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UDC 533.9.07

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KALMYKOV, A. A., TERESHIN, V. I., CHEBOTAREV, V. V., KHIZHNYAK, N. A. and  
LYSENKO, O. YE.

"Calculation of Plasmoid Motion in an Axially Symmetric, Spatially Periodic,  
Alternating Magnetic Field"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol. 40, No. 3, Mar 70, pp 466-474

Abstract: The motion of a plasmoid in a magnetic field produced by a system of coils with mutually opposing currents is considered. The analysis is conducted within the framework of the integral model of a small bunch, considering the effects of dissipation and the gas kinetic pressure. The paper is an extension of experimental work in which stabilization and focusing of a plasma moving in a spatially periodic, alternating, axially symmetric magnetic field was first observed. The equations of motion were integrated on a computer for different parameters of the plasmoid. The following conclusions were drawn from the computations: 1. The initial velocity of the plasmoid is the basic parameter affecting the passage of plasmoids through the system. 2. For large initial velocities there exists an interval of values of the ratio  $N/H_0^2$  under which passage of the plasmoid through the system is observed. As the initial velocity increases,

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KALMYKOV, A. A., et al, Zhurnal tekhnicheskoy fiziki, Vol. 40, No. 3, Mar 70, pp 466-474

the  $N/H_0^2$  interval broadens. 3. Upon reflection of the plasmoids the plasma is captured in the magnetic cell with subsequent emission through the magnetic slit. 4. When bunches with good conductivity pass through the system, currents are induced in them which fully compensate the applied magnetic field so that there is no field inside the plasmoid. 5. When plasmoids with poor conductivity pass through the system, a shift in phase occurs between the magnetic field and the induced current. In this case the magnetic field penetrates the plasmoid. 6. Plasmoids with poor conductivity undergo a strong retardation in the system which is proportional to the phase shift between the magnetic field and the induced current. Preliminary analysis shows that these results are in good agreement with experimental data of the authors but a more complete comparison will require more detailed experiments. This work is currently being conducted and the results will be published. The interest of B. G. Safronov in this work is acknowledged.

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1/3 039 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--CALCULATION OF PLASMOID MOTION IN AN AXIALLY SYMMETRIC, SPATIALLY  
PERIODIC, ALTERNATING MAGNETIC FIELD -U-  
AUTHOR--(05)-KALMYKOV, A.A., TERESHIN, V.I., CHEBOTAREV, V.V., KHIZHNYAK,  
N.A., LYSENKO, O.YE.  
COUNTRY OF INFO--USSR K  
SOURCE--LENINGRAD, ZHURNAL TEKHICHESKOY FIZIKI, VOL. 40, NO. 3, MAR 70, PP  
466-474  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--PLASMOID, PLASMA FLOW, MOTION EQUATION, COMPUTER CALCULATION,  
VELOCITY DISTRIBUTION, MAGNETIC FIELD EFFECT, PLASMA CONDUCTIVITY,  
MAGNETIC PERMEABILITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3004/1351 STEP NO--UR/0057/70/040/003/0466/0474  
CIRC ACCESSION NO--AP0131782  
UNCLASSIFIED

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PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131782

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MOTION OF A PLASMOID IN A MAGNETIC FIELD PRODUCED BY A SYSTEM OF COILS WITH MUTUALLY OPPOSING CURRENTS IS CONSIDERED. THE ANALYSIS IS CONDUCTED WITHIN THE FRAMEWORK OF THE INTEGRAL MODEL OF A SMALL BUNCH, CONSIDERING THE EFFECTS OF DISSIPATION AND THE GAS KINETIC PRESSURE. THE PAPER IS AN EXTENSION OF EXPERIMENTAL WORK IN WHICH STABILIZATION AND FOCUSING OF A PLASMA MOVING IN A SPATIALLY PERIODIC, ALTERNATING, AXIALLY SYMMETRIC MAGNETIC FIELD WAS FIRST OBSERVED. THE EQUATIONS OF MOTION WERE INTEGRATED ON A COMPUTER FOR DIFFERENT PARAMETERS OF THE PLASMOID. THE FOLLOWING CONCLUSIONS WERE DRAWN FROM THE COMPUTATIONS: 1. THE INITIAL VELOCITY OF THE PLASMOID IS THE BASIC PARAMETER EFFECTING THE PASSAGE OF PLASMOIDS THROUGH THE SYSTEM. 2. FOR LARGE INITIAL VELOCITIES THERE EXISTS AN INTERVAL OF VALUES OF THE RATIO  $N-H \text{ PRIME}^2 \text{ SUBO}$  UNDER WHICH PASSAGE OF THE PLASMOID THROUGH THE SYSTEM IS OBSERVED. AS THE INITIAL VELOCITY INCREASES, THE  $N-H \text{ PRIME}^2 \text{ SUBO}$  INTERVAL BROADENS. 3. UPON REFLECTION OF THE PLASMOIDS THE PLASMA IS CAPTURED IN THE MAGNETIC CELL WITH SUBSEQUENT EMISSION THROUGH THE MAGNETIC SLIT. 4. WHEN BUNCHES WITH GOOD CONDUCTIVITY PASS THROUGH THE SYSTEM, CURRENTS ARE INDUCED IN THEM WHICH FULLY COMPENSATE THE APPLIED MAGNETIC FIELD SO THAT THERE IS NO FIELD INSIDE THE PLASMOID. 5. WHEN PLASMOIDS WITH POOR CONDUCTIVITY PASS THROUGH THE SYSTEM, A SHIFT IN PHASE OCCURS BETWEEN THE MAGNETIC FIELD AND THE INDUCED CURRENT. IN THIS CASE THE MAGNETIC FIELD PENETRATES THE PLASMOID. 6.

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PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131782

ABSTRACT/EXTRACT--PASMOTOS WITH POOR CONDUCTIVITY UNDERGO A STRONG RETARDATION IN THE SYSTEM WHICH IS PROPORTIONAL TO THE PHASE SHIFT BETWEEN THE MAGNETIC FIELD AND THE INDUCED CURRENT. PRELIMINARY ANALYSIS SHOWS THAT THESE RESULTS ARE IN GOOD AGREEMENT WITH EXPERIMENTAL DATA OF THE AUTHORS BUT A MORE COMPLETE COMPARISON WILL REQUIRE MORE DETAILED EXPERIMENTS. THIS WORK IS CURRENTLY BEING CONDUCTED AND THE RESULTS WILL BE PUBLISHED.

UNCLASSIFIED

USSR

UDC: 621.317.373.023

KALMYKOV, A. I.

"Comparative Analysis of Methods of Measuring Phase Difference on Superhigh Frequencies"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmreniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 90-94 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A335)

Translation: The author classifies methods of measuring phase difference, the type of readout device being taken as the criterion for classification rather than the principle of conversion. One group includes methods where phase displacement is measured by SHF phase shifters (interference methods, methods with modulation in two channels and methods with modulation in a single channel). A second group includes methods which use frequency mixers and superheterodyne methods. Phase shifters on a converted frequency are used to measure phase displacement in these methods. The fundamental properties of the methods are analyzed. The advantages of the new classification are pointed out. Bibliography of nineteen titles. E. I.

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UDC 536.2:669.24'25

RAD'KOV, A. I., ~~KALMYKOV, A. N.~~, and PRET'YAKOVA, S. M., Central Scientific Research Institute of Ferrous Metallurgy

"Thermal Conductivity of the 29NK Alloy at 80-293°K"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 10, 1970, pp 38-44

Abstract: Alloys corresponding to 29NK in chemical composition or differing from it in lower contents of nickel and cobalt were used to study the thermal conductivity and the effect of martensite conversion on thermal conductivity, and to determine compositions in which the  $\gamma \rightarrow \alpha$  conversion does not occur down to liquid nitrogen temperatures. The thermal conductivity of the austenitic component of 29NK alloy was found to be 70-80% lower than that of the martensitic component. The thermal conductivity of alloys in which the  $\gamma \rightarrow \alpha$  conversion occurs depends on the quantity of  $\alpha$  phase and is intermediate between the  $\gamma$  and  $\alpha$  phases. The conversion is observed not only in alloys in which the composition differs from that of 29NK in lower content of nickel and cobalt, but also in alloys with chemical compositions corresponding to 29NK. As the content of nickel is

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RAD'KOV, A. I.; et al, Metallovedeniye i Termicheskaya Obrabotka Metallov,  
No 10, 1970, pp 38-44

increased, the temperature of martensitic conversion drops, while the  
quantity of  $\alpha$  phase separated upon cooling is simultaneously decreased.

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CSO: 1840-W



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UDC 539.374

KALMYKOV, G. V.

"Network Models of Extrusion"

Tr. Mosk. Aviats. In-ta (Works of the Moscow Aviation Institute), No 229, 1971, pp 137-140 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2V426 by V. B. Geronimus)

Translation: Simulation of the process of shaping the surface of parts is based upon a particularity of the anisotropy of rolled sheet products of some metals and alloys, which consists in the similarity of their structure to that of fibrous material. The sheet is regarded approximately as a regular orthogonal network. It is assumed approximately (particularly for plastic materials such as stainless steel of the austenite class, and aluminum alloys) that in the stamping process, such a network is transformed on the surface of the part in the form of a Chebyshev network, of which the opposite sides of each curvilinear quadrangle formed by it are of equal length. It is supposed that the indicated assumption is valid from the geometrical point of view for elementary regular surfaces. In other cases it becomes necessary to resort to some assumptions based upon the experimental data. Considered as an example is the process of the extrusion of a cylindrical cup from a sheet. In this case, transforma-  
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KALMYKOV, G. V., Tr. Mosk. Aviats. In-ta, No 229, 1971, pp 137-140

tion of the lines of the orthogonal network of the sheet surface into a Chebyshev network on the cylindrical surface of the piece is impossible, since in this case considerable influence upon the position of the network lines is exerted by the bottom surface of the piece.

As a result of laboratory experimentation, it was established that the lines of an orthogonal plane network are transformed onto a cylindrical surface in the form of curves reminiscent of parabolas, and which narrow toward the axis of symmetry as the distance of the vortex of the curve to the base surface of the piece increases, while the points of the orthogonal network which are transformed onto a cylindrical surface move within the axial planes of the piece. On the basis of this are derived the equations of the lines into which the lines of the orthogonal network that touch the periphery of the base of the piece are transformed. It was assumed that during transformation, the segment lengths of the network lines do not change. The equations were derived in an orthogonal system of coordinates on an evolute of the cylindrical surface. The relationships used for establishing a point correspondance between the cylindrical surface of the piece and the orthogonal network of the sheet plane are presented. On the basis of the obtained formulas, the shape and dimensions of the sheet layout for a cylindrical cup are determined.

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UDC 621.4/.6:533.6

KALMYKOV, I. I., and MOSIN, I. I.

"Effect of Design Execution of Nozzle on the Performance of the Ejector Stage With a Conical Mixing Chamber"

Tr. Kazan. aviats. in-ta (Transactions of the Kazan' Aviation Institute), Vypusk (Issue) 114, 1970, pp 48-57 (from RZh-Mekhanika, No 12, Dec 70, Abstract No 12B464, by I. M. Baskin)

Translation: Results of an experimental study of the effect that the design execution of a working nozzle has on the performance of the ejector stage are presented. The experimental stand consisted of a two-stage ejector; supersonic conical nozzles with different design execution of the intake and outlet sections and with different-sized cylindrical sections were used as the units studied. The shape of the design elements was shown to markedly affect the ejector performance. For example, the best results correspond to use of a jet with a conical intake section and a smooth intake. It is noted that the optimal nozzle operating regime in the ejector system is the underexpansion regime.

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Automatic Control Instruments & Systems

USSR

KOLGSOV, S.P.; KALMYKOV, I.V.; NEFEDOVA, V.I.

"Elements of Automation" (book)

Moscow, Mashinostroyeniye Publishing House, 1970, 392 pp

Annotation: The book contains basic information on the structure, theory, and design of the elements (means of automation) comprising automatic control systems -- mechanical, electromechanical, ferromagnetic, electronic, semiconductor, etc.

Physically different elements of automation are considered from a point of view which reveals the common character of the structure of circuits and methods of design. The third edition is distinguished from the preceding one by the large variety of technical means of automation considered and the design of such elements as pneumatic and jet, thyristor, electronic-optical equipment, etc.

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KOLOSOV, S.P., et al., "Elements of Automation" (book), Moscow, Mashinostro-  
yeniye Publishing House, 1970, 392 pp


The textbook is designed for students of higher technical schools  
specializing in automation, but it can also be of interest to engineering  
and technical personnel concerned with problems of the design of means of  
automation.

There are 213 illustrations and 13 bibliographic references.

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USSR

 UDC 681.335.813

SAKHAROV, O. N., MASLOV, A. A., KALMYKOV, I. V.

"A Device for Generating Functions of Two Variables"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovar-nyye Znaki, No 12, 1970, Author's Certificate No 267 196, filed 3 Jan 69, p 121

Abstract: This Author's Certificate introduces a device for generating functions of two variables. The unit contains linear elements, a summing amplifier, and diode functional converters with reference voltages which vary according to predetermined laws. As a distinguishing feature of the patent, precision is improved and the device is simplified by connecting a source of voltage proportional to the first variable to the main inputs of those functional converters in which the source of voltage proportional to the second variable is connected to the reference voltage inputs through linear elements. A source of voltage proportional to the second variable is also connected to the main inputs of the other functional converters, whose reference voltage inputs are connected through linear elements to the signal source which is proportional to the first variable. The outputs of all functional converters are connected to the input of the summing amplifier. 1/1

USSR

*K* UDC: 621.313.322-82.001.3

STANISLAVSKIY, L. YA. (Candidate of Technical Science), KALMYKOV, I. Z. (Engineer), MINATSEVICH, E. N. (Engineer), and SEMELSKIY, N. A. (Engineer)

"A 40 Megawatt Vertical Reversible Hydroelectric Motor-Generator Set with Direct Line Starting"

Moscow, Elektrotehnika, No 3, 1970, pp 9-13

Abstract: A reversible hydroelectric generating system has been developed for the Kiev Hydrostorage Power Station, and is claimed to be unique for its type. Three units are to be installed at the Kiev station, each rated at 40 Mw in the motor mode and 33.4 Mw in the generator mode. Rotational speed is 166.7 rpm; rotor axes are vertical. The design is intended for peak load handling, hence had to be more versatile than usual hydropower generating systems; in addition to being reversible, the equipment must withstand three startups and shutdowns per day, which creates extra problems in heating of the starter windings and in bearing friction in the support thrust bearing. The bulk of the discussion concerns the solutions obtained to these problems. Design calculations are given for optimum spacing and size of the starter winding so as to insure even heating of all segments; as a result the system may be thrown on the line directly without danger of winding burnout. Because of the reversibility feature, the thrust

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STANISLAVSKIY, L. YA, et al, Elektrotehnika, No 3, 1970, pp 9-13

bearing had to be specially designed for maximum entrainment of oil in its segments. To avoid the possibility of dry starts due to heat deformation of the bearing surfaces, high-pressure oil is forced into the bearing gaps during the start and stop periods. Two structural drawings of the system are included.

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USSR

UDC: 537.591.15

KALMYKOV, N. N., FOMIN, Yu. A., KHRISTIANSEN, G. B., Scientific Research Institute of Nuclear Physics, Moscow State University imeni M. V. Lomonosov

"Extensive Air Showers and Characteristics of Nuclear Interactions at Superhigh Energies"

Moscow, Izvestiya Akademii Nauk SSSR: Ser. Fizicheskaya, Vol 37, No 7, Jul 73, pp 1430-1432

Abstract: One of the most important problems in the physics of extensive air showers of cosmic rays is the acquisition of data relative to the characteristics of nuclear interactions in the superhigh energy region (above  $10^5$  GeV). In connection with the interpretation of a number of experiments from the field of extensive showers, the authors examine a hypothesis according to which the model of development of extensive air showers must include a sharp increase in the multiplicity of secondary particles such that  $n \sim E_0^2$  when  $E_0 < 10^4$  GeV and  $n \sim E_0^3$  when  $E_0 > 10^5$  GeV. A comparison of theoretical and experimental relations shows that the model with high multiplicity in pure form does not agree well with the

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KALMYKOV, N. N. et al., Izvestiya Akademii Nauk SSSR: Ser. Fizicheskaya,  
Vol 37, No 7, Jul 73, pp 1430-1432

experiment; however, the agreement is considerably improved if it is assumed that 30% of the energy lost by a nucleon is transferred to an isobaric pion. The introduction of such a pion reduces the percentage of muons in the shower and at the same time makes no appreciable change in the variation of the shower with altitude. Some experiments are suggested for refining the proposed shower model.

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172 008 UNCLASSIFIED PROCESSING DATE--19SEP70  
TITLE--FLOTATION OF BARITE FROM A DESLIMED SLURRY AT THE SALAIR  
CONCENTRATING MILL -U-  
AUTHOR-(04)-VINOKUROV, F.P., KALMYKOV, N.N., SHAKHMATOV, V.N., DENISENKO,  
Z.I.  
COUNTRY OF INFO--USSR  
SOURCE--TSVET. METAL. 1970, 43(1), 86-7  
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--FLOTATION, BARIUM MINERAL, SLIME

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0762

STEP NO--UR/0136/70/043/001/0086/0087

CIRC ACCESSION NO--AP0102727

UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0102727

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ATTEMPT WAS MADE TO DECREASE THE AMT. OF SLURRIES IN THE FEEDING OF THE BARITE FLOTATION. WHEN DESLIMED SLURRY IS USED THE FLOTATION OF THE BARITE IMPROVES CONSIDERABLY, THE EXTN. INCREASES, THE QUALITY OF THE BARITE CONCS. ALSO IMPROVES. THE DESLIMING OPERATION WAS INVESTIGATED IN SOME DETAIL. THE TECHNIQUE USED AND DESCRIBED HEREIN HAS MANY ADVANTAGES AND IS TO BE PREFERRED OVER THE PRESENT TECHNOL.

UNCLASSIFIED

USSR

UDC 619:616.988.43.085.37

KALMYKOV, V. A., NURIYEV, G. G., ROMANOVICH, T. N., and KHAYERTYNOV, S. Kh.,  
Kazan' Veterinary Institute, Kazan'

"Use of a Transplantable Line of Cattle Embryo Kidney Cells for the Preparation of a Vaccine Against Foot-and-Mouth Disease"

Moscow, Veterinariya, No 5, May 73, pp 62-64

Abstract: Foot-and-mouth disease virus of strain A22 550 and of an epizootic A strain was cultured on a monolayer culture of transplantable cattle embryo kidney cells (CEKC). The virus that had been cultured on CEKC was inactivated with hydroxylamine, whereupon the virus suspension was freed of the excess hydroxylamine by dialysis. An experimental vaccine was prepared by combining 70% of the inactivated virus suspension with 25% of a 6% Al(OH)<sub>3</sub> suspension, 0.1% quinosol, and 5% glycerin. Saponin (0.05%) or vitamin B<sub>12</sub> was added as an adjuvant. The activity of the vaccine was estimated on the basis of the antigenic effect on rats, the index of resistance for mice 4-5 days old, and the protective dose for adult mice. The effect of the number of passages on CEKC on the activity of the vaccine was determined. The antigenic activity of the vaccine derived from the epizootic strain was the

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KALMYKOV, V. A., et al., Veterinariya, No 5, May 73, pp 62-64

same as that of the vaccine prepared for the strain A22 550, but the index of resistance produced by it was somewhat lower. The vaccine to which vitamin B<sub>12</sub> had been added was somewhat more active than that prepared with saponin.

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UDC 532.517.4

ROMANENKO, P. N., KALMYKOV, V. G.

"Distribution of Tangential Stresses in a Non-compressible Turbulent Boundary Layer"

Minsk, Inzhenerno-Fizicheskiy Zhurnal, Vol. 20, No. 4, Apr. 71, p. 666-673.

Abstract: An isothermal turbulent boundary layer with positive pressure gradient is studied. A hot-wire anemometer is used to investigate turbulence. Good approximations of the distribution of shear stress in a turbulent boundary layer with positive pressure gradient are obtained on the basis of measurement of the turbulent shear stress.

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UDC: 621.373.42(088.8)

KALMYKOV, V. V., Moscow Higher Technical Academy

"A Noise-Like Signal Generator"

USSR Author's Certificate No 280532, filed 18 Nov 68, published 9 Dec 70  
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6D339 P)

Translation: A noise-like signal generator is proposed which contains a cadence pulse generator, an electronic switch, an n-place shift register with linear feedback, and a circuit for setting initial conditions. In order to increase the number of noise-like signals generated by the device and to reduce correlations between them, the generator also includes a mod-two adder and an n-place register which is connected through this adder to the output of the main register. Two illustrations. V. P.

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USSR

UDC: 621.373.444

KALMYKOV, V. V., Moscow Higher Technical Academy imeni N. E. Bauman

"A Generator of Noise-Like Signals"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki, No 28, 1970, Soviet Patent No 280532, Class 21, filed 18 Aug 68, p 38

Abstract: This Author's Certificate introduces a generator of noise-like signals which contains a cadence pulse generator, an electronic key, an n-digit shift register with linear feedback, and a circuit for setting up initial conditions. As a distinguishing feature of the patent, the number of noise-like signals which can be formed by the generator is increased and their mutual correlation is reduced by introducing a mod-2 adder and an n-place register connected through the adder to the output of the main register.

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USSR

UDC 669.14:620.178.2

KALMYKOV, V. V., Institute of Ferrous Metallurgy, Dnepropetrovsk

"Method for Determining the Tendency of Steel to Brittle Failure"

Moscow, Zavodskaya Laboratoriya, No 2, 1971, pp 223-224

Abstract: The notch sensitivity  $n$  is suggested as a cold brittleness criterion which takes into account the dependence of material properties on the test temperature and the stress character at different notch sharpnesses. It is suggested that the temperature of the maximum  $n$  appearance be considered the critical brittleness temperature. It is shown that the maximum  $n$  is a convenient characteristic for rating the cold brittleness of steel by notches of  $\rho = 1$  mm and  $\rho = 0.25$  mm (types I and IV, according to the All-Union State Standard GOST 9454-60).

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Acc. Nr.

AA0108179

Abstracting Service:  
CHEMICAL ABST. 6-10

Ref. Code

UR 0482

K

135550m Tool steel. Zaichenko, S. S.; Polushkin, N. A.;  
Kalmykov, Yu. D.; Chichkanov, A. I.; Shevchenko, V. I.;  
Biryukova, V. N.; Aref'ev, B. V. U.S.S.R. 260,900 (Cl. C22c).  
06 Jan 1970, Appl. 25 Jul 1968; From *Otkrytiya, Izobret., Prom.  
Obrasly, Tovarnye Znaki* 1970, 47(4), 81. Tool steel contg.  
lower amts. of scarce materials consisted of: C 0.50-0.65, Si  
0.60-0.90, Mn 0.20-0.40, Cr 6.5-8.0, Mo 1.1-1.5, W 0.7-1.1,  
V 0.10-0.25, Ti 0.05-0.15%, Fe and impurities the remainder.  
MSCL

REEL/FRAME

18 CR

19891845

USSR

UDC 621.762.2:669.1

BONDARENKO, A. V., KALMYKOV, Yu. V., KUTNYAKHOVA, V. M., and KLETSKO, G. P.

"Electrocrystallization of Powders of Iron and Alloys of Iron With Cobalt and Nickel Using Acoustical Oscillations"

Ul'trazvuk. metody intensivifik. tekhnol. protsessov [Ultrasonic Methods of Intensifying Technological Processes -- collection of works] (Moscow Institute of Steels and Alloys, 60), Moscow, 1970, pp 212-215 (Translated from Referativnyy Zhurnal-Metallurgiya, No 2, 1971, Abstract No 2 G436 by the authors)

Translation: Results are presented from a study of the process of precipitation of Fe and its alloys on a grooved cathode oscillating at 100 Hz by electrocrystallization from aqueous sulphate solutions. The possibility of increasing the current density and other parameters during electrolytic powder production is clarified. 1 figure; 2 tables.

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1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--STUDIES ON RESPIRATION OF KANAMYCIN PRODUCING ORGANISM DURING  
BIOSYNTHESIS -U-

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

COUNTRY OF INFO--USSR

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

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BIOSYNTHESIS, KANAMYCIN, MICROORGANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1832

STEP NO--UR/0297/70/015/006/0500/0505

ARC ACCESSION NO--AP0125443

UNCLASSIFIED

2/2 018

IRG ACCESSION NO--AP0125443

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT. THE EFFECT OF CHANGES IN AERATION AND MIXING CONDITIONS ON RESPIRATION OF THE KANAMYCIN PRODUCING ORGANISM AND BIOSYNTHESIS OF THE ANTIBIOTIC WAS STUDIED. DURING INTENSIVE MIXING AN INCREASE IN THE AMOUNT OF AIR SUPPLIED WITHIN 1 TO 3 VOL-VOL DID NOT AFFECT THE ANTIBIOTIC BIOSYNTHESIS. AT LOW LEVELS OF MIXING IT SLIGHTLY INCREASED. A DECREASE IN THE INTENSITY OF MIXING MARKEDLY SUPPRESSED THE ANTIBIOTIC BIOSYNTHESIS. NATURAL CHANGES IN THE RESPIRATION LEVELS DEPENDANT ON THE MIXING CONDITIONS WERE PROBABLY ABSENT. THE MODE OF ACTION OF THE MIXING INTENSITY ON THE ANTIBIOTIC BIOSYNTHESIS MUST BE ATTRIBUTED TO LEVELLING OF THE CONCENTRATIONS OF THE NUTRIENTS AND METABOLITES NEAR THE CELL WALLS, AND NOT TO IMPROVEMENT OF THE AERATION CONDITIONS.

FACILITY: ALL UNION INSTITUTE FOR ANTIOTIBIOTICS,  
MOSCOW.

UNCLASSIFIED

USSR

UDC 632.95

KALMYKOVA, R. G., KEYSER, L. S.

"Thin Layer and Gas-Liquid Chromatography of Gardona"

Tr. 2-go Vses. soveshch. po issled. ostatkov pestitsidov i profilakt. zagryazneniya imi produktov pitaniya, kormov i vmesh. sredey (Works of the Second All-Union Conference on the Investigation of Pesticide Residues and Preventive Contamination of Food Products, Fodder and Environment), Tallin, 1971, pp 151-154 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12N445)

Translation: A sample of plant material (corn, potatoes, tomatoes, fruit) is shaken for 2-3 hours with an organic solvent (pentane, petroleum ether, hexane,  $\text{CHCl}_3$ ); the extract is purified on a column with  $\text{Na}_2\text{SO}_4$  or a mixture of three grams of celite 545 and 1.5 grams of KAD carbon or AR-3; it is eluted with 150 ml of acetone, and the chromatographic analysis is run on a reinforced layer of silicic acid in the n-hexane-acetone system (4:1); it is developed with an ammonia solution of  $\text{AgNO}_3$  in acetone with irradiation by ultraviolet light. The sensitivity of the analysis was 5  $\gamma$ . For quantitative analysis of gardona, the gas-liquid chromatographic method was used with an electron capture detector. The adsorbent was chromosorb W (80-100 mesh) silanized and impregnated with 5% silicon SF-30. The gas carrier was  $\text{N}_2$ .

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USSR

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UDC 621.396.677

ASHKENAZI, D. YA., BRODULENKO, G. I., BELYAYEVA, G. N., KALMYKOVA, T. A.

"Push-In Lightning Arrester with a Capillary"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Engineering. Scientific and Technical Collection. Superhigh Frequency Electronics), 1970, vyp. 6, pp 158-160 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9B79)

Translation: This article contains an investigation of the use of a capillary as one of the elements of a wide-band lightning arrester which is installed in a wave guide filter or resonator. The capillary is coupled to the wave guide via a cylindrical housing in which the capillary is fastened. The design of the discharger permits combination of small losses and small recovery time inherent to a capillary discharger with high mechanical strength and convenience of replacement during operation. There are two illustrations and a one-entry bibliography.

1/1

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1/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--ADHESIVE BASE ON SKS 50K LATEX -U-

AUTHOR--(04)-KIZBER, S.A., KALMYKOVA, Z.P., PRYAKHINA, E.A., GONSOVSKAYA,  
T.B.

COUNTRY OF INFO--USSR

SOURCE--POLIGRAFIYA 1970, 1, 36-7

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ADHESIVE, LATEX, STYRENE/(U)SKS50K STYRENE RUBBER, (U)SKS30SHR  
STYRENE RUBBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0887

STEP NO--UR/0543/70/001/000/0036/0037

CIRC ACCESSION NO--AP0134616

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134616

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTS. WITH ADHESIVES PREPD. FROM  
SKS 50K LATEX (I) INDICATED THAT THEY COULD BE USED FOR BOOK BINDING,  
AND THAT I IS A GOOD SUBSTITUTE FOR SKS 30SHR LATEX. THE PHYS.  
PROPERTIES OF SKS 50K ADHESIVES WERE DETD.

UNCLASSIFIED



KALNACH, Ya. V.

SPRS 57908  
6-73

3

IX-6. STRUCTURAL STUDIES OF THE SYSTEM MADE UP OF THE SILICON CARBIDE FILM AND SILICON SUBSTRATE

Article by Ya. V. Kalnash, I. P. Novikova, I. A. Fel'm', ISSI: SSSRSIIRIA, 11. SSSRSIIRIA, 12-17 June 1972, p 1211

By means of electron microscopy and diffraction, infrared spectroscopy and metallographic techniques, studies were made of the variation of the silicon carbide film structure on silicon as a function of the growth conditions of the films and their thickness and also the effect of the films of different structure and thickness on the structure of the monocrystalline substrate. In order to obtain silicon carbide, the method of thermal decomposition of chlorosilanes in an argon or hydrogen atmosphere was used.

On the basis of the analysis of the histograms of the film constructed by the dark-field microphotography, the general characteristic of the film growth process to a thickness of 4,000 A was given for different growth conditions.

The film defects were discovered, and the causes of their occurrence were established. The dependence of the film on the cleanliness and perfection of the substrate was established.

The effect of a polycrystalline (uniform) film on the substrate structure was detected on reaching a film thickness of 5,000-6,000 A. The defects surface. The degree of "destruction" of the substrate depends on the size of the crystal units of the film and its thickness.

USSR

UDO 539.211 + 539.23 + 548.74

KALNAOH, YA.V., FELTYN', I.A. [Physicotechnical Institute, Academy Of Sciences, Latvian SSR]

"Concerning Crystalline Structure Of Silicon Dioxide Pyrolytic Films"

Izv. Akademii Nauk Latvyskoy SSR: Seriya fizicheskikh i tekhnicheskikh nauk  
(Bulletin Of The Academy Of Sciences, Latvian SSR: Physics And Technical Sciences Series), No. 4, 1972, pp 9-14

Abstract: The paper studies the effect of processing Ge and Si substrates on the crystalline structure of films grown by way of pyrolytic decomposition of tetraetoxisilane at temperatures of 350 and 700° C. The state of the substrate surface before coating with a SiO<sub>2</sub> film was investigated after each processing with the aid of diffraction of fast electrons. It is found that the surface of Si and Ge substrates differ after various forms of processing: 1) By the degree of contamination; 2) By the presence of layers which differ in structure from the basic material; and 3) By profile. The most perfect, pure, and plane surface can be obtained by chemical-mechanical polishing of silicon. Films obtained by pyrolytic decomposition of tetraetoxisilane at temperature of 700 and 350° C had an amorphous structure and differed among themselves in chemical composition. No dependence of the crystalline structure of SiO<sub>2</sub> on the

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USSR

KALNACH, YA. V. and FELTYN', I. A., Izv. Akademii Nauk Latvyskoy SSR: Seriya fizicheskikh i tekhnicheskikh nauk, No 4, 1972, pp 9-14

method of processing of the substrate was detected. A considerable effect of the method of processing the substrate on the number of defects in the films was noted. The crystalline structure of high-temperature pyrolytic films on Ge and Si is close to the structure of films thermally grown on Si, and has the short-range order of  $\beta$ -cristobalite. Received, 6 Dec 1971. 19 ref. 4 fig.

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USSR

UDC 538.214

BUTYLENKO, A. K., SUPRUNENKO, P. A., and KAL'NAYA, G. I., Institute of Metal Physics, Academy of Sciences Ukr SSR and Kiev State University

"Coexistence of Antiferromagnetism and Superconductivity in the Cr-Re System"

Kiev, Metallofizika, No 40, 1972, pp 61-64

Abstract: A comparison is made between known data and experimental data on the change of physical properties in the region of solid solutions of rhenium in chromium in connection with the observed transition, in relation to concentration, of the alloys from the antiferromagnetic state to superconductivity. The hypothesis was expressed that the indicated transition can be caused by the occurrence of ordering in the alloys with the formation of a superconducting phase of the type  $\beta\text{-W}(\text{Cr}_3\text{O})$  and that with the ordering processes there can be associated superconducting properties of the alloys in similar morphological systems Mo-Re, W-Re, and others. 2 figures, 27 bibliographic references.

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KALNBERZ, V.K.

Traumatology  
+  
Orthopedics

EXPERIENCE IN PREVENTION OF CHILD INJURY IN LITHUANIAN SSR

UNCLASIFIED

Article by V.K. Kalnberz, V.A. Krivina, R. Vici, Bronskas, Maza, Scientific Research Institute of Traumatology and Orthopedics, Moscow, *Meditsinskii Nauk Sbornik*, Russian, No. 4, 1972, pp 12-551

Prevention of child injury is closely related to development of medicine, pedagogy, psychology, social hygiene of childhood, health statistics and forensic, physical culture, athletics, development of legislation on child and adolescent labor safety, socio-economic living conditions in urban and rural areas, and scientific and technological progress.

Some prevention of traumatism among children was practiced for a long time. This did not include organization of control of child injuries, but in various historical periods it was reflected in the principles and systems of child upbringing.

The ancient Greeks strived to rear a handsome, brave, and strong man, in their expression "a perfect citizen," through meticulous care of children, prevention of injuries to the body, conditioning of the organism, instilling physical and labor skills, and discipline.

Many monuments to Russian culture of the 15th-17th centuries also had inscriptions quoting the profound ideas of preventive people of those times about childhood hygiene and physical conditioning of children.

The prominent genre figure of the 17th century and pedagogue, P.I. Petukhov gave a number of concrete instructions on the prevention of traumas among children: "... do not entrust children to youngsters and do not allow them to take in their hands anything that could harm them." And further, "...the art of bringing children up lies in diverting them from what could harm them, without inhibiting their playfulness, and doing this without excess...."

The idea of preventing injury among children while in school is found in Plato and Aristotle, Rubelak and Kant, Falter and Helvetius, Froebner and Rudshcheyev.



USSR

UDC: 621.762.5(088.8)

MUKHA, I. M., DOVBISHCHUK, M. A., KAL'NENKO, B. I., BELILOVETS, A. D.

"Method of Sintering of Metal Ceramic Products"

USSR Author's Certificate Number 353793, Filed 10/02/70, Published 30/10/72  
(Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract  
No 8G403).

Translation: A method is suggested for sintering metal ceramic products, including heating in a controlled gas atmosphere. In order to reduce the sintering cycle and increase product quality, they are heated by a glowing gas discharge.

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USSR

UDC 621.791.012

SAMSONOV, G. V., MUKHA, I. M., DOVBISHCHUK, M. N., and KAL'NHNKO, B. I.,  
Kiev

"The Effect of Heating by Glow Discharge on the Physico-Chemical Surface  
Condition of Solid Alloys"

Kishinev, Elektronnaya Obrabotka Materialov, No 5 (35), 1970, pp 32-38

Abstract: The effect of ionic heating on the physico-mechanical surface  
properties of solid alloys of the type VK (VK2, VK6, VK8, VK15, and VK20)  
and TK (T5K10, T15K6, and T30K4) and tungsten and titanium carbides during  
diffusion welding in a glow discharge is demonstrated. An analysis is  
presented of the variation of the chemical composition of surface layers  
as a function of the energy condition and the electron structure of the  
heated materials.

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USSR

UDC 669.14.018.58.001.6

YELYUTINA, G. I., KAL'NER, D. A., and MURAV'YEVA, YE. M.

"Magnetic Steel for Welded Bimetallic Rotors"

Spetsial'nyye Stali i Splavy (Special Steels and Alloys -- Collection of Works), No 77, Metallurgiya Press, 1970, pp 200-207

Translation: A magnetic high-strength steel, type 30Kh3V2M, is developed with room temperature ultimate strength over  $1,000 \text{ Kn/m}^2$  ( $>100 \text{ kg/mm}^2$ ), yield point greater than  $800 \text{ Mn/m}^2$  ( $>80 \text{ kg/mm}^2$ ), and impact toughness 1250-1450  $\text{kJ/m}^2$  (12.5-14.5  $\text{kg}\cdot\text{m/cm}^2$ ). The steel has great hardenability, good weldability, low tendency to superheating, and good resistance to tempering. After hardening from  $1150^\circ\text{C}$  in oil and double annealing at  $625^\circ\text{C}$  (2+8 hr), it has high magnetic properties at room temperature:  $B_{25} = 1.38-1.44 \text{ T}$  (13,800-14,400 gs);  $B_{400} = 1.88-2.0 \text{ T}$  (18,800-20,600 gs).

Type 30Kh3V2M steel can be used for welded bimetallic rotors of high-speed, powerful electrical machines, due to its combination of mechanical, magnetic, and technological properties. 4 figures; 8 tables.

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Heat Treatment

K

UDC (647):621.785.545

USSR

SHEPELYAKOVSKIY, K. Z., KALINER, V. B., and NEKOMOV, V. F., Automobile Plant  
imeni Likhachev

"Technique of Steel Heat Treatment During Induction Heating"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 11, Nov 70, pp  
7-12

Translation: Development of a theoretical concept on the effect of the degree of heterogeneity in the initial structure on the uniformity of the temperature field during electrical heating is discussed. The question of optimal parameters and displacement of the interval of phase transformations during a high rate of electric heating is considered, as is the problem of super-hardness at surface induction hardening. The special features in the application of induction hardening, as a method of increasing the structural strength of steel, are considered. Specifically, a discussion is presented of the method of surface hardening during deep induction heating which produces maximum strength properties at minimum alloying of steel and eliminates the formation of cracks during hardening.

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USSR

UDC: 519.1

TABARNYY, V. G., KALNIBOLOTSKIY, Yu. M., SHEVELENKO, Zh. Sh.

"Concerning a Method of Constructing a Normal Tree of a Circuit Graph"

Teor. elektrotehnika. Resp. mezhved. nauch.-tekhn. sb. (Theoretical Electronics. Republic Interdepartmental Scientific and Technical Collection), 1972, vyp. 14, pp 91-97 (from RZh-Kibernetika, No 5, May 73, abstract No 5V537 by the authors)

Translation: On the basis of methods of structural numbers a method is proposed for constructing normal trees of a structural circuit graph, and a description is given of their investigation for the purpose of optimum (in the given sense) construction of a system of differential equations of an electronic circuit in normal form.

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USSR

UDC: 621.372.061

KALNIBOLOTSKIY, Yu. M., TABARNYY, V. G., SHEVELENKO, Zh. Sh.

"Component Degeneration in Analysis of Electronic Circuits by Means of Equations of Variables of State"

Kiev, Radioelektronika, Vol 15, No 7, Jul 72, pp 911-914

Abstract: The authors consider the structural properties of electronic circuits which prevent the occurrence of component degeneration in the process of deriving the equations of variables of state.

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USSR

UDC 621.372.1

KALNIBOLOTSKIY, Yu. M., GORDIYENKO, V. N., TKACHENKO, V. A.

"Algorithms for Minimizing the Sensitivity of Electronic Radio Circuits to Dispersion of the Parameters of Circuit Elements by the Method of Discrete Equivalent Conversions"

Avtomatiz. proyektir. v elektron. Resp. mezhved. nauch.-tekh. sb. (Design Automation in Electronics. Republic Interdepartmental Scientific and Technical Collection), vyp. 2, Kiev, "Tekhnika", 1970, pp 84-90

Abstract: An algorithm is proposed for minimizing the sensitivity of electronic radio circuits to scatter of the parameters of circuit elements. Sensitivity is minimized by using discrete equivalent conversions and the method of contributions of the elements to the polynomial coefficients of the circuit function. One table, one illustration, bibliography of ten titles.

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USSR

UDC: 621.372.061

KALNIBOLOTSKIY, Yu. M., SKOROBOGAT'KO, N. V., and KOROLEV, Yu. V.

"An Algorithm for Tuning Circuits"

Avtomatiz. proyektir. v elektronike. Resp. mezhyed. nauchno-tekhn. sb. (Automation of Design in Electronics. Republic Interdepartmental Scientific-Technical Collection) 1970, No. 1, pp 144-149 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3A133)

Translation: One of the methods for tuning an electronic circuit using a digital computer according to the specified system function and the initial configuration is considered. An algorithm is proposed through which the rated elements can be determined, the configuration of the circuit can be made more accurate, and its characteristic corrected. A block diagram of the programmed solution for this problem by the computer is given. The proposed method can be used also for designing correcting stages and for solving component equations. One illustration, one table, bibliography of three. Resume

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USSR

UDC 621.372.057

KALNIBOLOTSKIY, Yu. M., ROGOZA, V. S.

"Synthesis of Electronic RC Circuits Using a System of Differential Equations"

Avtomatiz. proyektir. v elektron. Resp. mezhved. nauch.-tekhn. sb. (Design Automation in Electronics. Republic Interdepartmental Scientific and Technical Collection), vyp. 2, Kiev, "Tekhnika", 1970, pp 90-99

Abstract: A system of differential equations is presented for RC circuits which have no degenerations. A method is described for finding the numerical values of particular secondary parameters which appear in the equations as coefficients of the voltages across reactances and across the master source. Taking a general unistor circuit and known particular secondary parameters as a basis, numerical values are found for the conductances between all junctions of the synthesized circuit, and a matrix of the circuit conductances is set up. The conductance matrix enables construction of the configuration of the unknown circuit, and the values of its components are found. In conclusion, a synthesis algorithm is proposed with illustration by an example. Three illustrations, bibliography of four titles.

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USSR

UDC: 621.372

KALNIBOLOTSKIY, Yu. M., GORDIYENKO, V. N., TKACHENKO, V. A.

"An Algorithm for Minimizing the Sensitivity of Electronic Circuits to Scatter of the Parameters of Their Elements by the Method of Discrete Equivalent Transformations"

Avtomatiz. proyektir. v elektronike. Resp. mezhved. nauchn.-tekhn. sb. (Design Automation in Electronics. Republic Interdepartmental Scientific and Technical Collection), 1970, vyp. 2, pp 84-90 (from RZh-Radiotekhnika, No 5, May 70, Abstract No 5A70)

Translation: An algorithm is proposed for minimizing the sensitivity of electronic circuits to scatter of the parameters of circuit elements. This sensitivity is minimized by using discrete equivalent converters and the method of the contributions of the elements to the polynomial coefficients of the circuit function. Bibliography of ten titles. Resumé.

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USSR

UDC 621.396.621.54

KALNIN, A. A. *K*

"Effect of Noise on a Phase AFC with an Intermediate Frequency Amplifier"

Moscow, Radiotekhnika, Vol 25, No 9, 1970, pp 48-54

Abstract: Using the method of V. I. Tikhonov (Avtomatika i telemekhanika, Vol 20, No 9, 1959, and Vol 21, No 3, 1960) the author considers the effect of noise with a correlation function of  $K_n(\tau) = \sigma^2 r(\tau) \cos \omega \tau$  on the AFC system shown in a block diagram of the article. The system has two types of simple low-frequency filter connected between the phase detector and the reactance tube circuit, and is designed to stabilize the local oscillator frequency. For simplicity, the natural noise of the circuit components and the phase fluctuations of the local oscillator are neglected in the computations. Markov process concepts, the Fokker-Planck equation in particular, are used to obtain the statistical characteristic of the phase difference and its derivative. The author obtains an expression for the average frequency deviation of the local oscillator and the signal, which agrees in form with the results of Tikhonov in the reference cited above, obtained for simpler AFC circuits.

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USSR

UDG 535.37:548.756

TRINKLER, M.F., KALNIN', A.E. [Physics Institute, AS, Latvian SSR]

"Study Of Intracenter Luminescence Of A KCl-KJTI Crystal. I."

Izv. Akademii Nauk Latvviyskoy SSR: Seriya fizicheskikh i tekhnicheskikh nauk  
(Bulletin Of The Academy Of Sciences, Latvian SSR: Physics And Technical  
Sciences Series), No 4, 1972, pp 33-40

Abstract: A detailed description is presented of spectral-kinetic measurements made on monocrystals of KCl-KJTI grown by the Kyropoulos procedure with two concentrations of iodine (2 and 4 molar percent) and a concentration of thallium of 0.3 molar percent in the melt. Based on these investigations, it is possible to conclude that the emission spectrum of the phosphor crystal KCl.KJ (4 molar percent)--Tl (0.2 molar percent) consists of nine bands which are connected with the luminescence of the thallium ion in different iso-structures of the mixed base of KCl-KJ or close to residual defects caused by uniaxial pressure (possible emission band on 480 nm). Received, 29 Nov 1971. 23 ref. 6 fig. 1 tab.

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USSR

UDC 678.06:678 029.5:669:678.742.2]01:53

KALNIN, M. M., KARLIVAN, V. P., METRA, A. YA., SOBOLEVSKIY, CH. A., MALERS, I. YA., DZENIS, M. YA., KRAGIS, I. ZH., and REYKHEMANIS, P. K.

"Metalloplastics Based on Modified Polyethylene"

Moscow, Plasticheskiye Massy, No 10, 1972, pp 31-33

Abstract: The technological process of the production of metalloplastics is based on thermal contact [plating] between a pretreated metal base and a film of modified polyethylene. Optimal ranges of the important parameters influencing the properties of metalloplastics are as follows: temperature of thermal contact -- 200-250°C; duration of the contact -- 30-60 sec; filler content -- 8-10 vol-%. The surface of the metal base is cleaned, preheated and passed through a set of rollers where the initial contact with modified polyethylene is made. Final bonding occurs in an induction heating chamber. The material obtained -- the unilateral or bilateral metalloplastic -- shows high anticorrosive properties. It can be processed by several methods such as bending, folding, or die stamping. Surfaces can be joined together by welding or folding and other methods. This material is ideally suited for production of equipment resistant to chemical agents, such as storage or sedimentation tanks. It could be used for production of special pipe lines, ventilation systems, etc. Due to 1/2

USSR

KALNIN', M. M., et al., *Plasticheskiye Massy*, No 10, 1972, pp 31-33

the ability of producing colored surface coatings, it could also be used in automobile, airplane or ship building industry as well as for construction of furniture or specialized equipment.

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USSR

UDC 632.95

1

GILLER, S. A., BULENKOVA, L. F., KONSTANTE, G. G., KALNIN', M. M., and SHIMANSKAYA, M. V.

"Gas Chromatographic Separation of Organochlorine Insecticides on Various Columns"

Tr. 2-go Vses. soveshch. po issled. ostatkov pestitsidov i profilakt. zagryazneniya imi produktov pitaniya, koznov i vnesh. sredy (Works of the Second All-Union Conference on Investigation of Residues of Pesticides, and Prevention of Pesticide Contamination of Foodstuffs, Fodder, and the External Environment), Tallinn, 1971, pp 51-53 (from RZh-Khimiya, No 11, Jun 72, Abstract No 1111403)

Translation: Excellent separation of p,p'-DDT, o,p'-DDT, p,p'-DDE and  $\gamma$ -hexachlorocyclohexane is achieved on SKTFT-50 fluorinated silicone (Leningrad) applied (5%) on silanized chromosorb W. The relative times of retention of these pesticides are given as well as those of lindane and aldrin on various fixed phases.

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1/2 026 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--STUDY OF THE PROPAGATION OF LONGITUDINAL WAVES IN A POLYETHYLENE  
BAR -U-  
AUTHOR--(02)--KOKGSHVILI, S.M., KALNIN, P.P.  
COUNTRY OF INFO--USSR  
SOURCE--MEKHANIKA POLIMEROV, VOL. 6, JAN.-FEB. 1970, P. 59-67  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, PHYSICS  
TOPIC TAGS--POLYETHYLENE, DIGITAL COMPUTER, VISCO ELASTICITY, MECHANICAL  
STRESS, LONGITUDINAL WAVE, CALCULATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1992/1895 STEP NO--UR/0374/70/006/000/0059/0067  
CIRC ACCESSION NO--AP0112875  
UNCLASSIFIED



2/2 026

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0112875

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE PROPAGATION OF LONGITUDINAL WAVES IN A LONG POLYETHYLENE BAR IN TERMS OF THE BOLTZMAN VOLTERRA EQUATION. A NUMERICAL SOLUTION OF THIS PROBLEM IS OBTAINED BY MEANS OF A DIGITAL COMPUTER. CALCULATED RESULTS ARE COMPARED WITH EXPERIMENTALLY OBTAINED DATA. USING THE MODEL OF A VISCOUS ELASTIC STANDARD BODY, DYNAMICAL STRESS STRAIN DIAGRAMS ARE CONSTRUCTED FOR THE CASE OF WAVE PROPAGATION IN A PRESTRETCHED BAR. FACILITY: AKADEMIJA NAUK LATVIISKOI SSR, INSTITUT MEKhanIKI POLIMEROV, RIGA, LATVIAN SSR.

UNCLASSIFIED

USSR

UDC 621.3:083.72:538.4

TSIRKUNOV, V. E., KALNIN', R. K., RYBAKOV, E. K.

"Measurement of Flow Velocity of Liquid Metal by Method of Relationships"

Magnitnaya Gidrodinamika, No 2, 1971, pp 133-136.

ABSTRACT: A contactless flow meter using a pulsating magnetic field inductor is described. The flow of metal being transported is defined by the relationship of the velocity and vortex signals resulting from the secondary magnetic field. The mean square error in determination of flow does not exceed 2.5%, and the indications of the flow meter do not change with a change in conductivity of the medium being tested of up to 30%.

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USSR

UDC 547,447+547,233+547,821+541,651

NEYLAND, O. Ya., KALNIN', S. V., and BITE, Dz. V., Riga Polytechnic Institute, Riga

"Acid-Base and Tautomeric Equilibria of Some New Derivatives of 1,3-Indandione"

Riga, Izvestiya Akademii Nauk Latvyskoy SSR, Seriya Khimicheskaya, No 6, 1970, pp 739-740

Abstract: The prototropic transformations of 1,3-indandione with onium substituents were studied. The betaine of 2-trimethylammanium-1,3-indandione (I, m. pt. 196-8°) was prepared by the action of  $\text{Me}_3\text{SO}_4$  on 2-amino-1,3-indandione hexachlorostannate. By alkylating with  $\text{Me}_2\text{SO}_4$  2-methylthio-1,3-indandione in a KOH solution, the betaine of 2-dimethylsulfonium-1,3-indandione (II; m. pt. 189-90°, lit. 190°) was obtained. The acidity and tautomeric equilibrium constants of I and II were determined and compared with those of 1,3-indandione and of 2-pyridinium, 2-methylthio, and 2-chloro-1,3-indandione (table). The constants based on measurements of protolysis in  $\text{H}_2\text{O}$  and EtOH characterized the C-acidity. Among onium substituents the greatest effect on the acidity was exerted by the  $\text{SMe}_2$  group. The  $\text{SMe}$  group also exerted a considerable effect. The action of these two substituents can be explained by

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USSR

NEYLAND, O. Ya., et al, Izvestiya Akademii Nauk Latvyskoy SSR, Seriya Khimicheskaya, No 6, 1970, pp 739-740

the participation of unfilled d-orbitals of the S-atom in the delocalization of the electron in the anion formed by the substituted compound.

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= 29 -

Corrosion

USSR

UDC 669.14.018.8

TOMASHOV, N. D., CHERNOVA, G. P., KALINA, G. S., BUDBERG, P. B.,  
and GAVZE, A. L., Institute of Physical Chemistry, Academy of  
Sciences USSR

"Investigation of the Structure and Corrosion Behavior of  
Alloys of the System Ti - Ta - Cr "

Moscow, Zashchita Metallov, Vol 7, No. 4, Jul-Aug 71, pp 387 -391

Abstract : The structure and corrosion behavior of alloys of the  
system Ti - Ta - Cr , containing Cr from 2.5 -20 % and Ta up to  
30 %, were investigated, using for the analysis of the phase equi-  
librium the microstructure, roentgenophase, differential-thermal,  
and dilatometry methods and characteristic diagrams of the alloys  
subjected to hot plastic deformations in the temperature interval  
of 1,000 -500 deg. and subsequent hardening ( 1,200 -600 deg. ).  
Depending on the temperature of heat treatment, these alloys can

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USSR

TCMASHOV, N. D., et al., Zashchita Metallov, Vol 7, No 4, Jul-Aug 71,  
pp 387-391

have a homogeneous structure of a  $\beta$ -solid solution or a heterogeneous structure  $\alpha + \beta + \gamma$ . The investigation results are discussed by reference to the shown microstructure and diagrams of polythermal cuts of the alloys by different correlation of their components and effects of the alloying components on the corrosion rate. It was found that the stability region of the  $\beta$ -phase on the state diagram increases and the beginning eutectoid transformation  $\beta \rightarrow \alpha + \gamma$  shifts into the region of higher contents of alloying elements and lower temperatures by increasing the relative content of Ta to Cr relations of 1:3, 1:1, and 3:1. The corrosion rate of alloys with homogeneous structure is lower than that of alloys with heterogeneous structure by 2-10 times and more. The Ti - Ta - Cr alloys with Ta:Cr=3:1 and the Ti - Ta alloys with a Ta-content of 20% and higher are corrosion-resistant in 5% HCl at 100 deg. The Cr-alloying of Ti decreases its corrosion properties in the HCl-solution and the corrosion rate increases with increasing Cr-content, particularly for alloys with heterogeneous structure. Four illustr., eight biblio. refs.

2/2

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1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT7  
 TITLE--ELECTROPHYSICAL PROPERTIES OF PYROLYTIC SILICON DIOXIDE FILMS ON  
 SILICON AND GERMANIUM -U-  
 AUTHDR--(03)-KALNINA, R., FELTINS, I., FREYBERG, L.  
 COUNTRY OF INFO--USSR  
 SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(4), 813  
 DATE PUBLISHED-----70  
 SUBJECT AREAS--PHYSICS, MATERIALS  
 TOPIC TAGS--ELECTRIC PROPERTY, SILICON DIOXIDE, GERMANIUM, PHYSICAL  
 PROPERTY, SURFACE FILM, PYROLYTIC MATERIAL, DIELECTRIC STRENGTH  
 CONTROL MARKING--NO RESTRICTIONS  
 DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAE--1998/0931 STEP NO--UR/0449/70/004/004/0813/0813  
 CIRC ACCESSION NO--AP0121533  
 UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121533

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SURFACE D. OF STATE AND CHARGE D. IN PYROLYTIC SiO<sub>2</sub> FILMS DEPOSITED ON P TYPE GE AND SI WERE STUDIED BY CAPACITANCE MEASUREMENTS. SiO<sub>2</sub> WAS DEPOSITED IN AR OR O BY THERMAL DISSOCN. OF Si(OEt)<sub>4</sub> AT 700DEGREES. FILMS DEPOSITED IN O EXHIBIT HIGHER DIELEC. STRENGTH AND LOWER D. OF STATES THAN THE OTHERS. FACILITY: FIZ.-ENERG. INST., RIGA, USSR.

UNCLASSIFIED



USSR

UDC 612.822.3+612.821.2

KRYLOV, S. S., VINOGRADOV, V. V., and ~~KAL'NING, S. A.~~ Leningrad

"On the Relationship Between an Electroencephalogram and Various Types of Memory Under the Influence of Amizil"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlova, Vol 21, Vyp 6, Nov/Dec 71, pp 1,223-1,229

Abstract: Two-, three-, and five-milligram doses of amizil were administered intramuscularly to a group of dogs and cats. Within 5-10 minutes after the injection of the drug, which is known to block the brain's cholinoreceptors, the EEG's of all the animals exhibited slow, high-amplitude waves, similar to those that occur during natural sleep. These amizil-induced changes were accompanied by loss of short-term image memory and loss of prolonged retention of current information and consequent inability to learn. The animals regained their short-term memory within 5-6 hours, at the same time that the blockade of the cholinoreceptors ceased, and the EEG's returned to normal. Simple, stable conditioned reflexes, involving long-term memory, were disrupted for only about 4 hours, although the more complex alimentary motor type were disrupted for 24-48 hours. These disturbances were caused by the indirect interference of amizil in the metabolism of biogenic amines, particularly catecholamines.

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USSR

KRYLOV, S. S., et al., Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlova, Vol 21, Vyp 6, Nov/Dec 71, pp 1,223-1,229

A frequency analysis of the EEG's showed an increase in slow waves in all parts of the brain, and an increase in alpha- and beta-waves in the reticular formation of the midbrain.

2/2

USSR

UDC 577.4

BARZDIN', Ya. M. and KALNIN'SH, Ya. Ya.

"General Conceptions of Algorithms and Automata"

Kiev-Alushta, V sb. Teoriya yazykov i metody postroyeniya sistem programmir. (Language Theory and Methods of Constructing Programming Systems--collection of works) 1972, pp 43-47 (from RZh--Matematika, No 12, 1972, Abstract No 12V244)

Translation: The determination of algorithms processing finite models of signature  $\sigma_{m,k} = \langle S_1, \dots, S_m; R_1, \dots, R_k \rangle$  is proposed, where  $S_1, \dots, S_m$  are one-place and  $R_1, \dots, R_k$  are two-place predicate symbols. Such models are represented as oriented graphs with marked arcs and vertices. Elementary transformations and predicates are obtained with the models as well as unconditional and conditional commands for the transformation of the neighborhoods of the graph vertices. The program for the signature  $\sigma_{m,k}$  is the graph system of the algorithm made up of the commands already mentioned. It is proved that for each signature  $\sigma_{m,k}$  ( $m \geq 0, k \geq 2$ ) there exists a finite universal system of commands  $U_{m,k}$  such that

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USSR

BARZDIN', Ya. M. and KALNIN'SH, Ya. Ya., Teoriya yazykov i metody postroyeniya sistem programmir. 1972, pp 43-47

every command (conditional and unconditional) of the signature  $\sigma_{m,k}$  can be replaced by an equivalent program without cycles in the system of commands  $U_{m,k}$ . It is also proved that any function transforming models of signature  $\sigma_{m,k}$  into models of this same signature, and capable of computation by a program  $\mathcal{M}$  of some signature, may be computed by a program  $\mathcal{N}$  of signature  $\sigma_{m,k}$ , for which the time of the computation increases no more than a constant number of times. It is asserted that it is possible to define the idea of parallel application of the program to all elements of the model. The increasing automaton is defined as a model all of whose elements execute the same command. The authors investigate the problem of block modeling for several increasing automata by others.  
A. Muchnik

2/2

- 4 -

USSR

UDC 577.4

BARZDIN', YA. M., KALNIN'SH, YA. YA.

"General Concepts of the Algorithm and Automaton"

V sb. Teoriya yazykov i metody postroyeniya sistem programmir (Language Theory and Methods of Constructing Programming Systems--collection of works), Kiev-Alushta, 1972, pp 43-47 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V244)

Translation: A definition is proposed for algorithms which process finite signature models  $\sigma_{m,k} = \langle S_1, \dots, S_m; R_1, \dots, R_k \rangle$ , where  $S_1, \dots, S_m$  are single-place predicate symbols, and  $R_1, \dots, R_k$  are two-place predicate symbols. These models are depicted in the form of oriented graphs with tagged arcs and vertices. Elementary transformations and predicates in the models are defined, and with their help, the unconditional and conditional commands of conversion of the extremities of the apex of the graph are defined. The signature program  $\sigma_{m,k}$  is a graph-chart of the algorithm compiled from the above-mentioned commands. It is proved that for each signature  $\sigma_{m,k}$  ( $m \geq 0, k \geq 2$ ) there is a finite universal system of commands  $U_{m,k}$  such that any command (conditional and unconditional) of the signature  $\sigma_{m,k}$  can be replaced by the equivalent program without loops in the system of commands  $U_{m,k}$ . It is also proved that any

USSR

BARZDIN', YA. N., et al., Teoriya yazykov i metody postroyeniya sistem programir, Kiev-Alushta, 1972, pp 43-47

function converting the models of the signature  $\sigma_{m,k}$  in the models of the same signature and calculated by the program  $\mathcal{M}$  of any signature can be calculated using the program  $\mathcal{N}$  of the signature  $\sigma_{m,k}$ . Here, the calculation time increases by no more than a constant number of times. The possibility of defining the concept of parallel application of a program to all elements of the model is stated. The growing automaton is defined as the model all elements of which execute the same command. The authors investigate the problem of block simulation of certain growing automata by others.

2/2

USSR

UDC 5:621.391

KALNIN'SH, Ya. Ya.

"Modeling of Planar Logic Circuits in Iterative Nets"

Latv. Mat. Yezhegodnik, [Latvian Mathematics Annual]  
1970, Vol 8, pp 117-139, (Translated from Referativnyy Zhurnal Kibernetika, No 5,  
1971, Abstract No. 5V431 by G. Blokhina).

Translation: Problems of modeling of planar logic circuits in iterative circuits  
are studied. Estimates are established for the number of elements and the rate  
of calculation in this modeling. The method of constructing an iterative circuit  
which is universal for planar logic circuits of a fixed number of elements is  
presented.

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KALININ'SH, Z. A.

*biochemistry*

SECTION VI  
Sci Selects, Reference  
Facilities  
PCS-59 SEP 91

(U) During this quarterly reporting period, five new articles were located from the Institute of Biochemistry and Physiology of Microorganisms at Pushchino. On the basis of these articles, it was possible to identify 13 new personalities with the Institute. The personalities, the subjects of the articles, and the dates are given below:

Personality	Subject	Date
Evfer, M. Ya.	u-oxoglutaric acid	1969 (65)
Buronin, A. V.	antibiotic production	1970 (66)
Distaf, Ya. S.	Candida zeyheri	1971 (67)
Kalinin, Z. A.	u-oxoglutaric acid	1969 (65)
Karlin, Sh. P. Ya.	u-oxoglutaric acid	1969 (65)
Lyositsin, S. K.	u-oxoglutaric acid	1970 (66)
Mindlin, S. Z.	antibiotic production	1970 (66)
Pelteson, I. Zh.	u-oxoglutaric acid	1970 (66)
Rozentiv, S. M. PC	Candida lipolytica	1971 (67)
Slava, V. A.	u-oxoglutaric acid	1971 (65)
Tikhonov, S. M. PC	u-oxoglutaric acid	1971 (65)
Tikhonov, Yu. G.	u-oxoglutaric acid	1971 (65)
Zeligov, D. B.	u-oxoglutaric acid	1971 (65)

Two of the five new articles were authored by personalities already identified with the Institute of Biochemistry and Physiology of Microorganisms. One of these articles dealt with penicillium brevis compactum (68) and the other with methane oxidizing bacteria (69). Reference 65 was jointly issued from the above Institute and the Institute of Microbiology Acad. A. Kirshenblitshy NBS, possibly indicating some joint work between the two facilities.

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INCI ASSIFEN



USSR-

UDC 620.193+539'.24

SEMIN, YE. G., SKORIKOV, YE. A., BALASHOV, D. V., DOROFEEV, B. YU., KAL'NIT-  
SKAYA, E. A., Novocherkassk Polytechnic Institute

"Oxidation Resistance of Fe-Ni-Al-Co-Based Alloys in the Air at 1280°"

Moscow, Zashchita Metallov, Vol 8, No 6, 1972, pp 718-719

Abstract: A study was made of the oxidation resistance of alloys based on Fe-Ni-Al-Co used in the production of permanent magnets in the air at 1280° as a function of the content of the technological additives Co, Ti, Nb, and S. The oxidation products were investigated by x-ray, electron diffraction and metallographic methods using the URS-50IM and the BEIM-1 devices and the MIM-7 microscope. The oxidation of the alloys takes place nonuniformly. The outer layer of the scale is formed of coarse regular crystals elongated perpendicular to the surface. The longer the experiment and the higher the temperature, the larger are the crystals. The inside layer of the scale is formed of small equant grains and is bonded tightly to the metal. The scale becomes thicker when the specimens are held up to 3 hours at 1280°.

The composition of the scales is presented. The oxidation law of the alloys with time is parabolic in the first 10 minutes and then linear, which is connected with continuous destruction of the oxide film. Thus, alloying the

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USSR

SEMIN, YE. G., et al., Zashchita Metallov, Vol 8, No 6, 1972, pp 716-719

Fe-Ni-Al-Co alloys with technological additives has little effect on their corrosion resistance; therefore their thermomagnetic treatment must be carried out in the presence of a protective atmosphere or protective coatings.

2/2

USSR

UDC 620.172.24

SEVERDENKO, V. P., Academician of the Academy of Sciences BSSR, KAL'NITSKIY,  
R. M., Physicotechnical Institute of the Academy of Sciences BSSR

"Strength and Plasticity of Molybdenum as Determined from Brief Tests"

Minsk, Doklady Akademii nauk BSSR, No. 4, Apr 72, pp 321-323

Abstract: The strength and plasticity of metalloceramic predeformed molybdenum were determined. Deformation was carried out in the temperature range 20-1000°C and in the range of deformation rates of 13-300 mm/min with rates of initial deformation of  $3 \cdot 10^{-2}$  -  $6 \cdot 10^{-1}$  sec<sup>-1</sup>. Smooth and notched samples of diameter (1.49-1.51) ± 0.005 mm and length of the cylindrical section of 9 mm were subjected to tension. The samples were fabricated of 99% deformed molybdenum rod purity 99.9% obtained from aluminum molybdate. The theoretical coefficient of stress concentration for samples with a notch was 1.2. The samples were annealed at 900°C. The results are presented in graphical form. The strength limit of smooth samples decreases at all deformation rates used in the temperature interval from 20 to 100-200°C. With a further rise in temperature the intensity of the increase in strength drops and to a greater degree with a relatively high deformation rate. An increase in deformation rate thus causes a rise in

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USSR

SEVERDENKO, V. P., KAL'NITSKIY, R. M., Doklady Akademii nauk BSSR, No. 4, Apr 72, pp 321-323

temperature at which there occur breaks in the graphs of the strength limit of molybdenum. A decrease in the intensity of the change in the strength limit of molybdenum at temperatures above 100-200°C is attributed to exhaustion of the active effect of temperature on its strength and a change in the deformation mechanism. Stabilization of the strength limit values occurs at temperatures of 400-600°C and deformation rates of  $3 \cdot 10^{-2} \text{ sec}^{-1}$ . The values of the strength limit of smooth samples of molybdenum with an increase in temperature from 20 to 1000°C decrease by a factor of 2-3 from 78-96.5 to 22.5-31.5 kgauss/ $\text{mm}^2$ . It is proposed that these results be used in the design in engineering calculation of molybdenum parts.

2/2

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1/2 050

UNCLASSIFIED

PROCESSING DATE--02OCT70

TITLE--ANTIFRICTION PROPERTIES AND WEAR RESISTANCE OF A PLASTIC PLASMA  
COATING PAIR DURING DRY FRICTION -U-  
AUTHOR--(03)--KUTKOV, A.A., KALNITSKIY, V.S., BLAGOVESTNY, A.S.

COUNTRY OF INFO--USSR

K

SOURCE--MEKH. POLIM. 1970, 6(1), 177

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--WEAR RESISTANCE, PLASTIC COATING, MATERIAL TESTING EQUIPMENT,  
PLASMA TORCH SPRAYING, ALUMINUM OXIDE, POLYAMIDE RESIN, CAPRONE,  
POLYETHYLENE, POLYTETRAFLUOROETHYLENE, VINYL RESIN, FRICTION  
TEST/(U)VINIPLAST VINYL RESIN, (U)FTOROPLAST4 FLUORINE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0374/70/006/001/0177/0177

PROXY REEL/FRAME--1989/0811

CIRC ACCESSION NO--AP0107353

UNCLASSIFIED

2/2 050

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0107353

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PLASTICS, E.G., POLYAMIDE P-68, KAPRON, POLYETHYLENE, VINIPLAST, AND FTOROPLAST-4 WERE TESTED IN A FRICTION TESTING APP. AGAINST A PLASMA AL SUB2 O SUB3 COATING 60-300 MU THICK. THE ANTIFRICTION PROPERTIES AND WEAR RESISTANCE OF THE PAIRS TESTED WERE MARKEDLY SUPERIOR TO THOSE OF A STEEL PLASTIC PAIR. THE PLASMA COATINGS WERE ENTIRELY UNAFFECTED DURING THE FRICTION OF PLASTICS.

UNCLASSIFIED

USSR

UDC 621.313.333:538.4

~~KALNYN~~ A. Ya., MIKRYUKOV, Ch. K., PETROVICH, R. A.,  
RUPENEYT, V. A., and ULMANIS, L. Ya.

"Flat Induction Pump Characteristics With Heterogeneous Electro-  
magnetic Force Distribution Along the Channel Width"

Riga, Magnitnaya Gidrodinamika, No 4, Oct-Dec 71, pp 94-98

Abstract : Velocity profiles and  $p(Q)$ -characteristics of magneto-  
hydrodynamic (MHD) machines with accounting for local slipping  
along the channel width with non-uniform distribution of electro-  
magnetic forces are calculated and compared with experimentally  
derived results. The latter comply satisfactorily with theoret-  
ical calculations. The velocity profiles calculated for various  
flow rates  $Q$  and a current load of  $A=0.27 \times 10^3$  A/m show that at  
pumping conditions a reverse flow exists on channel borders. The  
investigation revealed that the calculation of MHD-machines by  
simultaneous accounting for electromagnetic and hydraulic proces-  
ses results in more precise conformity of theoretical and experi-  
mental data. Five illustr., four formulas, six biblio. refs.

1/1





USSR

UDC: 621.382.002

~~KALNYNYA, R. P.~~, FELTYN', I. A., FREYBERGA, L. A., EGLITIS, I. E.,  
AND EIMANIS, I. A.

"Silicon Oxide Films Obtained by Reactive Sputtering of Silicon  
in a High-Frequency Plasma"

Riga, Izvestiya Akademii nauk Latvyskoy SSR -- Seriya fizicheskikh  
i tekhnicheskikh nauk, No 5, 1972, pp 58-63

Abstract: A description is given of the use of reactive sputtering in a high-frequency gas-discharge plasma for the deposition of silicon oxide films. Monocrystalline silicon was used as the source and a high-frequency discharge was employed since they broaden the chemical composition of the film and result in high productivity. The purpose of this paper is to establish a connection between the condition of the films and their electrophysical parameters. The films were grown on silicon substrates set at right angles to the target in an argon-oxygen plasma in which the oxygen content was varied from 0-100%. Further details of film deposition and of the experimental apparatus are given together with the absorption spectra of SiO<sub>2</sub> films and curves illustrating the electrophysical characteristics of the films. The authors are associated with the Physics-Energy Institute, Academy of Sciences of the Latvian SSR.

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USSR

UDC: 621.382.2

ZHAGATA, L. A., ~~KALNINYA, R. P.~~, FELTYN', I. A., and FREYBERGA,  
L. A.

"Dielectric Films Obtained by Low-Temperature Oxidation of Tetra-  
etoxyasilane"

Riga, Izvestiya Akademii nauk Latvyskoy SSR -- Seriya fizicheskikh  
i tekhnicheskikh nauk, No 5, 1972, pp 34-39

Abstract: Experimental research is described for the formation of films by oxidized tetraetoxyasilane in the temperature range of 270-370° C in dry oxygen and in a mixture of oxygen and water vapor. Changes in the composition and characteristics of the films as a result of the changes in the deposition techniques were also observed in the course of these experiments. The specimen films were grown on chemically and mechanically polished n- and p-type silicon substrates in a device described in an earlier article published in this same journal (No 1, 1965, p 26) by the second and third authors named above. Film thickness was measured by the method of interference lines and film composition was determined by the method of infrared absorption. Electrical characteristics of the films were investigated by the MOS structure method. The authors are associated with the Physics-Energy Institute. Academy of Sciences of the Latvian SSR.

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1/2 022

UNCLASSIFIED

PROCESSING DATE--300CT70

TITLE--INFRARED SPECTROSCOPIC STUDY OF THE HYDROGEN BONDING OF SOME CARBINOLS -U-

AUTHOR--(04)--USMANOV, A., KOZHUKHOVA, A.N., MARUPOV, R., KALONTAROV, I.YA.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK TADZH. SSR 1970, 13(3), 31-4

DATE PUBLISHED--70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IR SPECTRUM, HYDROGEN BONDING, HYDROXYL RADICAL, HETEROCYCLIC NITROGEN COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/1086

STEP NO--UR/0425/70/013/003/0031/0034

CIRC ACCESSION NO--AT0124743

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30OCT70

2/2 022

CIRC. ACCESSION NO--AT0124743

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

ABSTRACT. IR SPECTRA (3000-3800 CM PRIME  
NEGATIVE) OF I (AS SOLID AND 1 AND 2PERCENT SOLNS. IN CCL SUB4) AND H  
SUB2 C:CHC TRIPLE BOND CCME SUB2 OH (AS LIQ. AND 0.5, 1, 2, AND 5PERCENT  
SOLNS. IN CCL SUB4) INDICATE THE ABSENCE OF INTRAMOL. H BONDS. A BAND  
AT 3600 CM PRIME NEGATIVE WAS ASCRIBED TO FREE OH GROUPS.  
FACILITY: FIZ.-TEKH. INST. IM. UMAROVA, DUSHANBE, USSR.

UNCLASSIFIED

UDC 621.378

USSR

BORISEVICH, N. A., KALOSHA, I. I., LAVRUSHIN, V. F., MASLENNIKOVA, V. P.,  
TOLKACHEV, V. A.

"Generation Capacity of Isomer 1,4-Dipyrazolenylbenzenes"

Minsk, Zhurnal Prikladnoy Spektroskopii, No. 1, Jan 72, pp 45-48

Abstract: A large group of the 1,4-dipyrazolenylbenzenes of the structure 1,4-di( $n'$ - $R_{n'}$ ,  $m'$ - $R_{m'}$ ,  $\Delta^2'$ -pyrazolenyl- $k'$ ) benzene was investigated; where  $n'$  denotes 1 or 3 positions;  $m$  is 3, 5;  $k$  is 1, 3, or 5; and  $R_{n'}$  and  $R_{m'}$  are aryl or methyl substitutes in the position  $n'$  and  $m'$ . The fluorescence and desorption spectra and the relative quantum yield of this class have been thoroughly investigated. Three groups of compounds were studied under excitation of the second harmonic of a ruby laser: 1,4-di(1'-aryl-3'-aryl- $\Delta^2'$ -pyrazolenyl-5') benzenes (16 substances) and 1,4-di(1'-methyl-3'-phenylpyrazolenyl-5') benzenes (A); 1,4-di(1'-aryl-5'-aryl- $\Delta^2'$ -pyrazolenyl-3') benzenes (12 substances) and 1,4-di(1'-methyl-5'-phenylpyrazolenyl-3')-benzene (B); and 1,4-di(5'-aryl-3'-aryl- $\Delta^2'$ -pyrazolenyl-1') benzenes (8 substances) (C). Only compounds of group (B) are generated. Generation on two wavelengths corresponding to the

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USSR

BORISEVICH, N. A., et al, Zhurnal Prikladnoy Spektroskopii, No. 1, Jan 72,  
pp 45-48

oscillatory maxima of the fluorescence spectra was observed in the majority of  
(B) compounds. The generation wavelength is in the range 425-500 nm. The  
relationship between the generation capacity and the structural chain of the  
compound is analyzed.

2/2

- 104 -

USSR

UDC 621.373:530.145.6

KALOSHA, I. I., TOLKACHEV, V. A.

"Some New Emitting Solutions of Complex Molecules and Their Peculiarities"

Zh. prikl. spektroskopii (Journal of Applied Spectroscopy), 1971, 14, vyp. 3, pp 537-539 (from RZh-Radiotekhnika, No 7, Jul 71, Abstract No 7D126)

Translation: The article is a report on emission obtained on eight complex organic solutions: 6-dimethylamino-1,2-benzophenazine (I), 8-dinaphthylene oxide (II), 1,8-naphthoylene-1,2-benzimidazole (III), 2-phenyl-4-paradimethylaminostyryl-5,6-benzoquinoline (IV), benzanthrone (V), N-methylacridone (VI), perylene (VII) and 5-phenylacridine (VIII). Of these, I-IV are among compounds previously known with respect to emission. Data are given on the emission waves in various solvents. It is noted that the solvent has a strong effect on the position of the fluorescence spectrum and emission spectrum of molecules of (I). On the other hand, the solvent has a minimum effect on the spectra and emission of (II), whose emission is located at a wavelength of 375 nm. Pumping was done by the second harmonic of a ruby laser on a wavelength of 347 nm.

One illustration, one table, bibliography of eight titles. Resumé.

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UNCLASSIFIED

PROCESSING DATE--16OCT70 /

1/2 023

TITLE--THERMAL BREAKDOWN OF RUBBER IN SUPERHEATED WATER VAPOR AT  
ATMOSPHERIC PRESSURE -U-

AUTHOR--(05)--MAKAROV, V.M., EPSHTEYN, V.G., ZAKHAROV, N.D., MAKAROV, M.H.,  
KALOSHINA, A.V.

COUNTRY OF INFO--USSR

SOURCE--KAUCH. REZINA 1970, 29(2), 25-7

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--THERMAL DECOMPOSITION, STYRENE, WEAR RESISTANCE, SYNTHETIC  
RUBBER/(U)SKMS50ARKM15 STYRENE RUBBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1993/0387

STEP NO--UR/0138/70/029/002/0025/0027

CIRC ACCESSION NO--AP0113305

UNCLASSIFIED



PROCESSING DATE--16OCT70

UNCLASSIFIED

2/2 023

CIRC ACCESSION NO--AP0113305

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

ABSTRACT. THE STRAIN RELAXATION PARAMETERS (V. M. MAKAROV, 1969) OF SYNTHETIC RECLAIMED RUBBER SKMS-30-ARKM-15 SHOWED THAT THE OPTIMUM TEMP. AND TIME OF RECLAIMING WITH SUPERHEATED STEAM (M. M. MAKAROV, ET AL., 1962) WERE 300DEGREES AND 180 SEC WHEN 15PERCENT PETROLEUM OIL (MAZUT) WAS ADDED TO THE RUBBER. THE PRESENCE OF MAZUT SLOWED THE CROSSLINKING OF THE RECLAIMED RUBBER WITHOUT AFFECTING THE DEVULCANIZATION RATES. THE RECLAIMED RUBBER OBTAINED BY THIS METHOD HAD BETTER HEAT STABILITY, WEAR RESISTANCE, AND FATIGUE RESISTANCE THAN OTHER RECLAIMED RUBBERS. FACILITY: YAROSLAV. TEKHNOL. INST., YAROSLAVL, USSR.

UNCLASSIFIED

UDC: 548.25

USSR

BUYKO, L. D., KALOSHKIN, E. P., KOLESHKO, V. M., and CHIGIR',  
G. G.

"Device for Measuring the Alloying Profile of Epitaxial Films"

Moscow, Pribory i tekhnika eksperimenta, No 4, July-August, 1972,  
pp 220-222

Abstract: The function of the device described by this paper is to determine the concentration of impurities in epitaxial films through the use of the barrier capacitance method, which is based on the dependence of the p-n junction capacitance on the impurity concentration. The basic schematic of the device is given. Its principal component is a bridge with transformer arms and a set of standard capacitances. Capabilities of the device were checked by using epitaxial films of the  $n^+-n$  and  $n^+-n-p^+$  types, grown on Si of the substrate KES-0.01 by the reduction of  $SiCl_4$  with hydrogen. A curve is plotted for the distribution of the impurity concentration in the  $n^+-n$  film as a function of the film's thickness, and it is found that points found experimentally through the use of this device fall almost directly on this theoretically plotted curve. Similar graphical results were obtained for the  $n^+-n-p^+$  film.

1/1

USSR

UDC: 613.645-07:612.822.3.014.421.7

AMIROV, N. Kh., ZUBAIROVA, G. O., MENDELEVICH, D. M., and KALPINA, G. A., Kazan Medical Institute

"EEG Changes in Persons Working Under Low-Intensity Red Light and in Complete Darkness"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 1, 1971, pp 13-16

Abstract: Bioelectric activity of the brain was studied in several groups of females working in a photographic and motion picture film factory under low-intensity red light or in complete darkness. The EEG's of those working under red light were in most cases characterized by an irregular alpha rhythm localized chiefly in the occipital and parietal regions. The amplitude ranged from 20 to 30  $\mu$ v and the frequency was between 8.5 to 12 osc/sec. All the subjects exhibited a distinct beta rhythm of different oscillation frequencies and amplitudes. The EEG's of the women who worked in darkness were characterized in half the cases by a pronounced and regular alpha rhythm (with an average amplitude of 15 to 20  $\mu$ v) in the central and temporal regions. In cases where the alpha rhythm was indistinct or absent, the beta rhythm was dominant. The results of functional tests with opening and closing of the eyes confirmed the decrease in level of cortical

USSR

UDC 613.645

KAMCHATNOV, V. P., and KALPINA, G. A., Medical Institute im. S. V. Kurashov,  
Kazan

"Physiological and Hygienic Evaluation of Working Conditions of Persons Who Work  
in Low-Intensity Light"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 9, Sep 70, pp 16-19

Abstract: Physiological tests were administered to 412 females working in a film processing plant under red, green, or yellow light of low intensity 25 w bulbs. Complex shifts were found in the central and autonomic nervous system which included marked increases in optical rheobase and chronaxy and lengthening of the latent period of visual and motor reactions during the course of the day. The EEG was characterized by an irregular alpha rhythm, frequently followed by more rapid low-amplitude oscillations, an indication of decreased reactivity of the cortical processes. The condition of the autonomic nervous system was judged from shifts in skin temperature and arterial pressure, both of which were much lower at the end of a work shift than at the beginning. The physiological data were supported by the results of a neurological examination which showed a large number of functional shifts. In general, the adverse effects were most pronounced in those who worked in soft red light. Yellow light was less irritating than green.

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USSR

KALPAYEV, O. Sh. and AKHMEDZHANOV, K. A., Tashkent Institute of the Advanced Training of Physicians

"Cytochrome and Other Indicators of Distal Blood During Acute Poisoning by Fozalon in an Experiment"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, Jul 73, pp 45-47

Abstract: The toxic effect of these chemical compounds is related to the disturbance of the cell metabolism through upsetting the exchange mechanism. The experiments were carried out on 24 rabbits and 24 rats. These were divided into three groups: a control group; a group exposed to fozalon vapors ( $5.57 \text{ mg/m}^3$ ) for four hours a day for two weeks; and a group which were injected with a threshold dose (5 mg/kg). The animals were tested every few hours during the first day, then daily from the second to the fourteenth day for the following: condition of the animal; development of clinical indications of poisoning; change in weight; morphological structure of the distal blood; activity of the cholinesterase in the blood, alkaline phosphatase; peroxidase; and also the concentration of glycogen and phospholipids in the leukocytes. The data indicate that a small decrease in

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USSR

KALPAYEV, O. Sh. and AKHMEDZHANOV, K. A., Meditsinskiy Zhurnal Uzbekistana,  
Jul 73, pp 45-47

the cholinesterase activity of the blood occurs together with a pronounced  
change in the metabolism of the leukocytes characterized by a decrease in  
the cytochrome indicators.

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USSR

UDC 615.711.7

AVAKYAN, O. M., POGOSYAN, A. V., and KALITRIKIAN, A. A., Institute of Fine Organic Chemistry, Academy of Sciences Armenian SSR

"The Search for New Sympatholytics and Adrenolytics"

Yerevan, Biologicheskii Zhurnal Armenii, Vol 23, No 6, June 70, pp 14-20

Abstract: In their quest for sympatholytic and adrenolytic compounds, the authors studied 694 synthetic compounds, with many divergent structures. Among the many groups of substances and their derivatives which were tested on animals in the laboratory, amidine and guanidine derivatives were found to possess the desired properties. Adrenolytic properties were found in the derivatives of p-alkoxybenzyl-1,4-benzodioxane-w-ile-methylamine and 2(N-p-alkoxybenzylpiperazinomethyl)-1,4-benzodioxane. Sympatholytic properties were found in the derivatives of N-alkyl-N-(4-alkoxybenzyl)-aminoalkylguanidine and N-(r-alkoxybenzylmercaptoalkyl) guanidine. Study of the mechanism of their action will promote understanding of the mechanism of the transmission of stimulation from nerve endings to the receptors.

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UDC 619:576.851.48:636.4(476.5)

KAL'TSOVA, T. G.

"Enteropathogenic Serotypes of Escherichia coli Isolated From Pigs of Vitebskaya Oblast"

Minsk, Izvestiya Akademii Nauk BSSR, seriya Sel'skokhozyaystvennykh Nauk, No 1, 1972, pp 116-118

Abstract: Serotypes of 30 local strains of E. coli isolated from young pigs from different regions of Vitebskaya Oblast were identified, and their hemolytic and pathogenic activities were studied on white mice. With the exception of three strains, all the others belonged to serotypes 0139, 0117, 044, 026, 08. Principal serotypes of E. coli are 0139, 0117, and 044. The study has shown that different strains which belong to different serotypes differ markedly with respect to their pathogenic activity and ability to cause beta-hemolysis of erythrocytes. Some of the strains did not show any pathogenic activity.

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ON THE MAJORITY OF CONTEMPORARY ELECTRONIC AND IONIC DEVICES. BOOK I  
CONTAIN DATA ON ELECTRON BEAM RECEIVER AND TRANSMITTER TUBES,  
ELECTROVACUUM PHOTOELECTRONIC DEVICES AND ELECTROVACUUM IONIC DEVICES.  
THE BOOK WAS WRITTEN FOR SPECIALISTS WORKING WITH RADIOELECTRONIC  
EQUIPMENT, AS WELL AS STUDENTS AND RADIO AMATEURS.

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