

UNCLASSIFIED

PROCESSING DATE--04DEC70

272 016

CIRC ACCESSION NO--AP0133050

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE 1I^{ON} ANISOTROPY OF Mn^{2+} SUB 4 WAS EVALUATED BY ANAL. OF THE PER LINE OF Mn^{2+} POSITIVE MEASURED AT 30 GHZ AT ROOM TEMP. THE LINE WAS ANALYZED BY THE METHOD OF MOMENTS UNDER THE ASSUMPTION OF ANISOTROPIC EXCHANGE INTERACTION AND WITHOUT CONSIDERATION OF BROADENING OF THE HYPERFINE STRUCTURE, WHICH IN THIS CASE IS SMALL IN COMPARISON WITH DIPOLE DIPOLE BROADENING.

FACILITY: FIZ. TEKH. INST. NIZKIKH TEMP., KHARKOV, USSR.

UNCLASSIFIED

Physiology

USSR

UDC 611.41:611.14]-02:612.014.47

NESTERENKO, N. T., Department of Normal Anatomy, 1st Leningrad Medical
Institute imeni I. P. Pavlov

"The Effect of Gravitational Stress, Hypokinesia, and Hypodynamia on the
Vascular Bed of the Spleen"

Leningrad, Arkhiv Anatomii, Gistologii i Embriologii, Vol 64, No 5, 1973,
pp 44-51

Abstract: The purpose of the investigation was to study the effect of gravi-
tational stress, hypokinesia, and hypodynamia on the vascular bed of the
spleen as a whole. The experiments were made on 180 white rats of both
sexes, with 40 used for study of the normal vascular bed. In the first
series of tests, the animals were subjected to single continuous maximum
endurable stresses in the chest-back direction. In the second series, the
animals were subjected to hypokinesia for periods from one to eight weeks.
For the third series the animals were subjected to hypokinesia for the times
indicated above, then put under the stresses mentioned previously. Study
was done by roentgenography, microroentgenography, clearing the sections,
and a histological method. It was established that gravitational stress
leads to morphological changes of the entire bed, expressed in constriction
1/2

USSR

NESTERENKO, N. T., Arkhiv Anatomii, Gistologii i Embriologii, Vol 64, No 5, 1973, pp 44-51

of both the arteries and veins of all orders. Similar changes were observed in the early periods of hypokinesia, but at later times the terminal branches of the arteries remained constricted while the terminal sections of the veins began to dilate after the fourth week. Sinuosity, uneven contours, varicose dilation were found in the large arteries and veins, and there were abrupt changes in the structure of the parenchyma, such as atrophy of the folliculi and narrowing of the lumen of the central arteries due to thickening of the muscular wall. Where stresses were combined with hypokinesia these changes were more marked (deformation of vessel walls - dilation and ruptures).

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NESTERENKO, N. V.

DISSOCIATING GASES AS COOLANTS AND WORKING SUBSTANCES AT ATOMIC POWER PLANTS

JPRS 60560
16 November 1973

(16)

Translation of Russian-language materials presented at the Third All-Union Conference by A.K. Krashin, et al., *Dissotsiiruyushchiye gazy kak toplivostejel i rabochiye tela*, *Inzhenericheskikh Uspekhov*, 1973, Minsk, UDC: 621.317.627.987, signed to press 12 April 1973.

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Information Theory

USSR

UDC 533.9.08

ZHDANOV, A.I., NESTERENKO, P.T., MAKAROV, A.F., GOLOSNYAK, V.L.

"Automation Of Analysis Of Experimental Data In Investigations Of Plasma Physics"

Vestn. Khar'kov. politekh. in-ta (Bulletin Of Khar'kov Polytechnical Institute),
1970, No 50(98), pp 53-56 (from RZh--Elektronika i yeye primeneniye, No 1,
January 1971, Abstract No 1A236)

Translation: A system is described which is intended for automation of the analysis of the signals of diagnostic data units [датчик] recorded on a photographic film in experiments of plasma physics. This system, constructed on the base of the "Dnepr" controller, includes a specially developed device for introduction into the machine of graphic information. 3 ill. 3 ref. Summary.

1/1

USSR

UDC 541.1:546.27'16:547.1'118

SPITSYN, VIKT. I., KOLLI, I. D., SADYKOVA, E. M., and NESTERENKO, R. G.,
Moscow State University imeni M. V. Lomonosov

"A Study of Certain Adducts of Boron Trifluoride with Trialkyl(aryl)-phosphines"

Moscow, Izvestiya Akad, Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 72, pp 45-50

Abstract: Published data on the halogenic borophosphanes are still very scant. The few compounds thus far obtained are recommended as antinock additives for engine fuels, hydraulic fluids, dielectrics and catalysts for polymerization. In addition, borophosphanes containing a fluorine atom with the boron have gone almost entirely unstudied.

Using trialkyl(phenyl) phosphines in combination with etherate of biron trifluoride, the authors obtained a number of fluorine-derivative borophosphanes, for which chemical analyses were made for those of type $F_3B \cdot PR_3$, infrared spectra were obtained for those of type $F_3B \cdot PR_3$, and both thermal and chemical analyses for the products of decomposition of those of type $F_3BP(C_6H_5)_3$ heated in nitrogen and air were made. Decomposition was found to occur at 180-200°C in the case of air, and 200-220° in the case of nitrogen. Complete graphic summary of data obtained accompanies the paper.

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Acc. Nr:
AP0052436

Abstracting Service:
CHEMICAL ABST. 5-70

Ref. Code:
UR 0342

N

101738p Effect of washing on the quality of cotton fabric finished by Karbamol TsEM [1,3-bis(hydroxymethyl)-2-imidazolidinone]. Kryukova, A. S.; Nesterenko, R. V. (NIOPIK, Moscow, USSR). *Tekst. Prom. (Moscow)* 1970, 30(1), 50-3 (Russ). Samples of cotton poplin were treated with a finishing soln. contg. 300 Karbamol TsEM and 20 g/l. $MgCl_2 \cdot 6H_2O$. One portion of the samples was washed with 0.2% household soap soln. The washed samples after storage at 20° and 65% relative air humidity for 28 days retained their original crease recovery angle (α) and lost 3.8% of the chem. bound HCHO. The unwashed samples after 28 days storage lost 16% bound HCHO; α was decreased 10%. The evolution of HCHO from the washed samples, stored in a closed space, was 1/6 of that from the unwashed samples.

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USSR

UDC 621.378.3

NESTERENKO, T. M., KHAPALYUK, A. P.

"Concerning the Spectral Width of Laser Modes"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol 17, No 4, Oct 72, pp 623-632

Abstract: Expressions describing generation of a spatially bounded beam with finite spectral width are derived on the basis of exact solutions of Maxwell's equations in the form of Fourier integrals and conditions of steady-state emission of a Fabry-Perot cavity. In the case of finite dimensions of the active medium, these expressions are suitable for describing a beam from the instant that steady-state emission conditions begin to be satisfied until the instant that the field in the expansion process fills the entire volume of the cavity. Emission is treated as a collection of a large number of time-limited and space-limited pulses whose length depends on the initial radius of the beam and the transverse dimensions of the active medium. The pulse duration determines the spectral width of the mode, and its dimensions determine the divergence of the beam. The results are applied to the case of a beam with Gaussian distribution of intensity in the cross section.

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USSR

UDC 547.341*139.81+547.391

PUDOVIK, A. N., BAYEVA, E. S., NESTERENKO, V. D., and ANOSHINA, N. P.

"Reaction of Analides of Dialkyl Phosphorous and Diaryl Phosphonous Acids with β -Quinones"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 32-37

Abstract: In continuation of the study of the reactions of acid amides of trivalent phosphorous with compounds containing an activated carbonyl group [A. N. Pudovik, et al., Izv. AN SSSR, Ser. Khim., 510, 1972], a study was made of the reactions of analides of dialkyl phosphorous and diaryl phosphonous acids with different substituted and unsubstituted β -quinones and β -naphthoquinone. The amides of dialkylphosphorous and diaryl phosphonous acids react with β -quinones with the formation of: O,O-dialkyl-O- β -hydroxy aryl- β -arylimido phosphates and phosphinates. The O,O-dialkyl-O- β -hydroxyaryl-N-arylimido phosphates are subjected to thermal regrouping into O-alkyl-O- β -alkoxyaryl-N-arylamido phosphates.

1/1

USSR

UDC 542.91:547.1'118

PUDOVIK, A. N., BATTYEVA, E.S., and NESTERENKO, V. D., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbusov, Acad. Sc. USSR

"Reaction of N-Arylamides of Dialkylphosphorous and Diarylphosphinous Acids With Benzyl"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 4, Apr 72, pp 871-875

Abstract: N-Arylamides of dialkylphosphorous and diarylphosphinous acids react with benzyl forming respective imidophosphites and imidophosphonates. To 4.2 g of the diethylphosphorous acid anilide in 50 ml ether, 4.2 g of benzyl in 100 ml ether was added dropwise with stirring and in an atmosphere of nitrogen. After a 30 min reaction at room temperature, the solvent was removed, the residue was evacuated down to 0.08 mm for 30 min, to yield a light yellow liquid. In an analogous manner, diethyl- δ -benzoylbenzyl-N-tolylimidophosphate was obtained from toluidide and benzyl. When diethyl- δ -benzoylbenzyl-N-phenylimidophosphate (I) was reacted with CS_2 , phenylisothiocyanate, m.p. 52-55° was obtained: with water (I) gave diethylanilidophosphate, m.p. 93°. The anilide of diphenylphosphinous acid treated with benzyl, followed by CO_2 gave diphenylanilidophosphate, m.p. 234° and δ -benzoylbenzyl-diphenylphosphinate, m.p. 128-130°.

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USSR

UDC 621.039.524.034.3

NESTERENKO, V. B., TVERKOVKIN, B. YE., SHINKEVICH, O. S., PLESHCHENKOV, G. A.

"Calculating the Parameters of a Chemically Reacting Flow in a Heated Channel"

Dissotsiiiruyushch. gazy kak tenlonositeli i rab. tela energ. ustanovok -- V. sb.
(Dissociating Gases as Heat Transfer Agents and the Working Medium of Power
Plants -- Collection of Works), Minsk, Nauka i tekhn. Press, 1970, pp 238-252
(from RZh-Elektrotehnika i Energetika, No 5, May 1971, Abstract No 5U192)

Translation: A one-dimensional procedure for calculating the parameters of a chemically reacting stationary flow in a heated channel is proposed. The results of numerical calculation are presented, and the effect of the kinetics of chemical reactions on the average parameters of the chemically reacting flow is analyzed in the example of the dissociating system $N_2O_4 \rightleftharpoons 2NO_2 \rightleftharpoons 2NO + O_2$. There are 4 illustrations, 1 table and a 6-entry bibliography.

1/1

USSR

UDC 621.039.526.621.311.2.001.5

NESTERENKO, V. B., Doctor of Technical Sciences, Institute of Nuclear Power Engineering, AS, Belorussian SSR

"Dissociating Nitrogen Tetroxide—Promising Heat-Transfer Agent and Working Medium of Atomic Electrical Stations With Gas-Cooled Fast-Neutron Nuclear Reactors"

Teplotoenergetika, No 1, Jan 1972, pp 72-78

Abstract: The results are considered of a number of studies (including work done at the Institute of Nuclear Power Engineering, AS, Belorussian SSR) of the thermodynamic effectiveness of gas and gas-liquid cycles based on dissociating nitrogen tetroxide. The results are presented of a comparison of the effectiveness of the gas heat-transfer agents He, CO₂, and N₂O₄ for one-loop atomic electric power plants with fast reactors. The prospects are noted for the use of the dissociating heat-transfer agent N₂O₄ in atomic electric power plants with gas-cooled fast-neutron reactors. 1 tab. 4 ill. 31 ref.

1/1

USSR

UDC 621.039.524.034.3

NESTERENKO, V. B., KHOREV, V. I., KREMESHVYY, A. I., SOKOL'CHIK, V. A.

"Gas Loop Devices Using a Dissociating Heat Exchange Agent"

Dissotsiiruyushch. gazy kak teplonositeli i rab. tela energ. ustanovok -- V sb. (Dissociating Gases as Heat Transfer Agents and the Working Medium of Power Plants -- Collection of Works), Minsk, Nauka i tekhn. Press, 1970, pp 161-165 (from RZh-Elektrotehnika i Energetika, No 5, May 1971, Abstract No 5U189)

Translation: Two loop devices designed for studying dissociating heat exchange agents, testing building materials and reserve testing of fuel elements are described. The loop devices are located in the research (IRT-2,000) reactor of the Nuclear Power Institute of the Belorussian SSR Academy of Sciences. The characteristic features inherent in the loop devices operating on the dissociating heat exchange agent are reflected. There are two illustrations and a one-entry bibliography.

1/1

USSR

UDC 621.039.524.034.3:621.039.526

KRASIN, A. K., NESTERENKO, V. B., KOLYKHAN, L. I., BUBNOV, V. P., IL'IN, A. YA.,
SLIZOV, V. P., SHURFROV, YU. V.

"Experimental Power Plant with a Gas Cooled Fast-Neutron Reactor and a Dissociating Heat Transfer Agent (BRG-20)"

Dissotsiiiruyushch. gazy kak teplonositeli i rab. tela energ. ustanovok -- V sb.
(Dissociating Gases as Heat Transfer Agents and the Working Medium of Power Plants -- Collection of Works), Minsk, Nauka i Tekhn. Press, 1970, pp 42-47
(from RZh-Elektrotehnika i Energetika, No 5, May 1971, Abstract No 5U107)

Translation: The possibility of creating an experimental industrial atomic power plant with a gas-cooled fast neutron reactor and a dissociating heat exchange agent is investigated. The parameters of the device and the required volume of experimental research are discussed. There are two illustrations and a four-entry bibliography.

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USSR

UDC 621.039.526:621.039.524.034.3

NESTERENKO, V. B., TVERKOVKIN, B. YE., SHINKEVICH, O. S.

"Prospects for Application of Dissociating Gases as the Heat Exchange Agents of Fast Neutron Nuclear Reactors"

Dissotsiiiruyushch. gazy kak teplonositeli i rab. tela energ. ustanovok -- V sb.
(Dissociating Gases as Heat Transfer Agents and the Working Medium of Power Plants -- Collection of Works), Minsk, Nauka i tekhn. Press, 1970, pp 36-41
(from RZh-Elektrotehnika i Energetika, No 5, May 1971, Abstract No 5U193)

Translation: Results are presented from thermal calculation of the cores of fast neutron nuclear reactors with dissociating heat exchange agents N_2O_4 , Al_2Cl_6 and Al_2Br_6 . They are compared with the heat engineering characteristics of the water vapor and sodium reactor. There is 1 illustration, 1 table and a 4-entry bibliography.

1/1

USSR

UDC 621.039.524.034.3

NESTERENKO, V. B., LOMASHEV, B. I., VERZHINSKAYA A. B., KOZLOVSKIY, V. G.,
SAKOVICH, A. T.

"First Experience in Realizing Thermal Cycles in a Dissociating Gas $\text{N}_2\text{O}_4 \rightleftharpoons 2\text{NO}_2 \rightleftharpoons 2\text{NO} + \text{O}_2$ "

Dissotsiiiruyushch. gazy kak teplonositeli i rab. tela energ. ustanovok -- V sb.
(Dissociating Gases as Heat Transfer Agents and the Working Medium of Power
Plants -- Collection of Works), Minsk, Nauka i Tekhn. Press, 1970, pp 95-104
(from RZh-Elektrotehnika i Energetika, No 5, May 1971, Abstract No 5U183)

Translation: The experimental testing units (the thermal D-50 and the power Vulkan) and the experience accumulated during operation of them in a dissociating medium $\text{N}_2\text{O}_4 \rightleftharpoons 2\text{NO}_2 \rightleftharpoons 2\text{NO} + \text{O}_2$ are presented for operation by a closed gas-liquid cycle scheme with the following parameters: 1) $p = 10-60$ absolute atmospheres, $T = 25-600^\circ \text{C}$; 2) $p = 3-15$ absolute atmospheres, $T = 25-500^\circ \text{C}$. The first operating experience in N_2O_4 confirmed the reversibility of the chemical reaction of dissociation of the system $\text{N}_2\text{O}_4 \rightleftharpoons 2\text{NO}_2 \rightleftharpoons 2\text{NO} + \text{O}_2$. Methods of measuring all the necessary values -- temperature, pressure, flow rate and so on -- are developed. This method of operation permits an approach to the
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USSR

NESTERENKO, V. B. et al., Dissotsiiruyushch' gazy kak tepionositeli i rab. tela energ. ustanovok, Minsk, Nauka i Tekhn. Press, 1970, pp 95-104

operation of more powerful heat and power plants. There are 2 illustrations and 1 table.

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USSR

UDC 621.43.018

NAUMOV, A. N., and NESTERENKO, V. B., Institute of Nuclear Power Engineering,
Academy of Sciences, ~~Belorussian~~ SSR

"Thermodynamic Possibilities of the Stirling Cycle With a Chemically
Reacting Gas"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Energeticheskikh Nauk
No 1, 1971, pp 48-52

Abstract: A thermodynamic analysis of the Stirling cycle with a chemically reacting working medium is given. It is shown that the use of a chemically reacting working medium makes it possible to decrease the influence of internal losses upon the effective efficiency of the cycle. The domain of expedient application of the cycle is defined -- power installations operating in a comparatively narrow temperature range of the working medium. Five figures, 3 bibliographic entries.

1/1

Nuclear Science and Technology

USSR

UDC 621.039.52

KRASIN, A. K., NESTERENKO, V. B., KOLYKHAN, L. I., BUBNOV, V. E., IL'IN, A. YA., SILCOV, V. P., and SHUFROV, YU. V.

"Experimental Powder Installation With Gas-Cooled Fast-Neutron Reactor and Dissociating Heat-Transfer Medium (BRG-20)"

Dissotsiiruyushch. Gazy kak Teplonositeli i Rab. Tela Emorg. Ustanovok' (Dissociating Gases as Heat Transfer Media and Working Fluids of Power Installations -- collection of works), Minsk, Nauka i Tekhn. Press, 1970, pp 42-47 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 4, 1971, Abstract No 4.50.134)

Translation: The possibility is studied of creating an experimental pilot scale atomic power plant with a gas-cooled fast-neutron reactor with dissociating coolant. The parameters of the installation and required volume of experimental study are discussed. 2 figures, 4 biblio. refs.

1/1

1/2 037 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--CALCULATION OF THE THERMODYNAMIC PROPERTIES OF CHEMICALLY REACTING
SYSTEMS BASED ON THE EQUATION OF STATE -U-
AUTHOR--(02)-BAZHIN, N.A., NESTERENKO, V.B.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK BELORUSS. SSR 1970, 14(4), 317-20
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, PHYSICS
TOPIC TAGS--THERMODYNAMIC CHARACTERISTIC, GAS STATE, LOW PRESSURE,
EQUILIBRIUM CONSTANT, ENTROPY, ENTHALPY, REAL GAS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3006/1163 STEP NO--UR/0250/70/014/004/0317/0320
CIRC ACCESSION NO--AT0134845
UNCLASSIFIED

2/2 037

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0134845

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPRESSIONS WERE DERIVED FOR
CALCG. THE ENTROPY S AND ENTHALPY H OF CHEM. REACTING REAL GASEOUS
SYSTEMS IN RELATION TO PRESSURE, VOL., TEMP., NO. OF MOLES AND MOLE
FRACTION, THE HEAT CAPACITY AT A VERY LOW PRESSURE, AND THE EQUIL.
DEGREE OF CONVERSION CALCD. FROM THE DEPENDENCE OF THE IDEAL EQUIL.
CONST. ON TEMP. IN THE STD. AND IDEAL STATES. FACILITY: INST.
YAD. ENERG., MINSK, USSR.

UNCLASSIFIED



USSR

UDC 747.341.139.31 + 547.391

PUDOVIK, A. N., BATYYEVA, E. S., IL'YASOV, A. V., NESTERENKO, V. D.,
MUKHTAROV, A. Sh., and ANOSHINA, N. P.

"Reactions of Trivalent Phosphorus Acid Amides With p-Quinones"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 7, Jul 73, pp 1451-1456

Abstract: Reaction of N-acetamides of dialkylphosphorous acids with p-quinones has been studied. Analogously to N-arylamidophosphites the N-acetamidophosphites react easily with p-benzoquinone, chloranil, and α -naphthoquinone forming crystalline addition products -- O,O-dialkyl O-p-hydroxyaryl N-acetimidophosphates. Using the EPR method, the possibility of a single electron transfer in the reactions of trivalent phosphorus acid amides with p-quinones was demonstrated going through an intermediate ion-radical formation.

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USSR

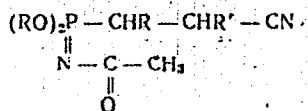
UDC 547.341.26'.118.07

PUDOVIK, A. N., BATYYEVA, E. S., NESTERENKO, V. D., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov

"A Method of Producing 0,0-Dialkyl-N-Acetimido-β-Cyanalkylphosphonates"

Moscow, Otkrytiya, Izobreneniya, Promyshlennyye Obraztzy, Tovarnyye Znaki, No 16, Jun 73, Author's Certificate No 375299, Division C, filed 27 Aug 71, published 23 Mar 73, pp 51-52

Translation: This Author's Certificate introduces: 1. A method of making 0,0-dialkyl-N-acetimido-β-cyanalkylphosphonates of the general formula



where R and R' are hydrogen or an alkyl. As a distinguishing feature of the patent, an 0,0-dialkyl-N-acetamidophosphite is reacted with a nitrile of an α,β-unsaturated carboxylic acid with subsequent isolation of the goal product by conventional methods. 2. A modification of this method distinguished by the fact that the process is carried out in an organic
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USSR

PUDOVIK, A. N., et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 16, Jun 73, Author's Certificate No 375299, Division C, filed 27 Aug 71, published 23 Mar 73, pp 51-52

solvent such as benzene with the application of heat. 3. A modification of the method covered in point 1 distinguished by the fact that the process is done in the presence of an alkali metal alcoholate such as sodium ethylate as a catalyst.

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UDC 547.261.118.07

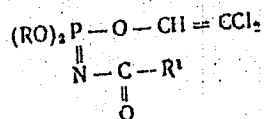
USSR

PUDOVIK, A. N., BATYYEVKA, Ye. S., and NESTERENKO, V. D., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov

"A Method of Synthesizing O,O-Dialkyl-O-Dichlorovinyl-N-Acylimidophosphates"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obrazttsy, Tovarnyye Znaki, No 16, Jun 73, Author's Certificate No 375297, Division C, filed 27 Sep 71, published 23 Mar 73, p 51

Translation: This Author's Certificate introduces a method of synthesizing O,O-dialkyl-O-dichlorovinyl-N-acylimidophosphates of the general formula



where R and R¹ are an alkyl. As a distinguishing feature of the patent, an O,O-dialkyl-N-acylamidophosphite is reacted with chloral in an organic solvent such as benzene in the presence of a hydrogen chloride acceptor such as trimethylamine with subsequent isolation of the goal product by conventional methods.

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USSR

N UDC 547.341:139.81 + 547.391

PUDOVIK, A. N., BATYYEVA, E. S., and NESTERENKO, V. D.

"Reaction of Phenylsulfamide of Diphenylphosphinous acid with Benzaldehyde"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 2, Feb 70, pp 502-503

Abstract: Phenylsulfamide of diphenylphosphinous acid reacts energetically with benzaldehyde in the absence of a catalyst to give a crystalline product of composition 1 : 1, representing phenylsulfamide of diphenyl(α -hydroxybenzyl)phosphine.

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Steels

USSR

UDC 621.785.533:669.018.8

POPOV, I. N., PEREVERSEV, V. M., KOROLEV, P. G., ZHEREBIN, O. A., and
NESTERENKO, V. I., Kursk Polytechnic Institute

"Cyclic Strength and Residual Stresses of Nitrocemented Steel Containing
Chromium and Nickel"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 3,
1973, pp 152-154

Abstract: The fatigue strength and residual stresses of 20KhGSNT nitro-
cemented steel containing chromium and nickel were experimentally investi-
gated. The fatigue strength on bending after nitrocementation did not
decrease, in comparison with cementation and temper hardening by repeated
heating. The high value of the endurance limit of 20KhGSNT nitrocemented
steel is a function of the presence on the surface of the nitrocemented layer
of compressive residual principal stresses, determined with the help of the
"PION 2" device. The presence of compressive residual stresses on the metal
surface results also from the analysis of sources of fatigue failures. Two
figures, five bibliographic references.

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USSR

UDC 621.375.82

NESTERENKO, V. M.

"Device for Measuring the Peak Laser Power on the Basis of the Optical Rectification Phenomenon"

V sb. Impul's. fotometriya (Pulse Photometry -- Collection of Works), No. 2, Leningrad, "Mashinostroyeniye", 1972, pp 104-110 (from RZh-Fizika, No 10, Oct 72, Abstract No 10D1026)

Translation: A device for measuring the peak power of laser radiation with modulated Q on the basis of the optical rectification phenomenon is described. The device is intended for measurements in the 0.3-300 Mw range at wavelengths of 693 and 1060 nm. 11 ref. Authors abstract.

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USSR

UDC 621.317.382:621.378.325

NESTERENKO, V.M., MOROZOV, B.N.

"Use Of Optical Detection For Measurement Of Laser Power"

Kvantovaya elektronika, Moscow, No 5, May 71, pp 87-92

Abstract: The peculiarities are considered of the phenomenon of optical detection as applied to the measurement of laser power. Detectors of optical radiation using nonlinear polarization in crystals make it possible without attenuators to measure laser emission with a power density up to 10^9 watt/cm², and are characterized by a high speed of response (10^{-9} -- 10^{-10} sec) and a linearity which make it possible to operate in a wide range of wave lengths, including the infrared. The results of a study of five types of crystals are presented. The principal characteristics and a photograph are shown of a device for measurement of the peak power of a laser emission of 0.5--4 micrometer. The range of the power measured is 50 kw to 1 gigawatt. The maximum power density of the emission measured is 500 Kw/cm². Received by editors, 22 Feb 71. 2 fig. 1 tab. 8 ref.

1/1

NESTERENKO, V.P.

MS 55722
10 April 73

ON THE ERROR OF A PENDULUM WITH A VIBRATING SUSPENSION

UDC 531.383

Article by V. P. Nesterenko, Tomsk Polytechnical Institute, Leningrad, Izvestiya VUZ Fizmatnauki, Russian, No 1, January 1973, recommended by the Chair of Chronoscopic Instruments and Devices, submitted 7 February 1972. Pp. 55-58.

It is demonstrated that in consideration of finite rigidity in the stretching of the rod of a pendulum an additional component of the dynamic error of rigidity, caused by the vibration of the point of suspension of the pendulum.

In the vibration of the point of suspension of a pendulum, a deviation of the position of dynamic equilibrium of the pendulum of the vertical is observed (1, 2, 3). In reference (3) it was demonstrated that in consideration of the finite rigidity of the rod of a pendulum its bending leads to a decrease in this deviation. With a decrease in the rigidity of the rod to bending, the rigidity to stretching also decreases, and therefore in the solution of this problem it is also necessary to consider it.

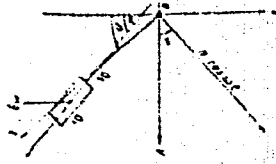


Figure 1.

USSR

UDC 615.23:547.775+546.171.5

PISKAREV, A. V., NESTERENKO, V. S. and SUMINOV, S. I., Division of Radiation Pathophysiology and Radiation Pharmacology, Scientific Research Institute of Medical Radiology, Academy of Medical Sciences USSR, Obninsk

"Effect of Pyrazolone and Hydrazine Derivatives on the Resistance of Mice to Hypoxia"

Moscow, Farmakologiya i Toksikologiya, Vol 36, No 1, Jan/Feb 73, pp 48-54

Abstract: The effects of 23 pyrazolone and hydrazine derivatives in increasing the resistance of mice to hypoxia were studied in experiments in which the animals were lifted to a simulated altitude of 10,000 m (rate of lifting 30 m/sec) or 10,500 m (rate of lifting 11 m/sec) by reducing the pressure in a chamber after intraperitoneal administration to the animals of the compounds tested. Of the seven pyrazolone derivatives tested, analgin exerted the greatest effect in protecting against hypoxia. The antihypoxic activity decreased in the order analgin > antipyrine > 2-cyano-ethyl-5-pyrazolone > amidopyrine. Butadion, 1-benzyl-3-methyl-5-pyrazolone, and 1-phenyl-3-methyl-5-pyrazolone had no significant activity. With the exception of hexylhydrazine and heptylhydrazine sulfates, all the hydrazine derivatives tested increased the resistance of the mice to hypoxia after being administered in appropriate 1/2

...with consider the motion of a pendulum which is a solid rod of length l on an articulated joint (hinged joint), and the lower end is fixed with the base in a vertical plane according to the law a cos wt. In the general case the equations of motion of the pendulum are introduced in the following manner. It is assumed that the rod has no mass, the axis of the elastic rod is kept in a vertical line; the presence of bending of the rod is considered only in the introduction of a certain elastic connection between the bottom connection hinge of the rod, which we will consider proportional to their relative angular displacement with a proportionality factor c.

The differential equations of motion of the pendulum, compiled by means of the Lagrange method, with consideration of the linear terms only, have the form

math display="block">I \ddot{\alpha} + c(t) \alpha + \dots = \dots

where

math display="block">I = \dots

where I is the moment of inertia of the pendulum relative to the axis passing through the joint O_0 and perpendicular to the plane XOY; alpha, beta are the angles determined by the deviation of the pendulum relative to the vertical; alpha is the angle of the rod in stretching; beta is the angle between the vibration vector and the plane of the horizon; k is the acceleration of free fall; m is the mass of the pendulum; l = O_0O_1; R = O_1O_2.

In all further investigations we will consider the disturbance to be parametric resonance. For solution of the equations of system (1), we will use the method of successive approximations. For the first approximation we will accept the following system of equations:

math display="block">\ddot{\alpha} + \dots = \dots

USSR

PISKAREV, A. V., et al., Farmakologiya i Toksikologiya, Vol 36, No 1, Jan/Feb 73, pp 48-54

doses. The most pronounced antihypoxic effect was observed on administration of apressin, 1-hydrazinophthalazine-4-carboxylic acid hydrazide, phelazine, phenizine, and 1-(2-cyanoethyl)-1-p-toluenesulfonylhydrazine. The activity of the pyrazolone derivatives was associated with the hypothermic effect produced by them. While some of the hydrazine derivatives also reduced the rectal temperature of the animals, one may assume that compounds of this type, being MAO inhibitors, could increase the level in the body of biogenic amines (serotonin, adrenaline, and histamine) that are of importance in adaptive reactions.

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USSR

UDC 577.391

KUDRYAVTSEV, V. D., NESTERENKO, V. S., and CHERKASOV, V. F., Institute of Medical Radiology, Academy of Medical Sciences USSR, Obninsk

"The Effect of Whole-Body Gamma-Ray Irradiation on Some Receptor Functions in Rat Skeletal Muscle"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 4, 1970, pp 611-613

Abstract: The threshold of electrical stimulation of gastrocnemius receptors in Wistar rats dropped 2 to 3 hours after wholebody irradiation (900 r) and continued to drop steadily until the 5th day, when the excitability of the receptors tended to return to normal. However, on the 7th day the threshold again began to drop. The latent period of excitation in response to single submaximum stimulation was the same as in controls 2 to 3 hours after irradiation, but lengthened significantly thereafter until the 5th day when it approached control values. On the 7th day the latent period again started to lengthen. Following submaximum stimulation when prolonged depolarization of the receptors sets in, impulse activity is partly or entirely blocked because of depression of receptor potential.

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USSR

UDC 548,0:535

VLOKH, O. G., KUTNYIY, I. V., LAZ'KO, L. A., and NESTERENKO, V. YA., L'vov State University imeni Iv. Franko

"Electrogyration of Crystals and Phase Transitions"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 9, Sep 71, pp 1852-1855

Abstract: Among the effects which are spontaneously generated during ferroelectric phase transitions the best known are the linear and quadratic electro-optical effects which are manifested in the change in refracting properties of the crystals and are described by polar tensors of the third and fourth ranks. Proceeding from the common symmetry arguments based on the principles of Curie and Neumann it may be expected that the ferroelectric phase transitions will be accompanied also by change in the gyration properties of the crystals that are associated with the imaginary part of the complex refractive index. The authors studied the spontaneous electrogyration effect in crystals of triglycinesulfate (TGS). They determined the size of the coefficient of linear electrogyration of the TGS crystals. They analyzed the character of the spontaneous electrogyration as a function of the type of phase transition and indicated the excellent characteristics of this effect as compared to the spontaneous electro-optical effect. The article contains 1 illustration and 11 bibliographic entries.

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USSR

UDC 546.56;611.621;620.187-529.26

ZALUTSKIY, V. P., NESTERENKO, Ye. G., and OSIPENKO, I. A., Institute of Metal Physics, Academy of Sciences UkrSSR

"Structural Changes Upon Decomposition of Cu-Mn-Al Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 30, No 3, Sep 70, pp 627-633

Abstract: X-ray and electron-microscope studies were made of the structural changes in the process of decomposition of Cu-Mn-Al alloys. It is demonstrated that after annealing at 200-250° C, the x-ray diffraction pictures show satellites. An increase in the annealing temperature causes a change in the distribution of intensities in the diffraction maxima and leads to the appearance of reflections from the separated phase (Cu₉Al₄). The orientation of the separation phase relative to the crystals of the initial alloy is determined. The results of the x-ray diffraction studies are compared with the electron-microscope studies, and the nature of the structural changes occurring upon decomposition of the Cu-Mn-Al alloy is discussed. It is determined that when the alloy Cu₂AlMn ages Ginzburg complexes occur in the early stages, while in the later stages the excess phase Cu₉Al₄ is separated.

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USSR

UDC: 621.396.6.049.75.002

GRINSHTEYN, E. Sh., NESTERENKO, Yu. F., FROLOVA, I. S.

"Making Multilayered Printed-Circuit Boards With Protruding Leads"

V sb. Obmen opytom v radioprom-sti (Experience Pooling in the Radio Industry--collection of works), vyp. 4, Moscow, 1972, pp 36-38 (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8V328)

Translation: A technological process is worked out for making multilayered printed-circuit boards with protruding leads. The technique gives boards with high operational reliability and enables 100% tracing with automated design of multilayered printed-circuit boards without human interference. Resumé.

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USSR

UDC: 537.529

BAYKOV, A. P., ISKOL'DSKIY, A. M., and NESTERIKHIN, Yu. Ye.,
Institute of Automation and Electrometry, Novosibirsk

"Electrical Explosion of Wires Under High Energy Velocities"

Leningrad, Zhurnal tekhnicheskoy fiziki, No 1, 1973, pp 136-140

Abstract: If an energy level close to the energy of sublimation is put into a conductor for a time equal to the time constant for the growth of low-mode magnetohydrodynamic instabilities, the instabilities should not develop. The experiment described in this article is designed to test this theory. It consists in connecting exploding wires to a three-channel generator of rectangular pulses, one channel of which supplies energy to the wire, the other two being used to form gating pulses supplied to an electronic-optical converter to trigger a camera for photographing the explosion. A diagram of the generator is given. Since the pulse supplied by the generator has a steep leading edge, the time rate of change of the energy supplied to the wire is enormous, of the order of 10^{10} joules/g-sec. The experiments show that rapid explosions in wires of 10^{-3} cm diameter occur without the development of MHD instabilities. The authors express gratitude to A. Z. Potashinskiy for
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UDC: 537.529

BAYKOV, A. P., et al, Zhurnal tekhnicheskoy fiziki, No 1, 1973,
pp 136-140

his comments and to V. G. Stashevskiy for his assistance with the
experiments.

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UDC 612.1:612.4:613.163:613.168(211-17)

USSR

NEVEROVA, N. P., Problem Laboratory for Investigating Man's Acclimatization in the Extreme North, Archangelsk Medical Institute

"The Effect of Fluctuations in the Electromagnetic Field of the Earth in the North on Blood Flow Velocity Changes and Adrenaline Excretion"

Kiev, Vrachebnoye Delo, No 4, 1973, pp 77-80

Abstract: The investigation was conducted in Archangelsk in the electromagnetically active month of April 1969, on 10 young, healthy men from the USSR's southern regions who had been in Archangelsk 4 months. The subjects adhered to a uniform daily routine concerning work, relaxation, sleep, and meals. A total of 250 determinations of blood flow velocity were made between 6 and 7 AM in the basal state by means of an ear oximeter. After holding breath, the time elapsing from the beginning of the first inspiration to the beginning of the rise in oxyhemoglobin concentration was measured. At the same time, the quantity of adrenaline excreted with urine per hour was determined. The results revealed a wide scatter of the normal lung-ear circulation time of 4.5 ± 0.3 sec, as indicated by a sigma of 1.29. Comparison of the circulation time with the K index of electromagnetic fluctuations showed a nonlinear relationship. Adrenaline excretion increased with increasing electromagnetic

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USSR

NEVEROVA, N. P., Vrachebnoye Delo, No 4, 1973, pp 77-80

fluctuations. It is inferred that the observed deviations in hysteresis and adrenaline excretion may to a certain degree be associated with climatic adaptation and that placement of meteorolabile individuals in the protective environment of a biotron may be of prophylactic value on electromagnetically active days in subarctic regions.

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Devices

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USSR

UDC 681.327

DOLGOVSOV, B. S., KOVALEV, A. M., KOTOV, V. N., LUBKOV, A. A., NESTERIKHIN, YU. YE., OBERIYSHEV, K. P., TOKAREV, A. S., YAKIMOVICH, A. P., Novosibirsk

"Problems of Constructing Devices for Operative Interaction of Man with a Computer"

Novosibirsk, Avtometriya, No 2, 1972, pp 35-39

Abstract: Two types of devices corresponding to the basic requirements for systems for operative interaction of man with a computer -- a computer operating in the time sharing mode and peripheral devices numbering from 1 to 1,000 -- have been developed at the Institute of Automation and Electrodynamics of the Siberian Department of the USSR Academy of Sciences. One of them -- the Ekran -- was discussed previously [B. S. Dolgovenov, et al., Avtometriya, No 4, 1971; B. S. Dolgovenov, et al., Avtometriya, No 4, 1971; A. M. Kovalov, et al., Avtometriya, No 4, 1971]. The other -- the Simbol -- is investigated in the present article. A block diagram of the Simbol alphanumeric system is presented, and the algorithms for the various operating modes of the system are discussed. The algorithms of all modes of the system are executed by means of a microprogram control element. An effort was made to achieve the fastest possible system for which the principal cycle of the microprogrammed control unit was reduced to a minimum. Where possible the single pulse instructions

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OLGOVISOV, B. S., et al., *Avtometriya*, No 2, 1972, pp 35-39

are processed simultaneously; a very high cycle frequency is selected -- 2.5 millihertz. The operating logic of the device can be changed. One of the basic parameters of the operative interaction device along with broad functional possibilities is the information capacity. Thus, much attention was given to the high speed of individual units, in particular, the speed of the symbol generator. The programmed segment method was used as the basis for constructing the symbol generator which provides 1,024 symbols with an image regeneration frequency of 50 hertz. An example image photograph from the Simbol screen is shown.

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USSR

UDC: 621.383.8 : 621.039.66

BARYSHEV, B. A., GYAVGYANEN, L. V., DIAMANT, L. M., ISKOL'DSKIY, A. M., KRASNOGOLOVYY, I. I., and NESTERIKHIN, Yu. Ye.

"Nanosecond Electronic-Optical Photorecorder 'Channel' With Amplified Image Brightness"

Novosibirsk, Avtometriya, No 6, 1971, pp 53-58

Abstract: This paper represents a continuation of the work being done by the Institute of Automation and Electrometry on the design of devices for parallel recording and processing of optical signals obtained in the investigation of nanosecond and subnanosecond processes. A description is given in this paper of a multistage electronic-optical converter, developed by the authors, which has an electrostatic input chamber and two stages of image brightness magnification. A photograph and a functional diagram of the converter are given. Some of the advantages of this "Kanal" (Channel) instrument are low exposure time in frame operation, high electric field intensity near the photocathode due to the presence there of a control grid, a larger screen, high noise immunity, and a type of structure permitting assembly-line production by the Ministry of the Electronics Industry. The authors thank Yu. A. Shapiro for making the numerical computations, V. Yu. Sholokhov, Yu. N.

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UDC: 621.383.8 : 621.039.66

BARYSHEV, B. A., et al, Avtometriya, No 6, 1971, pp 53-58

Yevgrafov, and V. A. Gubachenko for their help in the structural development of the instrument, and V. D. Prilepskikh for helping prepare the apparatus.

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USSR

UDC: 537.533.3

BOHDARENKO, Yu. V., BUDURNYKH, V. I., IL'IN, V. P., KONTSELSKIY, A. N., ~~XXXXXXXXXX~~ No., LOBOVA, G. S., and SHESLAR, A. F.

"Electronic-Optical Converters in Forced Light Load Operation"

Novosibirsk, Izvestiya, No 6, 1971, pp 7-14

Abstract: Forced light load operation is defined as that mode of operation of the photo-cathode of an electronic-optical converter in which a photocurrent of high density is picked up in recording processes 10^{-8} - 10^{-10} s in duration. In this kind of operation the obtained images are markedly distorted. The direction of this paper is to take a closer look at the basic effects tending to deteriorate the image quality through experiments, the purpose of which is to investigate the effect of the electric field near the photocathode and the space charge in causing this distortion. A diagram of the experimental equipment is given and the experimental procedure explained. Photographic samples of the image distortion are shown and the reasons for the defects clarified. The authors express their gratitude to B. A. Baryshev for his assistance in preparing the equipment, and to E. M. Diamant and I. N. Zaytseva for their aid.

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AUTHOR-- NESTERIKHIN, YU., DOCTOR OF PHYSICAL-TECHNICAL SCIENCES,
DIRECTOR, INSTITUTE OF AUTOMATION AND ELECTRIC MEASURE-
MENTS /INSTITUT AVTOMATIKI I ELEKTROMETRII/ OF THE
SIBERIAN BRANCH OF THE ACADEMY

TITLE-- THE SCIENTIST

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NEWSPAPER-- KOMSOMOL, SKAYA PRAVDA, FEBRUARY 3, 1970, P 2, COL 1

ABSTRACT-- THE ARTICLE REVIEWS OBSTACLES WHICH HINDER THE DEVELOPMENT OF SOVIET ELECTRONICS. ONE OF THE MAIN OBSTACLES, IN THE OPINION OF THE AUTHOR, IS THE FACT THAT ELECTRONIC INSTRUMENT COMPONENTS ARE MANUFACTURED BY DIFFERENT INDUSTRIES. THIS RESULTS IN A TIME LAG OF 5-6 YEARS WHICH ARE SPENT ON THE COORDINATION OF EFFORTS OF SUCH MINISTRIES AS THE MINISTRY OF THE ELECTRONIC INDUSTRY, THE MINISTRY OF INSTRUMENT CONSTRUCTION, OR THE MINISTRY OF THE RADIO INDUSTRY. SOME TIME IS ALSO LOST IN INDUSTRIAL RESEARCH INSTITUTES, WHICH ARE SERVING AS LINKS BETWEEN BASIC SCIENCE AND INDUSTRIAL APPLICATIONS. THE AUTHOR IS OF THE OPINION THAT BETTER RESULTS ARE ACHIEVED WHEN

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ACADEMIC INSTITUTES ARE HANDING THEIR DEVELOPED PROJECTS NOT TO INDUSTRIAL INSTITUTES, BUT TO EXPERIMENTAL-DESIGN BUREAUS OF INDUSTRIAL PLANTS. THE AUTHOR'S INSTITUTE, FOR EXAMPLE, MAINTAINS CLOSE AND LONG-TERM CONTACTS WITH THE L'VOV PLANT OF MEASURING DEVICES, THE OMSK "ELEKTROTOCHPRIBOR" PLANT, AND THE NOVOSIBIRSK INSTRUMENT CONSTRUCTION PLANT IMENI LENIN. IN THE CASE OF THE LATTER, AN ATTEMPT WAS MADE TO SIMULTANEOUSLY CONDUCT RESEARCH AND DEVELOPMENT WORK /NAUCHNO-ISSLEDOVATEL, SKIYE I OPYTNO-KONSTRUKTORSKIYE RAZRABOTKI/. THIS APPROACH CUT MORE THAN IN HALF THE TIME NEEDED TO DEVELOP CERTAIN INSTRUMENTS. ON THE OTHER HAND, SOME PLANTS REFUSE TO COOPERATE ON THE PRETEXT OF BEING "SWAMPED WITH WORK". FOR INSTANCE, THE INSTITUTE WAS TOLD BY THE MINISTRY OF INSTRUMENT CONSTRUCTION, AUTOMATION AND CONTROL SYSTEMS THAT AN ELECTRONIC-OPTICAL LENS, "ZIS-1", DEVELOPED BY THE INSTITUTE, WILL GO INTO PRODUCTION ONLY IN 1975, WHEN A NEW PLANT WILL GO INTO OPERATION. THE "ZIS-1" LENSE CAN SNAP PICTURES AT 1 BILLIONTH OF A SECOND. SITUATIONS LIKE THIS ARISE BECAUSE PLANT'S ALLOCATIONS DO NOT TAKE INTO ACCOUNT CERTAIN TEMPORARY LOSSES WHICH ARE UNAVOIDABLE WHEN PIONEERING NEW PRODUCTION.

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19600220

Recorders and Transducers

USSR

UDC: 53.08+535.853

BAGLAY, R. D., ISKOL'DSKIY, A. M., KUDRYASHOV, M. I., and
NESTERIKHIN, Yu. Ye.

"Electron-Optical Recorder 'Spectrum' as an Element in Automated
Spectrum Investigation Systems"

Novosibirsk, Avtometriya, No 6, 1971, pp 24-41

Abstract: The Soviet spectral recording device "Spektr" (Spectrum) performs rapid conversion of unidimensional spatial distributions of electric signals and records them, by means of an oscilloscope, on photographic film. The recording system in the device is a double electronic-optical converter with electrostatic focusing and electron-beam deflection, given the designation LI-602. The purpose of this article is to consider the system errors and noise in the LI-602, describe the structure of the mechanical and electronic blocks in it, set up its mathematical model as a passive filter, present the results of typical experiments performed with data processing equipment, and propose several methods for eliminating systematic and random errors. A photograph of the device is reproduced together with some samples of the oscillographic output. Credit for assisting in the work is given to L. P. Baykov and V. D. Prilepskikh

ATO032096

NUCLEAR SCI. ABST. 2-70 UR 0000

6510 (NP-tr-1861) EXPERIMENTS WITH STRONG SHOCK-
 WAVES ON "VODA I." Kaptanov, V. A.; Kornilov, V. A.; Lagu-
 nov, V. M.; Nesterikhin, Yu. E.; Papyrin, A. N.; Shomarenko,
 A. G.; Fedorov, V. S. (Akademiya Nauk SSSR, Novosibirsk [In-
 stitut Yadernoi Fiziki]). Translated for Culham Lab., Abingdon,
 Eng., from Preprint No. 238. 11p. (CTG-658). Dep. CFSTI
 (U. S. Sales Only).

Experiments are described on the excitation of strong collision-
 less shock waves ($M \geq 5$) with subsequent containment of the
 plasma by the magnetic field of the shock loop. A magnetic piston
 of ~ 20 kOe was produced within $\sim 100 \times 10^{-9}$ sec by a current
 generator forming a long line with water insulation for 250 keV
 and wave impedance of 1Ω . (auth)

19700282

USSR

UDC 621.317.7-52+62-50

NESTERIKHIN, Yu. Ye. of Novosibirsk

"Autometry and Cybernetics"

Novosibirsk, Avtometriya, No 2, 1970, pp 3-8

Abstract: The first half of this article is devoted to a general and popular exposition of the thesis that information collection and processing represents one of the leading areas of technology, with application in a wide variety of fields. This contemporary truism is illustrated by examples from laboratory research, industrial testing, and automatic process control, all described in general terms. The concept is extended to social processes, but without examples. In this context, the author extends the term autometry to include practically all information gathering processes, pointing out that even purely scientific measurements require the collection of information about the instantaneous values of many interacting parameters. The requirement for a systems approach, combining information collection and processing in a unified technology, is emphasized.

In the second half of the article, modern developments in autometry are illustrated with four specific instruments:

- 1) A digital laser displacement measuring instrument, developed in the

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NESTERIKHIN, Yu. Ye, Avtometriya, No 2, 1970, pp 3-8

Institute of Automation and Electronic Measurement, Siberian Department of the USSR Academy of Sciences. This instrument can be used to measure velocity, acceleration, deformation, amplitude of vibrations, and coefficient of linear expansion, as well as serving in the alignment of various structures. It uses the interference principle, based on a small helium-neon laser, with the movement of interference bands converted to a series of electrical impulses. The instrument records displacement digitally in millimeters. It must be adjusted for conditions of the ambient medium. It has a measurement range of 1000 millimeters, a sensitivity of 0.1 micrometers, an accuracy of $0.0001 \pm 0.5 \times 10^{-5}$ millimeters, and can record displacement at the rate of 1.5 meters per minute. It is constructed of Soviet integrated circuits and can be connected directly to a computer or programmed control apparatus.

2) A laser instrument for measuring the velocity of streams of liquid or gas, made by the same institute. The technique is based on the detection of Doppler shift in the velocity of laser light, reflected from micro particles in the stream. It makes direct measurements of the velocities of small sections of the stream, and introduces no disturbing influence of significance. Its characteristics are, range of measurement 1 millimeter

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USSR

NESMERIKHIN, Yu. Ye., Novosibirsk, Avtometriya, No 2, 1970, pp 3-3

per second - 10 meters per second, area of resolution 10 x 50 microns, accuracy of measurement on the order of a few%. This is the first Soviet laser instrument for measuring flowstream velocities with digital readout.

3) A method of simultaneously determining the instantaneous local values of electron densities and electron temperature at the front of a shock wave in a plasma, by the Institute of Nuclear Physics and the Institute of Automation and Electronic Measurement, Siberian Department of the USSR Academy of Sciences. The measurements were performed with an apparatus for the study of quasistationary shock waves, formed by the flow of a supersonic plasma stream with a velocity of $1.2 \cdot 10^7$ centimeters per second, and a density of $2 \cdot 10^{14}$ centimeters⁻³ around a cylindrical object. An area of the shock wave front was probed for 15 to 20 nanoseconds with a 500 megawatt laser, and its image was recorded by Thompson scattering radiation, using electronic optical converters. The image was spectrally analyzed by a type MDR-2 diffraction spectroscopy and transferred to the photocathode of the converter, where it was recorded with an exposure equal in length to the laser impulse. Its brightness was amplified and it was photographed. The factor of current amplification was approximately 10^7 , making it possible to record an individual photoelectron. The photographs obtained were processed by counting individual photons, showing that the scattered signal

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USSR

NESTERIKHIN, Yu. Ye., Novosibirsk, Avtometriya, No 2, 1970, pp 3-8

reached a maximum of approximately twice the background signal. The value for electron temperature, $T_e = 6$ electron volts, obtained when a contour of 80 Angstroms was obtained by scattering laser light at 6943 Angstroms, agrees well with the results of spectroscopic measurements. The change in density along the direction of propagation of the laser beam agrees with control measurements made by a Michelson interferometer.

4) A flying spot scanner for reading film information directly into a digital computer, developed in the Institute of Automation and Electronic Measurement of the Siberian Branch, Academy of Sciences of the USSR. Each frame of the film is scanned by a flying spot formed on the screen of a cathode ray tube. The image of the spot passes through an objective lens to the plane of the film. The beam is deflected by a raster scan deflector. Special optical grids determine the two dimensional coordinates of the spot. This instrument, using a CRT with a high resolution and optical grids for determining coordinates, can ensure accuracy of spot location with an error not exceeding 0.001 times the linear dimension of the frame. The optical density of any section of the photo material is read out in discrete form, using an electronic multiplier located behind the film. The discrete

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USSR

NESTERIKHIN, Yu, Ye., Novosibirsk, Avtometriya, No 2, 1970, pp 3-8

circuit elements are Soviet integrated circuits. The time to read one 36 x 24 millimeter frame is 4 seconds, the quantum step in coordinate calculation is 12 microns, the resolving power is 25 microns.

The author concludes by describing science as one of the foremost battle fields in the ideological struggle and making a brief bow to Lenin.

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NESTERIN, M. F.

MEDICOBIOLOGICAL INVESTIGATIONS DEALING WITH THE USE OF ESTROGENS AS GROWTH STIMULATING AGENTS

UDC: 613.281:636.084.52:615.357.651

*JPRS 55569
29 MAR 72*

Article by A.A. Pokrovskiy, M.F. Nesterin, G.P. Vavilina, Ye. Ya. Kuznetsova, L.A. Solov'yeva, Institute of Nutrition, USSR Academy of Medical Sciences, Moscow; Moscow, Vsesoyuznyi Nauchnyi Meditsinskii Nauk SSSR, Russian, No 2, 1972, pp 3-15]

In the last few years there has been intensive discussion in the special literature of the desirability of using various growth stimulants on farm animals (K.I. Baulin and Yu.N. Shamberov, 1966; Yu.P. Fomichev, 1967; Yu.N. Shamberov, 1970).

Among such biostimulants, some attention is being given to sex hormones and especially the synthetic analogues of estrogens. Proposals made in this area are based on experimental investigations conducted in the 1940s which revealed that androgens and estrogens (Kochakian, 1935, 1946; Albraght, 1947; Kruokemper, 1953) have a definite anabolic effect.

It was shown that when using the same number of fodder units, administration of androgens and estrogen leads to a reliable increase in weight increment related mainly to accumulation of protein substances in androgena and with increased moisture and fat content in tissues. In addition, for estrogen the nature of stimulation of biosynthetic processes in this case is determined by species-related distinctions.

In the early 1950s, the research foundation of Iowa College received a patent for using diethylstilbestrol, a synthetic estrogen analogue, to fatten bull calves, and soon after this their suggestion was sanctioned by the Food and Drug Administration. This method consisted of adding 10 mg diethylstilbestrol daily to the animal's fodder. In 1955, the practice was also adopted of subcutaneous implantation of a diethylstilbestrol pill.

It must be noted that an increased weight gain is obtained when using this hormone only if a specific fodder composition is used. In particular a specific protein level, as well as proportion of protein to other components. Thus, it was noted that with an 11 percent protein content in the diet there was a marked anabolic effect, with 8 percent and more (122) diethylstilbestrol did not have a beneficial effect on weight gain (Snapp and Newman, 1962). The

NESTERIN, M. F.

JPRS 53561
29 Mar 72

ABSTRACTS OF ARTICLES PUBLISHED IN THIS ISSUE

(Abstracts; Moscow, Voenik Akademii Meditsinskikh Nauk SSSR, Russian, No 2, 1972, p 96)

"Medicobiological Investigations Dealing with the Use of Estrogens as Growth Stimulating Agents," by A.A. Pokrovskiy, M.F. Nesterin, G.F. Vavilina, Ye.Ye. Byantseva, L.R. Solov'yeva, p 3.

As a result of medicobiological examination of meat products obtained from bull calves stimulated with diethylstilbestrol, it was shown that the recommended method of using this hormone does not rule out the possibility of retention in subproducts of meat of residual quantities of this agent. When feeding laboratory animals on experimental meat there was manifestation of some adverse effects on their development and change in sex gland function. On the basis of the data obtained and the literature, with due consideration of worldwide experience in using diethylstilbestrol to fatten various species of animals, the authors conclude that it is impossible to use this preparation in animal breeding.

There are eight tables, one illustration; bibliography lists 118 items.

"Experience with Vitamin E Supplement for Bicycle Racers and Skiers," by Ye.A. Sakayeva, V.V. Yefremov, p 52.

A study was made of the effect of different intensities of physical stress on Vitamin E availability in the organism of cyclists and skiers during winter sport meets. As a result of the study it was found that 1,3-2 and especially 3-4-hour training induces a considerable decline in vitamin E content in the blood serum of the athletes. Additional intake of this vitamin in doses of 50-150 mg for cyclists who trained for 1.5-2 hours and 200-300 mg for skiers who trained for 3-4 hours raises the blood serum vitamin E level and results in greater efficiency of the athletes.

Two illustrations; bibliography lists nine items.

(8000)

"A True Antrumectomy Technique in Surgery for Peptic Ulcers," by Yu.N. Pankovskiy, A.A. Gruber, T.I. Laktionova, p 72.

A method is described for pinpointing the boundaries of the antral portion of the stomach during surgical interventions using 2% solution of Congo red dye as an indicator on the gastric mucosa. The method has been developed experimentally and used in clinical practice on 50 patients with duodenal and gastric ulcers; this revealed that it is simple, safe, and permits performance of a true antrumectomy, in other words, it permits the performance of a functionally substantiated sparing operation on the stomach. The precision of the method was confirmed by histological examinations.

Two illustrations; one table; bibliography lists 24 items.

10,637
CSO: 1847-W

UNCLASSIFIED PROCESSING DATE--17JUL71

TITLE--BIOLOGICAL ACTION OF FLUORESCENT SUBSTANCES ISOLATED FROM THE MOLD
ASPERGILLUS NIGER -U-
AUTHOR--SKIRKO, B.K., NESTERIN, M.F., VISSARICHOVA, V.YA.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,
NR 2, PP 44-46
DATE PUBLISHED-----70

*26
5
31*

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

CPIC TAGS--FLUORESCENCE, CHROMATOGRAPHY, ASPERGILLUS, ENZYME ACTIVITY,
FOOD INDUSTRY, LIVER, BILE, FOOD INDUSTRY, WHITE RAT, PROTEIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1982/0406

STEP NO--UR/0219/70/069/002/0044/0046

IRC ACCESSION NO--A00051923

UNCLASSIFIED

Acc. Nr: **AP0051923**

Ref. Code: **UR0219**

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i
Meditsiny, 1970, Vol **69**, Nr **2**, pp **44-46**

BIOLOGICAL ACTION OF FLUORESCENT SUBSTANCES ISOLATED FROM THE
MOLD *ASPERGILLUS NIGER*

B. K. Skirko, M. F. Neslerin, V. Ya. Vissarionova

Institute of Nutrition, Academy of Medical Sciences of the USSR, Moscow

Extraction and preparative chromatography was used to isolate fluorescent substances from the mold *Aspergillus niger*. Experiments on albino rats testified to their toxic hepatotropic action: when given orally, they induce protein dystrophy of the liver parenchyma and proliferation of the bile ducts epithelium. If the mold *Aspergillus niger* is used as a source for enzyme preparations to be used in food industry, the preparation must be washed of fluorescent contaminants.

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REEL/FRAME
19820406

2kc

USSR

UDC 537.311.3:546.26'28

GEYTSI, I.I., GORIN, S.I., NESTEROV, A.A., PLETYUSHIN, A.A."On The Nature Of The 'Red' Band Of Cathodoluminescence Of Irradiated β -SiC"

V sb. Radiats. fiz. nemet. kristallov (Radiation Physics Of Nonmetallic Crystals-Collection Of Works), Vol 3, Part 2, Kiev, "Nauk.dumka," 1971, pp 97-105 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B38)

Translation: The effect was studied of fast electrons on the spectra of cathodoluminescence (CL) of β -SiC. Crystals of β -SiC (n-type; $\rho \sim 0.1 - 1.0$ ohm.cm) were irradiated by 3.5 Mev fast electrons, with doses from 10^{12} to 10^{17} cm⁻² at room temperature. After irradiation by doses of $\sim 10^{15} - 10^{16}$ cm⁻², in the red region of the spectrum (2 - 1.5 ev), an intensive band of CL appears with good development of the thin structure, which is connected with recombinations of the localized excitons at the ionized acceptors. I.I.

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USSR

GEYTSI, I.I., et al., Fizika i Tekhnika Poluprovodnikov, Vol 4, No 5, 1970, pp 879-885

In order to explain the mechanism of radiative recombination in the red band and also the relation between the fine structure and the continuous spectrum, the intensities were measured as functions of the excitation flux density, the radiation kinetics during pulse excitation were studied, and spectra were taken for defined time intervals after the end of the excitation pulse. The results indicate that the fine structure is not connected with the donor-acceptor mechanism of radiative recombination.

It is pointed out that the green band of the cathodoluminescence is connected with radiative hole capture in the nitrogen level. Radiation by fast electrons leads to the occurrence of additional recombination channels of the nonequilibrium carriers of both radiated and nonradiated types. The presence of narrow lines (with a halfwidth less than kT) within the limits of the red band indicate localization of the charge carriers before recombination. The difference in the form of the red band for different temperatures is determined by whether

2/3

USSR

UDC: 621.315.592

GEYTSI, I.I., NESTEROV, A.A., SMIRNOV, L.S.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202210015-6"

"Thin Structure of the 'Red' Band of Cathodoluminescence of β -SiC Irradiated by Fast Electrons"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 4, No 5, 1970, pp 879-885

Abstract: This article contains an investigation of the cathodoluminescence of β -SiC caused by lattice defects. Irradiation by fast electrons and also heating to high-temperatures (above $1,100^\circ\text{C}$) lead to the occurrence of luminescence in the $6,250\text{-}10,000\text{ \AA}$ range. At temperatures below 150°K on the short-wave side of this band, there is a thin structure in the form of narrow lines with a halfwidth less than kT and their phonon recurrence. It is demonstrated that the "red" band with its fine structure is most likely caused by radiation annihilation of excitons captured on the ionized centers formed as a result of irradiation or high-temperature heating. It is proposed that the centers are of the acceptor type. The depths of these levels are estimated from the fine cathodoluminescence structure: $E_V + 0.42$, $E_V + 0.44$, $E_V + 0.48$, $E_V + 0.5$ electron volts. The final solution of the problem of the charge state of the centers requires additional investigation.

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USSR

GEYTSI, I.I., et al., Fizika i Tekhnika Poluprovodnikov, Vol 4, No 5, 1970,
pp 879-885

phononless transitions take place or not. It is also pointed out that the model of the exciton located on the ionized center is more suitable to explain the data obtained in this experiment than the model of the exciton located on the neutral center.

3/3

- 40 -

1/2 015 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--FORMATION OF RETICULAR POLYURETHANE BASED ON AN OLIGOMERIC MACRO
DIISOCYANATE -U-
AUTHOR-(04)-NESTEROV, A.E., LIPATOVA, T.E., IVASHCHENKO, V.R., LIPATOV,
YU.S.
COUNTRY OF INFO--USSR
SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(2) 150-3
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--POLYURETHANE RESIN, OLIGOMER, ORGANIC ISOCYANATE, MOLECULAR
WEIGHT, INTRINSIC VISCOSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1986/0252

STEP NO--UR/0460/70/012/002/0150/0153

CIRC ACCESSION NO--AP0102302

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0102302

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POLYDISPERSITY, MOL. WT. DISTRIBUTION, INTRINSIC VISCOSITY, AND DIMENSIONS OF MACROMOLS. RESULTING FROM THE REACTION PRODUCTS OF A MACRODIISOCYANATE (I) (PREPD. FROM POLYPROPYLENE GLYCOL (MOL. WT. 2000) AND 4, 4, DIPHENYLMETHANE DIISOCYANATE) AND ETC(CH SUB2 OH) SUB3 WERE STUDIED. A SUDDEN INCREASE IN THE MOL. WT. OF I AND IN THE M SUB2-M SUBZ RATIO WAS OBSD. BEYOND SIMILAR TO 50PERCENT CONVERSION. A PLOT OF INTRINSIC VISCOSITY, M SUBW-M SUBZ, AND R PRIME2-M SUBW VS. CONVERSION (WHERE (R PRIME2) PRIMEONE HALF IS THE MEAN SQUARE RADIUS OF INERTIA, M SUBW IS THE WT. AV. MOL. WT., AND M SUBZ IS THE Z AV. MOL. WT.) SUGGESTED THAT A COMPLETELY CROSSLINKED POLYURETHANE, CONSISTING OF DISCRETE MICROBLOCKS SPARSELY BOUND BY CHEM. BONDS, WAS FORMED DURING THE LAST STAGES OF HARDENING.

UNCLASSIFIED

USSR

UDC 621.643.29+002.72

KONCHEV, Yu. N., State Scientific Research Institute of the Gas Industry, Saratov; GORSKIY, V. V., NESTEROV, A. M.; Northwest Specialized Construction Trust, Kalinin

"Construction of a High Pressure Polyethylene Gas Line Under Winter Conditions"

Moscow, Stroitel'stvo truboprovodov, No. 5, May 72, pp 24-26

Abstract: Studies have shown that pipes of high-density polyethylene can be welded at temperatures below 0°C down to an ambient air temperature of -20°C without lowering the qualities of the welded joint. It is noted that the basic factors determining the properties of a welded seam, in addition to the welding technique, are the temperature and the rate of cooling of the molten material. At a high rate of cooling and at low temperatures of the structure the seam becomes microcrystalline, with the result that there is a certain drop in the density, the yield point and the strength of the material, for example, in many experiments the density of the material reduced from 0.956 to 0.951 g/cm³ and the yield point and the strength were reduced 8-10%. There is also a rise in the relative expansion of 65-80% on the average and in the shock viscosity of 20-25%.

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USSR

KONCHEV, Yu. N., et al, Stroitel'stvo truboprovodov, No. 5, May 72, pp 24-26

The properties of the material change with the course of time due to continuing crystallization processes in it. The structure transforms into an equilibrium state and after 5-9 days the high-density polyethylene reestablishes its initial properties. It is recommended that the location where the welding is done be protected from wind and precipitation and that the flashing off temperature of the material be increased by 5-10% to obtain a high-quality welded joint at temperatures below zero. Individual sections of the pipe line were subjected to strength and density tests and after completion of the construction the entire line was subjected to a pneumatic test at pressures of 7.5 and 6 kilogram-force/cm². The tests showed the high strength of the welded joints and no breakdowns in the joints or a disruption in their density was observed.

USSR

BRODER, D. L., GAMALIY, A. F., ZEMTSEV, B. V., NESTEROV, B. V., and KHAM'YANOV, L. P. (Institute of Physics and Power Engineering)

"Gamma Radiation Upon Capture of Thermal Neutrons by Isotopes of Cr"

Moscow, Yadernaya Fizika, Vol 13, No 2, 1971, pp 233-239

Abstract: This work is devoted to the study of the spectra of gamma radiation arising upon capture of thermal neutrons by Cr isotopes, by means of a Ge-Li gamma spectrometer. The isotopes of chromium studied are Cr⁵⁰, Cr⁵², and Cr⁵³. The yield of gamma lines per 100 captures of neutrons in each isotope are determined. Diagrams of the energy levels of Cr⁵¹, Cr⁵³, and Cr⁵⁴ nuclei are presented. The results are compared with the data of other authors. In general the data agree well with the data of recent works concerning the energy of individual gamma lines, but not as well concerning their yield. A number of new gamma lines are observed, particularly for Cr⁵⁰ and Cr⁵².

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USSR

NESTEROV, E. YE.

"An Apparatus for Solving Equations of the Form $\sqrt{m^2 + n^2}$ "

Moscow, Otkrytiya izobreteniya promyshlennyye obraztsy tovarnyye znaki, No 18, 17 Apr 73, p 125

Translation: (11) 377805(21)1405522/18-24(22)23.02,70(51)G 06g 7/10(53) 681.335.5

(72) (54) An apparatus for solving equations of the form $\sqrt{m^2 + n^2}$ -, containing two resistor voltage dividers, two diode logic circuits, a direct current power source, and a resistor is distinguished by the fact that the apparatus is simplified by connecting the resistor voltage dividers at their midpoints, while the diode logic circuits are connected by identical electrodes to the ends of the resistor voltage dividers and connected in pairs by other electrodes, with the source and the resistor connected in series between the midpoint of the resistor voltage dividers and the common point of two diodes of one of the logic circuits.

1/1

- 37 -

1/2 010 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EFFECT OF SINTERING PROCESS PARAMETERS ON PELLET QUALITY AS STUDIED
BY A FACTOR METHOD UNDER INDUSTRIAL CONDITIONS -U-
AUTHOR--(05)-SHARYGIN, D.A., ONISHCHENKO, A.E., RYABOKON, F.A., NESTEROV,
G.S., URIN, V.D. INDUSTRIAL
COUNTRY OF INFO--USSR
SOURCE--STAL' 1970, 30(2), 105-7
DATE PUBLISHED-----70
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY
TOPIC TAGS--IRON OXIDE, SULFUR, DESULFURIZATION, INDUSTRIAL PRODUCTION,
HIGH TEMPERATURE EFFECT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1994/1950 STEP NO--UR/0133/70/030/002/0105/0107
CIRC ACCESSION NO--AP0115758

UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0115758

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS OF TEMP. OF THE PREHEATING ZONE, THICKNESS OF THE PELLET LAYER, TIME IN THE FIRING ZONE, AND SPECIFIC GAS CONSUMPTION ON THE CRUSHING STRENGTH OF PELLETS, THEIR FeO AND S CONTENTS, THE DEGREE OF DESULFURIZATION, AND THE PROPORTION OF SMALLER THAN OR EQUAL TO 5-MM FINES WERE STATISTICALLY INVESTIGATED, USING PRODUCTION DATA. AFTER DETG. THE REGRESSION COEFFS., THE CORRESPONDING VALUE OF THE QUALITY PARAMETER, Y, CAN BE GIVEN AS $Y = B_0 + B_1 X_1 + B_2 X_2 + \dots + B_n X_n$, WHERE B IS THE COEFF. OF REGRESSION AND X ARE INDEPENDENT VARIABLES. ANAL. OF THE DATA OBTAINED PERMITTED AN IMPROVEMENT OF PELLET PREPN. BY SELECTING CORRESPONDING TREATMENT PARAMETERS. PLANT RESULTS CHECKED THE ACCURACY OF THESE PREDICTIONS. FACILITY: SOKOLOVSKO SARBAISKII GORNODOBOGAT. KOMB., USSR.

UNCLASSIFIED

Mining, Petroleum, Geological

USSR

WDC 553.982.003.12:56.07

NESTEROV, I. I., SHPIL'MAN, V. I.

"Procedure for Evaluating Predicted and Prospective Reserves"

Moscow, Geologiya nefi i gaza, No 6, 1972, pp 1-6

Abstract: A procedure for evaluating predicted and prospective oil and gas reserves is outlined. The procedure is a general one but is discussed specifically as applied to Western Siberia. Predicted and prospective reserves are distinguished as the area estimates of the reserves of any section as a whole without indicating where accumulations of oil and gas can be discovered within the section and a specific discovered but not drilled out trap respectively. The subdivision of Western Siberia into districts for purposes of applying the procedure is discussed. In performing the evaluation, the reserve density -- the ratio of the total explored geological reserves of hydrocarbons to the area of the standard (gas is recalculated into oil)-and the largest possible number of geological, geochemical and hydrogeological parameters founded from the genetic point of view are determined with respect to each standard section for the oil and gas-bearing complex. Correlation analysis and the least squares method are then applied. Formulas are derived which can be used to estimate the density of the reserves within the limits of a prospective territory.

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USSR

NESTEROV, I. I., et al., *Geologiya nefi i gaza*, No 6, 1972, pp 1-6

Qualitative prediction or analysis of the standards using pattern recognition algorithms can be used to draw the boundary of prospective areas. The evaluation of the proportion of oil, gas and condensate in potential resources and the isolation of prospective structures are also discussed from the qualitative and quantitative points of view.

The level of geological knowledge permits evaluation of the prospective reserves of a trap which has not been drilled out only very approximately. The evaluation procedure can be used at this time not so much to evaluate the potential possibilities of a region as to establish the order of exploratory drilling.

USSR

UDG 632.95

PIL'MENSHTEYN, I. D., BEZUGLIY, S. F., NESTEROV, I. A., YAKOVLEVA, L. I.,
and STONOV, L. D.

"Adhesion of Emulsions to Treated Surface"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protectants -- collection of works), vyp 1, Moscow, 1970, pp 291-297 (from RZh-Khimiya, No 13, 10 Jul 72, Abstract No 13N534 by I. Pil'menshteyn)

Translation: Factors affecting the adherence of emulsion drops of 2,4-D butyl ester to various substrates (paraffinized surface of a polished steel plate and the surface of a bean leaf) were estimated according to the flow-off angle (α_{fl} -- the angle of inclination of the surface to the horizon at which a drop applied to that surface began to flow off). The method of correlation analysis shows that α_{fl} is determined by wetting conditions for the drops of the treated surface.

1/1

1/2 032 UNCLASSIFIED PROCESSING DATE--ZONOVTO
 TITLE--DEPENDENCE OF THE BREAKDOWN THRESHOLD OF A TRANSPARENT DIELECTRIC
 ON LASER PULSE DURATION -U-
 AUTHOR-(04)-NESTEROV, L.A., POPLAVSKIY, A.A., FERSMAN, I.A., KHAZOV, L.D.
 COUNTRY OF INFO--USSR N
 SOURCE--ZHURNAL TEKHNICHESKOI FIZIKI, VOL. 40, MAR. 1970, P. 651-653
 DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS
 TOPIC TAGS--LASER PULSE, DIELECTRIC BREAKDOWN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--1994/1256

STEP NO--UR/0057/70/040/000/0651/0653

GIRC ACCESSION NO--AP0115273

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

2/2 032

CIRC ACCESSION NO--AP0115273
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. EXPERIMENTAL DETERMINATION OF THE ENERGY DENSITY THRESHOLD FOR LASER INDUCED SURFACE BREAKDOWN OF A TRANSPARENT DIELECTRIC AT GIVEN LASER PULSE DURATIONS AND BEAM DIAMETERS. AN EQUATION RELATING THESE FACTORS IS DERIVED FOR PULSE DURATIONS RANGING FROM 2 MICROSEC TO 20 NSEC AND SAMPLE DIAMETERS FROM 8.7 TO 340 MICRONS. THE EQUATION IS ALSO APPROXIMATELY ACCURATE FOR GIANT PULSE EMISSION OF ABOUT .001 SEC IN DURATION AND FOR INTERNAL BREAKDOWN OF THE MATERIAL. IT IS SUGGESTED THAT THE DEPENDENCE OF THRESHOLD POWER ON PULSE DURATION IS DUE TO THERMAL DIFFUSION FROM THE IRRADIATED ZONE.

UNCLASSIFIED

USSR

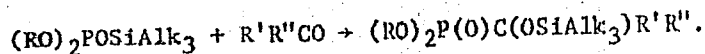
UDC 547.26'118 + 547.341 + 547.345

NESTEROV, I. V., KREPYSHEYEVA, N. Ye., SABIROVA, R. A., and ROMANOVA, G. N.,
Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, USSR Academy
of Sciences

"Derivatives of Phosphorous Acid. VIII. Reaction of the Dialkyl Trialkyl-
silyl Phosphites With Aldehydes and Ketones"

Leningrad, Zhurnal Obshchey Khimii, Vol XLI, No 11, 1971, pp 2,449-2,452

Abstract: Dialkyl acyl and tetraalkyl pyrophosphites are known to react with
carbonyl compounds according to $(RO)_2POAc + R'R''CO \rightarrow (RO)_2P(O)C(OAc)R'R''$
(R = alkyl, R' = alkyl, aryl, R'' = H, alkyl and Ac = acyl or $P(OR)_2$). In
this connection, the reactions of dialkyl trialkylsilyl phosphites with
aldehydes and ketones were studied. These reactions were found to proceed
along exactly the same lines when Ac = SiAlk₃, and the reactions proceed under
much less rigorous conditions when Ac = acyl. The aldehydes react rapidly,
with release of heat, while the ketones require preheating to 100°C. In all
cases, there is formation of the dialkyl esters of α-(trialkylsiloxy)alkyl-
phosphonic acids:



1/2

USSR

NESTEROV, L. V., et al., Zhurnal Obshchey Khimii, Vol XLII, No 11, Nov 1971, pp 2,449-2,452

These compounds have been known only for a few years, and until now no satisfactory method had been devised for obtaining them. Physical data for the nine compounds obtained, along with laboratory procedures, are given in the paper.

2/2

1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--SOLVENT EFFECT ON SPIN SPIN COUPLING CONSTANTS IN PMR SPECTRA OF
ORGANOPHOSPHORUS COMPOUNDS CONTAINING A P-D GROUP. I. GEMINAL CONSTANTS
AUTHOR--(05)-VINOGRADOV, L.I., SAMITOV, YU.YU., KESSEL, A.YA., NESTEROV,
L.V., MARDANOVA, V.B.
COUNTRY OF INFO--USSR

SOURCE--TEOR. EKSP. KHIM. 1970, 6(1), 103-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SOLVENT ACTION, MAGNETIC RESONANCE, PROTON, SPECTRUM, ORGANIC
PHOSPHORUS COMPOUND, DIELECTRIC EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605013/B04 STEP NO--UR/0379/70/006/001/0103/0107

CIRC ACCESSION NO--AP0140345

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140345

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. J SUBP-C-H CONSTS. WERE MEASURED FOR MEPOCL SUB2, MEPOCLOPH, MEPO(OPH) SUB2, MEP(O)CINET SUB2, AND MEP(O)(NET SUB2)OPH IN 8 ORG. SOLVENTS. CORRELATIONS J SUBP-C-H VS. (EPSILON MINUS 1)-(EPSILON PLUS N PRIME2-2) ARE DISCUSSED, WHERE EPSILON EQUALS DIELEC. CONST. OF SOLVENT. FACILITY: KAZAN. GOSUNIV., KAZAN, USSR.

UNCLASSIFIED

USSR

UDC 547.26'118

NESTEROV, L. V., KESSEL', A. Ya., SAMITOV, Yu. Yu., MUSINA, A. A. Institute of Organic and Physical Chemistry imeni A. Ye. Arbutov, Academy of Sciences USSR, and Kazan State University imeni V. I. Ul'yanov Lenin

"Nucleophilicity of the Phosphoryl and Thiophosphoryl Groups"

Leningrad, Zhurnal Obshehei Khimii, Vol 40, No 6, Jun 70, pp 1237-1241

Abstract: A series of compounds of the form $CH_3P(S)XY$ was synthesized. All were alkylated by equivalent amounts of triethyloxonium borofluoride in methylene chloride. Their chemical shifts of the P-bonded methyl group protons exhibited a critical range beyond which no alkylation reaction took place. It was found that the methyl protons in the methylphosphonic acid derivatives are shielded more than those of the corresponding methylthiophonic acid derivatives, due to the greater tendency of the $P=O$ bond to reverse coordination.

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- 32 -

USSR

UDC 541.6 + 661.718.1

NESTEROV, L. V., and MUTALAPOVA, R. I., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Stability of Phenylphenoxyphosphonium Chlorides and Bromides"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 71, p 167

Abstract: The decomposition of phenylphenoxyphosphonium bromides and chlorides occurs analogously to that of iodides, their stability increasing with increasing number of phenyl substituents. Furthermore, the bromides decompose slower than the iodides, and the chlorides -- slower than the bromides. The decomposition of phenoxyphosphonium halides -- the second stage of Arbuzov reaction -- occurs by an S_N^2 mechanism.

1/1

- 64 -

USSR

UDC 542.91 + 661.718.1

NESTEROV, L. V., and ALEKSANDROVA, N. A., Institute of Organic and Physical
Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Dialkyldialkoxyphosphonium Salts"

Moscow, Izvestiya Akademii Nauk, Seriya Khimicheskaya, No 2, Feb 71, pp 415-
416

Abstract: Dialkyldialkoxyphosphonium salts were obtained by treatment of
dialkyl alkylphosphonites with equimolar quantities of alkyl halides in ether
at 0°C. The most stable of these salts were those with branched alkoxy chains.
n-Alkoxy salts were not isolated even though their formation was noted. The
alkoxy substituents could be arranged in order of stability:

neo-C₅H₁₁ iso-C₄H₉ iso-C₃H₇ n-C₄H₉ C₂H₅.

Stability is due to steric hindrance of the attack of the halide anions on
the isoalkoxy groups.

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UNCLASSIFIED

PROCESSING DATE--02OCT70

1/2 007

TITLE--REACTION OF ALPHA, ALKOXYVINYL ACETATES WITH CHLORAL -U-

AUTHOR--(021)-NESTEROV, L.V., SABIROVA, R.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970 6(3) 625

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ALKOXIDE, ACETATE, CHLORINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1578

STEP NO--UR/0366/70/006/003/0625/0625

CIRC ACCESSION NO--AP0112522

UNCLASSIFIED

2/2 007
CIRC ACCESSION NO--AP0112522
ABSTRACT/EXTRACT--(U) GP-0-
(R IS ME OR ET) WITH CL SUB3 CCHO GAVE CL SUB3 CCH(OAC)CH SUB2 CO SUB2
R.

UNCLASSIFIED

PROCESSING DATE--02OCT70

UNCLASSIFIED

89

USSR

UDC 538.27

VINOGRADOV, L. I., SAMITOV, YU. YU., KESSEL', A. YA., NESTEROV, L. V.,
and MARDANOVA, V. B., Kazan' State University, Institute of Organic
and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR,
Kazan'

"Effect of Solvent on Spin-Spin Coupling Constants in PMR Spectra of
Some Organophosphorus Compounds Containing P=O Group. I. Geminal
Constants J_{P-C-H} "

Kiev, Teoreticheskaya i Eksperimental'naya Khimiya, Vol. 6, No. 1, Jan-
Feb 70, pp 103-107

Abstract: A study was made of the effect of nonaromatic and aromatic
solvents on the geminal spin-spin coupling constant of P^{31} and H^1 nu-
clei in CH_3POCl_2 , $CH_3POClOPh$, $CH_3PO(OPh)_2$, $CH_3POClN(C_2H_5)_2$ and
 $CH_3PON(C_2H_5)_2OPh$. There was found to be a linear decrease in J_{P-C-H}
with an increase in the electric field of the reaction, with the de-
crease being sharper in aromatic solvents. It is concluded that a

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VINOGRADOV, L. I., et al., Teoreticheskaya i Eksperimental'naya Khimiya, Vol 6, No 1, Jan-Feb 70, pp 103-107

positive sign is likeliest for the spin-spin coupling constant. Two possible mechanisms for the spin-spin interaction through the pi-electron system of the aromatic ring are suggested to explain the increase in J_{p-C-H} as Cl atoms are displaced by OPh:

1. The spin-spin interaction results from the pi-electron current induced by the magnetic moment of the nucleus in the aromatic ring, creating a local field on the second nucleus.

2. The spin-spin interaction occurs through the pi-electron system of the aromatic ring according to the mechanism suggested by H. M. McCONNELL for a long-range proton-proton interaction in aromatic systems. This mechanism is apparently realized in the compounds investigated here.

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VINOGRADOV, L. I., et al., Teoreticheskaya i Eksperimental'naya Khimiya, Vol 6, No 1, Jan-Feb 70, pp 103-107

An explanation is given for some peculiarities in the variation of the reactivity of the studied compounds.

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1/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70
 TITLE--OPTIMIZATION OF COMPLEX CHEMICAL TECHNOLOGICAL PROCESSES WITH
 ANALOG COMPUTERS -U-
 AUTHOR--NESTEROV, P.M. *N*
 COUNTRY OF INFO--USSR
 SOURCE--CHEM. TECH. (LEIPZIG) 1970, 22(4), 206-9
 DATE PUBLISHED-----70
 SUBJECT AREAS--MATERIALS
 TOPIC TAGS--COMPUTER APPLICATION, ANALOG COMPUTER, LUBRICATING OIL,
 PETROLEUM PRODUCTION, MATHEMATIC MODEL, PHENOL, CHEMICAL PURIFICATION,
 CHEMICAL SEPARATION, INDUSTRIAL PRODUCTION
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAE--3002/1880 STEP NO--GE/9006/70/022/004/0206/0209
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PROCESSING DATE--13NOV70

2/2 017

CIRC ACCESSION NO--AP0129240

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN INVESTIGATION WAS MADE, BY USING AN ANALOG COMPUTER, OF THE RECOVERY OF LUBRICATING OIL FROM A RESIDUE OF A PETROLEUM FRACTION FROM A DEBITUMENIZING PROCESS APPLYING METHODS OF MATH. MODELLING AND EXPT. PLANNING. THE EXPT. WAS CARRIED OUT IN AN INDUSTRIAL COLUMN OF 22 M HEIGHT AND 2.6 M DIAM. WHICH WAS PACKED WITH 50 X 50 X 50 MM RASCHIG RINGS. ANALOG EQUATIONS WERE ESTABLISHED FOR THE QUAL. CHARACTERISTICS OF THE END PRODUCT, COMPRISING COKE CONTENT OF THE REFINED FRACTION, COLOR, AND FLASH POINT. THESE PARAMETERS ARE INDUSTRIALLY SUBJECTED TO LIMITS. THE RESULT OF AN ANALOG COMPUTER STUDY OF THE OPTIMUM CONDITIONS OF THE PROCESS FOR SELECTIVE PURIFICATION OF LUBRICATING OILS FROM PHENOL CONTG. PETROLEUM FRACTIONS MADE IT POSSIBLE TO RAISE THE YIELD BY 1.5-2.5 PERCENT.

FACILITY: D. I. MENDELEEV INST., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.357.7:669.15'(24(088.8)

NEVSKIY, O. B., NESTEROV, P. V., and CHERNAYENKO, M. P.

"Electrolytic Plating of Nickel-Iron Alloy of Permalloy Type"

USSR Author's Certificate No 324305, Filed 7 Mar 69, Published 16 Mar 72 (from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom, No 23(II), Abstract No 231264P by M. V. Ivanov)

Translation: In order to achieve the electrolytic plating of Ni-Fe alloy of uniform chemical composition, the suggested process should be conducted in a hermetically closed contained in Ar atmosphere while the electrolyte is turbulently mixed. The best results are obtained at Reynolds numbers 2500-10,000, 50-65°C, D_c 100-200 ma/cm². The electrolyte contains (g/liter) FeSO₄ 5-7, NiSO₄ 300-360, H₃BO₃ 25-30, saccharin 0.2-0.8, citric acid up to 3, and pH 2.7-3.0. The suggested method makes it possible to obtain Ni-Fe films characterized by the following parameters: coercive force 150-200 a/m, anisotropy field 80-120 a/m, axis slope of light magnetization $\leq 1.5^\circ$.

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USSR
KOPERSAKO, N. T., NESTEROV, P. V.

UDC: 681.32.001

"Singularities of Continuous Measurement of Parameters and Sorting of Cylindrical Magnetic Films"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Technology. Scientific and Technical Collection. Microelectronics), 1971, vyp. 4(30), pp 185-193 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct 71, Abstract No 10B139)

Translation: The paper deals with the problem of the comprehensive study of cylindrical magnetic films throughout the length of specimens. Problems of continuous measurement of static parameters are illustrated by the example of a stand for registering obliquity of the axis of anisotropy and magnetostriction. The experimental set-up is briefly described. It is shown that when the magnetostriction of magnetic films differs from zero, twisting deformation of a specimen leads to an additional rotation of the preferred axis of magnetization of the film, and this additional obliquity is a measure of the magnetostriction. A description is given of the block diagram of a stand for automatic sorting of cylindrical magnetic films by dynamic parameters. Five illustrations, bibliography of two titles. Resumé.

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USSR

UDC: 681.32.001

NEVSKIY, O. B., NESTEROV, P. V., ALEKSEYEV, N. M.

"A Transfer Line for Continuous Electrochemical Deposition of Cylindrical Magnetic Films"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Technology. Scientific and Technical Collection. Microelectronics), 1971, vyp. 4(30), pp 176-184 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct 71, Abstract No 10B138)

Translation: The paper describes the flowchart and design of a line for continuous electrochemical deposition of cylindrical magnetic films. The line performs the operations of cathodic degreasing, electropolishing, deposition of copper and deposition of permalloy with zero magnetostriction (80 percent Ni, 10 percent Fe). All operations are done at high current density and with intense agitation (with the exception of electropolishing). The advantages of such conditions are pointed out. Note is made of the harmful effect of iron oxidation in the electrolyte for the deposition of permalloy and of the necessity for complete hermetic sealing of the tank.

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USSR

NEVSKIY, O. B. et al., Elektron. tekhnika. Nauchn.-tekhn. sb. Mikroelektronika, 1971, vyp. 4(30), pp 176-184

A description is given of methods of monitoring and controlling the process to obtain zero magnetostriction and the required pulse parameters. Seven illustrations, bibliography of thirteen titles. Resumé.

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USSR

UDC: 681.32.001

SHAKHNOV, V. A., NESTEROV, P. V.

"Technological Methods of Making Memory Matrices on Cylindrical Magnetic Films"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Technology. Scientific and Technical Collection. Microelectronics), 1971, VYP. 4(30), pp 194-200 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct 71, Abstract No 10B140)

Translation: In accordance with the requirement for ensuring the necessary accuracy in making memory matrices on cylindrical magnetic films, a comparison is made of some technological methods of implementing systems of control elements. A description is given of the technological processes, material requirements are defined, and recommendations are made on some of these materials. A method is outlined for shaping control elements of a new type combining the advantages of a solenoid and a strip line. A matrixless method is proposed for constructing an accumulator with a high packing density of memory elements. Three illustrations, bibliography of three titles. Resumé.

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USSR

UDC: 681.32.001

MURMUKHAMEDOV, G. M., NESTEROV, P. V., SALTYKOV, V. V.

"Wire Substrate for Cylindrical Magnetic Films"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Technology. Scientific and Technical Collection. Microelectronics), 1971, vyp. 4(30), pp 164-175 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct 71, Abstract No 10B137 P)

Translation: Basic requirements are formulated which must be satisfied by a wire substrate, and the influence of the substrate on the properties of cylindrical magnetic films is analyzed. A detailed investigation is made of the physical and mechanical properties of thin BrB2 copper-beryllium alloy wire, and recommendations are given on its use as a cylindrical substrate. A description is given of the technology for making a precision wire substrate, including processes of continuous tempering, mechanical treatment by rotating diamond draw plates, and thermal stabilization of properties. Seven illustrations, bibliography of nine titles. Resumé.

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USSR

UDC 621.377.622.322.5.037.733.2

SHAKHNOV, V. A., and NESTEROV, P. V.

"The Effect of Information Transcription on the Efficiency of Magnetic, Thin-Film Memory Elements"

Sb. Nauch. Tr. po Probl. Mikroelektron. Mosk. In-t Elektron. Tekhn. (Collection of Scientific Works on Problems of Microelectronics. Moscow Institute of Electrical Engineering), No 5, 1970, pp 124-132 (from Referativnyy Zhurnal -- Avtomatika, Telemekhanika, i Vychislitel'naya Tekhnika, No 8, 1971, Abstract No 8B112)

Translation: The article cites the results of experimental research on the efficient area of memory elements made from cylindrical magnetic thin-films using various models of information transcription. It is shown that the use of dual heteropolar pulses for transcription makes it possible to increase the efficient area and the density of information transcription on cylindrical magnetic thin films.

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USSR

UDC 621.377.622.322.5.001.572

PRESNUKHIN, L. N., NESTEROV, P. V., and SHAKHNOV, V. A.

"Research on Dynamic Switching of Magnetic Thin-Film Elements With the Help of a Digital Model"

Sb. Nauch. Tr. po Probl. Mikroelektron. Mosk. In-t. Elektron. Tekhn. (Collection of Scientific Works on Problems of Microelectronics, Moscow Institute of Electrical Engineering), No 5, 1970, pp 133-141 (from Referativnyy Zhurnal — Avtomatika, Telemekhanika, i Vychislitel'naya Tekhnika, No 8, 1971, Abstract No 8B113)

Translation: A digital model of a magnetic thin-film element of a memory device is selected and justified. Results of theoretical research on the effect of the front of intensification of the switching field, the initial angular displacement of the magnetization vector, and the magnitude and dispersion of the anisotropy field on the switching of magnetic thin films are cited.

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USSR

UDC

BORTNIKOV, Yu. S., NESTEROV, V. A., RUBASHOV, I. B., Moscow

"Study of Characteristics of the Electric Gas Dynamic Engine"

Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 6, 1971, pp 167-170.

ABSTRACT: Results are presented from theoretical and experimental studies of the electric gas dynamic engine, designed to create the thrust for a flight vehicle. Calculation relationships are produced, which agree well with the experimental data. It is demonstrated that the effectiveness of this engine can be rather high for practical purposes. A number of works have been written concerning ion-convection pumps operating on this principle, in which dielectric fluids are pumped using a Corona discharge. The use of the "Corona wind" in gases allows the creation of an engine capable of operating in any non-conducting atmosphere. In contrast to the ion engine, the EGD engine creates thrust due to acceleration of a neutral working fluid (for example, atmospheric gases) by means of ions, allowing the creation of a significant thrust, sufficient to support a vehicle in the atmosphere.

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NESTEROV, V. A.

Public Health

~~SECRET~~
C. Allen

SOJPRS 54354
29 OCT 71

UDC: 616-036.86:001.8

MAIN DIRECTIONS OF IN-DEPTH INVESTIGATION OF DISABILITY

(Article by Professor V.A. Nesterov, ^(Public Health) Boris V.N. Yelshin, ^{Chair of Social Hygiene and Public Health Organization} headed by Professor V.A. Nesterov, Khabarovsk Medical Institute Ioni Fed Aron, Krasnodar; Moscow, Sovetskoye Zdravostreneniye, Russian, No 9, 1971, submitted 16 February 1971, pp 11-20)

The significant loss to the health of the population and national economy caused by disability is the reason for the urgency of improving the socihygienic methods of investigating this problem. Much has been done by A.Y. Tretyakov, A.Ye. Averbakh, Ye.M. Shisgal, N.Yu. Mageril with respect to developing methodological approaches in the study of disability, particularly in the last decade. One of the popular methods in dynamic determination of primary disability status on the basis of VPK (Medical Commission for Determination of Disability). In Krasnodar, the indices of primary resignation due to disability dropped from 51.8 per 10,000 workers to 44.3 from 1964 to 1970, and the figures for individuals of employable age dropped from 47.4 to 40.9, respectively.

The age and sex coefficients of disability status progress with age, both for men and women, and reach a maximum in the decade preceding retirement age: 60 years for men and 55 years for women (Table 1).

At up to 19 years of age the indices are much higher than in the age group from 20 to 29 years, because of the greater number of invalids since childhood who became entitled to a pension in 1967. In the age groups up to 35 years, the indices are much higher for men than women, and in the next two age groups (40-49 and 50-54 years) they are, on the contrary, higher for women. On the whole, the disability indices referable to employable age groups constituted 45.1 for men and 36.7 for women per 10,000 workers.

The method we have proposed, by analogy to mortality tables, of compiling disability tables to evaluate the loss caused by disability indicates that even with relatively low disability indices in 1967, the period of gainful employment (44 years for men and 39 years for women) will be three years shorter.

The most important causes of disability among men are circulatory diseases (26.9%), accidents, poisoning and trauma (17.5%), neoplasms (12.5%),

1/2 030 UNCLASSIFIED PROCESSING DATE--11DEC70
 TITLE--MEASUREMENTS OF THE PRIMARY COSMIC RAY SPECTRA IN THE 10 TO THE
 10TH POWER TIMES 10 TO THE 14TH POWER EV ENERGY RANGE FROM PROTON 1, 2,
 AUTHGR--(05)--AKIMOV, V.V., GRIGOROV, N.L., NESTEROV, V.E., RAPOPORT, I.D.,
 SAVENKO, I.A.
 COUNTRY OF INFO--USSR, HUNGARY
 SOURCE--INTERNATIONAL CONFERENCE ON COSMIC RAYS, 11TH, BUDAPEST, HUNGARY,
 AUGUST 25-SEPTEMBER 4, 1969, PROCEEDINGS, VOLUME 1 ORIGIN AND GALACTIC.
 DATE PUBLISHED-----70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, SPACE TECHNOLOGY

TOPIC TAGS--PRIMARY COSMIC RAY, PROTON SPECTRUM/(U)PROTON 3 SCIENTIFIC
 SATELLITE, (U)PROTON 2 UNMANNED LABORATORY, (U)PROTON 1 UNMANNED
 LABORATORY

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DOCUMENT CLASS--UNCLASSIFIED
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CIRC ACCESSION NO--AT0144422
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2/2 930

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AT0144422

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF THE RESULTS OF MEASUREMENTS OF THE SPECTRUM OF THE PRIMARY COSMIC RAY PROTONS ON THE ENERGY RANGING FROM 10 TO THE 10 TH POWER TO 10 TO THE 13 TH POWER EV AND THE SPECTRUM OF ALL PARTICLES OF THE PRIMARY COSMIC RAYS RANGING FROM 10 TO THE 11 TH POWER TO 10 TO THE 14 TH POWER EV CARRIED OUT ON PROTON 1, 2, AND 3 SATELLITES. THE APPROXIMATING FUNCTION WHICH DESCRIBED THE PROTON SPECTRUM IS PRESENTED. IT IS SHOWN THAT THE SPECTRUM OF ALL PARTICLES CAN BE REPRESENTED BY SUPERPOSING THE OBTAINED PROTON SPECTRUM AND POWER SPECTRUM OF PARTICLES WITH CHARGES OF ABOVE OR EQUAL TO 2.Z.W.
FACILITY: MOSKOVSKII GOSUDARSTVENNYI UNIVERSITET, MOSCOW, USSR.

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