation results agree satisfactorily with the experimental data. The latter are discussed by reference to diagrams showing the magnetostriction dependence on the magnetic induction, the effect of tensile strength on the coercive force and residual induction, and the permeability

1/2

- 56 -

USSR

MIROSHNICHENKO, F.D., et al, Sverdlovsk, Fizika Metallov i Metallovedeniye,
Vol 31, No 6, Jun 71, pp 1191-1197

dependence on the external load. Data of the observed anisotropic effect of nickel surface films on magnetic properties of transformer steel are presented. They demonstrate also the decreased magnetostriction in specimens cut perpendicularly to rolling. Five illustrations, one table, 14 biblio. refs.

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1/2 038 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--EFFECT OF SURFACE OXIDE FILMS ON THE MAGNETIC PROPERTIES OF
TRANSFORMER STEELS -U-
AUTHOR--(04)-PROKOPCHENKO, YE.A., MIROSHNICHENKO, F.D., KRUTSILO, I.K.,
MUSHTAYEV, V.F.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(2), 267-71
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TRANSFORMER STEEL, MAGNETIC PROPERTY, TECHNICAL STANDARD,
STEEL SHEET, OXIDATION, SILICON ALLOY, SINGLE CRYSTAL, ANISOTROPY,
ETCHED CRYSTAL, COLD ROLLING, OXIDE FILM/(U)GOST E320 TRANSFORMER STEEL,
(U)GOST E330 TRANSFORMER STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1994/1926

STEP NO--UR/0048/70/034/002/0257/0271

CIRC ACCESSION NO--AP0115740

UNCLASSIFIED

2/2 038

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0115740

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SERIES OF EXPTS. WAS PERFORMED TO STUDY THE EFFECT OF SURFACE OXIDE FILMS 3-5 MU THICK, OBTAINED BY THERMAL OXIDN. IN AIR, ON THE REDISTRIBUTION OF DISLOCATION IN AND THE MAGNETIC PROPERTIES OF SOVIET TRANSFORMER STEELS GOST E320 AND E330. PLATE SPECIMENS 250 TIMES 20 TIMES 0.35 MM CUT OUT OF COLD ROLLED TRANSFORMER STEEL PLATES AT ANGLES OF 0, 55, AND 90DEGREES WITH RESPECT TO THE ROLLING DIRECTION WERE SUBJECTED TO MAGNETIC MEASUREMENTS AND EXPOSED TO AIR AND (OR) HIGH PURITY AR AT VARIOUS ELEVATED TEMPS. THEN THE FILM THICKNESS WAS DETD. AND THE MAGNETOSTRICTION, COERCIVE FORCE, REMANENT INDUCTION, AND SP. MAGNETIC LOSSES OF THE SPECIMENS WERE MEASURED AGAIN. ANISOTROPY OF THE MAGNETIC PROPERTIES WAS ALSO STUDIED AS THE SPECIMENS CUT AT THE 3 DIFFERENT ANGLES (LONGITUDINALLY, TRANSVERSELY, AND AT 55DEGREES) FROM THE ENROLLED PLATE WERE CONSIDERED TO BE QUASI SINGLE CRYSTALS CUT ALONG THE (100), (110), AND (111) CRYSTALLOGRAPHIC PLANES, RESP. IN SUPPLEMENTARY EXPTS. THE THICKNESS OF THE OXIDE FILM WAS CHANGED BY ETCHING OR ADDNL. ANNEALING. THE PRESENCE OF AN OXIDE LAYER ON THE SURFACE OF THE FESI ALLOYS IMPROVED THEIR MAGNETIC PROPERTIES FROM THE STANDPOINT OF TRANSFORMER APPLICATION, LOWERING THEIR MAGNETOSTRICTION, COERCIVE FORCE, REMANENT INDUCTION, AND SP. LOSSES. AN ANISOTROPY OF THE EFFECT OF THE SURFACE FILM ON THE MAGNETOSTRICTION AS WELL AS ON THE OTHER MAGNETIC PARAMETERS OF THE TRANSFORMER STEELS WAS FOUND.

INST., ZAPOROZHE, USSR. FACILITY: ZAPOROZH. GOS. PEDAGOG.

UNCLASSIFIED

USSR

UDC 539.293

KRUTSILO, I. K., MIROSHNICHENKO, F. D., GRITSAY, F. Ye., MOROZOV, V. N.,
Zaporozh'ye State University

"Magnetostriction of Porous Nickel Films"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, No. 7, 1972,
pp 141-143

Abstract: The magnetostriction of porous cermet nickel films was investigated. In the opinion of the authors there has been insufficient attention given to magnetic studies of these materials, although one should expect original magnetic properties in such materials, with their unusual internal structure. The material used was PNK-1 industrial carbonyl nickel powder. After rolling, the tape obtained was baked in a protective atmosphere of dissociated ammonia for 30 min. Films with a porosity of 8, 22, 23, and 34% were obtained after rolling, since the centering was done at different specific pressures. Samples of dimensions $6 \times 30 \text{ mm}^2$ were cut from these films; samples with a porosity of 8% had a thickness of 0.25, those with a porosity of 22% had a thickness of

1/2

USSR

KRUTSILO, I. K., et al, Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, No. 7, 1972, pp 141-143

0.11, those with a porosity of 23% had a thickness of 0.1, and those with a porosity of 34% had a thickness of 0.14 mm. The magnetostriction of the samples was measured by the optico-mechanical method with a sensitivity of $1.1 \cdot 10^{-6} \text{ mm}^{-1}$. A new form of magnetostriction was observed in the film. As distinct from compact nickel, this magnetostriction is positive, being unsaturated in fields up to 1400 oe, and it exceeds λ_s of nickel by several factors. The existence of magnetocharge and positive tensomagnetostriction was shown in the samples. It was also shown experimentally that the magnetostriction of fabricated parts depends not only on the λ_s of the material but also on the mutual position and configuration of these parts.

2/2

- 51 -

USSR

UDC 532.517.4

BORONIN, V. V., ALEKSANDROV, M. A., MIROSHNICHENKO, G. V., SHENIN, Ye. K.

"Study of the Structure of Turbulence With the Aid of the 'Dnepr-1' Controlling Computer"

Tr. VNII gidrotekhn. i melior. (Works of the All-Union Scientific Research Institute of Hydraulic Engineering and Land Reclamation), 1972, Vol. 53, pp 167-179 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B1062)

Translation: The results of a computer assisted automated calculation of the physical characteristics of the turbulence field with direct recording of measurements into the ready access memory of the computer are presented. Using transducers based on measuring the force action of the flow on the receiving element mechanically connected to the tensometric converter, the flow of water into a hydraulic chute with a working area of 160×160 mm was investigated. The frequency of interrogation of the transducers was 100 Hz and the time for carrying out the process was 20 sec. The distributions of the average velocity, the intensities of the pulsations in the flow rate and pressures and certain correlation functions are given for the range of Reynolds numbers $10-50 \cdot 10^3$. The effect of measurement time on the values measured was investigated. The results are similar to results of other investigators. 7 ref. V. A. Frost.

1/1

- 136 -

1/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70
 TITLE--COHERENT BREMSSTRAHLUNG IN A DIAMOND SINGLE CRYSTAL -U-
 AUTHOR--(05)-GORBENKO, V.G., ZHEBROVSKIY, YU.V., KOLESNIKOV, L.YA.,
 MIRDSHNICHENKO, I.I., ROMASKO, L.M.
 COUNTRY OF INFO--USSR
 SOURCE--YAD. FIZ. 1970, 11(5), 1044-8
 DATE PUBLISHED-----70

M

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY
 TOPIC TAGS--DIAMOND, SINGLE CRYSTAL, PHOTON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--3007/1232

STEP NO--UR/0367/70/011/005/1044/1048

CIRC ACCESSION NO--AP0136643

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136643
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. QUASI MONOCHROMATIC POLARIZED PHOTON BEAM WAS OBTAINED FROM A DIAMOND SINGLE CRYSTAL AT THE KHARKOV 2,GEV EPSILON LINEAR ACCELERATOR. THE INTEGRAL INTENSITY OF PHOTONS MEASURED WITH QUANTAMETERS WAS 5 TIMES 10 PRIME9 EQUIV. GAMMA QUANTA IN 1 SEC WITH THE MEAN CURRENT OF EPSILON FLUX 0.2 MUA. THE COHERENT EFFECT WAS INVESTIGATED BY MEASURING INTEGRAL PHOTON AND SECONDARY ELECTRON INTENSITIES AS FUNCTIONS OF THE DIAMOND ORIENTATION ANGLES RELATIVE TO THE INCIDENT EPSILON MOMENTUM. INTENSITY AND POLARIZATION SPECTRA OF THE PHOTON BEAM ARE GIVEN. THE PHOTON POLARIZATION WAS ESTD. FROM THE RESULTS OF THE (GAMMA,RHO) REACTION STUDIED IN THE 1ST PI N RESONANCE REGION. FACILITY: FIZ.-TEKH. INST., KHARKOV, USSR.

UNCLASSIFIED

USSR

UDC 621.762.224:669.14.018.253

PETROV, A. K., LEVITIN, V. V., MIROSHNICHENKO, I. S., AKIMENKO, V. B., ANDREYEVA, A. YA., BATENEVA, M. K., GOLOVKO, V. A., LABUNOVICH, O. A., ORLOV, YU. G., and ORMAN, R. Z., Ukrainian Scientific Research Institute of Special Steels, Alloys and Ferroalloys, Dnepropetrovsk State University

"Study of Atomized Powders of High-Speed Steel and Blanks Made of Them"

Poroshkovaya Metallurgiya, No 3, Mar 71, pp 9-14

Abstract: This work was performed in order to study the structure of powders of high-speed steel produced by atomizing of liquid steel with a stream of pure argon applied to a stream of metal through a slit diaphragm at a pressure of 6-8 atm. For comparison, one melt was atomized using compressed air at 14-16 atm under industrial conditions. The structure and phase composition of the initial powder, powder after heat treatment, and blanks made from the powder were studied. Blanks produced by

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USSR

PETROV, A. K., et al., Poroshkovaya Metallurgiya, No 3, Mar 71,
pp 9-14

hydrostatic pressing with subsequent sintering had a fine-grain structure with evenly distributed carbides. The structure corresponded to a hardness of 65 HRC after tempering at 560° and 61 HRC after tempering at 620°. This indicates the possibility of producing blanks from atomized powders of high speed steel.

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- 62 -

USSR

UDC 621.762.224:669.14.018.253

PETROV, A. K., LEVITIN, V. V., MIROSHNICHENKO, I. S., AKIMENKO, V. B., ANDREYEVA, A. YA., BATENEVA, M. K., GOLOVKO, V. A., LABUNOVICH, O. A., ORLOV, YU. G., and ORMAN, R. Z., Ukrainian Scientific Research Institute of Special Steels, Alloys and Ferroalloys, Dnepropetrovsk State University

"Study of Atomized Powders of High-Speed Steel and Blanks Made of Them"

Poroshkovaya Metallurgiya, No 3, Mar 71, pp 9-14

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USSR

PETROV, A. K., et al., Poroshkovaya Metallurgiya, No 3, Mar 71,
pp 9-14

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2/2

67

1/2 035 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--EFFECT OF THE COOLING RATE ON THE SUPERCOOLING OF METALLIC MELTS
-U-
AUTHOR--(02)-MIROSHNICHENKO, I.S., BREKHARYA, G.P.
COUNTRY OF INFO--USSR
SOURCE--FIZ. METAL METALLOVED. 1970, 29(3), 664-6
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--METAL CRYSTALLIZATION, NONFERROUS LIQUID METAL, COOLING RATE,
METAL COOLING, ALUMINUM ALLOY, CHROMIUM ALLOY, MANGANESE ALLOY,
MAGNESIUM ALLOY, BISMUTH ALLOY, ANTIMONY ALLOY, HIGH PURITY METAL,
ULTRAHIGH PURITY METAL, SUPERCOOLING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3C01/0351 STEP NO--UR/0126/70/024/003/0664/0666
CIRC ACCESSION NO--AP0126107
UNCLASSIFIED

2/2 035

UNCLASSIFIED

PROCESSING DATE--20NOV76

CIRC ACCESSION NO--AP0126107

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MOLTEN DROP OF METAL WAS PLACED BETWEEN 2 CU DISCS TOGETHER WITH A CHROMELALUMEL THERMOCOUPLE. THE DISCS WERE PRESSED TOGETHER AND THE DROP WAS CONVERTED INTO A FILM, WHICH WAS THUS VERY RAPIDLY COOLED AND SUPERCOOLED. COOLING RATES VARIED FROM 2 TIMES 10 PRIME4 TO 3 TIMES 10 PRIMES DEGREES-SEC BY VARYING THE THICKNESS OF THE FILM. THE FOLLOWING VALUES WERE OBTAINED FOR MAX. SUPERCOOLING (1ST FIGURES) AT COOLING RATE OF THE LIQ. METAL (2ND FIGURES): AL,MN 6.9PERCENT 329, 3 TIMES 20 PRIMES; AL,CR 6.0PERCENT 332, 2 TIMES 10 PRIMES; FOR AL,MG 12.0PERCENT 180, 6 TIMES 10 PRIME4; AL,CU 15.0PERCENT 150, 7 TIMES 10 PRIME4; BI,SB 18.5PERCENT, 160, 5 TIMES 10 PRIME4; AL (99.999PERCENT) 92, 1 TIMES 10 PRIMES; FOR AL (99.7PERCENT) 134, 1 TIMES 10 PRIMES; FOR BI (99.999PERCENT) 45, 5 TIMES 10 PRIME4; FOR BI (97.5PERCENT) 63DEGREES, 5 TIMES 10 PRIME4 DEGREES-SEC. THUS, THE LEAST SUPERCOOLING OCCURRED WITH THE HIGHEST PURITY METALS. FACILITY: DNEPRCPETROVSK. GOSUNIV., DNEPRCPETROVSK, USSR.

UNCLASSIFIED

USSR

UDC 539.143.43

LARIN, G. M., and MIROSHNICHENKO, I. V., Institute of General and Inorganic Chemistry, Academy of Sciences USSR

"The EPR of Magnetically Diluted Single Crystals of Cuprous Diethyldithiophosphate"

Moscow, Zhurnal Strukturnoy Khimii, Vol 13, No 4, Jul-Aug 72, pp 727-728

Abstract: Single crystals of cuprous diethyldithiophosphate (I) diluted with Ni diethyldithiophosphate in the ratio of 1:300 were subjected to study. The crystals had been grown by the slow evaporation of an acetone solution containing the two compounds. On the basis of the angular relation of the EPR spectrum of I, the mutual orientation of the magnetic axes of the two geometrically non-equivalent Cu complexes contained in a single elementary cell was established. The angle between the Z axes of the g -tensors was $45 \pm 1^\circ$, while the X_1 and X_2 axes were parallel to each other. A superfine structure derived from the nuclei of the two isotopes ^{63}Cu and ^{65}Cu and a supplementary superfine structure associated with the two equivalent P atoms were observed in the EPR spectrum of I. The EPR spectrum of Cu in I could be described by an axially symmetric spin Hamiltonian from which the ratio of the magnetic moment of ^{63}Cu to that of ^{65}Cu followed that was equal to 0.9329. The supplementary superfine structure

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- 24 -

USSR

LARIN, G. M. and MIROSHNICHENKO, I. V., Zhurnal Strukturnoy Khimii, Vol 13, No 4, Jul-Aug 72, pp 727-728

derived from the P atoms was isotropic. It followed from this that the super-fine splitting at the P atoms originated by reason of the spin density of the unpaired electron on the s-orbitals of the P atoms only.

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Coatings

USSR

UDC 621.762.8

ZVEREV, A. I., and MIROSHNICHENKO, I. Yu., Institute of Problems of Material Science, Academy of Sciences UkrSSR

"Utilization of Detonation Phenomenon for Applying Coatings"

Kiev, Poroshkovaya Metallurgiya, No 11 (119), Nov 72, pp 36-47

Abstract: The state of the art of the detonation method for applying coatings is reviewed. The nature of the detonation phenomenon is discussed on the basis of diagrams showing the structure of a detonation wave and its excitation in a cylindrical tube and the formation of the coating, the structure of spin detonation, and the change-over from slow burning to detonation in a $2H_2+O_2$ mix. In the change-over the flame propagating rate in long tubes of small diameter increases gradually and at a certain distance from the ignition point the detonation wave develops. This distance decreases with increasing initial pressure and it increases with increasing tube diameter and augmentation of the initial temperature of the mix. The transition phenomenon from slow burning to detonation and the detonation effect by itself in mixes capable of chemical conversions are used for applying coatings to high-melting and other materials. Detonation coatings are widely used for protecting machine parts, tools, and equipment. Characteristics of mixtures
1/2

USSR

ZVEREV, A. I., and MIROSHNICHENKO, I. Yu., Poroshkovaya Metallurgiya, No 11 (119), Nov 72, pp 36-47

and of materials used in the detonation method for applying coatings are presented, and properties of coatings and ranges of their application are indicated. Seven figures, eight tables, one formula, thirty-four bibliographic references.

2/2

- 12 -

Acc. Nr.

AP0048449

Abstracting Service:

CHEMICAL ABST. 570

Ref. Code

4R0449

105570a Optical and photoelectric properties of thin layers of orthorhombic lead oxide. Kramarenko, N. L.; Miloslavskii,

V. K.; Miroshnichenko, I. M. (Fiz. Tekh. Inst. Nizkikh Temp., Khar'kov, USSR). *Fiz. Tekh. Poluprov.* 1970, 4(1), 227 (Russ). The spectral dependence of the absorption coeff. K of thin PbO layers was investigated in the energy range 1.7-5.5 eV, at 85-500°K, for K values of 5×10^1 - 5×10^6 cm⁻¹. The absorption spectrum consists of 3 parts: the 1st, corresponding to straight permitted transitions; the 2nd, approximated by straight lines in the $K^{1/2}(h\nu)$ coordinates; and the 3rd, with $h\nu < 27$ eV, in single crystals. Peculiarities of the spectral dependence of the photocond. (which is sensitive to annealing of the specimen) are discussed. Photoelec. inactive absorption is absent. The obsd. absorption in the tails is related to a transition between "quasi-surface" states (at the grain boundaries) and permitted zones. Alexandre Fuchs

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REEL/FRAME
19800157

18 N

USSR

UDC 621.314.57(088.8)

MIRGSHNICHENKO, I.S. [Ivanov. energ. in-t--Ivanovskiy Power Institute]

"Three-Phase Null Inverter"

USSR Author's Certificate No 262255, filed 30 Nov 67, published 2 June 70
(from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No
3B560P)

Translation: In order to increase the efficiency of an inverter which contains a device for recovery of the reactive power of a d-c power supply, an auxiliary 3-phase 3-core transformer is provided. The ends of the phases of the primary winding of the auxiliary transformer are connected to the phases of the inverter, and the ends of the secondary winding to the negative poles of the power supply; the start of the phases of the primary and secondary windings are connected to the anodes of six semiconductor diodes, the cathodes of which are connected to the positive pole of the power supply. 2 ill. A.T.

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- 16 -

Entomology

USSR

ZHUK, N. S., NI, A. S., MIRCSEHNICHENKO, N. I., KIM, V. YU., OVCHINNIKOV, N. A., and YUGAY, YU. M., Kazakh Institute of Epidemiology and Microbiology, Karatal'sk Rayon Sanitary Epidemiological Station, and Taldy-Kurgansk Oblast' Sanitary Epidemiological Station

"Control of Blood-Sucking Insects in the Paddies of the Karatal'sk Rayon Rice-Growing System"

Alma-Ata, Zdravookhraneniye Kazakhstana, Vol 30, No 5, May 71, pp 14-15

Abstract: Favorable conditions for the propagation of mosquitoes exist in the rice paddies of Karatal'sk Rayon. Large amounts of larvae of *Anopheles maculipennis*, *An. hyrcanus*, and *Culex modestus* are present in the paddies. Application of chlorophos in 0.5-0.8% solutions was effective in the control of mosquito larvae. Extermination of the larvae to the extent of 100% was obtained when these solutions were applied in amounts ≥ 100 l./ha. The solutions were either sprayed from an aircraft or released into the paddies on the ground level. The first method sometimes resulted in inadequate spraying because of misses due to improper signaling while the second method had the drawback that the solution did not spread in a sufficient concentration to areas distant from the point of release. Organophosphorus compounds can be

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USSR

ZHUK, N. S., et al., Zdravookhraneniye Kazakhstana, Vol 30, No 5, May 71,
pp 14-15

used on rice crops only before flowering of the plants. Sound agricultural methods including lack of inclines in the system of paddies, dense planting of rice, and drainage of water from the paddies, dense planting of rice, and drainage of water from the paddies also proved effective in the control of mosquitoes.

2/2

USSR

UDC 547.785.5'786.07

TSUPAK, Ye. B., CHUB, N. K., SIMONOV, A. M., and MIROSHNICHENKO, N. M.,
Rostov State University, Rostov-on-Don

"Studies in the Field of Benzimidazole Derivatives. XXVIII. Synthesis of Some
3-/2'-Benzimidazolyl/isoxazoles"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 6, Jun 72, pp 812-815

Abstract: By the chlorination of the oximes of 1-methyl-2-formylbenzimidazole and of its 5-methyl and 5-nitro derivatives, the hydrochlorides of the corresponding 2-benzimidazolylmethylhydroxamoyl chlorides were synthesized. Nitration of the oximes gave benzimidazolylmethylnitrolic acids. The products of the two conversions reacted with acetyl- or benzoylacetone in the presence of bases, forming 1', 5'-substituted 3-/2-benzimidazolyl/-4-acyl-5-methylisoxazoles.

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1/2 028 UNCLASSIFIED PROCESSING DATE--250670
TITLE--CORROSIVE WEAR IN WELLS AS A FUNCTION OF GAS CONDENSATE FLOW
VELOCITIES -U-
AUTHOR-(04)-KUTOVAYA, A.A., ULYANOV, A.M., KUZNETSOV, V.P.,
~~MIROSHNICHENKO, O.A.~~ M
COUNTRY OF INFO--USSR
SOURCE--GAZOV. PROM. 1969, 14(11), 8-10
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--PETROLEUM DEPOSIT, CORROSION RATE, METAL PIPE, PIPE FLOW/(U)D
STEEL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1998/2032 STEP NO--UR/0492769/014/011/0008/0010
CIRC ACCESSION NO--AP0122261
UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0122261

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CORROSION EROSION EXPTS. WERE CONDUCTED AT 4 WELL SITES ON TYPE D STEELS AT GAS CONDENSATE FLOW RATES OF 5-45 M,SEC. TEST SPECIMENS WERE LOCATED IN COUPLINGS CONNECTING 1.5M LONG SECTIONS OF 2, 2.5, 3, 4, AND 6 IN. PIPES. THE OPERATING CONDITIONS FOR THE NORTHERN STAVROPOLSK PETAGIADINSK (1) AND MAIKOPSK (2) WELL SITES ARE, RESP.: LIQ. FLOWS, 320-380 AND 4-51.,DAY. GAS FLOWS, 180-200 AND 400-500 10 PRIME3 M PRIME3PERDAY. WELL PRESSURE, 26-27.5 AND 100-102 ATM. CONDENSATE TEMP., 51-3 AND 70-85DEGREES. CO SUB2 CONTENT, 0.7-0.9 AND 4.3 VOL.PERCENT. CL RPRIME NEGATIVE IN CONDENSER WATER, 88-105 AND 30 MG-L. CORROSION RATES AT I INCREASED SLOWLY AT FLOWS OF 5-20 M,SEC, AND WERE AT A MAX. OF 0.18 MM,YEAR IN THE 20-28 M,SEC REGION, DROPPING OFF SHARPLY TO 0.07 MM,YEAR AT 40-45M,SEC. AT SITE, 2, THE CORROSION INCREASED RAPIDLY AT FLOWS OF 2-7 M,SEC, WAS AT A MAX. OF 4.7 MMPERYEAR, IN THE 8-12 M,SEC REGION AND LEVELED OFF AT SIMILAR TO 3.2 MMPERYEAR AT FLOWS GREATER THAN 20,M,SEC. LOWER CORROSION RATES AT THE HIGHER FLOW RATES ARE DUE TO INCREASED TURBULENCE IN THE PIPES: EROSION CONTRIBUTIONS TO CORROSION ARE INSIFICANT EVEN AT HIGH FLOWS AS LONG AS THE CONDENSATE IS NOT CORROSIVE.

UNCLASSIFIED

1/3 033 UNCLASSIFIED PROCESSING DATE--20NOV70
 TITLE--EXPERIENCE IN THE ORGANIZATION OF ENDOCRINOLOGICAL SERVICE TO AN
 URBAN POPULATION --U-
 AUTHOR--(02)--ELSHTEYN, N.V., MIROSHNICHENKO, R.S.
 COUNTRY OF INFO--USSR
 SOURCE--TALLIN; MOSCOW, SOVETSKOYE ZDRAVOOKHRANENIYE, RUSSIAN, NO 3, 1970,
 PP 27-32
 DATE PUBLISHED-----70

M

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
 TOPIC TAGS--ENDOCRINOLOGY, PUBLIC HEALTH, GOITER, MEDICAL FACILITY,
 MEDICAL PERSONNEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAE--3005/0663

STEP NO--UR/0753/70/000/003/0027/0032

CIRC ACCESSION NO--AP0132792

UNCLASSIFIED

2/3 033

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132792

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WE HAVE NOT FOUND IN THE LITERATURE SUMMARY RESEARCH ON THE ORGANIZATION OF SPECIALIZED ENDOCRINOLOGICAL SERVICE IN CITIES. ONLY A. P. NEGUREY PRESENTS CERTAIN MATERIAL ON FIRST STEPS IN DEVELOPING THIS KIND OF SERVICE. A NUMBER OF AUTHORS (K. S. RUBTSOVA; L. T. KLYACHKINA; M. A. RAKCHEYEVA; S. P. SEREBRYANAYA AND M. S. NOSOVA, ETC.) TREAT DISPENSARY SERVICE OF PATIENTS WITH ENDOCRINOUS PATHOLOGY. BUT ONE GETS THE IMPRESSION THAT THERE STILL DOES NOT EXIST A UNIFIED APPROACH TO THE PRINCIPLES OF ORGANIZING THIS WORK AND THE PRINCIPLES FOR OBSERVATION OF THESE PATIENTS. A UNIQUE SITUATION HAS TAKEN SHAPE IN TALLIN: THERE IS AN ENDOCRINOLOGIST IN EVERY POLYCLINIC, BUT THE PATIENTS WHO NEED TO BE EXAMINED ARE SENT TO TARTU, WHICH IS 190 KILOMETERS FROM TALLIN. ACCORDING TO DATA WE HAVE OBTAINED FROM THE TARTU GOITER CONTROL DISPENSARY, 25PERCENT OF THE BEDS IN ITS INFIRMARY ARE OCCUPIED BY INHABITANTS OF TALLIN. THUS, THE ENDOCRINOLOGISTS OF THE POLYCLINICS, DEPRIVED OF THE NECESSARY EQUIPMENT, HAVE BECOME AN INTERMEDIATE ADMINISTRATIVE STAGE, NOT INFREQUENTLY REROUTING PATIENTS FROM THERAPEUTISTS IN TALLIN TO THE TARTU GOITER CONTROL DISPENSARY. WE BELIEVED THERE WAS NO JUSTIFICATION FOR THIS FORM OF ORGANIZATION OF ENDOCRINOLOGICAL SERVICE TO THE POPULATION OF THE CITY. ON A RECOMMENDATION FROM ONE OF US (N. V. EL'SHTEYN), THE MINISTRY OF HEALTH ESTONIAN SSR CREATED A CITY ENDOCRINOLOGICAL DISPENSARY DEPARTMENT ASSOCIATED WITH THE KHAR'YUMYAYE HOSPITAL. THE ENTIRE STAFF OF THE ENDOCRINOLOGY OFFICES OF THE POLYCLINICS WAS TRANSFERRED TO THIS DEPARTMENT.

UNCLASSIFIED

3/3 033

UNCLASSIFIED

PROCESSING DATE--20NOV70

GIRC ACCESSION NO--AP0132792

ABSTRACT/EXTRACT--IN ADDITION, A GYNECOLOGIST ENDOCRINOLOGIST, A NEUROPATHOLOGIST, A PHYSICIAN FOR THE FUNCTIONAL DIAGNOSIS OFFICE, AND LABORATORY ASSISTANTS WERE INCLUDED IN THE STAFF. IN CONNECTION WITH THE OPENING OF THE ENDOCRINOLOGY DISPENSARY DEPARTMENT, THE QUESTION AROSE OF THE PRINCIPAL LINES OF ITS ACTIVITY. AS WE KNOW, GOITER CONTROL DISPENSARIES HAVE BEEN DEVELOPED IN VARIOUS REPUBLICS (B. M. KOTLYARENKO AND M. S. GLUSKER; I. D. LEVIT), AS HAVE DISPENSARIES FOR TREATING CLIMACTERIC DISORDERS (N. V. SVECHNIKOVA). IT SEEMED TO US THAT SUCH A NARROW SPECIALIZED APPROACH TO THE ORGANIZATION OF ENDOCRINOLOGICAL SERVICE WAS INSUFFICIENTLY SUBSTANTIATED FOR A CITY LIKE TALLIN (AS OF 1 JANUARY 1965 ITS POPULATION WAS 334,000). IN ACCORDANCE WITH ORDER NO 340, DATED 30 APRIL 1968, OF THE MINISTER OF HEALTH USSR, IN CITIES WITH A POPULATION OVER 25,000 THE POSITION OF POLYCLINIC ENDOCRINOLOGIST IS TO BE ESTABLISHED AT THE RATE OF 0.2 PER 10,000 ADULTS. AS THE MATERIAL PRESENTED ABOVE SHOWS, IN CITIES THAT HAVE SEVERAL POLYCLINICS (AND IN LARGER CITIES THIS APPLIES TO RAYONS), IT IS EXPEDIENT TO CENTRALIZE ENDOCRINOLOGICAL SERVICE. AN ESTABLISHMENT OF THE DISPENSARY TYPE SHOULD BE MADE PART OF ONE OF THE HOSPITALS, AND A SPECIALIZED HOSPITAL DEPARTMENT OR BEDS ALLOCATED TO THIS SPECIALIZATION SHOULD BE ORGANIZED WITH THE HOSPITAL'S FACILITIES.

UNCLASSIFIED

USSR

UDC 669.14.018.29-414

GOL'DSHTEYN, M. I., BLYUM, E. E., GRIN', A. V., SELETKOV, A. I., LITVINENKO, D. A., LEYKIN, I. M., RUDCHENKO, A. V., OREL, E. I., VAYNTRAUB, S. S., LOKTIONOV, P. Ya., LASHCHEV, V. Ya., MOSIOSHVILI, V. V., MIPOSHNICHENKO, S. I., and KONDRASHOV, M. M., Ural Scientific Research Institute of Ferrous Metals, Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin, and Kommunarsk Metallurgical Plant

"Adoption of the Industrial Production of 15G2AF Sheet Steel"

Moscow, Stal', No 9, Sep 70, pp 828-830

Abstract: An investigation of the 15G2AF plate steel (10-25 mm), commercially produced at the Kommunarsk Metallurgical Plant, revealed that alloying of the manganous structural steel with nitrogen and vanadium increases the strength and plasticity properties of the normalized rolled steel. Normalizing of the metal effects a size reduction of the grain (to 10-12), which assures a low (-100°C to -120°C) cold brittleness threshold. The strength of the 15G2AF steel was found to be at least 60 kg/mm² and the yield stress at least 45 kg/mm². Use of 15G2AF steel for welded structures decreased weight, in comparison with steel 10G2S1, by 13.6%.

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- 52 -

1/2 041 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--SATURATION AND DISPERSION EFFECTS IN A GAS LASER -U-

AUTHOR--MIROSHNICHENKO, V.I.

COUNTRY OF INFO--USSR

SOURCE--UKRAINS'KII FIZICHNII ZHURNAL, VOL. 15, APR. 1970 P 672.

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--GAS LASER, LIGHT DISPERSION, SINGLE MODE LASER, RESONATOR Q FACTOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0706

STEP NO--UR/0185/70/015/000/0672/0672

CIRC ACCESSION NO--AP0126418

UNCLASSIFIED

2/2 041

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0126418

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DEVELOPMENT OF A SEMICLASSICAL THEORY FOR THE SINGLE MODE OPERATION OF A GAS LASER IN THE CASE WHERE THE SATURATION PARAMETER IS LARGE. ATTENTION IS GIVEN TO THE LIMITING CASES OF (1) PRECISE ALIGNMENT OF THE RESONATOR FREQUENCY TO THE SPECTRAL LINE FREQUENCY, AND (2) MISALIGNMENT ENSURING NONOVERLAP OF THE BENNETT THROUGHES.

UNCLASSIFIED

MIROSH NICHENKO, V.N.

MHD.

JPRS 55131
8 February 1972

UDC 621.313.12:538.4
TECHNICAL-ECONOMIC ANALYSIS OF A CLOSED-CYCLE
POWER PLANT WITH A NON-EQUILIBRIUM PLASMA
AND GENERATOR

[Article* by D. Ya. Shuryatskiy, V. I. Kovbasjuk, Ye. M. Shelkov, L. P. Stolyal, and V. N. Miroshnichenko, Institute of High Temperatures, USSR Academy of Sciences, Moscow, *Izv. Vuzovskikh Vuzovskikh Temperatur, Russian*, Vol. 9, No. 6, November-December 1971, submitted 25 September 1970, pp 1264-1270]

The combination of a high-temperature gas-cooled reactor and a plasma MHDG (magnetohydrodynamic generator) may be one of the promising trends in the improvement of the technical and economic indices of a closed-cycle electric power plant by means of decreasing specific capital expenditures in the enlargement of the unit capacity of the power plant and increasing the thermodynamic efficiency of the cycle. Since even promising gas-cooled reactors provide a comparatively low level (1500-1700°C) of the deceleration temperatures at the input to the MHDG, the development of the conductivity necessary for the effective operation of the generator is possible only in non-equilibrium ionization of the alkali additive in the inert gases. In this work, problems of the selection of the parameters of a closed-cycle power plant with a non-equilibrium MHDG are considered, and on the basis of design developments estimates of its economic indices are made.

1. Selection of a circuit and basic parameters for a closed-cycle plasma MHDG (magnetohydrodynamic power plant). The application of a high-temperature gas-cooled reactor as a heat source in a plasma MHD cycle advances as the basic problem the costs of the parameters of the reactor and the MHD channel. On the one hand, the heat carrier (coolant) must provide effective heat removal in the active zone (core) of the reactor, for which it is necessary to have a high gas pressure. On the other hand, the coolant, as the working fluid of the MHDG, must have an adequately

*Materials prepared for reference [1] are the basis of this article.

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[I - USSR - L]

USSR

UDC: 51

KUZ'MIN, I. V., BELOGUROV, V. P., MIROSHNICHENKO, V. T.

"Determining Optimum Inventories for Steady-State Production Processes"

Pribory i sistemy avtomatiki. Resp. mezhved. temat. nauch.-tekhn. sb.
(Devices and Systems of Automation. Republic Interdepartmental Thematic
Scientific and Technical Collection), 1973, vyp. 26, pp 103-106 (from
RZh-Kibernetika, No 7, Jul 73, abstract No 7V549 by the authors)

Translation: The paper investigates the problem of determining optimum
inventories for stationary production processes. Analytical expressions
are presented which enable determining the advisability of introducing
reserves and the capacity of warehouses.

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- 37 -

USSR

UDC 657.783:621.396.62

KUZ'MIN, I. V., Doctor of Technical Sciences, BELOGUROV, V. P., Candidate of Technical Sciences, MIROSHNICHENKO, V. T.

"Selecting the Optimum Capacity of Intermediate Storage Points in Mass Production"

Kiev, Mekhanizatsiya i Avtomatizatsiya Upravleniya, No 5, Sep/Oct 72, pp 22-24

Abstract: The paper deals with the problem of making a certain product which requires a number of component parts. The production quota is satisfied on the average, but not "rhythmically", i. e., sometimes the quota is not met, and sometimes there is a surplus of the product. This disruption in rhythm is determined to a considerable extent by the availability of the component parts, and can be alleviated by building up stocks. Since this involves economic losses, the problem is to find the optimum volume of reserve stocks. A criterion of optimality is proposed which gives the overall cost of losses per unit of time per component part, and a solution is found for the equation giving the derivative of this criterion with respect to the reserve stocks when this ratio is equal to zero. A numerical example is given.

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USSR

UDC: 51

KUZ'MIN, I. V., BELOGUROV, V. P., and MIROSHNICHENKO, V. T.

"Determining the Optimal Reserves for Stationary Productive Processes"

Pribory i sistemy avtomatiki. Resp. mezhved. temat. nauch.-tekhn. sb. (Automation Systems and Instruments, Republic Interdepartmental Thematic Scientific-Technical Collection) No 26, 1973, pp 103-106 (from RZh--Matematika; July, 1973; Abs. No. V549)

Translation: The authors investigate the problem of determining the optimal reserves for stationary productive processes. Analytic expressions are given which permit determination of the best way for introducing the reserves and the capacity of warehouses. Authors' abstract.

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USSR

UDC 546.183.2

IVANOVA, ZH. M., GUSAR', N. I., MIROSHNICHENKO, V. V., and GOLOLOBOV, Yu. G.,
Institute of Organic Chemistry, Academy of Sciences, UkrSSR

"Reaction of Dialkylaminosulfenyl Chlorides With Alkyl Difluorophosphites"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 9, Sep 72, p 2115

Abstract: Diethylaminosulfenyl chloride reacts with two equivalents of ethyl difluorophosphite yielding ethyl difluorothiophosphate, b.p. $78-79^{\circ}$, d_4^{20} 1.2293, n_D^{20} 1.3755, and diethyl amidodifluorophosphate b. p. $44-45^{\circ}/12$ mm, d_4^{20} 1.1470, n_D^{20} 1.3730. The starting ethyl difluorophosphite was obtained by fluorination of ethyl dichlorophosphite with antimonytrifluoride, b.p. $23-24^{\circ}$, d_4^{15} 1.0922, n_D^{15} 1.3280.

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USSR

UDC 539.219.3

BLINKIN, A. M., OZHIGOV, L. S., ~~MIROSEMICHIENKO, YU. T.~~, KHRIPKOV, YU. F., and SEMENENKO, V. YE., Kharkov State University imeni A. M. Gor'kiy

"Diffusion in Composite Materials"

Sverdlovsk, Fizika Metallov i Metalloyedeniye, Vol 35, No 4, 1973, pp 870-872

Abstract: The effect of the fiber-matrix boundary interface and excess concentration of non-equilibrium defects, formed in the reinforced metal due to thermal stresses, on diffusion parameters in composite materials of the core-shell type was investigated for Cu-W and Cu-Mo composites in which copper was the core and tungsten and molybdenum were the shells. Tungsten wire with diameters of 1.0, 1.5, and 2.0 mm was placed in the center of a crucible and fused with copper of electron-beam purity. Sample diameter was 6 mm. The Cu-W composite consisted of molybdenum shells 0.5 and 1.0 mm thick and an external diameter of 9 mm, inside of which the copper was melted. A eutectic composition Al-Al₃Ni was produced by directed crystallization and drawing rates of 25, 40, 90, 360, and 720 mm/hr. The nickel and aluminum were added according to a method described in a previous work of the authors. The ratios of diffusion coefficients for nickel (D/D_{Cu}) in the composites to the coefficient of diffusion in pure copper were plotted against the volume content (in %) of the reinforcing

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USSR

BLINKIN, A. M., et al, Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 4, 1973, pp 870-872

phase at 700°C. From the graph it was determined that the diffusion coefficient ratio increases with increased content of the reinforcing phase with the effect much more intense in the Cu-Mo composite. The diffusion activation energy for pure copper was 54.8 kcal/mole, while for copper, reinforced with molybdenum shells 0.5 and 1.0 mm thick, these energies were 43.3 and 35.2 kcal/mole, respectively. From experimental data it was found that the diffusion coefficients increase with decreased fiber diameter and are maximum in the composite produced at a drawing rate of 720 mm/hr. These results allowed the assumption to be made that the diffusion coefficients are increased with decreased fiber diameter (for one and the same content of reinforcing phase content) due to the increased length of the matrix-fiber boundary interface. 2 figures, 5 bibliographic references.

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- 10 -

USSR

UDC: 621.318.1

POLIVANOV, K. M., MIROSHNIK, I. A., YEZHOV, S. N., PIGAREV, Ye. N., SHUKH-
MIN, L. N., Voronezh Polytechnical Institute

"A Method of Sorting Magnetically Soft Ferrites"

USSR Author's Certificate No 282454, filed 25 Apr 69, published 17 Dec 70
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V464 P)

Translation: This Author's Certificate introduces a method of sorting magnetically soft ferrites used for work in weak magnetic fields as cores in wide-band transformers. As a distinguishing feature of the method, the sorting process is simplified by using double grading of the ferrites on the lower and upper frequency of the working band with measurement of the absolute value of the permeability of a ferrite.

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- 171 -

USSR

UDC 531--391

SVELTITSKIY, V. A. and MIROSHNIK, R. A., Moscow Higher Technical School imeni
N. Ye. Bauman

"Critical Velocities of the Steady Movement of a Flexible Thread in a Two-
Dimensional Homogeneous Stream"

Kiev, Prikladnaya Mekhanika, Vol 9, No 5, May 1973, pp 94-98

Abstract: A study is made of the conditions under which steady movement of
the thread of a ballistic antenna is possible in the case of a wind load. Two
critical velocities are found, which respectively determine the minimum velocity
necessary for the existence of movement, and the velocity that is of importance
in practical applications, starting with which directional launching of the
antenna can be conducted. The investigation is conducted without determination
of the form of steady movement. 3 figures. 10 references.

1/1

- 6 -

USSR

UDC: 531.391

SVETLITSKIY, V. A., MIROSHNIK, R. A., KURKIN, V. I., Moscow Higher Technical Academy imeni Bauman

"Determining the Forms of Steady-State Motion of a Filament in Media of Different Viscosities"

Kiev, Prikladnaya Mekhanika, Vol 8, No 4, Apr 72, pp 100-104

Abstract: The authors study forms of steady-state motion of a flexible inextensible closed filament with regard to forces of gravity and longitudinal drag of the medium. A closed solution is found in cartesian coordinates. An expression is found for determining tension in the filament. The boundary-value problem is solved in the case of motion of the filament in two media with different longitudinal drag. Both possible forms of steady-state motion are plotted for a numerical example in the case where the filament ascends from underwater into the air, and these forms are compared with the forms of motion of the filament in air alone or in water alone. Two illustrations, bibliography of four titles.

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- 15 -

1/2 012 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--MASS SPECTROMETRIC DETERMINATION OF AMINO ACID SEQUENCES IN
PEPTIDES. XV. FRAGMENTATION OF PEPTIDES CONTAINING MONOAMINO
AUTHOR--(05)-SHEMUAKIN, M.M., OVCHINNIKOV, YU.A., KIRYUSHKIN, A.A.,
MIROSHNIKOV, A.I., ROZVNOV, B.V. /
COUNTRY OF INFO--USSR M
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2), 443-60
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--AMINO ACID, PEPTIDE, ESTER, MASS SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1254 STEP NO--UR/0079/70/040/002/0443/0460
CIRC ACCESSION NO--AP0107730
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0107730

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MASS SPECTRA WERE TABULATED FOR 17 PEPTIDES WITH ASPARTIC AND GLUTAMIC RESIDUES IN VARIOUS POSITIONS, EXAMD. IN THE FORM OF ME OR TERT-BU ESTERS AT THE TERMINAL CO SUB2 H. SUCH PEPTIDES HAVE RELATIVELY HIGH VOLATILITY. THE MASS SPECTRA SHOWED THE USUAL AMINO ACID TYPE OF CLEAVAGE ALONG WITH LOSS OF ELEMENTS OF THE ALC. OF THE ESTER AND OF THE RO SUB2 C GROUP. FACILITY: INST. KHIM. PRIR. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--MASS SPECTROMETRIC DETERMINATION OF AMINO ACID SEQUENCES IN
PEPTIDES. XIII. FRAGMENTATION OF PEPTIDES CONTAINING ASPARAGINE AND
AUTHOR--(05)-SHEMYAKIN, M.M., OVCHINNIKOV, YU.A., KIRYUSHKIN, A.A.,
MIROSHNIKOV, A.I., ROZYNOV, B.V.
COUNTRY OF INFO--USSR

SOURCE--ZH. OBSCH. KHIM. 1970, 40(2), 407-29

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PEPTIDE, ASPARAGINE, GLUTAMIC ACID, AMINE DERIVATIVE, MASS
SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1997/2017

STEP NO--UR/0079/70/040/002/0407/0429

CIRC ACCESSION NO--AP0120660

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--23OCT7

CIRC ACCESSION NO--AP0120660

ABSTRACT/EXTRACT--(U) GP-0--

ABSTRACT. MASS SPECTRA WERE TABULATED FOR 2 PEPTIDES CONTG. ASPARAGINE AND GLUTAMINE PORTIONS IN VARIOUS PARTS OF THE CHAIN, AND EXAMD. IN THE FORM OF ME OR TER-BU ESTERS. SUCH PEPTIDE WERE DECOMPO. BY ELECTRON IMPACT MAINLY ALONG THE LINES OF AMINO ACID TYPE FRAGMENTATION, ACCOMPANIED BY ELIMINATION OF NH SUB3 AND CARBOXAMIDE GROUP.

USSR.

FACILITY: INST. KHIM. PRIR. SOEDIN., MOSCOW

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--CONFORMATION OF GRAMICIDIN S AND ITS N, N PRIME DIACETYL DERIVATIVE
IN SOLUTIONS -U-
AUTHOR--(05)--OVCHINNIKOV, YU.A., IVANOV, V.F., BYSTROV, V.F., MIROSHNIKOV,
A.I., SHEPEL, E.N.
COUNTRY OF INFO--USSR
SOURCE--BIOCHEM. BIOPHYS. RES. COMMUN. 1970, 39(2), 217-25
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ANTIBIOTIC, MOLECULAR STRUCTURE, IR SPECTRUM, PROTON
RESONANCE/(U)GRAMICIDIN S ANTIBIOTIC
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/0939 STEP NO--US/0000/70/039/002/0217/0225
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PROCESSING DATE--30OCT70

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONFORMATION OF GRAMICIDIN S (I) AND N, N PRIME DIACETYLGAMICIDIN S (II) WAS STUDIED BY ORD, PMR, AND QUANT. IR METHODS USING SEVERAL DIFFERENT SOLVENTS. THE DATA OBTAINED PROVIDE PROOF OF THE HODGKIN DUGHTON-SCHWYZER BETA PLEATED SHEET TYPE MODEL, FOR WHICH PHI AND PSI COORDINATES ARE GIVEN. I AND II LACK AN INTERNAL CAVITY CAPABLE OF ACCOMODATING METAL CATIONS, AND ARE UNABLE TO FORM COMPLEXES WITH METAL CATIONS. FACILITY: INST. CHEM. NATUR. PROD., MOSCOW, USSR.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--MASS SPECTROMETRIC DETERMINATION OF AMINO ACID SEQUENCES IN
PEPTIDES. XIV. SYNTHESIS OF DERIVATIVES OF PEPTIDES CONTAINING
AUTHOR--(03)-MIROSHNIKOV, A.I., KIRYUSHKIN, A.A., OVCHINNIKOV, YU.A.

COUNTRY OF INFO--USSR

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PROCESSING DATE--23OCT70

CIRC ACCESSION NO--A0123449

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. (Z EQUALS SUCCINIMIDU, CBO EQUALS CARBOBENZOXY, DEC EQUALS DECANDYL, NPS EQUALS O-NITRO PHENYLSULFENYL). TERT-BUTOXYCARBONYL AND BENZYLOXYCARBONYL METHODS WERE USED TO SYNTHESIZE PEPTIDES BY CONVENTIONAL ROUTES FROM N-DECANOYLAMINO ACIDS. THE FOLLOWING COMPOS. ARE SHOWN ON MICROFICHE. THESE WERE PREPO. FOR MASS SPECTROSCOPIC STUDIES.

UNCLASSIFIED

USSR

UDC 778.155.43:778.19

BATALOV, YU. V., MIROSHNIKOV, M. M., Doctor of Sciences, and PORFIR'YEVA, N. N.,
Candidate of Sciences

"The Contrast Method of Processing Mars Photographs"

Leningrad, Optiko-Mekhanicheskaya Promyshlennost', No 9, Sep 73, pp 11-12

Abstract: The usefulness of the contrast method of processing photographs has been proven useful for improving the quality of the investigated photographic images. In this article are presented the procedure and results of processing, by the contrast method, six photographs of Mars taken from a space vehicle. An analysis of the photographs obtained as a result of the contrast treatment shows that this method makes it possible to resolve additional details of the features of Mars, that are not visible or are poorly distinguishable on the initial plate. 10 figures. 3 references.

1/1

- 91 -

MIROSHNIKOV, M. P.

SP-6 (13)
25 February 1974

(2)

PERSONALITY DEVELOPMENT IN STUDENTS

DOC: 613.86-053.6

Article by M. P. Miroshnikov, R. V. Rozhnova, Candidate of Medical Sciences, Chair of Child and Adolescent Hygiene, First Moscow Medical Institute Irent L.M. Sechenov, Huzeyra G. Gilyeva, Sanitariva, Kuznetsk, No 10, 1073, November 12, January 1973, pp 35-38

Proper development of the personality and biosocial adaptation of the adolescent can be aided by organizing his education and socially useful activities in accordance with the individual distinctions of the prior period of development, which are manifested in already-formed characterological traits, capabilities, and direction of interests. Signs of unsatisfactory adaptation serve as the basis for analysis of unfavorable micro-social conditions. The ultimate goal of our investigation is to find the cause-and-effect link between internal and external factors determining the adjustment process.

Our first task was to demonstrate the correlation between some personally distinctions of junior-year students and their adaptation to the educational process as well as to the microsocial environment of the VUZ. We were concerned with establishment of a possible link between personality distinction and academic achievement of students, their attitude toward studies and the existing educational process at the Institute, satisfaction with their own position at the VUZ and social activity. In addition, an effort was made to assess the significance of personality distinction of students making up one group on the successful function of such a group.

We made a study of 760 first- and second-year students referable to three faculties (medical, sanitary-hygienic, and pharmaceutical) at the First Moscow Medical Institute Irent L.M. Sechenov. We investigated personally distinctions using a modification of the comprehensive method of studying personality (F.B. Berezin and R.P. Miroshnikov) and clinical observation. We assessed the attitude of the subjects toward studies and existing educational process at the VUZ, as well as their social activity by the method of "competent judges," i.e., by calling upon students of the

From a paper delivered at the 16th All-Union Congress of Hygienists and Health Inspectors

USSR

UDC 681.3.06:51

MIROSHNIKOV, V. I., SHNEYDERMAN, Ya. A.

"Experimental Evaluation of Criteria of Semantic Correspondence for an Automated Information Retrieval System"

Materialy Seminara Po Kibernet. AN Mold SSR, Mold. Territor. Gruppa Nats. Kom. SSSR Po Avtomat. Upr., [Materials of Seminar on Cybernetics, Academy of Sciences, Moldavian SSR, Moldavian Territorial Group, National Committee of USSR on Automatic Control], No 25, 1970, pp 11-34, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1970, Abstract No. 5V636 by V. Mikheyev).

Translation: An automated documentographic descriptor information retrieval system using the Minsk-22 computer is described, and certain results of experimental evaluation of strong criteria of semantic correspondence using adjustable "Weight" factors are discussed. 10 biblic. refs.

1/1

USSR

UDC 621.165-762.001.45

FEDORCHENKO, I. M., Academician of the Academy of Sciences Ukrainian SSR;
KOSYAK, YU. F., LAZARENKO, A. V., MIROSHNIKOV, V. N., Candidates of Technical
Sciences; KANTEMIR, A. D., and UGOL'NIKOVA, L. A., Engineers

"Full-Scale Tests of Bronze-Graphite Powder Metallurgy Sealing Materials in
PVK-150 Turbine"

Leningrad, Energomashinostroyeniye, No 12, Dec 71, pp 27-29

Abstract: In high- and intermediate-pressure cylinders designed by the
Khar'kov Turbogenerator Plant, minimum clearance over the moving blades is
provided by sealing strips in the stator. Certain heat-resistant materials
should not be used for the strips, e.g. nickel, German silver, Kh18N9T steel.
New turbine designs use seals with the strips made in conjunction with the
shroud. Until recently such designs used only cast materials, chiefly iron
alloyed with 6% chromium. Full-scale tests of the nickel-graphite sealing
material UFG-1 in VK-50, VK-100 and K-300 turbines showed that this nickel-
base material is not promising for high-parameter turbines because of inter-
crystalline corrosion. Copper-base materials have proved more promising in
this respect.

1/2

USSR

FEDORCHENKO, I. M., et al., *Energomashinostroyeniye*, No 12, Dec 71, pp 27-29

Full-scale tests were made of bronze-graphite materials in the PVK-150 turbine at the Berezovskaya State Regional Electric Power Station. The experimental materials contain aluminum, iron and manganese as the principal alloying elements, as well as graphite as an antifriction addition. The results indicate satisfactory performance for 10,500 hours. The best materials are brands 43, 53 and 71, which should be used for sealing inserts for high-parameter turbines. The graphite content of the sealing materials should not exceed 3% (by weight). The average clearance was found to increase from 0-0.3 mm in the initial state to 0.8-0.9 mm after the tests. Assembly of the seal unit requires nonconcentric radial clearance. The condition of the rotor strips is satisfactory. The use of bronze-graphite sealing materials can be recommended after check tests in a K-500-240 type turbine.

2/2

- 71 -

USSR

UDC 621.762.01(088.8)

FEDORCHENKO, I. M., MIROSHNIKOV, V. N., BORODINA, T. I., and SHEVCHUK, Yu. F.

"Compacted Metal Ceramic Material"

USSR Author's Certificate No. 268658, Filed 22/04/58, Published 9/07/70
(Translated from Referativnyy Zhurnal-Metallurgiya, No. 2, 1971, Abstract
No. 2 G421 P)

Translation: A compacted metal ceramic material based on Fe contains metal fluoride. In order to increase the scale resistance, Al is introduced and the components are taken in the following relationship (%): BaF₂ 0.5-15, Al 0.5-25, Fe -- remainder.

1/1

- 34 -

MIROSHNIKOV, Yu. S.

USE OF MULTICHANNEL RHEOGRAPHY IN PHYSIOLOGICAL INVESTIGATIONS ON A CENTRIFUGAL...
Article by V. S. Zubov, Ye. I. Litskova, Yu. S. Miroshnikov and M. A. Hosov, Kosmicheskaya Biologiya i Meditsina, Russian, Vol. 5, No. 5, 1972, October 1972, pp 75-79, submitted for publication 29 December 1971.

UDC 612.014.422

Rheography as a method for studying the cardiovascular system... into broad use in clinical practice and experimental investigations... such instruments make it possible to register pulse blood flowing of different organs only in succession. In a research plan this can be applied... shifts occur slowly. However, if an investigator is dealing with extreme exposures and accordingly with rapidly transpiring changes in the cardiovascular system (such as in experiments on a centrifuge) the need arises for a means of observation of processes transpiring in many vascular zones... long-impacted accelerations sometimes cause oppositely directed changes in blood flowing in parts of the body situated under conditions different respect to hydrostatics. The multichannel rheography method is entirely suitable for studying hemodynamic reactions in this situation. This makes it possible to evaluate the changes in several vascular zones simultaneously to compare the results.

In this article we will not give a detailed analysis of the collagen material but will limit ourselves to an evaluation of the possibility of channel rheography as a method for studying the cardiovascular system under experimental conditions on a centrifuge.

The experiments were conducted on a centrifuge with a radius of 3 m... ment designed by S. L. Gorbunov and M. A. Rankin. The rheograph was set up directly in the centrifuge cabin because the great length of the measuring line between the centrifuge cabin and the recording apparatus (35-40 m) strongly reduces noise immunity and increases circuit capacitance--distortion, which exerts a considerable effect on power transfer and shape of the useful signal. Registry of the rheogram signal was with a 13-channel electroencephalograph, manufactured by the Japanese Sanal firm with a rate of paper movement 30 mm/sec.

JPRS 57577
KSTW 72J

MIROSHNIKOVA, M.

Computers

MACHINE ENTRANCE TESTING FOR HIGHER SCHOOLS

[Article by I. Venevskiy, M. Mirshnikova, I. Puppava, and Vasilik Stasitski, Russian, No 1, January 1972, pp 09-72]

In his report at the 24th CPSU Congress, L. I. Brezhnev pointed out the importance and necessity of work in the area of changing the content of the teaching process with the aim of bringing it into accord with the level of scientific and technical progress.

The higher school obtains, creates and turns out an enormous amount of information. The effective processing of this information for obtaining sound conclusions is extremely difficult. This applies particularly to testing the knowledge of persons entering the institutions of higher learning and also testing the current progress of the students. For this reason, electronic computers are beginning to come to the aid of the higher school.

Beginning in 1969, the Minsk Economics and Statistics Institute (IESI) has been using the Abilitex secondary school graduate system which was worked out under the leadership of the Institute's rector, M. A. Korolev. The task of this system is to process information on the course of the received applications, admission, the results of entrance exams, and so forth. In 1970, this system was supplemented by the Analiz (analysis) subsystem, the basic function of which was to process on a Minsk-22 computer data about the secondary school graduates entering the institution of higher learning in terms of the information of their personal file and the grades received by them in the entrance exams.

The problem of raising the quality of instruction and the effectiveness of the pedagogical process becomes more and more urgent every year. The sharp increase in the amount of professional knowledge and the necessity of assimilating this

knowledge in the established period of instruction requires a fundamental improvement in the existing teaching methods and means. Here the following are of help: training equipment, various systems of educational TV, lineophone equipment and teaching machines, and so forth. A group of instructors and graduate students at the MESI became acquainted with the experience of using various devices and machines for giving competitive entrance exams in higher mathematics and physics and for a final testing of the students' knowledge in higher mathematics.

At the Georgian Polytechnical Institute (ment V. i. Lenin, they use the ASL-3 testing machine which has been developed and manufactured at the Vilit Scientific Research Institute for Instrument Building and Automation Equipment. The examinations are given in writing. The secondary school graduate is to solve seven problems and examples covering various areas in a course of elementary mathematics. All the problems are compiled in such a manner that the answers consist of whole or two-digit positive numbers; since the machine is designed for a numerical answer input from 00 to 99. The four "safest" problems are given for correctly solving five problems. The Institute has provided for a number of methodological measures aimed at achieving complete independence for each secondary school graduate and for creating a quiet situation during the exam. After the secondary school examination of the work by the instructor, a laboratory assistant, under the supervision of the secondary school graduate, reads the numerical answers into the final grade on the examination sheet indicating the correctness of the answer for each problem. If the secondary school graduate does not agree with the grade given, he can immediately turn to a commission which, in the event of necessity, with the machine-mission graduate present, checks the grade given by the secondary school graduate about the results of the exam are not considered. The used testing device does not make it possible to test the knowledge on certain theoretical questions and sections of the course (the construction of graphs of functions, function analysis, the construction of graphs of mathematics exam is given where the work is, tested by the traditional method, that is, by the instructor. The necessity of reducing the solution number limits the number of possible problems and or two-digit number limits the number of possible problems and

USSR

UDC 8.74

VENETSKIY, I. G., KREMER, N. SH., and MIROSHNIKOVA, M. M.

"Giving Entrance Examinations with the 'Minsk-22' Computer"

Mat. v shkole (Mathematics in the School) 1972, No 1, pp 39-44 (from RZh-Matematika, No 7, 1972, Abstract No 7V631)

Translation: A method is described for giving entrance exams with the help of the "Minak-22" electronic computer. According to this method, a separate card bearing problems chosen by a sensor of pseudo-random numbers from a reserve recorded on magnetic tape is printed and issued to each matriculant by the machine. A program provides a sequence of problems of a certain complexity from specified subjects of a course in elementary mathematics. The place of the matriculant in the hall is also determined by random choice. In order to reduce the number of errors in the perforated answers to the problems and to shorten the time for checking the examination results, all the problems are made up so that the answers are in integers or in tenths, with no variable, π , or units of measurement. It was noted that these examinations pointed up the following advantages of this method of taking entrance examinations over the traditional scheme: 1) the standardization of requirements for all matriculants; 2) the high objectivity of the evaluations; 3) the elimination of difficulties, particularly the mechanical work of the instructor in correcting written material and oral examinations;

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USSR

VENETSKIY, I. G., et al., Mat. v shkole, 1972, No 1, pp 39-44 (from RZh-Matematika, No 7, 1972, Abstract No 7V631)

4) a notable reduction in subject committees; 5) the absence of unusual circumstances in the examination, of direct contact between the matriculant and the machine; 6) the high efficiency with which the examination was conducted (issuing a card with 20 problems took 45 seconds, a card with 5 problems, 25 seconds; the punching of the answers and the distribution of the results to 500 people took 2.2 hours); 7) the answer is written and can thus be controlled by the instructor; 8) a large number of problems given to the matriculant reduces to a minimum the element of randomness in evaluating its significance; 9) the high efficiency of the system permits conducting all the examinations during the morning hours; 10) the high centralization of the direction of the work by the reception and subject committees. V. Mikheyev

2/2

- 29 -

USSR

UDC 8.74

VENETSKIY, I. G., KREMER, N. SH., MIROSHNIKOVA, M. M.

"Entrance Exam Procedure Using the Minsk-22 Computer"

Mat. v shkole (Mathematics in School), 1972, No 1, pp 39-44 (from RZh-Kiber-
netika, No 7, Jul 72, Abstract No 7V631)

Translation: A procedure is described for entrance exams using the Minsk-22 computer. In accordance with this procedure, for each person who has finished secondary school the machine prepares, prints out and sends an individual note with the problems selected by the random number generator from a library recorded on magnetic tape. The program provides for the sequence of generating problems of defined complexity from the given divisions of the elementary mathematics course. The place of the graduate in the room is also determined randomly. In order to decrease the number of errors in punching the answers to the solved problems and to reduce the time of checking the examination results, all the problems are compiled so that the answer to any of them will be an integer or a decimal fraction without naming the variable, the number π , the notation for the measurement units, and so on. It is noted that the exams revealed the following advantages of the given entrance exam procedure

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USSR

VENETSKIY, I. G., et al., Mat. v shkole, 1972, No 1, pp 39-44

by comparison with the traditional one: 1) standardization of the requirements on all the graduates; 2) high objectivity of the evaluation; 3) elimination of the tedious, to a significant degree mechanical work of teachers with respect to checking written work and for the oral examination procedure; 4) significant reduction of the subject commissions; 5) insurance of the usual situation at the exams; absence of direct contact of the graduate with the machine; 6) high operativeness of giving the exam (generation of a sheet of 20 problems takes 45 seconds, a sheet of 5 problems, 25 seconds, and punching the answer and generating the results for 500 people takes 2.2 hours); 7) the response presents a written solution which can be checked by the teacher; 8) a large number of problems presented to the graduate reduces the element of chance when evaluating his skills to a minimum; 9) high operativeness of the system permits all the exams to be given in the morning; 10) high centralization of administration of the work of the acceptance and subject commissions.

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- 75 -

USSR

UDC 620.181.4:536.4

KARPINOS, D. M., TUGHINSKIY, L. I., MIROSHNIKOVA, T. K., and VISHNYAKOV, L. R., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Calculation of the Thermal Expansion of Reinforced Metals"

Kiev, Poroshkovaya Metallurgiya, No 1, Jan 74, pp 80-84

Abstract: A method was proposed for calculating the thermal expansion of composites, reinforced by unidirectionally oriented fibers, in which one or both of the materials in the composite possesses plastic rather than elastic properties. Tungsten wire of alloy KhN60V (VZh98) was used as the experimental material where the reinforcing fiber used was tungsten wire VA with its content in VZh98 varied. Tests showed that pure tungsten has a very low coefficient of thermal expansion and alloy VZh98 has a relatively high coefficient between 300 and 1300° C and increases with temperature. When reinforced with VA fibers, the thermal expansion is not as high as for the unreinforced alloy and starts decreasing between 700 and 900° C, depending on the VA content. The reason for this that at comparatively low temperatures the matrix has a yield strength high enough to cause substantial tensile stresses in the tungsten

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USSR

KARPINGS, D. M., et al., Poroshkovaya Metallurgiya, No 1, Jan 74, pp 80-84

fibers and, consequently, to cause additional temperature deformation in them. At high temperatures the matrix assimilates an ideal plastic body, its yield strength remains small and, therefore, the coefficient of thermal expansion of the composite is basically determined by the thermal expansion of the fibers. Thus, the matrix (VZh98) coefficient is greater than tungsten (fibers) and at low temperatures the coefficient increases, but as temperature rises the pure matrix becomes plastic, and the coefficient is governed then by the fibers, and the overall coefficient diminishes. Three figures, one table, five bibliographic references.

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- 10 -

1/2 029

TITLE--THE DEVELOPMENT OF OTORHINOLARYNGOLOGY AT THE FAR EAST DURING THE YEARS OF THE SOVIET POWER (1923-1969) -U-
AUTHOR--MIROSHNIKOVA, YE.Z.

UNCLASSIFIED

PROCESSING DATE--11SEP70

COUNTRY OF INFO--USSR

M

SOURCE--VESTNIK OTORINOLARINGOLOGII, 1970, NR 2, PP 102-106
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--OTOLARYNGOLOGY, MEDICAL INSTITUTE, MEDICAL TRAINING, PUBLIC HEALTH, MEDICAL R AND D

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CIRC ACCESSION NO--AP0102605
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE AUTHOR COMMITS TO PAPER INFORMATION RELEVANT OF THE DEVELOPMENT OF OTORHINOLARYNGOLOGY AT THE FAR EAST. AT THE FAR EAST IN THE PRE SOVIET PERIOD NO SPECIALIZED AID WAS RENDERED AT ALL. THE SOVIET POWER TOOK GREAT CARE OF THE HEALTH OF RESIDENTS OF THIS TERRITORY. SPECIAL ATTENTION WAS PAID TO THE ORGANIZATION OF MEDICAL SERVICE FOR ABORIGENS OF THE NORTH. DURING THE ENCOUNTERED WHICH DEPENDED ON THE RIGOROUS CLIMATIC CONDITIONS, VAST REGIONS AND ABSENCE OF TRANSPORTATION. IN THE DEVELOPMENT AND IMPROVEMENT OF OTORHINOLARYNGOLOGICAL SERVICE TO THE POPULATION OF THE FAR EAST A PARAMOUNT ROLE WAS PLAYED BY OTORHINOLARYNGOLOGICAL HOSPITALS FOUNDED AT THE NEWLY ORGANIZED MEDICAL INSTITUTES; IN 1930 IN Khabarovsk, IN 1952 IN Blagoveschensk and in 1956 in Vladivostok. THE OTORHINOLARYNGOLOGICAL CHAIR OF THE Khabarovsk Medical Institute paid a GREAT DEAL OF ATTENTION TO THE TRAINING OF QUALIFIED SPECIALISTS FOR THE FAR EAST. AT THE FAR EAST AT PRESENT THERE ARE 786 OTORHINOLARYNGOLOGISTS OTORHINOLARYNGOLOGICAL BEDS AND A TOTAL OF 288 OTORHINOLARYNGOLOGISTS WORK. IN ALL LARGE CITIES OF THE FAR EAST ALL TYPES OF OTORHINOLARYNGOLOGICAL OPERATIONS ARE PERFORMED, THE ACHIEVEMENTS OF THE UP TO DATE SCIENCE AND TECHNIQUE ARE INTRODUCED INTO PRACTICE.

Acc. Nr: **0049516**

Abstracting Service:

CHEMICAL ABST. 5170

Ref. Code:

WR0079

101080t Mass-spectrometric determination of the amino acid sequence in peptides. XII. Syntheses of derivatives of peptide-containing asparagine and glutamine residues. Miroshnikovs A. I.; Kiryushkin, A. A.; Ovchinnikov, Yu. A. (Inst. Khim. Priro. Soedin., Moscow, USSR). Zh. Obshch. Khim. 1970, 40 (1), 223-35 (Russ). A series of peptides was synthesized to obtain data on their mass spectra. Reaction of equimolar amts. of amino acids with the *N*-hydroxysuccinimic ester of decanoic acid in aq. dioxane-NaHCO₃ at room temp. gave the following decanoylamino acids (Dec = decanoyl): Dec-L-Asn-OH, m. 138-40°; Dec-Gly-OH, m. 115°; Dec-L-Gln-OH, m. 155-7°; Dec-L-Trp-OH, m. 94-5°; Dec-L-Phe-OH, m. 102-3°; Dec-L-Val-OH, m. 101-3° (the last 2 were best prepd. from decanoic acid and Et₃N with EtO₂CCl, followed by the appropriate amino acid and aq. NaOH in Me₂NCHO-THF. Treating *N*-acylamino acids and *N*-hydroxysuccinimide with dicyclohexylcarbodiimide (DCC) in dioxane overnight at room temp. gave the following *N*-hydroxysuccinimide esters of *N*-acylamino acids or peptides (B = *tert*-butoxycarbonyl, Z = carbobenzoxy, Su = succinimido): B-DL-Ala-OSu, m. 140-2°; B-L-Ala-OSu, m. 144-7°; Z-L-Ala-OSu, m. 122-3°; B-L-Phe-OSu, m. 153°; B-D-Phe-OSu, m. 152-3°; B-L-Pro-OSu, m. 134-6°; B-L-Ile-OSu, m. 90-9°; B-D-Met-OSu, m. 129-30°; Z-L-Phe-OSu, m. 140°; Z-L-Val-OSu, m. 127-8°; Dec-Gly-OSu, m. 87-8°; Dec-L-Gln-OSu, m. 101-3°; Dec-L-Asn-OSu, m. 90-2°; Dec-L-Phe-OSu, m. 113-14°; Dec-L-Trp-OSu, m. 126-8°; Dec-L-Val-OSu, m. 86-7°;

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Dec-Gly-Gly-"Sar"-OSu, — (amorphous); Dec-L-Gln-L-Asu-OSu, m. 165-7°; Z-L-Asn-(ONP): (ONP = *o*-nitrophenyl), m. 165-6°; and Z-L-Gln-ONP, m. 165-6°. Treating the *N*-hydroxysuccinimide esters of acylamino acids with amino acid Me ester-HCl in the presence of Et₃N in dioxane at room temp. gave the following Me esters of *N*-acyl peptides: Z-L-Ala-L-Ala-OMe, m. 105-7°; B-DL-Ala-Gly-OMe, m. 101-3°; B-D-Phe-L-Met-OMe, m. 138-9°; Z-L-Val-L-Val-OMe, m. 109-10°; B-L-Pro-D-Ala-OMe, oil; B-L-Ile-Gly-OMe, m. 100-2°; B-L-Phe-L-Arg-(NO₂)-OMe, — (amorphous); Z-D-Val-D-Ala-OMe, m. 147-0°; Z-L-Phe-Gly-OMe, m. 140-2°; B-DL-Val-L-Leu-OMe, m. 114-15°; NPS-D-Phe-L-Leu-OMe (NPS = *o*-nitrophenylsulfenyl), m. 114-15°; Z-L-Asn-L-Leu-OMe, m. 154-6°; Z-L-Gln-L-Phe-OMe, m. 194-6°; Z-L-Phe-L-Gln-OMe, — (amorphous); B-L-Ile-L-Ala-L-Ala-OMe, m. 185-6°; and B-D-Phe-D-Phe-D-Phe-L-Met-OMe, m. 96-7°; Z-L-Asn-L-Val-OBu-*tert*, m. 129-31°, was prepd. similarly. Some of the above were prepd. from acyl-amino acids and an amino acid ester by the DCC route or from the amino acid and a carbobenzoxyamino acid *p*-nitrophenyl ester in the presence of Et₃N, or from a carbobenzoxyamino acid and the Me ester of an amino acid in the presence of BuO₂CCl and Et₃N. Treating the acyl peptide in EtOH with aq. NaOH gave acyl peptides: B-DL-Ala-Gly-OH, m. 169-71°; Z-L-Phe-Gly-OH, m. 163-4°; Z-D-Val-D-Ala-OH, m. 167-9°; Dec-Gly-L-Pro-OH, m. 107-9°; and Dec-Gly-Gly-"Sar"-OH, m. 133-4°; the last 2 were best prepd. from the amino acid and the *N*-hydroxysuc-

25

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cinimide ester of decanoic acid as above. Keeping the Me esters of carbobenzoxy peptides with HBr in AcOH or *tert*-butoxycarbonyl peptides with dry HCl in EtOAc gave the following Me esters of dipeptides: H-L-Ala-L-Ala-OMe.HBr; H-L-Val-L-Val-OMe.HBr; H-L-Asn-L-Leu-OMe.HBr; H-L-Gln-L-Phe-OMe.HBr; H-L-Phe-L-Gln-OMe.HBr; H-D-Phe-L-Met-OMe.HBr; H-D-Phe-L-Met-OMe.HCl; H-D-Phe-L-Leu-OMe.HCl; H-L-Pro-D-Ala-OMe.HCl; H-DL-Val-L-Leu-OMe.CF₃CO₂H; H-L-Ile-Gly-OMe.CF₃CO₂H; H-L-Phe-L-Arg(NO₂)-OMe.CF₃CO₂H; H-L-Asn-L-Val-O-Bu-*tert*; and H-L-His-L-Leu-OMe.2HCl. Removal of the various protective groups by appropriate means gave the esters of the *N*-acyl tripeptides: B-L-Phe-L-Pro-D-Ala-OMe, m. 120-1°, B-L-Ala-L-Ile-Gly-OMe, — (amorphous); Dec-L-Val-L-Asn-L-Val-OBu-*tert*, m. 258-60°; Z-L-Phe-L-His-L-Leu-OMe, m. 180-2°; B-L-Phe-DL-Val-L-Leu-OMe, m. 244-6°; B-DL-Ala-Gly-L-Met-OMe, oil; Z-L-Leu-L-Val-L-Val-OMe, m. 142-3°; NPS-D-Ser-L-Ile-Gly-OMe, m. 210-11°; and Z-L-Glu(OMe-γ)-D-Phe-L-Leu-OMe, — (amorphous). Treating an acylamino acid with pivaloyl chloride, followed by an ester of an amino acid in pyridine-Et₃N in CHCl₃ gave: Dec-L-Asn-L-Phe-L-Arg(NO₂)-OMe (I), m. 205-7°; Dec-Gly-L-Pro-L-Asn-OMe, m. 212-13°; removal of the nitro group from I with H over Pd gave the Me ester of decanoyl-L-asparaginyll-L-phenylalanyl-L-pyrimidylornithine, m. 216-18°. Treating the carbobenzoxy

3/5

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derivs. with HBr in AcOH gave the following Me esters of tripeptides; while others were prepd. with HCl in EtOAc or CF₃CO₂H under anhyd. conditions: H-L-Leu-L-Val-L-Val-OMe.HBr; H-L-Glu(OMe- γ)-D-Phe-L-Leu-OMe.HBr; H-L-Ile-L-Ala-L-Ala-OMe.HBr; H-L-Phe-L-His-L-Leu-OMe.2HBr; H-D-Phe-D-Phe-L-Met-OMe.HCl; H-L-Phe-L-Pro-D-Ala-OMe.HCl; H-D-Ser-L-Ile-Gly-OMe.HCl; H-L-Ala-L-Ile-Gly-OMe.CF₃CO₂H; H-L-Phe-DL-Val-Leu-OMe.CF₃CO₂H; and H-DL-Ala-Gly-L-Met-OMe.CF₃CO₂H. Treating the amino acids with acyl chloride in pyridine-Et₃N gave the following Me esters of acyl tetrapeptides: Z-L-Asn-L-Phe-DL-Val-L-Leu-OMe, m. 227-8°; Z-D-Val-D-Ala-Asn-L-Leu-OMe, amorphous; Z-L-Phe-Gly-L-Phe-L-Gln-OMe, m. 215-17°; Dec-L-Gln-D-Phe-D-Phe-L-Met-OMe, m. 202-4°; B-D-Phe-DL-Ala-Gly-L-Met-OMe, m. 278-9°; Dec-L-Asn-L-Leu-L-Val-L-Val-OMe, m. 278-9°; Dec-L-Asn-D-Ser-L-Ile-Gly-OMe, m. 245-7°; Z-L-Gln-L-Ala-L-Ile-Gly-OMe, m. 148-50°; Z-L-Ala-L-Glu(OMe- γ)-D-Phe-L-Leu-OMe, m. 276-8°; Dec-L-Gln-L-Ile-L-Ala-L-Ala-OMe, m. 299-301°; Z-L-Asn-L-Ile-L-Ala-L-Ala-OMe, m. 288-90°; and Dec-L-Asn-L-Phe-L-His-L-Leu-OMe, m. 214-15°. Treating the carbobenzoxy derivs. with HBr in AcOH gave H-L-Asn-L-Ile-L-Ala-L-Ala-OMe.HBr; H-L-Asn-L-Phe-DL-Val-L-Leu-OMe.HBr; H-L-Phe-Gly-L-Phe-L-Gln-OMe.HBr; H-D-Val-D-Ala-L-Asn-L-Leu-OMe.HBr; H-L-Gln-L-Ala-L-Ile-Gly-OMe.HBr; and H-L-Ala-L-

45

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Glu(OMe- γ)-D-Phe-L-Leu-OMe.HBr. Similarly, the action of $\text{CF}_3\text{CO}_2\text{H}$ on the *tert*-butoxycarbonyl deriv. gave H-D-Phe-DL-Ala-Gly-L-Met-OMe. $\text{CF}_3\text{CO}_2\text{H}$. Similarly were obtained H-Gly-L-Phe-Gly-L-Phe-L-Gln-OMe.HBr; H-D-Met-L-Gln-L-Ala-L-Ile-Gly-OMe.HCl; and H-L-Phe-Gly-L-Asn-L-Phe-DL-Val-L-Leu-OMe.HBr). The DCC method was used to prepd.: Dec-L-Asn-D-Ile-L-Ala-L-Ala-OMe, m. 96-7°; Dec-Gly-Gly-"Sar"-L-Gln-L-Phe-OMe, m. 212-14°; Dec-L-Gln-L-Asn-L-Phe-L-Pro-D-Ala-OMe, m. 182-4°; Dec-L-Gln-D-Val-D-Ala-L-Asn-L-Leu-OMe, m. 267-9°; Dec-L-Trp-D-Val-D-Ala-L-Asn-L-Leu-OMe, m. 169-71°; Z-Gly-L-Phe-Gly-L-Phe-L-Gln-OMe, amorphous; Dec-L-Gln-D-Phe-DL-Ala-Gly-L-Met-OMe, m. 181-3°; Dec-L-Asn-L-Phe-DL-Ala-Gly-L-Met-OMe, m. 284-6°; D-D-Met-L-Gln-L-Ala-L-Ile-Gly-OMe, amorphous; Dec-L-Asn-L-Ala-L-Glu(OMe- γ)-D-Phe-L-Leu-OMe, m. 266-8°; Z-L-Phe-Gly-L-Asn-L-Phe-DL-Val-L-Leu-OMe, m. 267-9°; Dec-Gly-L-Phe-Gly-L-Phe-L-Gln-OMe, amorphous; Dec-D-Met-L-Gln-L-Ala-L-Ile-Gly-OMe, m. 242-3°; Dec-L-Phe-Gly-L-Asn-L-Phe-DL-Val-L-Leu-OMe, m. 244-6°; and Dec-L-Asn-L-Ala-D-Ala-D-Ala-OMe, m. 269-72°. The yields were 70-90%. Optical rotations were given for many of the compds. ... G. M. Kosolapoff

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UDC 669.16

TAVADZE, F. N., Academician, Georgian Academy of Sciences,
LANCHAVA, M. D., MIROTADZE, Sh. A., Academy of Sciences of
the Georgian SSR, Institute of Metallurgy

"Selecting Heat-Treat Conditions for Iron Castings With Modular
Graphite"

Tbilisi, Soobshcheniya, Akademii Nauk Gruzinskoy SSR, Vol 64,
No 1, Oct 71, pp 121-124

Abstract: In an attempt to determine precisely the heat
treatment conditions which give a predetermined microstruc-
ture, the authors studied rates of graphitization as a func-
tion of temperature and the cross section of castings of
metal with the following chemical composition: C--3.3-3.5%,
Si--2.4-2.4%, Mn--0.5-0.6%, P0.1-0.15%, S--0.01-0.012%, Mg--
0.045-0.055% and the remainder Fe. The kinetics of graphiti-
zation was studied at 850, 900 and 950°C. The results show
that the rate of graphitization of primary cementite is chief-
ly a function of temperature. The first stage of graphiti-

1/2

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TAVADZE, F. N. et al., Soobshcheniya, AN GSSR, Oct 71, pp 121-124

zation should be done at 920-930°C. A study of the rate of graphitization of secondary cementite showed that wall thickness has an appreciable effect along with temperature and cross section. However, holding for 4-5 hours at 750 and 720°C results in satisfactory microstructure in all cases. Secondary cementite in iron with modular graphite in the cast state with no subsequent heat treatment is rapidly graphitized in contrast to normalized specimens; a reduction in the concentration of carbon and silicon noticeably reduces the rate of graphitization of secondary cementite. Three figures, one table, bibliography of three titles.

2/2

USSR

UDC 620.178.15.05

MIROTVORSKIY, V. S., NIKIFOROV, A. Ya., and MEDVEDITSKIY, V. V.

"Device for Measuring Hardness and Microhardness at High Temperatures"

Moscow, Zavodskaya Laboratoriya, Vol 38, No 9, 1972,
pp 1144-1145

Abstract: The construction of a device for sight-measuring hardness and microhardness of materials on heating in vacuum or in a medium of purified inert gases with 5 g — 5 kg load on indenter is described by reference to its schematic drawing. The temperature of measurements, determined by the vapor pressure of metals, is for copper-base alloys ~800-900 °C and for Fe-, Ni-, and Co-base alloys ~1000-1100 °C. The working of the device, the use of special indenters, the radiative heating of the specimen with control of its surface, and the measuring of indenter impressions are discussed. The working accuracy rated for Al, Fe, and 30KhGSA and 1Kh13 steels from the relative mean square error in measuring the diagonal of one imprint, comprised 1/2

USSR

MIROTVORSKIY, V. S., et al., Zavodskaya Laboratoriya, Vol 38, No 9, 1972,
pp 1144-1145

$\pm 2.3-4.2\%$ for the described device and $\pm 1.4\%$ and $\pm 3.1\%$ for two other units. Hardness factors (185-192 kg/mm²), determined on different units, and the relative mean square errors in measuring the imprint diagonals on steels (2-5%) showed a good correlation. One figure, five bibliographic references.

2/2

- 81 -

USSR

UDC: 534.8.081.7

ANDREYEV, G. I., KOBTSEVA, T. Ye., MIROTVORSKIY, V. S., Moscow

"Internal Friction and Heat Release in Structural and Tool Steels in the Presence of Intense Ultrasonic Vibrations"

Moscow, Akusticheskiy Zhurnal, Vol 18, No 3, pp 343-350

Abstract: The paper describes an energy method of determining the internal friction of metals exposed to ultrasonic vibrations with a frequency of the order of 20 kHz at relative deformations of 10^{-4} - 10^{-3} . Internal friction is related to amplitude for commercial iron and for steel grades 30 KhGSA, 40 KhNMA, 50 KhFA, ShKh15 and 3 Kh13 in various states. The heat treatment effect on the damping factor is investigated. The results of studies of ultrasonic heating of metals show that there are amplitude-temperature regions of increased internal friction in commercial iron and grade 50 KhFA steel which are due to the development of slip bands and microstresses in the microstructure. The results of studies of the relation between heat treatment and the damping factor show that the proposed method of analysis may be useful in studying the dislocation nature of plastic deformation and defect accumulation of the fatigue type with high deformation amplitudes.

1/1

- 62 -

USSR

UDC: 621.396.67:624.97(088.8)

KERPELEV, S. M., MIROVA, T. D., FRIDMAN, P. M., ZINOV'YEVA, N. A.

"An Antenna Support"

USSR Author's Certificate No 272396, filed 27 Sep 68, published 22 Sep 70
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6B113 P)

Translation: The proposed antenna support contains a bar for fastening the antenna, a cable drum, and an instrument cabinet. To improve convenience in the use of the support, it contains an operator's chair formed by the interconnected tubes which make up the stand of the support and the top of the instrument cabinet. The cabinet top is accommodated in the longitudinal slots of two tubes which fit into the fastening brackets of the cable drum. The drum has rims with tires and racks for holding the antenna in the collapsed position.

1/1

- 12 -

USSR

UDC 535.854

MIROVITSKIY, D. I., SAMSONOV, G. A., SOBOLEV, G. A., and SHANIN, V. I.,
Moscow Institute of Radiotechnology, Electronics and Automation

"A Device for Processing the Optical Signals Scattered from Objects"

USSR Author's Certificate No 366444, Filed 22 Jan 71, Published 16 Jan 73
(from Otkrytiya, Izobreneniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7,
Mar (a) 73, Claim No 1617320/26-9)

Translation: A device for the processing of optical signals scattered from objects, containing a source of coherent radiation, an axial optical canal, consisting of a collimator, a phototransparency, a Dove prism and a lens for direct and reverse Fourier conversions with an adjustable filter mounted between them and a canal for formation of optical signals scattered from objects in a hologram, in series, distinguished by the fact that in order to increase the rapidity of signal processing in the basic optical canal a translucent mirror a lens, a hologram and a rotating mirror have also been placed in series, optically connecting the output of the collimeter with the adjustable filter, while the hollgram and the adjustable filter are recorded on a registering device, for example a thermoplastic.

1/1

USSR

UDC 621.373.826:772.99

BURYAK, G. V., ZAVITNEVICH, Yu. V., MIROVITSKIY, D. I., MAZAROV, V. L., and SAMSONOV, G. A.

"Some Holographic Investigations of Light Dispersion With Models"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses--collection of works) "Nauka," 1972, pp 323-327 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10D417)

Translation: A holographic imitator of optical and infrared electronic systems, designed for studying the peculiarities of functional connections and set units, radio lines, and processes and phenomena occurring in radio systems, is described. The imitator contains a laser, a set of holographic or spatial models, a group of shaping and transforming optical elements, holographic imitators of range nonuniformities, and a receiver block. The peculiarities of the range over which the radio waves are propagated are modeled through a set of functional amplitude, phase, or complex filters. Results are given of the determination of dispersion diagrams for various objects for a signal path containing nonuniformities. A method is described which measures the dimensions of the object and the distance to it by forming a three-beam diagram of the radiation in which the direction of two beams are fixed while the third performs angular scanning to sense the contour of the investigated ob-

USSR

UDC 621.372.826

MIROVITSKIY, D. I., DUBROVIN, V. F., and BASKAKOV, V. V.

"Cophased Surface-Wave Directional Couplers Based on Dielectric Waveguides"

Moscow, Antenny, No 12, 1971, pp 65-76

Abstract: The article outlines results of work on devising and employing rectangular polystyrene waveguides as three-way and four-way surface wave line junctions in symmetrical and asymmetrical microwave configurations. These elements have certain advantages over metallic waveguides and strip lines in the less accessible submillimeter and infrared wavelengths, as well as in the centimeter and millimeter ranges, but there are special power transmission features which cannot be explained by the usual procedures for metallic components: An effective directional coupling of power from the main waveguide into the side waveguide occurs over a $\pm 20\%$ frequency range in a coupling region approximately a (dielectric) wavelength long, and the coupled wave is in phase with the wave propagated in the main waveguide. The reasons for this phenomenon are interpreted, experimentally corroborated, and graphically displayed in terms of the directional radiation of power from a localized inhomogeneity in the waveguide, the relation between the amplitude-phase characteristics of the branched signal as a function of the

1/2

USSR

MIROVITSKIY, D. I., et al., Antenny, No 12, 1971, pp 65-76

angle at which the waveguides intersect, etc. After noting that their experimental data agrees well with later theoretical research for continuous transitions in open waveguides, the authors describe and plot properties of various cophased directional dielectric waveguide couplers and branching elements, including the losses in a three-way coupler in which power is transferred in a direction coinciding with the branch continuation, forming a fictitious branch, i.e., an area of free space. When two signals are simultaneously propagated from separate branches, their vector sum appears in the third branch and the coupler becomes an adder in which the various propagation, phase, and amplitude properties can be investigated. Moreover, if the applied signals are in phase, symmetrical and weakly directed radiation can undergo a directional phase shift at the waveguide intersection point. If special high-grade plastics and ceramics with 10-160 permittivity and lower losses are utilized, coupler dimensions, losses, and other properties can be substantially upgraded. A number of measuring instruments and testing units based on the above couplers have already been fabricated, and they show promise in several high-frequency applications, including use in multielement antenna feed devices.

2/2

- 10 -

USSR

UDC: 621.372.832:621.372.826.1

DUBROVIN, V. F., MIROVITSKIY, D. I., and OSIPOV, L. S.

"Directive Dividers Using Metal-Dielectric Waveguides"

Moscow, Antenny, No. 9, 1970, pp 72-80

Abstract: The beneficial characteristics of H waveguides provided the inspiration for the authors' researches of broadband elements used in uhf techniques for such devices as two and multi-channel directive power dividers, directional couplers, hybrid and rotating connections, and the like. In the present article, the results of the development of a two-channel directive power divider using waveguides of metal and dielectrics are given. The fundamental H_{01} wave in the guide is very simply excited by a rectangular waveguide with an H_{10} wave. The considerations leading to the choice of the width for the waveguide's dielectric plate and its dielectric permeability are indicated, and the details of the branching method for the power division are discussed. Direct connection between the divided output paths of the instrument was eliminated by the introduction of an insulating partition made of an absorbing material of the M-1 type in the shape of a wedge, with a base of

1/2

USSR

DUBROVIN, V. F., et al., Antenny, No 9, 1970, pp 72-80

8 mm, an altitude of 56 mm, and a thickness of 4 mm, which had the effect of sharply improving the divider's characteristics. A photograph and drawings of the instrument are given.

2/2

- 172 -

USSR

UDC 621.396.67.001.57

MIROVITSKIY, D. I., YELAGINA, N. M., TORGOVANOV, V. A., CHERKUNOVA, G. P.

"Quantitative Analysis of Cartographic Radiation Patterns in Optical Modeling of Antennas"

Moscow, Radiotekhnika i Elektronika, Vol 16, No 10, Oct 71, pp 1946-1950

Abstract: Photometric methods are used to analyze the photographic images of cartographic radiation patterns of antennas in the short-range, intermediate and long-range zones obtained by exposing diaphragms of various shapes (models of large antenna systems) to a coherent light beam. A photometric measurement procedure is worked out as well as a method of making the diaphragms. Evaluations obtained for antennas with circular, square and triangular apertures showed that the measurement error for the optical modeling method in long-range and short-range side lobes is ± 0.5 and ± 2 dB respectively. Five figures, bibliography of ten titles.

1/1

USSR

UDC: 621.372.832

DUBROVIN, V. F., MIROVITSKIY, D. I., OSIPOV, L. S., Moscow Institute of Radio Engineering, Electronics and Automation

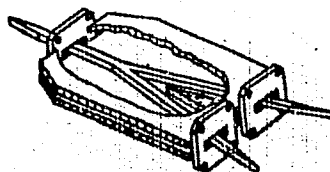
"A Power Divider"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 27, 1970, Soviet Patent No 279726, Class 21, filed 10 Mar 69, p 53

Abstract: This Author's Certificate introduces a power divider for super-high frequencies based on a metal-dielectric waveguide. As a distinguishing feature of the patent, the device is designed for directional division of SHF power over a wide frequency band while retaining high electrical insulation of the side branches without using additional unidirectional devices. The unit is made in the form of a one-piece metal-dielectric waveguide wye with an angle of 18-20° between the symmetric branches. The crossovers from the metal-dielectric to the standard waveguide in the symmetric branches are separated by an absorbing shield which may take the form of a wedge located on the bisector of this angle.

1/2

DUBROVIN, V. F. et al., Soviet Patent No 279726



2/2

- 131 -

USSR

UDC: 621.372.832-181.4

MIROVITSKIY, D. I., DUBROVIN, V. F., BASKAKOV, V. V.

"Hybrid Ring Connections Based on Dielectric Waveguides"

Moscow, Radiotekhnika i Elektronika, Vol 15, No 12, Dec 70, pp 2613-2615

Abstract: A hybrid cophased connector is proposed which is made in the form of a ring for purposes of miniaturization. The device is made of a rectangular dielectric waveguide with a cross section of 10 x 23 mm bent into a circle with a mean radius of 150 mm, the wider walls of the dielectric waveguide being perpendicular to the plane of the circle. The material is industrial polystyrene with a dielectric constant of 2.54 and a loss tangent of $4.3 \cdot 10^{-4}$. Laboratory tests of the connector showed that it operates satisfactorily in 20% of the frequency band (mean frequency 10 GHz); inherent losses are no more than 4.7 DB, and the VSWR at the output is no worse than 1.28. The size of the device can be further reduced by using high-frequency dielectrics which have lower losses. In principle, there are no restrictions on operation of these connectors in the submillimeter and optical ranges.

1/1

USSR

UDC: 621.372.853.1.09

MIROVITSKIY, D. I., DUBROVIN, V. F., VZyatyshev, V. F., PENSIKOV, M. V.,
SHEVCHENKO, V. V.

"Cophased Directional Coupling of Electromagnetic Energy in Lines with Delayed Waves"

Moscow, Radiotekhnika i Elektronika, Vol 16, No 1, Jan 71, pp 37-40

Abstract: The authors describe the principal characteristics of the experimentally observed phenomenon of cophased directional coupling of energy in intersecting and branched dielectric waveguides. Energy transmission is characterized by the following peculiarities in such systems: 1. effective directional coupling is observed even when the section of interaction is of the order of a wavelength or less; 2. the coupled wave is in phase with the wave being propagated in the main channel; 3. effective energy coupling takes place when the coefficients of reflection from the region of line branching are small, which is observed when the wave delays are small in the lines; 4. effective directional energy transmission takes place over an extremely broad frequency range. A clear physical interpretation of the effect is given together with confirming experiments involving investigation of directional radiation of energy from a localized nonhomogeneity in the waveguide, an investigation of

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MIROVITSKIY, D. I., et al., Radiotekhnika i Elektronika, Vol 16, No 1, Jan 71,
pp 37-40

the amplitude-phase dependence of a signal coupled out into a side branch as a function of the angle of intersection, etc. Some of the areas where the observed effect can be utilized in SHF technology are pointed out. The authors thank B. Z. Katsenelenbaum for interest in the work and discussion of the results.

2/2

- 122 -