USSR

POPOV, S. D., Zashchita Rasteniy, No 7, 1971, pp 29-32

It should be noted that the operation of a sprayer is greatly complicated by clogging, corrosion, lumpy substances, marked relationship between viscosity and temperature, foaming, and other undesirable properties of liquid toxic chemicals.

12/12

USSR UDC: 621.376.56(088.8)

POPOV, S. G., BARUZDIN, V. I.

"A Magnetic Pulse Duration Modulator"

USSR Author's Certificate No 264449, filed 25 May 67, published 17 Jun 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11D473 P)

Translation: This Author's Certificate introduces a magnetic pulse duration modulator for controlling a thyristor current regulator. The device contains a transformer with leads of a two-section winding connected through resistors, saturation chokes and diodes to the controlling electrodes of the thyristors, and the common tap from the transformer sections connected to the negative lead of the thyristor current regulator. To increase the steepness of the leading edges of the output pulses, a switching element such as a dynistor is connected between the common tap of the transformer secondary and the negative lead of the thyristors in the current regulator in series with a resistor. V. P.

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USSR

KUZNETSOV, O. M., POPOV, S. G., FEOKTISTOV, V. V.

"Discrete Vortices in a Planar Medium at $M_{\infty}<1$ and Unstable Boundary Layer at a Plate"

Moscow, Mekhanika Zhidosti i Gaza, No 5, Sep-Oct 70, pp 176-179

Abstract: Experiments in a wind tunnel qualitatively and quantitatively indicate the propagation of density waves above a plate at zero angle of attack with $M_{\infty}<1$; the oscillating frequencies of density in this area are identical to the frequency of discrete vortices formed in the wake of the plate. Studies were performed using a shadow device with parallel light beam with defocused diaphragm and a Schlieren interferometer.

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1/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--THERMODYNAMIC PROPERTIES OF BINARY OXIDE SYSTEMS AT HIGH TEMPERATURES. II. DETERMINATION OF GIBBS FREE ENERGIES OF FETO SUB3
AUTHOR-(03)-LEVITSKIY, V.A., POPOV, S.G., RATIANI, D.D.

COUNTRY OF INFO--USSR

SOURCE--ZH. FEZ. KHIM. 1970, 44(5), 1337-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--FREE ENERGY, ELECTRODE POTENTIAL, ELECTROLYTIC CELL, TITANIUM OXIDE, TITANATE, IRON COMPOUND, IRON OXIDE, ELECTROCHEMICAL ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1410 STEP NO--UR/0076/70/044/005/1337/1338

CIRC ACCESSION NO--AP0135084

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0135084

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EMF. OF THE CELL PT-FE, TIO SUB2, FETIO SUB3-O PRIME2NEGATIVE(FE SUB0.950, FE-PT WAS MEASURED TO DET. THE FREE ENERGY OF FORMATION OF FETIO SUB3 FROM OXIDES AT HIGH TEMPS. DELTAG (CAL) EQUALS MINUS 7320 PLUS 2182TAU. FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR UDC 620.17:669.15'74-194.28'71'27

POPOV, V. S., and POPOV, S. M., Zaporozhye Machine Building Institute

"High-Manganese Steel Alloyed With Molybdenum, Tungsten, and Aluminum"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 2, 1971, pp 65-66

Abstract: The influence of molybdenum, tungsten, and aluminum on the mechanical properties and wear-resistance of austenitic high-manganese steel produced by the electric slag method was studied. The content of carbon in the steels was limited to 0.08-0.12% in order to reveal the influence of the alloying elements on the mechanical properties. The addition of small quantities of molybdenum sharply increases the strength and plastic properties. The hardness and impact toughness remain unchanged. The influence of tungsten up to 0.3% results in an increase in strength by 40%, yield point by 75%, and relative elongation and necking down by 66 and 160% respectively; 0.4-2.4% W causes a reduction in these properties, particularly the yield point. Alloying of a high-manganese alloy with aluminum causes an increase in strength and plastic properties. Molybdenum is the most effective of the alloying elements studied, particularly at 0.3% Mo.

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USSR

UDC 669.15-194.829.178.16

POPOV, S. N., and POPOV, V. S., Zaporozh'ye Machine Building Institute imeni V. Ya. Chubar

"Composition of the Metal Matrix of Alloys and Their Wear Resistance in an Abrasive Medium"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 11, Nov 70, pp 23-27

Abstract: A study was made of low-carbon alloys (to 0.1% C) with 1.33-36% Mn, 2.5-34.5% Ni, and 4-22.5% Cr, and of a high-manganese alloy with 22% Mn and chromium alloyed to the limit of solubility in austenite. The wear resistance of the Mn-alloyed alloy is related to the effect of manganese on the change in quantity of the ε-phase, which forms in the surface layer of the alloy in the process of wear. The carbonless chromium martensite and ferrite possess a relatively low wear resistance (20% higher than that of St. 3 steel). An increase in the content of chromium from 2.7 to 12.4% does not lead to increased wear resistance of the G22 carbonless iron-manganese alloy.

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USSR

UDC: 533.9...16

IVANOVSKIY, M. A., POPOV, S. N., POPRYADUKHIN, A. P.

"The TOR-2 Stellarator"

Tr. Fiz. in-ta AN SSSR (Works of the Physics Institute, Academy of Sciences of the USSR), 1973, 65, pp 65-72 (from RZh-Fizika, No 6, Jun 73, abstract No 6G355)

Translation: The difference between the Tor-2 stellarator and others is that the magnetic field is set up by discrete elliptical coils rather than by helical windings. The paper gives the theoretical assumptions which act as the basis for the design of the installation, and also the results of initial studies. Bibliography of 12 titles.

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USSR

UDC: 533.9...16

ANDRYUKHINA, E. D., IVANOVSKIY, M. A., POPOV, S. N., POPRYADUKHIN, A. P., FEDYANIN, O. I., KHOL'NOV, Yu. V.

"Investigation of the Magnetic Field Structure of the Tor-1 and Tor-2 Stellarators"

Tr. Fiz. in-ta AN SSSR (Works of the Physics Institute, Academy of Sciences of the USSR), 1973, 65, pp 73-81 (from RZh-Fizika, No 6, Jun 73, abstract No 6G358)

Translation: The electron beam method is used to study the structure of magnetic surfaces in toroidal plasma traps with a double-helix field -- the Tor-1 and Tor-2 stellarators. Beam monitoring was done by the conventional probe method and by a high-speed dielectric grid method. It is shown that the structure of the surfaces is regular up to angles of rotational conversion i of the order of 5.5π throughout the entire range of variation in i with the exception of the resonance values $i = \pi, 2\pi, 4\pi$, for which expansion of the surfaces with the formation of a rosette structure is recorded. The amplitude of resonance perturbations measured with respect to the width of the rosettes is of the order of 10^{-4} of the amplitude of the main stellarator field. Bibl. 11 titles.
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USSR

UDC 621.317.757

VITMAYEV, G. A., POPOV, S. N.

"An Instrument for Visual Measurement of the Phase-Amplitude and Phase--Frequency Characteristics of Two-Terminal Pair Networks"

V sb. Tonkiye magnitn. plenki, vychisl. tekhn. i radiotekhn. T. 1 (Thin Magnetic Films, Computer Technology and Radio Engineering--collection of works. Vol 1), Krasnoyarsk, 1971, pp 75-78 (from RZh-Radiotekhnika, No 11, Nov 71, Abstract No 11A316)

Translation: The paper describes an instrument designed for: 1) automatic measurement and observation of the phase-amplitude characteristics of nonlinear two-terminal pair networks in a frequency band, or the phase--frequency characteristics of two-terminal pair networks throughout the dynamic range with manual setting of the carrier frequency or level respectively; 2) measurement of phase difference with screen readout or by the compensation method. Technical data are given as well as a block diagram. One illustration, E. L.

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Public Health, Hygiene and Sanitation

USSR

UDC 616-057:796

LOMAREV, P. I.; POPOV, S. N.; TYURIN, A. M.; SHAPKAYTS, Yu. M.; Laboratory of Functional Diagnostics, Institute of Physical Culture imeni P. F. Lesgaft

"Effect of Athletic Activity on the Incidence and Duration of Some Diseases"

Moscow, Sovetskaya Meditsina, Vol 34, No 2, Feb 71, pp 100-103

Abstract: The incidence and duration of diseases involving an initial request for medical treatment was determined for employed persons engaged in athletics (group A) and not engaged in athletics (group B). The persons in both groups were otherwise healthy males, most of them young. The study was conducted for three years. The incidence of diseases per 1,000 persons was as follows: simple sore throat A 48, B 135; influenza A 33, B 24; severe colds A 554, B 920; furunculosis and abscesses A 99, B 167; diseases of the locomotor apparatus A 127, B 107; diseases of the peripheral nervous system A 44, B 19; diseases of digestive organs A 29, B 45; eye diseases A 75, B 99. The

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LOMAREV, P. I., et al, Sovetskaya Meditsina, Vol 34, No 2, Feb 71, pp 100-103

average incidence of all diseases per 1,000 persons was 126 and 189 for group A and B, respectively. The time in days lost from work per case was 4.9 and 7.7 for group A and B, respectively. The higher incidence of diseases of the peripheral nervous system (radiculitis, plexitis, neuritis, etc) and of the locomotor apparatus for persons engaged in athletics can be explained by excessive strain in athletic training due to the injudicious nature of this training. The average number of days lost due to any single type of disease, including diseases of the peripheral nervous system and of the locomotor apparatus, was lower for athletes than non-athletes.

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3304 (AEC-tr-7101) ABSOLUTE MEASUREMENT OF PLASMA PARAMETERS. Popov, S. N. (Akademiya Nauk SSSR, Moscow. Institut Fiziki). Translation of Preprint No. 161. 30p. Dep. CFSTI.

The possibilities of obtaining absolute measurements of a number of basic plasma parameters by means of a drift mass spectrometer, in which a receiver with a voltage barrier is used as a current receiver are discussed. (auth)

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USSR

UDC 621.372.852.1(088.8)

POPOV, S. V.

"Band Separating Filter"

USSR Author's Certificate No 253257, Filed 4 Mar 68, Published 2 Feb 70 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9B130P)

Translation: The proposed filter consists of two cascade-connected three-decibel directional couplers the connecting lines of which have a dispersion element connected to them. The inputs of the latter are connected to the outputs of the first directional coupler, and the outputs are connected to the inputs of the second directional coupler. At one input of the first directional coupler a matched load is installed, and its other input is the filter input. The outputs of the second directional coupler are outputs of the device. The directional couplers can be executed with respect to any scheme insuring maintenance of the magnitude of the three decibel coupling in the operating frequency band with accuracy to 0.5 decibels. The schematic of the dispersion element depends on the width of the operating frequency band, the steepness and degree of linearity of the frequency-amplitude characteristic of the discriminator. It is executed in the form of a combination of segments of connected lines, the central conductors of

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USSR

POPOV, S. V., USSR Author's Certificate No 253257, Filed 4 Mar 68, Published 2 Feb 70 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9B130P)

which are connected on one end by means of jumpers which encompass the conductors only with respect to width. There is one illustration.

USSR

TSVETKOV, D., and POPOV, T.

"The Effect of High Frequency General Vibration on the Activity of Some Enzymes Participating in Biological Oxidation -- in the Experiment With Cytochromoxidase, Catalase, Peroxidase"

Zh. Gigiyeny, Epidemiol., Mikrobiol., i Immunol. (J. of Hygiene, Epidemiology, Microbiology and Immunology), 1973, Vol 17, No 2, pp 157-162 (from RZh - Biologicheskaya Khimiya, No 22, Nov 73, Abstract No 1412)

Translation: The effect of general high frequency vibrations (150 hc) on cytochromoxidase, peroxidase, and catalase in liver and blood has been studied in experiments on rats. It has been established that as a result of the action of the vibration for 1 hr per day for 45 days, the activity of the above enzymes undergoes an early change -- at 15 to 30 day, the changes being unstable, exhibiting a tendency to return to normal even with prolonged exposure. The observed changes in the enzyme activity indicate some acceleration in biooxidation.

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Public Health, Hygiene, and Sanitation

USSR

UDC 614.7:66

POPOV, T., BASMADZHIYEVA, K., KURCHATOVA, DAVIDKOVA, K., and NEYKOVSKA, L., Scientific Research Hygiene Institute, Sofia

"Combined Effect of Chemical Agents That Pollute Air and Water Simultaneously"

Moscow, Gigiyena i Sanitariya, No 12, 1971, pp 77-79

Abstract: In a two-month experiment, rats were poisoned by simultaneous round-the-clock inhalation of the contact herbicide dinitroorthocresol (DNOC) at the maximum permissible level and by daily ingestion of doses twice the maximum permissible dose. The results of 32 tests (behavior, change in weight, blood inorganic phosphorus, content of sulfhydryl groups, RBC, WBC, hemoglobin, catalase, peroxidase, and cholinesterase activities, and so forth) failed to reveal any functional disturbances in the main organs and systems of the animals. This is attributed to the absence of changes in the balance of energy-rich phosphorus compounds and in the content of sulfhydryl groups. It would appear that brief exposure to DNOC, peroral at a concentration twice the maximum permissible dose and by inhalation at the maximum possible concentration, does not constitute a danger to human health.

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USSR

UDC 577.4

POPOV, V. A., and VODOP'YANOV, V. K.

"Minimization of Algorithms on the Basis of Geometric Interpretation"

V sb. Radioelektronika letatel'n. apparatov (Radioelectronics of Flying Apparatus - collection of works), No 5, Khar'kov, 1973, pp 171 - 179 (from RZh Matematika No 12, 1973, abstract No 12 V 466

Translation: A method is proposed for transforming control algorithms on the basis of V. M. Glushkov's model (RZh Mat, 1966, 8 V135). To minimize the number of logical conditions, a geometric interpretation of this model in terms of covering the vertices of a m-dimensional unit cube is examined. A theorem on the possibility of minimizing the number of logical conditions of the algorithm is proven.

Abstract by A. Sapozhenko.

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USSR

UDC 577.4

POPOV, V. A., SKIBENKO, I. T., and MOKLYAK, N. G.

"A List of Types of Systems of Indeterminate Boolean Functions"

V sb. Radioelektronika letatel'n. apparatov (Radioelectronics of Flying Apparatus - Collection of Works), No 5, Khar'kov, 1973, pp 152 - 158 (from RZh Matematika No 12, 1973, abstract No 12 V465)

Translation: This article lists the types of systems of indeterminate Boolean functions with respect to groups of variable transpositions, inversions, and transformations of a single type. The case in which the groups act both on the area of determinacy and in the area of significance of the system function is considered. The numbers of types of systems for $n,m \leq 3$ are obtained. It is found that the number of these types when $n = m = 3$ exceeds 10^8. Cyclic indices of the groups considered are found but are not given in the article.

Abstract by A. Sapozhenko.

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USSR

UDC: 681.3.06:51

POPOV, V. A. and VODOP'YANOV, V. K.

"Minimization of Algorithms on the Basis of Geometric Interpretation"

Kharkov, V sb. Radioelektronika letatel'n. apparatov (Aerospace Electronics--collection of works) No 5, 1973, pp 171-179 (from RZh--Avtomatika, telemekhanika i vychislitel'naya tekhnika, No 12, 1973, Abstract No 12B71)

Translation: On the basis of the Glushkov algorithmic system, the representation of any algorithm is considered in a disjunctive situation on the basis of product operations and x-disjunctive operators. Among the set of regular forms of the algorithm are the normal, canonical, and minimal.

A theorem of the possibility of minimizing the number of logic conditions of the algorithm is proved, and an iterative procedure is proposed for the algorithm with the use of a theoretical, multivariate regular operation for the intersection of disjunctive complexes represented in geometric form as the coating of an m-dimensional unit cube. Bibliography of four. Resume.

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USSR

POPOV, V. A., SKIDANENKO, V. I. (Togliatti Polytechnical Institute)

"Phase Transitions and Critical Points in a Biaxial Antiferromagnetic"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, March 1974, pp 387-396

Abstract: Phase reversal of magnetic sublattices in a biaxial antiferromagnetic, with the magnetic field directed along the "easy" and "difficult" planes, is studied.

The existence of a critical first-order point is shown for the case in which the magnetic field is directed along the "easy" plane. Behavior of solutions for the antiferromagnetic ground state and features of the magnetic susceptibility tensor near the critical first-order point are examined.

The antiferromagnetic ground states are found, and conditions for realizing the first- and second-order phase transitions, when the magnetic field is directed along the "difficult" plane, are determined. The phase diagram shows the critical triple and quadruple points and a special triple point at which the character of the phase transition changes.

The article includes 37 equations and one figure. There are 11 references.

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USSR

UDC: 681.32.001

POPOV, V. A., MOKLYAK, N. G., SKIBENKO, I. T., SYCHEV, A. V., Khar'kov Aviation Institute

"On a Method of Optimum Synthesis of Universal Logic Modules"

Leningrad, Izvestiya VUZov: Priborostroyeniye, Vol 16, No 11, 1973, pp 58-61

Abstract: Previous papers have established a number of properties inherent in Boolean functions with high logical effectiveness, defined as the number of classes or types of subfunctions obtained by adjustments, and have also suggested a method of constructing universal logic modules which maximize the number of subfunctions. This paper proposes a group theory approach to synthesizing optimum universal logic modules which enables purposeful sorting of Boolean functions rather than trial and error and also considerably reduces the number of external adjustments which give identical subfunctions. The proposed method was used to develop an algorithm for synthesizing optimum universal logic modules. The algorithm is written in ALGOL-60 and realized on the BESM-4 computer. The circuit of one of the resultant modules is given. The method can be generalized to l-valued logic functions.

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USSR

UDC: 533.9...15

SHVAROV, I. K., IVANCHINOV-MARINSKIY, N. N., POPOV, V. A.

"A Method of Measuring the Density and Frequency of Electron Collisions of an Isotropic, Weakly Ionized Plasma"

USSR Author's Certificate No 347954, Division H, filed 3 Jul 70, published 4 Sep 72 (from RZh-Fizika, No 6, Jun 73, abstract No 6G134 P)

Translation: A method is described for measuring the density and frequency of electron collisions of an isotropic, weakly ionized plasma. The attenuation constants of a counterclockwise polarized microwave are measured at two magnetic field strengths for a volume of plasma contained in the magnetic field created by a solenoid. The plasma parameters are determined from the known relationships of each of the two attenuation constants to the concentration and frequency of electron collisions for the given volume of plasma.

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USSR

UDC 519:62-507

POPOV, V. A., MOKLYAK, N. G., and SKIBENKO, I. T.

"Enumeration of Types of Ternary Switching-Function Systems"

Riga, Avtomatika i Vychislitel'naya Tekhnika, No 4, Jul-Aug 73, No. Dep 5386-73 dated 9 Jan 73, received by editors 23 Nov (27 Jan) 72, p 36

Translation: The article considers systems of m ternary switching functions of n variables (SF) to describe ternary (n,m)-poles. A determination is made of the number of equivalence classes (types) of (n,m)-poles relative to five different groups inducing a given equivalence: 1) symmetrical group $S_n^{(3)}$ of order n! to the 3^n power; 2) negation group D_3^n of order 2^n to the 3^n power; 3) cyclic-negation group T_3^n of order 3^n to the 3^n power; 4) group H_3^n, which is the semidirect product of groups $S_n^{(3)}$ and D_3^n; 5) group G_3^n, which is the semidirect product of $S_n^{(3)}$ and T_3^n. The authors consider the case in which any of these groups acts on the domains of definition of an SF system; and another group, on the domains of values of the functions of the system. Here use is made of theorems of Pólya and de Bruyn which employ the cycle indices of permutation groups. To find the cycle indices of the groups under consideration, an effective algorithm, written in ALGOL-60 and realized on a BESM-4 digital computer, is offered. The authors present the cycle indices of groups $S_n^{(3)}$,

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USSR

POPOV, V. A., et al., Avtomatika i Vychislitel'naya Tekhnika, No 4, Jul-Aug 73, Dep 5386-73 dated 9 Jan 73, received by editors 23 Nov (27 Jan 72, p 36

H_3^n, and G_3^n for $n \leq 6$, as well as results of calculations of types of (n,m)-poles for n, $m \leq 3$. Twelve tables. Bibliography with seven titles.

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USSR

UDC: 621.317.3:[621.315.61+621.315.592]

URYVSKIY, Yu. I., SYNOROV, V. F., CHURIKOV, A. A., POPOV, V. A., KONONOV, V. I., LAVRENT'YEV, K. A., MASLENNIKOV, P. N.

"Ellipsometric Method of Checking Dielectric and Semiconductor Films"

Elektron. prom-st'. Nauch.-tekhn. sb. (The Electronics Industry. Scientific and Technical Collection), 1972, No 2, pp 82-83 (from RZh-Radiotekhnika, No 12, Dec 72, abstract No 12A393 by A. K.)

Translation: The ellipsometric inspection method is distinguished by high information capacity and resolution: It enables simultaneous measurement of the thickness and index of refraction of the film on a substrate during production with accuracy of up to 1 nm and 0.05 respectively. The method is based on determining the change in parameters of polarized light reflected from the surface being studied.

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USSR

POPOV, V. A. and SKIDANENKO, V. I.

"Dependence of the Resonant Frequency of Biaxial Antiferromagnetics on the Temperature"

Leningrad, Fizika Tverdogo Tela, vol 15, No 3, 1973, pp 899-901

Abstract: The intersection of two branches of the resonance frequency curves occurs in biaxial ferromagnetics in a strong magnetic field at a particular temperature. In this paper, the dependence of the energy spectrum of biaxial ferromagnetics in a strong magnetic field on the temperature is computed. It is shown that the disappearance of the intersection point of the resonance terms is apparently connected with the fact that the activation energy of one branch of the spin waves is higher than the energy of the other everywhere in the thermodynamic stability region of the antiferromagnetic vector perpendicular to the "easy" axis. The authors begin their analysis with the Hamiltonian of the biaxial antiferromagnetics in a magnetic field whose direction is parallel to the "easy" axis. An expression for the energy spectrum of the spin waves in terms of the temperature is then obtained.

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USSR

UDC 621.372.413

POPOV, V. A. and KHIZHNYAK, N. A.

"Theory of Resonators Loaded With Resonance Disturbing Bodies"

Radiotekhnika. Resp. mezhved. temat. nauch.-tekhn. sb. (Radio Engineering. Republic Interagency Thematic Scientific-Technical Collection of Articles), 1972, vyp.21, pp 117-130 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 B125)

Translation: The method of integral equations is used to obtain the expressions for the field and natural frequency of a resonator of regular shape with a dielectric disturbance. The well known formulas of Slater and Mayer are obtained in the case of a small spherical disturbance. In the case of a resonance disturbance, the frequency shift is commensurate with the difference between the natural frequencies of the resonator while the field takes on a structure which is transitional to the structure of the fields of the adjacent undisturbed modes of oscillation. It is shown that the structure of the field of a resonator can be controlled by changing the properties of the resonance disturbing body. Original article: three illustrations and five bibliographic entries. Resume.

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USSR

UDC 517.51

SENDOV, Bl., and POPOV, V. A. (Sofia)

"Exact Asymptotic Behavior of the Best Approximation by Algebraic and Trigonometric Polynomials in a Hausdorff Metric"

Moscow, Matematicheskiy Sbornik, Vol 89, No 1, Sep 72, pp 138-147

Abstract: The article gives the exact asymptotic behavior of the best approximation by algebraic or trigonometric polynomials respectively in a Hausdorff metric in the class of all bounded functions on the segment $[a, b]$ or in the class of all bounded 2π-periodic functions respectively.

The best approximation of the bounded function f by algebraic polynomials of degree n in a Hausdorff metric is defined by the formula $E_n(f)_r = \inf_{p \in H_n} r(f,p)$, where H_n is the set of all algebraic polynomials of degree no greater than n, while the best approximation of the 2π-periodic bounded function φ by trigonometric polynomials of order n is defined by the

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USSR

SENDOV, Bl., and POPOV, V. A., Matematicheskiy Sbornik, Vol 89, No 1, Sep 72, pp 138-147

formula $E_n^T(\varphi)_r = \inf_{T \in T_n} r(\varphi, T)$, where T_n is the set of all trigonometric polynomials of order n.

It is proved that the following equalities take place:

$$\lim_{n\to\infty} \sup_{f \in U^M_{[a,b]}} \frac{n}{\ln n} E_n(f)_r = \frac{b-a}{2},$$

$$\lim_{n\to\infty} \sup_{\varphi \in U^M_{2\pi}} \frac{n}{\ln n} E_n^T(\varphi)_r = 1,$$

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USSR

SENDOV, Bl., and POPOV, V. A., Matematicheskiy Sbornik, Vol 89, No 1, Sep 72, pp 138-147

where $B^{M}_{[a,b]}$ is the class of all functions bounded in absolute value by the constant M on the segment $[a, b]$ and $B^{M}_{2\pi}$ is the class of all 2π-periodic functions bounded in absolute value by the constant M.

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1/2 007 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--HYGIENIC ASSESSMENT OF TETRAHYDROFURAN AS AN ATMOSPHERIC POLLUTION -U-

AUTHOR--POPOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--GIGIYENA I SANITARIYA, 1970, NR 5, PP 16-19

DATE PUBLISHED--------70

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

TOPIC TAGS--AIR POLLUTION, WHITE RAT, FURAN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1642 STEP NO--UR/0240/70/000/005/0016/0019

CIRC ACCESSION NO--AP0112636

UNCLASSIFIED

2/2 007 UNCLASSIFIED

CIRC ACCESSION NO--AP0112636 PROCESSING DATE--02OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ONE TIME MAXIMUM PERMISSIBLE CONCENTRATION OF TETRAHYDROFURAN (THF) IN THE ATMOSPHERE IS SUGGESTED TO BE SET AT A LEVEL OF 0.2 MG-M PRIME3 ON THE BASIS OF DETERMINING THE THRESHOLD VALUE OF SMELL OF THF VAPOURS AND THE BIOELECTRIC CEREBRAL ACTIVITY OF MAN. SANITARY TOXICOLOGIC TESTS CARRIED OUT OVER ALBINO RATS FOR A PERIOD OF 3 MONTHS MADE IT POSSIBLE TO RECOMMEND THIS LEVEL AS THE DAILY AVERAGE MAXIMUM PERMISSIBLE CONCENTRATION. FIELD OBSERVATIONS PROVED AN EXPERIMENTAL THF PLANT, PRODUCING 100 TONS A YEAR, TO BE A RATHER INSIGNIFICANT SOURCE OF ATMOSPHERIC POLLUTION. HOWEVER, THE THF PLANT, PRODUCING 400 TONS A YEAR, CAUSES AIR POLLUTION WITH THF VAPOURS UP TO A DISTANCE OF 75 M. FACILITY: INSTITUT BOSHCHEY I KOMMUNAL'NOY GIGIYENY IM, A. N. SYSINA AMN SSSR, MOSCOW.

UNCLASSIFIED

USSR

UDC: None

BAR'YAKHTAR, V. G., BOROVIK, A. Ye., and POPOV, V. A.

"Theory of the Intermediate State of Antiferromagnetic Objects"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62, No 6, 1972, pp 2233-2242

Abstract: The theory of the intermediate state of antiferromagnetics in an external field is given in this article. Beginning their analysis with an expression for the various phases that can occur in antiferromagnetics, depending on the direction and magnitude of the external magnetic field, the authors develop a theory of perturbations through which the magnetic moment distribution in the intermediate state can be found with any degree of accuracy. Results of the theory for the case in which the antiferromagnetics has the form of an ellipsoid are given under the assumption that the magnetic moment and antiferromagnetism vectors are in uniform distribution. Also considered is the nonuniform distribution of these vectors in a plate, where the free antiferromagnetic energy is varied with respect to the vectors. Expressions are obtained for the energy of the intermediate state and for the domain dimensions. The authors thank A. I. Akhiyezer and V. V. Yeremenko for their comments; they are associated with the Physico-Technical Institute for Low Temperatures, Ukrainian Academy of Sciences.

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USSR UDC 669.71.48

POVKH, I. L., CHEKIN, D.V., SMIRNOV, V. A., BAZILEVSKIY, V. M., OKUNEV, V. M., POPOV, V. A.

"Study of the Possibility of the Impoverishment of Fused Salt Slags From Aluminum Production by Electromagnetic Weighting"

Tr. Donetsk. NII Chern. Metallurgii [Works of Donets Scientific Research Institute for Ferrous Metallurgy], 1970, No. 20(4), pp. 21-25. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G177 by the authors).

Translation: Studies performed on the electromagnetic weighting of salt slags produced in melting Al showed that it can be used to extract up to 98% of the Al and 83% of the oxides. 3 figs; 2 tables.

1/1

USSR

UDC: 621.694.2

BEZNOGIKH, YU. D., ZINOV'YEV, L. P., KADYROV, R. B., KARYAGIN, YU. K., PLYASHKEVICH, N. N., POPOV, V. A., SEMENYUSHKIN, I. N. and STEPANIUK, V. L.

"Injector Debuncher of the OIYAI Synchrophasotron With Energy Modulation of the Accelerated Beam"

Moscow, Pribory i Tekhnika Eksperimenta, Zhurnal Akademii Nauk SSSR, No 1, Jan/Feb 72, pp 37-38

Abstract: The particle intensity in the OIYAI synchrophasotron can be increased by 75% by reducing the energy scattering in the outlet beam and by modulating the energy of the injected beam. Both functions can be performed by a single high-frequency debuncher resonator located at a certain distance from the linear accelerator.

The debuncher resonator is 1/4 of the wave length of the round coaxial line. The tuning is achieved by deflecting the end walls and by a secondary power input. The diagram and the description of this device are presented. Some experimental results obtained with and without the debuncher are also given.

1/1

USSR UDC 621.311.1.064.1.001.24

POPOV, V. A., Engineer, Moscow Order of Lenin Power Engineering Institute

"Utilization of One Version of Solving Systems of Linear Equations by the Gaussian Method for Calculation of Complex Damage in Electrical Systems on Digital Computers"

Minsk, Izvestiya vysshikh uchebnykh zavedeniy -- Energetika, No 5, 1972, pp 3-7

Abstract: One of the methods of determining the electric variables for multipoint asymmetries in electric systems (simultaneous short circuits and phase discontinuities or several short circuits, and so on) is calculation by the complex circuit diagrams in which the circuits of the individual series are connected at the damage points via special coupling multipoles simulating the boundary conditions of the damage and via a common base junction coinciding with the neutrals of the circuits. The conductivity matrices of the systems of linear equations describing complex circuits are not symmetric with respect to the principal diagonal. A study was made of a version of the method of successive gaussian exclusions to simplify the algorithm for calculating such equations on digital computers and for efficient utilization of the ready-access memory.
1/1

USSR

UDC 621.374.33

VIGDORCHIK, V. G., DARKOV, S. K., KORTEVA, T. V., MEYERSON, S. I., POPOV, V. A., SITNIKOV, O. P., TRYKOV, Yu. V., OSTRYY, Kh. Ya.

"A Magnetic Digital Element"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 21, Jul 71, Author's Certificate No 308518, Division H, filed 16 Feb 70, published 1 Jul 71, pp 207-208

Translation: This Author's Certificate introduces a magnetic digital element which contains information, compensation and two switching cores. The device has a recording circuit, a coupling loop with flux quenching on resistors, and a ready circuit for the switching cores. As a distinguishing feature of the patent, in order to increase speed, improve stability, extend the range of ambient temperature variation and simplify the power supply system, the element is equipped with resistors in the coupling loop, dynamic excitation and dynamic magnetizing cores, one additional winding on each of the switching and compensation cores, and also two additional windings on the information core. The primary windings of the dynamic excitation and dynamic magnetizing cores are connected in series in the circuit of one of the cadence currents. The series-connected auxiliary windings of the switching cores and

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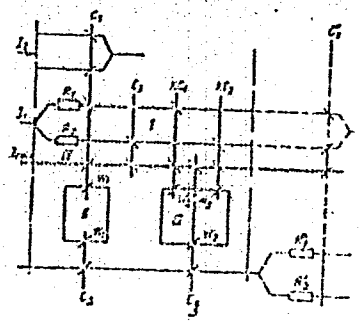
USSR

VIGDORCHIK, V. G., et al., Otkrytiya, izobreteniye, promyshlennyye obraztsy, tovarnyye znaki, No 21, Jul 71, Author's Certificate No 308518, Division H, filed 16 Feb 70, published 1 Jul 71, pp 207-208

the secondary winding of the dynamic excitation core form a loop for dynamic excitation of the switching cores. The series circuit comprised of the secondary winding of the dynamic magnetizing core and one of the auxiliary windings of the information core forms a loop for dynamic excitation of the information core, and the auxiliary winding of the information core and the third winding of the dynamic excitation core are connected in series to the ready winding of the switching core.



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USSR UDC: [537.226+537.311.33]:[539.3+536.21+536.631+536.651]

POPOV, V. A., MANZHELIY, V. G., and VLADIMIROVA, L. I.

"Thermal Capacitance of Ammonium Deuteride Solids"

Tr. Fiz.-tekhn. in-t nizk. temperatur AN USSR (Transactions, Physico-Technical Institute of Low Temperatures, Ukrainian Academy of Sciences) 1971, No. 12, pp 18-23 (from RZh-Fizika, No. 11, 1971, Abstract No. 11E832)

Translation: The heat capacitance of solid ND_3 in the temperature interval of 2-197° K as well as the melting enthalpy H_{tr} and the temperature T_{tr} corresponding to the triple point of ND_3 are determined. The contributions of the various forms of the molecular thermal movement in the heat capacity are analyzed. The enthalpy of the formation of orientation defects in solid ND_3 is determined. A discussion is given of the temperature dependence of the thermal capacitance. Bibliography of 16.

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USSR

POPOV, V. A., SKIDANENKO, V. I.

"Coupled Spin Waves and Spin-Spin Resonance in Antiferromagnetics"

Leningrad, Fizika Tverdogo Tela, Vol 14, No 2, 1972, pp 507-514

Abstract: The transformation of spin waves of one polarization into spin waves of another in two-axis antiferromagnetics in a diagonal magnetic field is considered. It is shown that antiferromagnetics as a whole represent two oscillatory systems which remain uncoupled with a constant field directed along the axis of symmetry. They are, however, coupled in a diagonal field. If only one of the oscillatory systems is pumped by the energy of a high-frequency field, there is a transfer of high-frequency energy into the second oscillatory system due to the coupling between the two. It is found also that this transfer is a maximum when the coupling factor reaches a critical value. The conditions for resonance transformation of one spin wave to the other and for the change of shape of the resonance curves are analyzed. The possibility of

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POPOV, V. A. et al, Fizika Tverdogo Tela, Vol 14, No 2, 1972, pp 507-514

using antiferromagnetics as high-frequency filters under spin-spin resonance conditions, with the width of the pass band controlled by the angle between the field and the crystal axis of symmetry, is indicated. The authors are grateful to G. A. Smolenskiy for his discussions and to A. S. Borovik-Romanov, V. A. Ozhogin, and Ye. G. Radashevskiy for their valuable comments. They are connected with the Physico-Technical Institute for Low Temperatures, USSR Academy of Sciences, Kharkov.

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USSR

UDC 629.78.015.076.8

KUZMAK, G. YE., POPOV, V. A.

"Study of the Transfer of Rotational into Oscillatory Motion Upon the Entry of an Uncontrolled Ballistic Body into the Atmosphere"

Uch. zap. Tsentr. aero-gidrodinam. in-ta (Scientific Notes of the Central Aerohydrodynamic Institute), 1970, Vol. 1, No. 6, pp 82-90 (from RZh-Raketostroyeniye, No 9, Sep 71, Abstract No 9.41.58)

Translation: The problem of determining conditions for the transfer of rotation relative to the center of mass into oscillations relative to the center of mass upon the entry of a ballistic body into the atmosphere is discussed for plane motion. The known analytical solutions are analyzed and a detailed numerical study is made of the sinusoidal moment characteristic. The fundamental parameters are identified and probability evaluations are given for the altitude and angle of attack of the body at the time of the transfer of rotation into oscillations under a uniform distribution of the values of the angle of attack at the boundary of the atmosphere. 5 ill., 5 ref. Resume.

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USSR

UDC 541.8:547.831:547.261/262

POPOV, V. A., YUSHKOVA, I. K., BOLAVINA, I. G., CHERKASOV, N. KH., and KHARLAMPOVICH, G. D.

"Study of the Solubility of Monosubstituted Quinoline, Isoquinoline, Quinaldine, and Lepidine Phosphates in Ethanol and Methanol of Different Concentrations"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 44, No 11, Nov 71, pp 2589-2591

Abstract: Solubility of monosubstituted quinoline, isoquinoline, quinaldine, and lepidine phosphates in aqueous-alcoholic mixtures of ethanol and methanol increases with with temperature increase and with a drop in the concentration of alcohols. In the 0-10° temperature range the phosphates can be arranged in the following order of decreasing solubility: lepidine phosphate isoquinoline phosphate quinoline phosphate quinaldine phosphate. In the 30-50° range the order is: isoquinoline phosphate quinaldine phosphate lepidine phosphate quinaldine phosphate. These differences in their solubility may be used to obtain pure products.

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USSR

UDC 629.19:533.6

KUZMAK, G. Ye., POPOV, V. A.

"Investigation of the Conversion of Rotary Motion to Oscillatory Motion When an Uncontrolled Ballistic Missile Enters the Atmosphere"

Uch. zap. Tsentr. aero-gidrodinam. in-ta (Scientific Notes of the Central Aerohydrodynamics Institute), 1970, 1, No 6, pp 82-90 (from RZh-Mekhanika, No 10, Oct 71, Abstract No 10B273)

Translation: The paper deals with the problem of determining the conditions of transition from rotation relative to the center of mass to oscillations relative to the center of mass for plane motion upon atmospheric entry of a ballistic missile. The known analytical solutions are analyzed, and a detailed numerical study is made of the sinusoidal moment characteristic. Basic parameters are derived, and probabilistic estimates are made of the altitude and angle of attack of the missile at the instant of transition from rotation to oscillations in the case of uniform distribution of the values of the angle of attack on the boundary of the atmosphere. Resumé.

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USSR

UDC:669.714

POVKH, I. L., CHEKIN, B. V., SMIRNOV, V. A., BAZILEVSKIY, V. M., OKUNEV, V. M. and POPOV, V. A., Donets State University, Donets Scientific Research Institute for Ferrous Metals, State Scientific Research and Planning Institute of Alloys and Nonferrous Metal Processing

"Extraction of Aluminum and Oxides From Salt Slags Using Electromagnetic Forces"

Ordzhonikidze, Izvestiya Vysshikh Uchevnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1971, pp 65-68

Abstract: The possibility in principle of the process of extraction of aluminum buttons and oxides from melted salt slags using electromagnetic forces is demonstrated. The basis of the phenomenon is the fact that when a weakly conducting liquid in which conducting droplets and non-conducting particles are suspended is placed in crossed electrical and magnetic fields, the specific gravity of the conducting phases increases.

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USSR

POVKH, I. L., et al., Izvestiya Vysshikh Uchevnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1971, pp 65-68

This causes the droplets to precipitate to the bottom and the non-conducting particles to rise to the top.

1/2 025 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--DENSITY OF SPIN WAVE STATES IN AN ANTIFERROMAGNET -U-

AUTHOR-(03)-BAKYAKHTAR, V.G., POPOV, V.A., KVIRIKADZE, A.G.

COUNTRY OF INFO--USSR

SOURCE--UKR. FIZ. ZH. (RUSS. ED.) 1970, 15(1), 167-9

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ANTIFERROMAGNETIC MATERIAL, ANTIFERROMAGNETIC THEORY, SPIN WAVE, SPIN WAVE THEORY, EXTERNAL MAGNETIC FIELD, CHARGE DENSITY, LIGHT ABSORPTION, LIGHT SCATTERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1449 STEP NO--UR/0185/70/015/001/0167/0169

CIRC ACCESSION NO--AP0112443

UNCLASSIFIED

2/2 025 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0112443
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT WAS STUDIED OF AN EXTERNAL MAGNETIC FIELD ON THE D. OF STATES FOR SPIN WAVES IN ANTIFERROMAGNETS. THE D. OF STATES CHANGES IN FIELDS OF THE ORDER OF THE EXCHANGE INTEGRAL. THIS CHANGE CAN BE OBSD. EXPTL. BY STUDYING THE ABSORPTION AND SCATTERING OF LIGHT OR OF SLOW NEUTRONS.
FACILITY: FIZ.-TEKH. INST., KHARKOV, USSR.

UNCLASSIFIED

USSR

BAR'YAKHTAR, V. G., BOROVIK, A. YE., POPOV, V. A., and STEFANOVSKIY, YE. P., Physicochemical Institute of the Academy of Sciences Ukrainian SSR

"The Domain Structure of an Antiferromagnet Resulting From Variations in the Character of the Magnetic Anisotropy"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 59, No 4, Oct 70, pp 1299-1306

Abstract: The article considers the case of the phase transition (with respect to temperature) of the first kind $\Phi_{\parallel} \rightleftarrows \Phi_{\perp}$. Distributions are obtained for antiferromagnet sublattice magnetic moments at the interfaces of phases $\Phi_{\parallel}$ and $\Phi_{\perp}$ (90° boundary), as well as 180° domain boundaries in antiferromagnets with weak ferromagnetism. The surface energies of the 90 and 180° domain walls are calculated, and the domain structures for a plane-parallel plate are determined and domain sizes estimated. It is shown that a thermo-

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USSR

BAR'YAKHTAR, V. G., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 59, No 4, Oct 70, pp 1299-1306

dynamically stable domain structure may occur in the phase transition due to weak ferromagnetism of the phase with magnetic anisotropy of the "easy plane" type. The surface energy of the 90° domain boundary is significantly less than that of the 180° domain boundary. However, the surface energy of the 180° interface declines significantly as the phase transition temperature is approached and becomes on the order of the 90° interface.

The authors thank A. I. AKHIYEZER, A. S. BOROVIK-ROMANOV and V. V. YEREMENKO for discussing the results.

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UDC 621.3.032.214

USSR

POPOV, V. A., GUSEVA, M. B., and DUBININA, Ye. M.

"Effective Electron Emitter Using a Hollow-Cathode Discharge"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 2, Feb 71, pp 327-329

Abstract: The article describes a special gas-discharge system using a hollow cathode as the effective electron source. A technique is suggested for transmitting high-density electron current without significant loss through regions with discretely varying pressure from 0.4 to 10^{-4} torr. The maximum output electron current density is 300 $a \cdot cm^{-2}$.

1/2 064 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--PREPARATION OF OHMIC CONTACTS IN SEMICONDUCTORS -U-

AUTHOR-(03)-POPOV, V.A., PIKHTIN, A.N., YASKOV, D.A.

COUNTRY OF INFO--USSR

SOURCE--PRIB. TEKH. EKSP. 1970, (2), 238-9

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--SEMICONDUCTOR DEVICE, SEMICONDUCTOR MATERIAL, LASER APPLICATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1801 STEP NO--UR/0120/70/000/002/0238/0239

CIRC ACCESSION NO--AP0135366

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--27NOV70

2/2 064

CIRC ACCESSION NO--AP0135366

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A LASER WAS USED TO PREP. OHMIC CONTACTS IN SEMICONDUCTORS. RESULTS ARE GIVEN FOR ALLOYING OF DIFFERENT METALS AND MIXTS. INTO A SERIES OF SEMICONDUCTOR MATERIALS.

FACILITY: LENINGRAD. ELEKTROTEKH. INST., LENINGRAD, USSR.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11SEP70

1/2 ~ 028

TITLE--THE HEAT CAPACITY OF SOLID CF SUB4 -U-

AUTHOR--BAGATSKIY, M.I., MANZHELIY, V.G., POPOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 37, NR 1, PP 65-72

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--HEAT CAPACITY, CRYSTAL STRUCTURE, MOLECULAR STRUCTURE, FLUORINATED ORGANIC COMPOUND, METHANE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--GE/0030/70/037/001/0065/0072

PROXY REEL/FRAME--1989/0635

CIRC ACCESSION NO--AP0107232 UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11SEP70

2/2 028
CIRC ACCESSION NO--AP0107232
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HEAT CAPACITY OF SOLID TETRAFLUOROMETHANE HAS BEEN MEASURED IN THE TEMPERATURE RANGE 2 TO 20DEGREESK. THE ANALYSIS OF THE RESULTS OF THIS PAPER AND LITERATURE DATA ON THE HEAT CAPACITY ALLOW TO MAKE CONCLUSIONS ABOUT THE CHARACTER OF THE HEAT MOTION OF THE MOLECULES IN CRYSTALLINE CF SUB4. AN "EXTRA" HEAT CAPACITY OF CF SUB4 NEAR THE PHASE TRANSFORMATION TEMPERATURE TAULAMBDA EQUALS 76.09DEGREESK IS DUE TO ORIENTATIONAL DISORDERING. THE TEMPERATURE DEPENDENCE OF THE "EXTRA" HEAT CAPACITY DELTAC SUBOR IS WELL DESCRIBED BY THE LOGARITHMIC FUNCTION DELTAC SUBOR SIMILAR TO LG (L MINUS TAU) TAULAMBDA).

UNCLASSIFIED

AA0046442

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent, 1-70

241183 IMPULSE TRANSMISSION contains a pivoting washer (1) and a mechanism for adjustment of the gear ratio by charging the position of the pivoting washer. In order to simplify the structure of the transmission the gear ratio adjustment mechanism is made in the form of a carrier (2) which is connected with a bush (3). The bush has a form of a double cone, and interacts with the wedges (4), which determine the position of the pivoting washer.

6.5.67. as 1154295/25-28, POPOV, V.A. (20.8.69) Bul. 13/1.4.69. Class 47h, Int. Cl. F 16h.

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19781670

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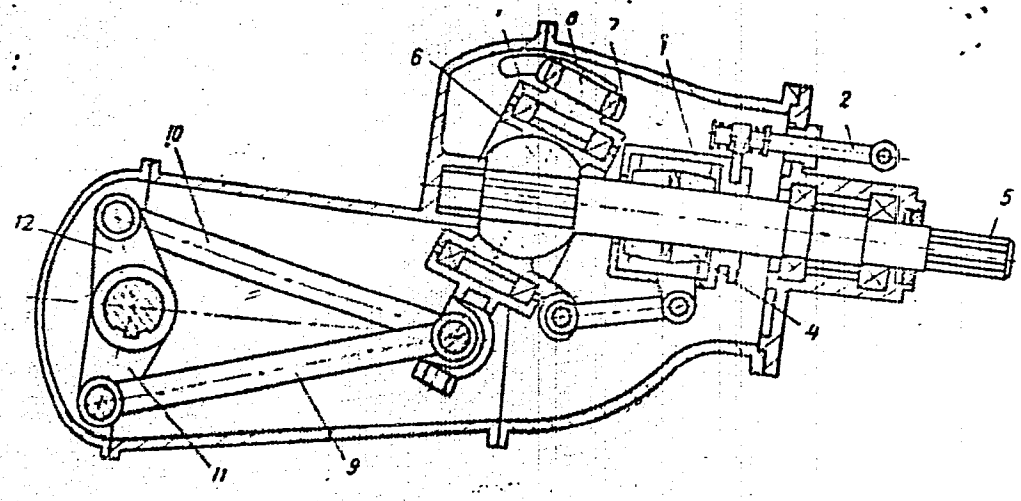

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19781671

Acc. Nr: AP0043583 Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 2, pp 494-506

LOW FREQUENCY ANTIFERROMAGNETIC RESONANCE IN COPPER CHLORIDE DIHYDRATE AND PHASE TRANSITIONS

V. G. Baryakhtar, A. A. Galkin, S. N. Kovner, V. A. Popov

Antiferromagnetic resonance in a $CuCl_2 \cdot 2H_2O$ single crystal is investigated at frequencies of 5.2, 3.0, 1.1 and 0.65 Gc/s. The dependence of resonance fields corresponding to frequencies 3 and 0.65 Gc/s on temperature is measured at temperatures between 1.52 and 4.2° K. The resonance field corresponding to the frequency 0.65 Gc/s and the larger of the resonance fields corresponding to the frequency 3 Gc/s within the experimental errors vary with temperature just as the overturning field of the sublattice magnetic moments does. The magnetic moment homogeneous oscillation frequencies in an antiferromagnet separated into domains are calculated. A phase equilibrium diagram is proposed for $CuCl_2 \cdot 2H_2O$ in a magnetic field parallel to the «easy» axis. The temperature dependence of the lability fields is calculated in the spin wave theory approximation.

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REEL/FRAME
19762055

Immunology

UDC 615.371.078

USSR

VASIL'YEVA, I. G., SEMENOV, V. F., GRACHEV, V. P., and POPOVA, V. D., Central Institute for the Advanced Training of Physicians, Institute of Poliomyelitis and Viral Encephalitides, Academy of Medicine USSR

"Potential Evaluation of Vaccines on the Basis of Autoantibody Formation"

Moscow, Laboratornoye Delo, No 6, 1972, pp 368-369

Abstract: Investigations were conducted with nine commercial vaccines to determine whether autoantibodies are a possible complication in vaccine reactions. Experimentally, smallpox was introduced into scarified skins of rabbits, while 200-300 g guinea pigs received subcutaneously 1 ml of Vi antigen, measles vaccine, live polio virus, typhoid vaccine, NIISI vaccine, Fermi's (rabies) vaccine, monovalent pertussis vaccine, or AKDS vaccine. When tested with autologous erythrocytes, the results showed that the smallpox vaccine caused the appearance of autoantibody in all 15 rabbits immunized. Measles, polio, typhoid, and NIISI elicited the appearance of antierythrocyte antibody in 21%, 33%, 50%, and 58% of the guinea pigs immunized, respectively. Only the Vi antigen vaccine did not induce the formation of autoantibodies. In the case of the polio and measles vaccines autoantibodies appeared in 2-3 weeks and persisted until the 30th postimmunization day. Autoantibodies to erythrocytes disappeared in 1.5 months in animals immunized with Fermi's or smallpox vaccines,

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USSR

VASIL'YEVA, I. G., et al., Laboratornoye Delo, No 6, 1972, pp 368-369

while persisting for over 8 weeks in NIISI immunized animals. In addition, all animals formed antiliver antibodies; furthermore, Fermi's vaccine, monovalent pertussis, and AKDS elicited antibodies against splenic tissue. Autoantibodies against the kidney were induced by Fermi's, NIISI, and AKDS vaccines, antibodies against the heart were formed by animals immunized with Fermi's vaccine and AKDS, antibodies against lung tissue were formed by animals immunized with AKDS and monovalent pertussis vaccine, and antibodies against the brain were formed by guinea pigs immunized with Fermi vaccine. The data indicate that the formation of autoantibodies following vaccination is a real phenonomenon and constitutes an important parameter in the evaluation of vaccine reaction.

2/2

USSR

UDC 669.14.018.2:620.17

TIKHOMIROV, V. V., SHAKHNAZAROV, YU. V., PANKOV, A. G., and POPOV, V. D.

"Mechanical Properties and the Breaking Strength of Steel Ni8K9M5T After Different Aging Methods"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 4, 1971, pp 6-8

Abstract: The effect of the temperature and the aging period on mechanical properties of Ni8K9M5T martensitic-aging steel melted down in a 0.5-ton vacuum-induction furnace was investigated. The breaking strength was rated by the specific work of impact bending of specimens with a fatigue crack and the factor K_c characterizing the intensity of stresses in plane stress condition. It was found that low-temperature aging at 425-450°C ensures high strength properties than high-temperature aging at 480-500°C. The factor K_c was found to represent a more responsive characteristic in rating the tendency of steel to brittle failure than the energy to fracture determined on an impact specimen with a preliminarily applied fatigue crack. Four illustrations, six biblio, refs.

1/1

UDC 539:3:534.1

USSR

PEREL'MAN, B. S., POPOV, V. F.

"Calculation of Destructive Stresses in the Compression of Thin-Walled Panels"

V sb. Kratk. tezisy dokl. k Konf. po povrezhdeniyam i ekspluat. nadezhnosti sudovykh konstruktsiy, 1972 (Brief Subjects of Papers at the Conference on Failure and Operational Reliability of Ship Designs, 1972 -- Collection of Works), Vladivostok, 1972, pp 83-87 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V315)

Translation: An algorithm is proposed for calculating a reinforced panel for the limiting state for three different forms of stability loss: local (sheathing between the ribs); general (ribs in its plane), and lateral (ribs out of its plane). Numerical results are not given. N. G. Gur'yanov.

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USSR

UDC 669.15'24'295--
--194:620.183

SAVITSKIY, Ye. M., POPOV, V. F., SHMATKO, M. N., and SAPEL'NIKOV, P. P., Moscow, Chelyabinsk

"The Effect of Cerium and Niobium on the Structure of Kh25T Steel"

Moscow, Izvestiya Akademii Nauk SSSR, No 5, 1973, pp 145-149

Abstract: The optical metallography of specimens of Kh26T steel from experimental and industrial melts makes possible the uncovering of the difference in the development of excess phases on grain boundaries of the cast metal. Microadditions of ferrocerium and ferroniobium favor a coagulation of separations. Semitransparent film separations of chromium carbides ($Cr_{23}C_6$) in common cast steel are arranged on grain boundaries in the form of continuous separations, they occupy a 5-10 times greater surface than in the experimental steel. Their quantity in the metal with ferrocerium and ferroniobiun is much lower, and they are sepa-

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USSR

SAVITSKIY, YE. M., et al., Izvestiya Akademii Nauk SSSR, No 5, 1973, pp 145-149

rated and distributed more uniformly in the matrix. Microalloying with ferrocerium and ferroniobium favored a higher coagulation of chromous carbides, if compared with ferrocerium. A substantial difference in the distribution of chromium carbides in fractures of the metal of pipes before and after thermal treatment was uncovered. Microalloying of steel with ferrocerium changes completely the structure of the investigated steel after forging: the grains were highly elongated and showed a fine-fragmented structure. The relation was established between the change of the structure and the increase of plastic characteristics of high-alloy steel of ferrite type. Three figures, one table, ten bibliographic references.

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UDC 616.915-036.2(47)

USSR

POPOV, V. F., and RYBKINA, N. M., Ministry of Health USSR

"Patterns of Measles Epidemiology in the USSR"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol 47, No 6, Jun 70, pp 68-73

Abstract: To improve mass measles vaccinations, the incidence of the disease in Russia was analyzed. The first case was reported in 1842. The incidence increased thereafter, as is shown by data for the period from 1890 to 1968. From 1924 on, the number of cases rose sharply. Fluctuations are observed from year to year, but the total number of cases increased. Practically the entire population, at least 90-98%, is infected by the disease at one time or another. Consequently, the number of cases must be equal to the number of births each year. For the last 17 years, more cases were reported in urban areas than in rural areas. Most cases were reported during the winter and spring months. The lowest incidence is reported in August/September, the maximum rate in February, regardless of the total number of cases involved. Morbidity among the urban population was higher than for the residents of rural areas. Children brought up in institutions show a greater incidence of measles than children brought up in their own home. It is proposed that the detailed data on measles incidence in the USSR be considered for use in mass vaccination in the USSR.

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USSR

UDC 621.385.032.14

POPOV, V.F.

"Investigation Of The Properties Of Nonsputtered Getters"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-technical Collection. Microwave Electronics), 1970, No 7, pp 150-153 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11A102)

Translation: The sorption characteristics of six nonsputtered getters were measured on a unit with non-oily evacuation. Their mechanical stability during vibration and their thermostability were examined. Summary.

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UDC 621.385.032.14

USSR

POPOV, V.F.

"Investigation Of The Rate Of Sorption Of Gases By Nonpulverized Porous Getters"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1970, Issue No 10, pp 118-128 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2A105)

Translation: The paper considers theoretically the sequence of the stages of the mechanism for sorption of gases by a porous getter, with the object of determining tentative semiemperical relations of the time and rate of sorption, and also a comparison of them with experimental data. It is shown that the initial stage -- physical adsorption -- in real porous getters continues from several seconds to tens of seconds, and consequently it is difficult experimentally to measure the rate of absorption of gases during adsorption. The transition to the stage of chemisorption is accompanied by a considerable reduction of the rate of sorption; the rate of sorption at this stage is the inversely proportional magnitude $(1 + \alpha t)^2$, where t is the time and α is the coefficient of "retention." Simultaneously with the process of chemisorption, the diffusion process is begun, which completely determines the gas absorption rate after the chemisorption rate is reduced to the diffusion rate. The quantity of gases being absorbed in a real getter

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POPOV, V.F., Elektron. tekhnika. Nauchno-tekhn. sb. Elektron SVCh , 1970, Issue No 10, pp 118-128

is determined by the parameters of the diffusion process. The absorption rate of gases at the diffusion stage is proportion to $1/t^{1/2}$. For a practical evaluation of the necessary size of the getter as a function of the conditions of its operation in devices, formulas are presented coupling the geometric size of the getter with the operating time of the device, the temperature, and porosity of the getter with the necessary pressure of the gas on the getter and rate of inleakage of the gas. 2 ill. 5 ref. G.B.

2/2

UNCLASSIFIED PROCESSING DATE--13NOV70

1/3 014

TITLE--SITUATION WITH TAENIARHYNCHOSIS, HOOKWORM DISEASES AND ASCARIDIASIS IN TRANSCAUCASIAN REPUBLICS AND MEASURES NECESSARY FOR ERADICATION AND

AUTHOR-(05)-POPOV, V.F., SHULMAN, YE.S., PROKOPENKO, L.I., ABRAMOVA, I.G., LOPUKHINA, N.G.

COUNTRY OF INFO--USSR

SOURCE--MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI, 1970, VOL 39, NR 2, PP 180-188

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DISEASE CONTROL, PARASITE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/1419 STEP NO--UR/0358/70/039/002/0180/0188

CIRC ACCESSION NO--AP0109481

UNCLASSIFIED

2/3 014 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0109481

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DECREEE OF THE USSR MINISTRY OF PUBLIC HEALTH NO. 230 OF MARCH 20, 1967 PROVIDES FOR A NUMBER OF MEASURES FOR INCREASING THE PACE OF ERADICATION AND REDUCTION OF INCIDENCE OF A NUMBER OF INFECTIOUS AND PARASITIC DISEASES IN THE SOVIET UNION. FROM YEAR TO YEAR THE RANGE OF EXAMINATIONS OF THE POPULATION FOR DETECTION OF HELMINTHIC DISEASES INCREASES IN THIS COUNTRY. THE AMOUNT OF WORK DONE FOR CONTROL OF HELMINTHIC DISEASES HAS INCREASED SIGNIFICANTLY IN REPUBLICS OF THE TRANSCAUCASUS WHICH, ALONGSIDE WITH INCREASING OF MATERIAL WELFARE OF THE PEOPLE, IMPROVEMENT OF THEIR SANITARY CULTURE, CONTINUOUSLY IMPROVING SANITARY CONDITIONS OF INHABITED AREAS RESULTED IN 1967 IN 2.1 FOLD REDUCTION IN THE INCIDENCE OF HELMINTHIC DISEASES IN THE POPULATION OF THE AZERBAIJAN AND THE ARMENIAN SSR, AND 2.8 FOLD REDUCTION IN THE GEORGIAN SSR AS COMPARED WITH THE LEVEL OF INCIDENCE IN 1950. EVEN THOUGH AS A RESULT OF MUCH WORK DONE IN SANITATION OF THE POPULATION FROM TAENIARHYNCHOSIS AND ASCARDIASIS THE INCIDENCE OF THESE HELMINTHIC DISEASES HAS BEEN REDUCED SEVERAL TIMES, IT IS STILL MUCH HIGHER THAN THE AVERAGE INDEX FOR THE SOVIET UNION. THE INCIDENCE OF HOOKWORM DISEASES IN THE POPULATION OF THE AZERBAIJAN SSR AND PARTICULARLY OF THE GEORGIAN SSR IN 1967 ALSO REDUCED SEVERAL TIMES AS COMPARED WITH THAT IN 1959, BUT ERADICATION OF THIS HELMINTHIC DISEASE REQUIRES STILL MUCH WORK TO BE DONE.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--13NOV70

3/3 014

CIRC ACCESSION NO--AP0109481

ABSTRACT/EXTRACT--THE MAIN CONDITIONS FOR ERADICATION AND REDUCTION OF THE INCIDENCE OF HELMINTHIC DISEASES IN THE TRANSCAUCASIAN REPUBLICS INCLUDE, FIRST OF ALL, IMPROVEMENT IN THE ORGANIZATION OF HELMINTHIC DISEASE CONTROL MEASURES WITH ENLISTING OF COOPERATION OF THE GENERAL MEDICAL NETWORK, IMPROVEMENT IN THE GUIDANCE OF THIS WORK ON THE PART OF PUBLIC HEALTH MINISTRIES AND CHIEF PHYSICIANS OF DISTRICTS, DETECTION AND SANITATION OF ALL PATIENTS WITH TAENIARHYNCHOSIS, PARTICULARLY AMONG CATTLE BREEDERS, INTRODUCTION OF LABELLING AND VITAL DIAGNOSIS OF MEASLES IN CATTLE IMPROVEMENT OF VETERINARY AND SANITARY CONTROL IN PLACES OF CATTLE SLAUGHTER, MARKED IMPROVEMENT IN THE SANITARY CONDITIONS OF VILLAGES AND CATTLE BREEDING FARMS, IMPROVEMENT OF SANITARY EDUCATION OF THE POPULATION, DETECTION AND SANITATION OF ALL MICROFOCI OF HOOKWORM DISEASES, SANITATION OF MICROFOCI OF ASCARIDIASIS PARTICULARLY IN INTENSIVE FOCI. FACILITY: GLAVNOYE SANITARNO-EPIDEMIOLOGICHESKOYE UPRAVLENIYE MINISTERSTVA ZDRAVOOKHRANENIYA SSSR. FACILITY: INSTITUT MEDITSINSKOY PARAZITOLOGII I TROPICHESKOY MEDITSINY IM. YE. I. MARTSINOVSKOGO MINISTERSTVA ZDRAVOOKHRANENIYA SSR, MOSCOW.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--04DEC70

1/2 013

TITLE--EPIDEMIOLOGICAL REGULARITIES OF MEASLES IN THE USSR -U-

AUTHOR-(02)-POPOV, V.F., RYBKINA, N.M.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 6, PP 68-73

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MEASLES, EPIDEMIOLOGY, MORBIDITY, GEOGRAPHIC LOCATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0411 STEP NO--UR/0016/70/000/006/0068/0073

CIRC ACCESSION NO--AP0126164

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--04DEC7C

2/2 013

CIRC ACCESSION NO--AP0126164

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INCIDENCE OF MEASLES IN THE COUNTRY FOR THE YEARS OF 1890 TO 1968 IS ANALYZED IN THIS WORK. THIS INCIDENCE WAS CHARACTERIZED BY PREVALENCE OR FALL IN CERTAIN YEARS. THE INCIDENCE PROVED TO CLIMB EVERY 2 TO 3 YEARS. MORBIDITY INDEX AMONG THE URBAN POPULATION WAS HIGHE THAN IN RURAL RESIDENTS. MOST OF THE CHILDREN BECOME INFECTED DURING THE WINTER SPRING MONTHS, AND ARE THROUGH WITH MEASLES WHEN REACHING THE AGE OF 8 TO 10 YEARS. THE INCIDENCE OF MEASLES IN THE ORGANIZED CHILDREN'S COLLECTIVE BODIES IS GREATER THAN AMONG CHILDREN BROUGHT UP AT HOME. WIDE APPLICATION OF LIVING MEASLES VACCINE WILL PERMIT TO CUT THE INCIDENCE OF THIS DISEASE IN THE NEAREST FUTURE. FACILITY: MINISTERSTVA ZDRAVOOKHRANENIYA SSSR.

UNCLASSIFIED

USSR UDC 632.954

GRUZDEV, G. S., and POPOV, V. G., Agricultural Academy imeni K. A. Timiryazev

"Combination of Chemical and Agrotechnical Methods in the Control of Acroption Repens D.C."

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 10, No 12, 1972, pp 37-42

Abstract: Banvel-D/active ingredient dimethylamine salt of 2-methoxy-3,6-dichlorobenzoic acid/and tordon-22k (a derivative of 4-amino-3,5,6-trichloropicolinic acid) are effective herbicides in the control of persistent perennial weeds such as gorchak polzuchiy (Acroption repens D. C.). However, their application in optimum doses for a herbicidal effect damages crops. It was established in experiments on waste land overgrown with A. repens that spraying with tordon-22k (1.0-3.0 kg/ha), banvel-D (5.0-10.0 kg/ha), or a mixture of tordon-22k +banvel-D (0.5 + 10.0 kg/ha; 1.0 + 5.0 kg/ha), when followed by plowing to a depth of 30 cm, suppressed the growth of A. repens for 9-11 mos and 24 mos on planting of corn and winter wheat, respectively. The root system of the weed perished entirely on application of the mixtures of the two herbicides. Banvel-D (5.0-10.0 kg/ha), tordon-22k (0.5-1.0 kg/ha), or a mixture of tordon-22K (0.5 kg/ha) and banvel-D (10.0 kg/ha) did not lower the yield of the green mass of corn planted 8 mos after application of the herbicides. Tordon-22k

USSR

GRUZDEV, G. S. and POPOV, V. G., Khimiya v Sel'skom Khozyaystve, Vol 10, No 12, 1972, pp 37-42

(2.0-3.0 kg/ha) lowered the yields of the green mass of corn and of the grains of winter wheat. Tordon-22k (0.5 kg/ha) or banvel-D (5.0 - 10.0 kg/ha) did not reduce the yield of winter wheat planted 1 yr after their application. The crops of corn and wheat planted 8 and 12 mos, respectively, after application of tordon-22k (0.5 kg/ha) or banvel-D (5.0-10.0 kg/ha) did not contain residues of the herbicides. On spraying of tordon-22k in amounts $\gg$0.5 kg/ha, its residual content in the crops was considerable.

UNCLASSIFIED PROCESSING DATE--20NOV70

1/2 017

TITLE--EFFECT OF HARVEST TIME AND STORAGE TEMPERATURE ON THE NUCLEIC ACID LEVEL IN TISSUES OF POTATO TUBERS -U-

AUTHOR-(02)-GUSEV, S.A., POPOV, V.G.

COUNTRY OF INFO--USSR

SOURCE--PRIKL. BIOKHIM. MIKROBIOL. 1970, 6(2), 138-41

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--FOOD STORAGE, TEMPERATURE, NUCLEIC ACID, DNA, RNA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/0120 STEP NO--UR/0411/70/006/002/0138/0141

CIRC ACCESSION NO--AP0135617

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--20NOV70

2/2 017

CIRC ACCESSION NO--AP0135617

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF HARVEST TIME AND STORAGE TEMP. ON THE CONTENT OF NUCLEIC ACIDS IN EYES OF POTATO TUBERS WAS INVESTIGATED. THE RNA AND DNA LEVELS IN EYES OF NONMATURE TUBERS WERE GREATER THAN THOSE OF MATURE ONES DURING HARVEST AND STORAGE. RNA DECREASED SLIGHTLY DURING WINTER STORAGE BUT SUDDENLY INCREASED IN MAY. DNA VARIED IRREGULARLY AND THE TREND WAS DEPENDENT ON VARIETY AND STORAGE TEMP.

UNCLASSIFIED

Acc. Nr: AP0044595 Ref. Code: UR 0497

PRIMARY SOURCE: Klinicheskaya Meditsina, 1970, Vol 48, Nr 1, pp 32-37

THE CLINICO-ELECTROCARDIOGRAPHIC PICTURE OF INTERMEDIATE FORMS OF CORONARY (ISCHEMIC) DISEASE

V. G. Popov, T. I. Belyakova

Summary

The paper presents the differential diagnosis signs of intermediate forms of coronary (ischemic) disease (primary and repeated microfocal myocardial infarction, focal dystrophy of the myocardium). The authors emphasize the diagnostic importance of these forms, along with the clinico-electrocardiographic picture, data of laboratory investigations. The recognition of intermediate forms of coronary disease is of essential significance both for the prognosis and for the proper institution of therapeutic and prophylactic measures.

02

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REEL/FRAME
19771271

USSR

UDC: 629.78.062.2

POPOV, V. I., RUTKOVSKIY, V. Yu.

"Investigation of the Dynamics of a System for Predamping a Gravitationally Stable Satellite With Regard to Limitations of Pickups and Flexural Oscillations of the Stabilizer"

Moscow, Upr. dvizhushchimisya ob"yektami. Tr. IV Vses. soveshch. po avtomat. upr. Tbilisi, 1968--sbornik (Control of Moving Objects. Works of the Fourth All-Union Conference on Automatic Control. Tbilisi, 1968--collection of papers), 1972, pp 72-87 (from RZh-Raketostroyeniye, No 10, Oct 72, abstract No 10.41.73)

Translation: The authors study the dynamics of a gas-reactive predamping system on the phase plane with regard to limitations of pickups. The problem of utilizing limitations of pickups in forming nonlinear control laws is considered. It is shown that a considerable savings of reaction mass may be effected by proper selection of the coefficients in the law of regulation and the delay time in the system. Self-oscillating modes in the predamping system are studied. A stabilizer is added to the satellite to make it gravitationally stable. The stabilizer must be uncovered after separation of the

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USSR

POPOV, V. I., RUTKOVSKIY, V. Yu., Upr. dvizhushchimisya ob"yektami. Tr. IV Vses. soveshch. po avtomat. upr. Tbilisi, 1968--sbornik, 1972, pp 72-87

satellite from the main lifting stage. Equations are derived for plane flexural oscillations of the satellite-stabilizer, and the resultant expressions are studied. Flexural oscillations of a satellite-stabilizer system with regard to the predamping system are investigated on a digital computer. It is shown that if the predamping system has a relay characteristic with a zone of insensitivity, flexural oscillations of the satellite-stabilizer system may be damped within an acceptable time interval. Four illustrations, bibliography of ten titles. Résumé.

2/2

USSR UDC 621.396.6-181.5

BELOUS, M. V., KOSENKOV, A. S., PAVLENKO, G. I., POPOV, V. I., CHUGAYEV, V. N., SHCHERBIK, V. K.

"On the Properties of Conductive Elements of Thin-Film Microcircuits Made by Vaporization of Aluminum, Nickel, Copper and Copper-Based Alloy"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Technology. Scientific and Technical Collection. Microelectronics), 1971, vyp. 1(27), pp 101-109 (from RZh-Radiotekhnika, No 8, Aug 71, Abstract No 8V277)

Translation: The authors studied the electrical, structural, adhesion and other properties of films made by vacuum deposition of aluminum, nickel, copper and an alloy of 94.5% Cu, 5% Ni and 0.5% Mn. It is shown that alloying copper with elements having a vapor pressure which differs markedly from that of the base of the alloy enables an appreciable improvement of the required properties of the films without any pronounced adverse effect on their conductivity. Resumé.

USSR UDC 632.93+631.531

POLYAKOV, I. M., POPOV, V. I., KUNACHEVA, YE. M.

"Effectiveness of Vitavax Against Loose Wheat Smut"

Moscow, Khimiya v Sel'skom Khozyaystve, No 1, 1972, pp 20-22

Abstract: A study was made of vitavax (2,3-dihydro-5-carboxyanilid-6-methyl-1, 4-oxathiine) prepared in various forms as a fungicide in the control of loose wheat smut. Test results are presented for the Krasnodar Kray, Leningrad, Irkutsk, Novosibirsk and Moscow Oblasts for a 75% wetting powder produced by the Uniroyal Company of the USA and a mixture of the MTs-25-vitavax made by the Murphy Company of England containing 50% vitavax and 30% bis-(8-guanidino-octyl)ammonium sulfate.

The 75% wetting powder was effective in the control of loose wheat smut in all the test areas. On slurry disinfection of the seed with vitavax in doses of 4-8 grams/kg (without drying), damage to the wheat from this disease was completely prevented in natural and artificial tests of seed infested with smut. The compound did not lower the germination or the thickness of the stand, and on the whole it had a positive effect on the harvest. An insignificant reduction in yield was observed only in one case. The effectiveness of the combination MTs-25-vitavax compound against smut was somewhat lower. Vitavax has been recommended for broad production testing under various climatic conditions.
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JPRS 55687
12 Apr 1972

UDC 612.014.482.4

RADIOBIOLOGICAL EFFECTS AFTER 3-YEAR GAMMA IRRADIATION OF DOGS

[Article by Yu. G. Grigor'yev, B. A. Markelov, V. I. Popov, A. A. Akhunov, A. V. Ilyukhin, T. P. Rastorgueva, A. V. Sedov, and V. A. Korsakov; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 6, No 1, pp 1-7, 1972, submitted for publication 25 March 1971]

Abstract: This paper summarizes the results of a three-year radiobiological experiment on dogs. In several experimental series chronic irradiation with varied dose rates (21 to 150 rad per year) and chronic irradiation combined with acute exposure (total doses of 190 rad per year) were applied. Clinical hematological, physiological and cytological examinations demonstrated that the animals maintained a satisfactory clinical condition and exhibited no serious organic radiation damage. However, a decrease in their compensatory potentialities and a change in their reactivity were noted.

POPOV, V. I.

A lack of adequate information in the literature on the biological effects induced by constant exposure to ionizing radiation in the doses possible during prolonged space flights served as a basis for conducting a special experiment on a large number of dogs. The scientific program for the experiment, the irradiation conditions and the results obtained one and two years after beginning this experiment have been published earlier (Yu. G. Grigor'yev, et al., 1968, 1970).

This paper gives materials obtained after three years of irradiation of the experimental animals. Data on the number of animals, doses and irradiation conditions are given in Table 1.

After three years of the experiment the condition of the animals, evaluated from the results of systematic examinations (inspections, temperature measurement, measurements of body weight, pulse and respiration rates), remains satisfactory. The incidence of disease in the irradiated groups (conjunctivitis, dyspepsia, etc.) was low and did not exceed the corresponding incidence in the group of control animals.

POPOV, V.I.

Radiation medicine

So: JPRS 53448
04 June 71

UDC 612.014.482.001.57:629.78

SIMULATION OF EXPOSURE TO RADIATION APPLICABLE TO PROLONGED SPACE FLIGHTS
AN (Radiation Aspects)

[Article by V. I. Popov, A. V. Shafirkin and V. V. Yurenev, Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 5, No 2, 1971, pp 46-50, submitted for publication 9 March 1970]

Radiation exposure is characterized by the following parameters: magnitude of the absorbed dose, temporal dose distribution, dose depth distribution, and spectrum of linear energy losses (LEL) in the irradiated object. In a prolonged experiment with the participation of a large number of laboratory animals the direct modeling of radiation exposure from galactic cosmic radiation (GCR) and solar flare radiation is impossible when using charged-particle accelerators. However, the dose loads and temporal dose distribution can be simulated in a broad range by using γ-radiation sources. It is most convenient to use the γ-radiation of a Co^{60} source having a LEL spectrum for which the general biological effect (GBE) is close to 1. In addition, the dose depth distribution in the animal body from Co^{60} γ-radiation is close to the GCR dose depth distribution and the depth distribution from radiations of hard solar flares (such as the flare of 23 February 1956).

The conditions for animal irradiation in a chronic experiment (Yu. G. Grigor'yev, et al.) were determined taking into account the following requirements. The simultaneous chronic irradiation of a large group of animals must combine without interruption for several years under conditions ensuring their normal vital functions. Servicing of the animals should be simple and convenient, and the time when irradiation is suspended is reduced to a minimum. Control and acute irradiation of the animals must conform to the current standards of radiation safety for servicing personnel and the surrounding population. Homogeneity in the dose field in the apparatus for chronic and acute irradiation of the animals must not be greater than ±10 percent.

Satisfaction of these requirements required creation of a special cage and the "Tyumen'" apparatus for chronic and "Kobal't" apparatus for acute irradiations of the animals. The principal components of the "Tyumen'" apparatus are a lead container-collimator containing a Co^{60} γ-radiation source, a rigid beam 4.5 m high, and a mechanism for changing the suspension height

USSR UDC 531.1

POPOV, V. I.

"The Stability of the Stationary Motions of a 4-Gyroscope Vertical Installed on a Satellite in a Newtonian Central Force Field"

Mekhanika Tverdogo Tela, No 6, 1971, pp 25-28.

ABSTRACT: The stability of a single-rotor gyroscope installed on a satellite has been studied in earlier articles. In this work, the method of measurement of potential energy is used to study the stability of stationary motions of a 4-rotor gyrosystem, installed on a satellite in a newtonian central force field. The problem is solved in a limited statement. The point of suspension of the gyrosystem does not correspond to the center of mass of the satellite. The corresponding angular velocities of the rotors are considered constant, as in the earlier works.

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USSR UDC 539.67

ZUBEKHIN, V. P., NOVOKRESHCHENOV, P. D., POPOV, V. I., and MAKSIMOV, V. P.

"On the Problem of Metal Internal Friction Mechanism in the Process of Plastic Deformation"

Sb. "Vnutrenneye treniye v metallicheskikh materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka," 1970, pp 73-76

Abstract: Results are presented of a study of the nature of internal friction in nickel and NTsm-2.5 alloy, measured in the process of their plastic deformation at various temperatures.

It is shown that a certain relationship is observed between changes in Q^{-1} and creeping stages.

Problems related to the onset and propagation of cracks are discussed on the basis of general dislocations. 3 figures, 8 references.

1/1

USSR UDC: 621.3.049.75

KOSENKOV, A. S., PAVLENKO, G. I., POPOV, V. I.

"A Method of Protecting the Film Elements of Microcircuits"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 10, Apr 71, Author's Certificate No 298087, Division H, filed 28 Mar 69, published 11 Mar 71, p 197

Translation: This Author's Certificate introduces a method of protecting the film elements of microcircuits such as contact areas and lines which also contain resistive elements based on pure metals and alloys. The method of protection is based on use of a material with high vapor tension such as cadmium or zinc by sublimation in vacuum with complete reflection of the material from the dielectric material of the substrate. As a distinguishing feature of the patent, the method is designed to ensure that there will be no changes in the parameters of film resistors, while the technological cycle is simplified and the cost of the finished product is reduced. Before coating with the protective material, the substrate with vapor-deposited film elements is heated in a vacuum to 393-453°K, and then the protective material is condensed on the elements to be protected while the rate of sublimation is regulated by controlling the temperature of the vaporizer while it is simultaneously completely reflected from the resistive film elements of the microcircuits.

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USSR

UDC 669.15.018.44:620.186

SPASSKIY, V. V., POPOV, V. I., GLINKIN, A. S., KRAVTSOVA, T. K., BOBYLEV, F. K., MESHCHERYAKOV, A. S., TROSHKIN, G. N.

"Effect of Phase Composition on the Properties of Austenitic Chromium-Nickel Steels in Castings and Welded Parts"

Liteyn. proiz-vo (Casting Production), 1970, No 11, pp 29-30 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4I649)

Translation: A study is made of EI572 heat-resistant steel containing (in %) C 0.28-0.33, Mn 1.08-1.27, Si 0.60-0.80, Cr 18.20-20, Ni 8.1-9.7, W 1.48-1.50, Mo 1.20-1.35, Ti 0.22-0.78, Nb 0.26-0.50. The castings were austenitized at 1,160°, and they were cooled in water before aging at 650-820° for 15 hours. The δ-ferrite content in the samples was determined after austenitization and aging. Increasing the Cr, Ni, and Ti content increases the δ-ferrite content. With an increase in the content of C > 0.30%, the amount of $M_{23}C_6$ carbides increased along the grain boundaries. The cooling rate of the casting has a noticeable effect on the amount of δ-ferrite in the steel: in the case of accelerated cooling of the casting in water (4°/second) the amount of δ-ferrite was about twice that obtained with ordinary cooling in the air (0.15°/second). Castings made of EI572 steel for welding must contain 3-5%

USSR

SPASSKIY, V. V., et al., Liteyn. proiz-vo, 1970, No 11, pp 29-30

δ-ferrite. This is somewhat higher than for the same steel during hot working. The required amount of δ-ferrite is insured by a 0.3-0.45% Ti content in steel.

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USSR

UDC 619:578.085.23-576.858.27

RUDOBEL'SKIY, E. V., SERGEYEV, V. A., and POPOV, V. I., All-Union Scientific Research Institute of Veterinary Virology and Microbiology

"Accumulation of Hog Cholera Virus in Cell Cultures"

Moscow, Veterinariya, No 6, Jun 71, pp 38-40

Abstract: The production of large amounts of cell cultures and subcultures of testicular tissue from lambs and the accumulation of attenuated hog cholera virus strains in these cultures is described. Tissue from the testicles of 1-3 month old lambs was taken, ground and treated with trypsin. The cell suspensions obtained were decanted into a vessel containing calf serum and kept there at a temperature of 4°C for trypsin treatment. The cell suspensions were precipitated by centrifugation. The LK (lapinized strain K) and AK (attenuated strain K) of hog cholera virus were used, as well as forms adapted to cell culture (in 26 and 47 passages, respectively). Some 10 ml of the virus medium was introduced into the cell culture, the mixture was kept for 2 hours at 37°C, then treated with 190 ml of 0.5% hydrolyzate of lactalbumin in Hanks salt solution, with 4% lamb serum (pH 7.6). Virus accumulations were determined after 3, 7, 9, and 11 days on piglets which had not been immunized

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USSR

RUDOBEL'SKIY, E. V., et al, Veterinariya, No 6, Jun 71, pp 38-40

against hog cholera. It was found that optimum conditions for cultivation were division by a factor of 8-12 of cells from testicular lamb tissues. Such a culture was best for accumulation of attenuated variants of hog cholera virus. The vaccination variant LK and the attenuated variant AK accumulated in a titer of 10^{-5} per ml of medium after 3 days of culture. Further reproduction of the virus is limited by the accumulation of interfering substances in the culture.

2/2

UDC 547.539.131

USSR

KONDRATENKO, N. V., SYROVA, G. P., POPOV, V. I., SHEYNKER, Yu. N., and YAGUPOL'SKIY, L. M., Institute of Organic Chemistry, Academy of Sciences, Ukrainian SSR

"Aryltrihalosilanes and Germanes. σ Constants of Trihalosilyl and -Germyl Groups

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 2056-2060

Abstract: The synthesis of fluorobenzene derivatives with $SiHlg_3$ and $GeHlg_3$ substituents where Hlg=F, Cl and Br is described and the σ constants of these groups determined. It was found that the induction effect increases in the series of substituents $CHlg_3$<$SiHlg_3$<$GeHlg_3$ with an increase in the electron donor capacity of the central atom to the halide atoms. The $SiHlg_3$ and $GeHlg_3$ hardly differ with respect to the conjugation effect, but they both excel the acceptor effect of the corresponding $CHlg_3$ groups. The regularities in changes in the σ_c constant value are attributed to the participation of silicon and germanium atoms in d_π-P_π conjugation. The yields, physical constants and analytical results of the obtained compounds are presented in a table.

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USSR

POPOV, V. I.

"Stability of a Bigyroscopic Frame Installed on a Satellite in the Field of Gravity of Two Stationary Centers"

Tr. Tambovsk. in-ta khim. mashinostr. (Works of Tambov Institute of Chemical Machine-Building), 1970, vyp. 4, pp 224-229 (from RZh-Mekhanika, No 11, Nov 70, Abstract No 11A120)

Translation: In this article the Routh theorem is used to study the stability of stationary movements of a bigyroscopic frame installed on an Earth satellite the center of mass of which moves in a circular orbit in the plane of the Earth's equator. The Earth's potential is approximated by the potential of two stationary centers.

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POPOV, V. I., Moscow

"On the Stability of Steady-State Motions of a Gyroscope Installed on a Satellite, With Regard to the Elasticity of the Rotor Bearings"

Moscow, Mekhanika Tverdogo Tela, No 6, Nov/Dec 70, pp 30-36

Abstract: An extremum theorem is proved for a holonomic mechanical system with n degrees of freedom, with n-k cyclic coordinates. The Routh method is used to derive sufficient conditions for the stability of steady-state motions of a gyroscope installed on a satellite in a Newtonian central force field with regard to the elasticity of the rotor bearings. It is assumed that the point of suspension of the gyroscope coincides with the center of mass of the satellite, which moves in a circular orbit in the same plane as the attracting center. The satellite is in equilibrium with respect to the orbital coordinate system, and the effect of the gyroscope on the satellite is disregarded. Special cases of the resultant conditions of stability are considered for absolutely rigid rotor bearings, and compared with the corresponding data in the literature. The author thanks V. V. Rumyantsev for formulating the problem and for constructive criticism, and A. I. Gurin for discussing the work.
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USSR

UDC 539.216.2:538.116

GOROKHOV, Ye. A., KARABANOVA, V. P., and POPOV, V. I., Irkutsk Pedagogical Institute

"Effect of Perpendicular Anisotropy on the Structure of Domain Boundaries in Thin Ferromagnetic Films"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 30, No 6, Dec 70, pp 1287-1290

Abstract: Titanium alloys (Ti-3Al-7Mo-11Cr and Ti-3Al-13V-11Cr) were investigated by electron micrcscopy after being heated to 1100° C and cooled in water or air. Chemical composition of the two alloys was, respectively (in %): 3.23 Al, 10.4 Cr, 7.2 Mo, 0.16 Fe, 0.13 Sr, 0.08 O_2, 0.008 H_2, 0.04 N_2 and 0.040 C; 2.85 Al, 10.64 Cr, 13.15 V, 0.34Fe, 0.10 Si, 0.09 O_2, 0.003 H_2, 0.01 N_2, and 0.021 C. The samples were annealed in the form of bars with a cross section of 15 x 15 mm and foil with a thickness of 0.25 mm. After soaking at 1100° C for 1 hour the samples were air cooled and the gas-saturated surface layer removed. The removed foil was annealed in quartz ampules (10^{-3} mm Hg) containing titanium chips. Gas analysis of the foils after heat treating showed (on the average) 0.12% oxygen, 0.04%

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carbon, 0.02% nitrogen, and 0.012% hydrogen. From this experiment it was found that in beta-titanium alloys, after annealing at 1100° C, stacking faults are formed in the process of cooling with segregation of a phase with an FCC lattice and lattice period of a = 4.25 Å. It is most probable that this phase is a titanium compound with interstitial elements: oxygen, carbon, and nitrogen.

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USSR UDC 541.6:536.485

POPOV, V. I., and VOSKRESENSKIY, V. A., Chair of Plastics, Kazan' Construction Engineering Institute

"The Frost Resistance of Polymers"

Moscow, Uspekhi Khimii, Vol 39, No 9, Sep 70, pp 1,707-1,718

Abstract: The article is a survey of the work of Soviet and foreign authors on the frost resistance of polymers. Technical frost resistance is defined as "the ability of polymeric materials to retain operating properties at low temperatures for a certain time interval," theoretical frost resistance as "the lower temperature limit for the start of segmental mobility of macromolecular chains." There is a discussion of existing qualitative methods for determining the frost resistance of various types of polymeric materials, as well as quantitative methods suggested by Soviet authors. Special attention is given to the method suggested by M. N. SHTEDING and V. A. KARGIN, which uses thermomechanical characteristics of the temperature dependence of deformation, obtained under axial tension on a deformometer. The authors consider this method "a significant step forward in frost resistance determination, but one requiring the making of a special and rather complex instrument -- the deformometer." The authors have used the KARGIN-SHTEDING principle to determine

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the frost resistance of polymeric films, but instead of the deformometer they used an instrument specially adapted for these purposes which is ordinarily employed in technology for determining the frost resistance of rubbers. The authors assert, "The use of the KARGIN-SHTEDING method with allowance for the procedural and equipment modifications suggested by us permits not only a more precise determination of the absolute frost-resistance values for polymeric films, but also the quantitative tracing of the effect of various external factors (quantity and type of plasticizers, processing conditions, aging processes etc.) on polymers."

The article concludes with data on research into the relationship between frost resistance and the previous history of polymer production and processing, the character and duration of aging, the action of plasticizers, fillers etc.

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UDC 621.314.58 (088.8)

USSR

ZINOV'YEV, G.S., POPOV, V.I. [Novosib. elektrotekhn. in-t -- Novosibirsk Electrical Engineering Institute]

"Method Of Frequency Conversion"

USSR Author's Certificate No 250283, filed 15 June 68, published 23 Jan 70 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B460P)

Translation: The invention pertains to a frequency converter in which from 3-phase voltage an intermediate single-phase high-frequency voltage is formed, which is subsequently converted with the aid of a phase splitter into 3-phase voltage of controlled frequency. With the object of eliminating equalizing currents, which increases the efficiency and the power factor of the converter, and also for simplification of the control system (because of replacing 6 thyristors by semiconductor diodes), it is proposed to form single-phase high-frequency voltage of a square form with a nonsymmetrical duration of the half periods. 2 ill. I.R.

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