

USSR

UDC 621.375:530.145.6

S
SOLLOGUB, V. S.

"Optimizing the Frequency Characteristics of Wide-Band Quantum Amplifiers"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific and Technical Collection. SHF Electronics), 1970, Vyp. 6, pp 113-125 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D174)

Translation: A method is proposed for calculating the optimum distribution of magnetic field intensity in wide-band quantum amplifiers with Zeeman broadening of the pass band. The method can be used to produce maximally flat frequency responses and is based on solving systems of algebraic equations. The Doppler form of the spectral line is used as an example to demonstrate the optimality of the frequency responses obtained by this method. Resumé.

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UDC: 629.78.015.076.6

SOLNECHNYI, E. M., CHUPRUN, B. Ye.

"Accounting for Uncontrolled Perturbations in Problems of Optimizing Space Vehicles"

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 173-187 (from RZh-Raketostroyeniye, No 10, Oct 72, abstract No 10.41.43)

Translation: The paper contains new formulations of optimization problems which account for the presence of uncontrolled perturbations. Accounting for such factors is important in particular in problems of bringing nuclear rocket reactors up to power, in problems of choosing an engine and its operating conditions for a spaceship, etc. A new formulation of the optimum control problem is proposed which requires predetermined constraints on motion of the system under the effect of any disturbances from a given class. An approximate algorithm is also proposed for finding the speed-optimum conditions when final stability is required. The numerical results of digital

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SOLNECHNYY, E. M., CHUPRUN, B. Ye., Upr. dvizhushchimisya ob"yektami. Tr. IV Vses. soveshch. po avtomat. upr. Tbilisi, 1968--sbornik, 1972, pp 173-187

computer calculations are analyzed. Consideration is given to some problems of selecting a spaceship engine and its operating conditions with regard to the presence of uncontrolled perturbations (errors in the control law and external force fields). Two possible formulations are given for the optimum problem of minimizing the initial mass of a spaceship; these formulations are analytically solved and the results are compared with each other and with the results of solution of the "classical" problem. Three illustrations, bibliography of four titles. Résumé.

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EQUIPMENT
Aeronautical

USSR

UDC 531.383

VERESOV, E.S., KANE, M.A. and SOL'NITSEV, R.I., Leningrad Electrotechnical
Institute imeni V.I. Yl'yanova (Lenina)

"Synthesis of a Digital Stabilization System in a Three-axial Gyrostabilizer"
Leningrad, Priborostroyeniye, No 4, 1971, pp 66-69

Abstract: A synthesized-mathematical-model investigation was made of a gyro-stabilizer system with digital stabilization. Selected criteria were maximum dynamic error in stabilization angle with stepwise and harmonic system reaction, maximum precession angle, and transient-precess time. The three-axis gyrostabilizer was treated as three single-axis units having cross-coupling. Interrelationships were established for moment of inertia relative to stabilizer axis, moment of inertia relative to precession, kinetic moment, friction coefficients for corresponding axis, perturbation moment in stabilization axis, stabilizer-motor-winding signal, stabilization angle, precession angle, and discrete time of digital stabilization system. Computer analysis of the synthesized model resulted in a correction program to minimize self-oscillation for single-axis and three-axis gyrostabilizers. The program was successfully applied to a test unit. The method proved to be simple and convenient for investigating the subject systems.

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Television

USSR

UDC 621.397:621.396.61

SOLNTSEV, A. A., YEFIMOV, I. I.

"A Television Device for Observation of High-Contrast Objects"

USSR Author's Certificate No 285043, filed 11 Dec 68, published 29 Dec 70
(from RZh-Radiotekhnika, No 7, Jul 71, Abstract No 7G104 P)

Translation: This Author's Certificate introduces a television device for observing high-contrast objects. The unit contains a television transmitting tube, a video amplifier, and an amplitude selector with two selection thresholds. The signal from one of the selector outputs is fed through a gamma corrector to the modulator of the transmitting tube. As a distinguishing feature of the patent, the contrast of the elements of the object being transmitted is reduced by connecting an adder between the output of the gamma corrector and the vidicon modulator. The second input of the adder is connected through an additional gamma corrector to the second output of the amplitude selector.

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USSR

UDC: 621.397

NIKIFOROV, D. D., SOLNTSEV, A. A., LIFSHITS, M. A., YEFIMOV, I. I.

"A Device for Measuring the Time Interval Between the Midpoints of Video Pulses"

USSR Author's Certificate No 275851, filed 15 Jul 67, published 13 Oct 70
(from RZh-Radiotekhnika, No 5, May 71, Abstract No 5G69 P)

Translation: The device is designed for measuring the time interval between the midpoints of video pulses in two sequences of identical frequency where the relative phase shift between sequences is such that the pulses of one sequence are within the limits of the pulses of the other sequence. The device contains time interval meters, and registration units, and is distinguished by the fact that measurement precision is improved by connecting the inputs of the device through differentiating links and a commutator to the inputs of the above-mentioned time interval meters. The outputs of these meters are connected through flip-flops to the registration unit.

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USSR

UDC: 621.374.5(088.8)

S
SOLNTSEV, A. A., YEFIMOV, I. I., LIFSHITS, M. L.

"A Signal Shaper"

USSR Author's Certificate No 250214, filed 28 Oct 66, published 22 Jan 70 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7G345 P)

Translation: A device is proposed for shaping a signal located on the time axis in the middle of a video pulse. The device contains a differential link and a delay unit. To improve the precision with which the shaped signal coincides with the middle of the video pulse, keys are connected between the differential link and the delay unit which serve to isolate signals corresponding to the front and cut-off of the video signal, and the leads from the delay unit are connected through coincidence circuits to memory elements which are connected to the load.

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USSR

UDC: 533.9.08:621.373.530.145.6

MARIPOV, A., BULKIN, P. S., SOLNTSEV, G. S., GINZBURG, V. M.

"Singularities of Diagnosing a Superhigh-Frequency Plasma by the H_{01} Mode
in a Circular Waveguide"

V sb. Vopr. fiz. nizkotemperaturn. plazmy (Problems of Low-Temperature Plasma
Physics—collection of works), Minsk, "Nauka i tekhn.", 1970, pp 75-78 (from
RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1D131)

[No abstract]

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USSR

UDC: 669.713

NIKIFOR, V.T., and SOLENTSEV, S.S.

S

"First Scientific and Technical Conference at the Bratsk Aluminum Plant"

Moscow, Tsvetnyye Metally, No 5, May 70, pp 93-94

Abstract: In November 1969, the first scientific-technical conference on accomplishments and suggestions for further improvement of technical and economic indicators of series-type electrolysis units, equipped with high-capacity electrolyzers with top current feed, was held at the Bratsk Aluminum Plant. Representatives from the Bratsk, Krasnoyarsk, Novokuznetsk, Irkutsk, and Volgograd aluminum plants, the Bratsk assembly administration of the Stroymontazh trust, VAMI (All-Union Institute of Aluminum and Magnesium), the Sverdlovsk Institute of Labor Hygiene and Occupational Diseases, and the Proyektstal'konstruktsiya, NIIZEB (Scientific Research Institute of Concrete and Reinforced Concrete), and Tsvetmetavtomatika institute were present at the conference. Twenty-five reports were presented. Various suggestions were offered on the improvement of electrolytic processes, both in the field of research and in the modification of existing techniques and equipment. These included suggestions on automatic regulation of anode arrangement, intensification and expansion of research on the improvement of anode-mass quality, acceleration of the development and adoption of the means of mechanization, continuous plant supply with the necessary raw materials and equipment, decrease

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NEKITICH, V.T., Tsvetnyye Metally, No 5, May 70, pp 93-94

of the negative effect of magnetic fields through rational arrangement of ferromagnetic parts, increase of the distance between anode and border by use of graphitized slabs, and intensification and expansion of research on the effect of magnetic and gas hydrodynamics of the melt, its temperature, and concentration fields, and geometric parameters on indicators of the electrolysis process.

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USSR

UDC 621.385.63

MCHEDLIDZE, G. G., SOLNTSEV, V. A.

"Wave Method of Solving the Nonlinear Equations of Traveling Wave Tubes"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 10, 1972, pp 2227-2230

Abstract: A method of numerical integration of the system of nonlinear equations of traveling wave tubes is proposed which is a generalization of the approximate method discussed previously [V. T. Ovcharov, et al., Radiotekhnika i elektronika, Vol 7, No 11, 1931, 1962; V. A. Solntsev, et al., Radiotekhnika i elektronika, Vol 11, No 1, 58, 1966]. The introduced method is not connected with representation of the beam by a set of charges but operates on its mean characteristics (mean velocity, grouping parameters). Thus, the order of the system of differential equations obtained is small independently of whether a harmonic or a complex signal is investigated. The essence of the method is discussed for the case of amplification of a harmonic signal. The presented algorithm for numerical solution of the equations permits variation of the degree of the approximating polynomial. Calculation results are presented graphically which were used to find the minimum required number of harmonics considered in the Fourier series used to represent the addition to the undisturbed phase of electrons caused by the high frequency forces, insuring correct description of all the nonlinear phenomena in the beam and a comparison of the results obtained

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MCHEDLIDZE, G. G., et al., Radiotekhnika i Elektronika, Vol 17, No 10, 1972,
pp 2227-2230

with previously published results. A system of ordinary differential equations is obtained by the wave method the order of which is appreciably lower than when using the large particle method, and the results are identical in both cases. The method can be generalized to the case of large values of the amplification parameter and more exact consideration of the space charge forces.

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Inorganic Compounds

USSR

UDC 542.61:546.791-31

BLINOVA, N. I., KOZHINA, I. I., RODIONOVA, L. P., and SOLNTESEV, V. M.

"Solution of Some Uranium Oxides in Sulfuric Acid"

Leningrad, Radiokhimiya, Vol 15, No 3, 1973, pp 391-397

Abstract: Changes in the composition and structure of tetragonal and cubic uranium oxides during solution at 90° in 2.0, 10.0, and 15.0 N H₂SO₄ were studied. Solution was carried out in an Ar atmosphere. Solution of U₄O₉ and beta-U₃O₇ proceeded with an insignificant change in the chemical composition. Other oxide phases did not form in the process. The concentration of H₂SO₄ had no effect on the limiting composition of the two oxides. The lower limit of the existence of the U₄O₉ phase was at a composition in the vicinity of UO_{2.231±0.005} and that of the beta-U₃O₇ phase at a composition in the vicinity of UO_{2.287±0.005}. For gamma-U₃O₇ and tetragonal and pseudocubic oxides with the compositions UO_{2.37} to UO_{2.40}, the limiting compositions varied with the concentration of H₂SO₄ and with the method by which the initial oxide had been

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BLINOVA, N. I., et al., Radiokhimiya, Vol 15, No 3, 1973, pp 391-397

prepared. As shown by the compositions on solution first in 2 N H_2SO_4 and then in 10 N H_2SO_4 , the changes in composition were reversible for these oxides. The lower limit of existence of the gamma- U_3O_7 phase at 90° was at a composition in the vicinity of $UO_2.346 \pm 0.005$. In the case of the oxides the behavior of which varied with the method of preparation, one could assume a lack of uniformity in the phase composition of the samples, which were apparently inhomogeneous in that respect. The authors thank Prof. U. M. Tolmachev for his help in the investigation.

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USSR

UDC 51:621.391

REPINA, L. K., and SOLNTSEV, V. N.

"The Solution of Two Applied Problems by the Random Search Method"

V sb. Issled. operatsiy i stat. modelir (Operations Research and Statistical Modeling--collection of works), First Edition, Leningrad, Leningrad University, 1972, pp 136 - 145 (from RZh Matematika, No 11, Nov 73, abstract No 11 V704)

Translation: This article examines several modifications of random search algorithms as applied to the solution of two problems. Numerical data obtained in the process of solving these problems are given, making it possible to compare the efficiency of the algorithms considered. The "non-local" search algorithm is recommended for further use.

Abstract from the introduction.

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USSR

KRYUKOV, V. N., and SOLNTSEV, V. P.

UDC 536.24

"Investigation of the Heat Exchange on a Rough Plate"

V Sb. "Teplo i Massoperenos". [In the Collection "Heat and Mass Transfer"],
Technical Information Minsk, 1972, pp 57-61 (from Referativnyy Zhurnal, No 6,
Jun 72. 34. Aviation and Rocket Engines. Abstract No 6.34.21)

Translation: Results are presented of the experimental investigation of heat flows on rough plates. The investigation was carried out on plates with a dense two-dimensional geometrically similar roughness of 0.2, 2.0, and 10.0 mm depths. A control experiment on a smooth surface was used for comparison. Besides, the local heat exchange on the surface with projections and the vortex structure between the roughness components were measured on the plate with 10 mm deep roughness. Four illustr., two biblio. refs.

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USSR

UDC 533.6.013

LJZHANSKIY, B. Ye., SOLNTSEV, V. P., Moscow

"Experimental Study of Flow in Three-Dimensional Open Zones Before Projections"

Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 1, 1972, pp 50-54.

Abstract: Some results are presented from an experimental study of subsonic flow in the zones of separation of a three-dimensional turbulent boundary layer, formed before cylindrical projections, rectangular parallelepipeds and plates. The ratio of the width of the projections to their height varied between 0.25 and 24, the ratio of the thickness of the boundary layer at the point of separation to the height of the projection -- from 0.2 to 2. Flow plans are produced, the influence of the geometric shape of the projection, ratio of width to height of projection, parameters of boundary layer, Euler and Reynolds on the flow picture and coordinates of characteristic points in the separation zone is demonstrated. Data are produced for determination of the dimensions of the three-dimensional separation zones before the projections.

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USSR

LUZHANSKIY, B. YE., SOLNTSEV, V.P. (Moscow)

"Experimental Investigation of Heat Exchange in Zones of Separation of the Turbulent Boundary Layer Before a Recess"

Moscow, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 1, 1971, pp 126-131

Abstract: In this article are presented the results of an experimental investigation of heat exchange in zones of separation of a two-dimensional turbulent boundary layer before a rectangular recess at a subsonic gas stream velocity. 5 figures, 1 table, 3 bibliographic entries.

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USSR

UDC 536.244:532.517.4

LUZHANSKIY, B. Ye., SOLNTSEV, V. P., Moscow

"An Experimental Study of Heat Exchange in Detached Zones Upstream From Cylindrical Projections"

Moscow, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 6, Nov/Dec, 72, pp 83-89

Abstract: The paper gives the results of an experimental study of heat exchange in the zones of detachment of the turbulent boundary layer upstream from cylindrical projections in a subsonic airflow. The research was done with a variation in the ratio of the projection diameter to the height from 0.25 to 4, the ratio of the thickness of the boundary layer at the detachment point to the height of the projection of 0.09 to 0.7, the Reynolds number calculated from the parameters of the oncoming flow to the height of the projection from 10^4 to $4 \cdot 10^5$, and a Mach number reaching 0.85. The temperature factor was 0.7. It is shown that the distribution of the heat transfer coefficients in the detached zone depends on the Reynolds and Euler numbers and on the ratio of the thickness of displacement of the boundary layer to the diameter (or height) of the

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USSR

SOLNTSEV, Yu. P., and KUZIN, A. V., (Editors)

"Optimizatsiya Metallurgicheskikh Protssessov" (Optimization of Metallurgical Processes), "Metallurgiya," Moscow, No 5, 1971, 448 pp

Translation of Foreword: The symposium, "Optimization of Metallurgical Processes," No 5, was compiled on the basis of papers presented at the Scientific-Technical Conference conducted by the "Bol'shevik" Plant together with the Leningrad District Administrations of the Scientific-Technical Society Mashprom and Ferrous Metallurgy, the Leningrad House of Scientific and Technical Propaganda, the Leningrad Polytechnic Institute imeni M. I. Kalinin, and the Northwestern Correspondence Polytechnic Institute, in May 1969. The works, presented by speakers of the Conference, were carried out both in laboratories of scientific-research institutes and universities and in laboratories and departments of plants of many cities in the Soviet Union. They cover a very wide range of problems. The symposium includes reports concerning the production of steel and alloys, foundry production, and heat treatment and shaping of metals. Intensive physico-mathematical analysis of investigation results is characteristic for the majority of reports. The method of mathematical statistics was selected by many authors of reports as a means of simplifying

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LUZHANSKIY, B. Ye., SOLNTSEV, V. P., Zhurnal Prikladnoy i Tekhnicheskoy Fiziki, No 6, Nov/Dec 72, pp 83-89

projection, as well as on the ratio of the diameter to the height. Integral relations are found which generalize data on heat exchange at characteristic points of detached zones, and also the dimensionless distributions of heat transfer coefficients for determining heat fluxes on a plate in the plane of symmetry of the detached zone upstream from projections.

USSR

SOLNTSEV, Yu. P., and KUZIN, A. V., Editors, "Optimizatsiya Metallurgicheskikh Protseessov" (Optimization of Metallurgical Processes), "Metallurgiya," Moscow, No 5, 1971, 448 pp

V. A. Kudrin, M. F. Sidorenko, N. A. Smirnov, A. S. Morozov, G. A. Khasin, N. S. Chuvatin, S. K. Filatov; Methods for Obtaining Low Phosphorus Content in Metal	9
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SOLNTSEV, Yu. P., and KUZIN, A. V., Editors, "Optimizatsiya Metallurgicheskikh Protsessov" (Optimization of Metallurgical Processes), "Metallurgiya," Moscow, No 5, 1971, 448 pp

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SOLNTSEV, Yu. P., and KUZIN, A. V., Editors, "Optimizatsiya Metallurgicheskikh Protsessov" (Optimization of Metallurgical Processes), "Metallurgiya," Moscow, No 5, 1971, 448 pp

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CSO: 1842-W

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1/3 013 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--3, (4,5, DIBROMO, 2, FURYL), 5, METHYLISOXAZOLE, 4, CARBOXYLIC ACID AND ITS
DERIVATIVES -U-
AUTHOR--(04)-KHISAMUTDINOV, G.KH., STRUKOV, I.T., SOLNSTEVA, A.A., RUDZIV,
E.A.
CCOUNTRY OF INFO--USSR
SOURCE--KHM.-FARM. ZH. 1970, 4(2), 21-3
DATE PUBLISHED--70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--FURFURAL, BROMINATION, HEREROCYCLIC OXYGEN COMPOUND, ISOMER,
ORGANIC AZO COMPOUND, PENICILLIN, BACTERICIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1993/0597

STEP NO--UR/0450/70/004/002/0021/0023

CIRC ACCESSION NO--AP0113484

UNCLASSIFIED

2/3 013

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0113484

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. K SUB2 CO SUB3 (14G) IN 120 ML H SUB2 O AND 51.5 G POWD. I (X EQUAL CHO), M. 36-70DEGREES (PREPD. IN 41.5PERCENT YIELD BY BROMINATION OF FURFURAL) ARE ADDED WITH STIRRING TO A COOLED SOLN. OF 14 G NH SUB2 OH.HCL IN 120 ML H SUB2 O, AND THE MIXT. IS STIRRED 1.5 HR AT 35-40DEGREES AND KEPT OVERNIGHT AT ROOM TEMP. TO GIVE 90.6PERCENT ISOMER A OF I (X EQUAL CH IS TO NOH), M. 113-14DEGREES. THIS (20 G) IN 300 ML DRY C SUB6 H SUB6 IS SATD. WITH DRY HCL TO YIELD 96PERCENT ISOMER B OF I (X EQUAL CH IS TO NOH), M. 123DEGREES. A SUSPENSION OF 6.72 G OF THIS IN 40 ML ABS. ETOH IS CHLORINATED AT MINUS 10 TO MINUS 13DEGREES TO COMPLETE OXIME DISSOLN. (SIMILAR TO 1.5 HR), THE SOLN. OF I (X EQUAL CCl IS TO NOH) OBTAINED IS ADDED OVER 20 MIN WITH STIRRING TO A COOLED ETHANOLIC SOLN. OF FRESHLY PREPD. ACCHNACO SUB2 ET (FROM 50 ML ABS. ETOH, 1.53 G METALLIC NA, AND 8.9 G ACCH SUB2 CO SUB2 ET), AND THE MIXT. BROUGHT TO PH 7.5-8, STIRRED 1 HR AT MINUS 5 TO MINUS 10DEGREES, AND KEPT 45 HR AT ROOM TEMP. TO YIELD 51.2PERCENT II (Y EQUAL OET), M. 123.5-24DEGREES (PETROLEUM ETHER). THIS (1 G), 0.14 G KOH, 14 ML ETOH, AND 14 ML WATER IS REFLUXED 4 HR TO GIVE 86.4PERCENT II (Y EQUAL CH), M. 229.5-30DEGREES (AQ. ETOH). SOCL SUB2 (5 ML) AND 2 DRGPS HCONME SUB2 ARE ADDED TO THE SUSPENSION OF 1.8 G OF THIS IN 30 ML C SUB6 H SUB6, AND THE MIXT. REFLUXED 4 HR TO GIVE 76.6PERCENT II (Y EQUAL Cl) (III), M. 90-10DEGREES (PETROLEUM ETHER).

UNCLASSIFIED

3/3 013

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0113484

ABSTRACT/EXTRACT--THIS (1 G) IN 5 ML DRY ME SUB2 CO IS ADDED STEPWISE TO A STIRRED SOLN. OF 0.64 G 6-AMINOPENICILLANIC ACID IN 18 ML 3PERCENT NAHCO SUB3, AND THE MIXT. STIRRED 3.5 HR AT 20DEGREES TO GIVE 0.34 G NA SALT OF 3-(4,5-DIBROMO-2-FURYL)-5-METHYLISOXAZOL-4-YLPENICILLIN, THE ANTIBACTERIAL ACTIVITY OF WHICH IS EXAMD. CONCD. AQ. NH SUB3 (10 ML) IS ADDED DROPWISE TO A STIRRED SOLN. OF 0.7 G III IN 20 ML DRY DIOXANE, AND THE MIXT. KEPT 30 MIN TO YIELD 83.3PERCENT II (Y EQUAL NH SUB2), M. 231-20DEGREES (ETOH). A MIXT. OF 1.85 G III AND 5 ML ABS. MEQH IS HEATED ON A BOILING WATER BATH 2 HR TO GIVE 88.5PERCENT II (Y EQUAL OME), M. 117-18DEGREES (MEQH). THIS (1 G), 0.5 ML ABS. ETOH, AND 0.3 ML N SUB2 NEGATIVE H SUB4 IS HEATED ON A BOILING WATER BATH 2 HR TO YIELD 67PERCENT II (Y EQUALS NHHH SUB2), M. 205.5-206DEGREES (ETOH).

UNCLASSIFIED

1/2 028 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--SPECIFIC MORPHOLOGICAL AND FUNCTIONAL FEATURES OF THE ACOUSTIC
ORGAN IN DOLPHINS -U-
AUTHOR--(02)-BELKOVICH, V.M., SOLNTSEVA, G.N.
COUNTRY OF INFO--USSR
SOURCE--ZOOLOG ZH 49(2): 275-282. ILLUS. 1970
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--DOLPHIN, EAR, ACOUSTIC SIGNAL, SENSE ORGAN, SOUND, WHALE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/1339 STEP NO--UR/0429/70/069/002/0275/0282
CIRC. ACCESSION NO--AP0133295

2/2 028

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0133295

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY OF THE ACOUSTIC ORGAN IN DELPHINUS DELPHIS AND TURSIOPS TRUNCATUS HAS SHOWN THAT ITS MORPHOLOGICAL STRUCTURE IS QUITE SIMILAR IN BOTH SPECIES AND THE SPIRAL ORGAN OF CORTI DOES NOT DIFFER FROM THAT IN MAMMALS IN HISTOLOGICAL RESPECT. THE MEATUS ACUSTICUS EXTERNUS IN DOLPHINS HAS A CONNECTIVE TISSUE OVERGROWING WHAT IS VERY IMPORTANT FOR INTERPRETATION OF THE MECHANISM OF SOUND CONDUCTION. THE RANGE OF PERCEPTION IN D. DELPHIS VARIES FROM 0.018 TO 280 KHZ. THE PERIPHERAL PART OF ACOUSTIC ANALYZATOR IN WHALES WAS SHOWN TO BE OF VALUE FOR THE DIRECTED AND INDEPENDENT RECEPTION OF SIGNAL TO EACH EAR, SWITCHING OFF THE MIDDLE EAR AT THE MOMENT OF SIGNAL DELIVERY, CONTRIVING BY INTENSITY, PRODUCTION OF PRIMARY SELECTION BY SPECTRAL CHARACTERS.
FACILITY: INST. DEVELOP. BIOL., ACAD. SCI. USSR, MOSCOW, USSR.

UNCLASSIFIED

USSR

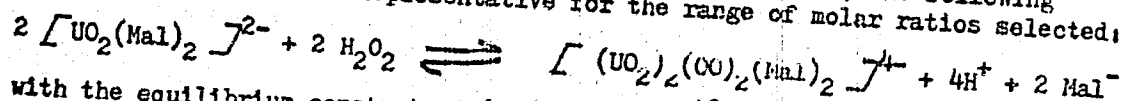
UDC 541.49.546.791.6

GUREVICH, A. M., POLOZHENSKAYA, L. P., OSICHEVA, N. P., and SOLNTSEVA, L. F.

"Reactions of Uranyl Malonate Complexes with Hydrogen Peroxide. II. Study of the Equilibria in the System $UO_2^{2+}-H_2O_2-C_3H_2O_4^{2-}-H_2O$ "

Leningrad, Radiokhimiya, Vol 13, No 5, 1971, pp 688-692

Abstract: Results are reported on the study of the reaction of uranyl malonate complexes with hydrogen peroxide employing the methods of light absorption and pH-metry. On the basis of the results of calculations, the following reaction is proposed as representative for the range of molar ratios selected:



with the equilibrium constant of $(3.3 \pm 0.6) \cdot 10^{-18}$. The complete formation of the complex ion $[(UO_2)_2(OO)_2(Mal)_2]^{4-}$ with a $10^{-3}M$ concentration of uranium occurs at the pH range of $6 \approx 7$. The stability constant of the diperoxodimalonatodiyranil ion was determined to be $1.7 \cdot 10^{75}$. In the pH range 2-7.5 partial displacement of the malonate groups takes place with the formation of $[(UO_2)_2(OO)(Mal)_x]^{(2x-2)-}$ type

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GUREVICH, A. M., et al., Radiokhimiya, Vol 13, No 5, 1971, pp 688-692

oc complexes in the first phase, followed by the formation of $[(UO_2)_2(OO)_2$
 $(Mal)_x]^{2x-}$ in the second phase. in weakly basic medium, various types of
peroxo-malonato-hydroxyl-uranyl complexes may form, and at pH > 10 , with
excess H_2O_2 the hydroxyl and malonate groups may be displaced with formation
of peroxide complexes $[(UO_2)_2(OO)_2(H_2O)_n]^{2-}$ and $[UO_2(OO)_3]^{4-}$.

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USSR

UDC 543.251:546.799.3

GUREVICH, A. M., POLOZHENSKAYA, L. P., OSICHEVA, N. P., and SOLNTSEVA, L. F.
"Electrochemical Method of Isolating Neptunium From an Alkaline Peroxide
Medium"

Leningrad, Radiokhimiya, Vol XIII, No 2, 1971, pp 239-245

Abstract: In connection with the urgency of the problem of separation and purification of transuranium elements and the difficulties of analyzing salt solutions containing micro amounts of transuranium elements, the possibility of separating these elements both jointly with uranium and in pure form (without a carrier) from alkaline peroxide media was studied on the example of ^{237}Np . The experimental procedure using the electrochemical method, and the data obtained are discussed. The applicability of the method to analysis of salt solutions of neptunium was demonstrated in a broad neptunium concentration range.

The yield of neptunium, introduced in the amount of 50-100 micrograms, reaches 99-100 percent, and its total losses vary from 0.5 to 1 percent under the following optimum conditions: $\text{pH} \approx 14.0$, $[\text{UO}_2] \geq 5.6 \cdot 10^{-5} \text{M}$ (1-2 milligrams in 75 ml), current density ≥ 1.0 milliamp/cm², electrolysis time ≥ 60 minutes, 1/2

USSR

GUREVICH, A. M., et al., Radiokhimiya, Vol XIII, No 2, 1971, pp 239-245

temperature 95-100°. Data indicating the effect of the amount of carrier introduced into the experiment on the neptunium yield show that with a decrease in carrier concentration below the indicated limit, the neptunium losses begin to increase in connection with an increase in the effect of the solubility factor of the uranium and neptunium compounds when washing the particulates with water. The data on the effect of salts on the ^{237}Np yield with uranium as the carrier show that the acetate and nitrate ions (both separately and jointly in a concentration up to 2M); the oxalate ion (up to 0.5M), have almost no effect on the ^{237}Np yield (97-99 percent) with total losses varying within the limits from 1 to 3 percent.

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USSR

NIKITIN, S. A., ~~SOLNTSEVA, I. I.~~ (Moscow State University)

"Effects of Pressure on the Galvanomagnetic Effect and the Critical Field in a Single Crystal of Dysprosium"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, August 1970, pp 351-355

Abstract: The influence of pressure on the galvanomagnetic effect in dysprosium single crystals is measured at temperatures between 85 and 177°K. A strong dependence of the pressure-induced shift of the critical field on temperature is observed. A thermodynamic analysis of the experimental data for dysprosium shows that the increase of the critical field with pressure at 110-140°K can be explained by the growth of exchange interaction. The correlations between dH_c/dp and dH_c/dT and also between the magnetostriction and dH_c/dT found in the present investigation indicate that the decrease of H_c due to cooling below 160°K, which results in a transition to the ferromagnetic state, occurs in dysprosium as a result of anomalous growth of the lattice constant c below the paramagnetism-helicoidal antiferromagnetism transition temperature.

1/1

(8)

USSR

UDC 632.95

BLIZNYUK, N. K., KHOKHLOV, P. S., KVASHA, Z. N., MARKOVA, L. I., LEVSKAYA, G. S., PROTASOVA, L. D., SOLNTSEVA, L. M., MATYUKHINA, Ye. N., VARSHAVSKIY, S. A., BARANOV, Yu. I., LIBMAN, B. Ya., ZHEMCHUZHIN, S. G.

"Method of Production of Dichlorides or Dibromides of Thiophosphonic Acids or Their Bis Analog"

USSR Author's Certificate No 332095, filed 19/08/69, published 17/04/72
(Translated from Referativnyy Zhurnal Khimiya, No 24(II), 1972, Abstract No 24N591, by T. A. Belyayeva)

Translation: Compounds of the formula $RP(X)X_2$ (I) (R=alkyl, aryl, aralkyl; X=Cl or Br) and $X_2P(S)A(S)PX_2$ (II) (A-bivalent hydrocarbon radical) were produced by the reaction of mono- or dihalo hydrocarbons with S, P and PX_3 with heating to 250-400° in an autoclave of stainless steel or nickel in the presence of catalytic quantities of I_2 or its compounds. Example. A mixture of 0.24 mole $PhCl$, 0.24 g-atom S, 0.16 g-atom white P, 35 ml PCl_3 and 0.05 g I_2 is heated at 290-330° for seven hours in an autoclave of stainless steel, the PCl_3 is distilled, then vacuum distillation is used to separate I (R=Ph, X=Cl), yield 60%, B. T. 109-112°/3, n_D^{20} 1.6241. Similarly, I were produced (given R, X, yield in %, B. P. in °C/mm, n_D^{20}): 4- ClC_6H_4 , 1/2

USSR

BLIZNYUK, N. K., et al., USSR Author's Certificate No 332095, filed 10/08/69, published 17/04/72

Cl, 53.5; 124-3/1.5-2, 1.6229; p-MeC₆H₄, Cl, 54.5, 125-7/1, 1.6120; 4FC₆H₄, Cl, 72.2, 95-7/0.5, 1.6028; Ph, Br, Cl, 127-130/2, 1.6850; 4-FC₆H₄, Br, 55, 135-8/1, 1.6758; PhCH₂, Cl, 76.4, 120-3/2, 1.6150; 3-FC₆H₄, Cl, 108-110/1.5, 1.5908; 4-MeC₆H₄CH₂, Cl, 53.3, 126-9/2, 1.6035; 4-ClC₆H₄CH₂, Cl, 61.6, 129-133.2, m. p. 74-6°, --; 2-FC₆H₄CH₂, Cl, 61.6, 129-133.2, m. p. 48-9°, --; 2.4-Me₂C₆H₃CH₂, Cl, 47.5, 140-1.6045; 2.4-Cl₂C₆H₃CH₂, Cl, 43.4, 147-9/2, m. p. 100-1°, --. Also produced were II (X=Cl, A=CH₂CH₂), yield 61.5%, m. p. 92-3°. I and II are intermediate products for the production of insecticides, acarocides, fungicides and herbicides.

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USSR

UDC 546.791.4

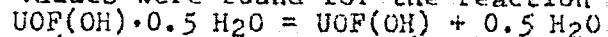
VDOVENKO, V. M., ROMANOV, G. A., and SOLNTSEVA, L. V.

"Heat of Formation of $\text{UOF(OH)} \cdot 0.5 \text{H}_2\text{O}$ "

Leningrad, Radiokhimiya, Vol 12, No 5, 1970, pp 764-766

Abstract: In continuation of their work, the authors determined the enthalpy of formation of $\text{UOF(OH)} \cdot 0.5 \text{H}_2\text{O}$ to be -374.9 ± 5.0 Kcal/mole.

The following values were found for the reaction



($\Delta H = 5.19$ Kcal/mole, $\Delta \phi = 1.46$ Kcal/mole, and $\Delta S = 12.48$). The heat of formation of UOF(OH) was found to be -340.8 ± 5.0 Kcal/mole.

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USSR

UDC 546.791.4

VDOVENKO, V. M., ROMANOV, G. A., MALININ, G. V., and SOLNTSEVA, L. V.

"Synthesis and Investigation of Some Physico-Chemical Properties of $\text{UOF(OH)} \cdot 0.5 \text{H}_2\text{O}$ "

Leningrad, Radiokhimiya, Vol 12, No 5, 1970, pp 762-764

Abstract: The compound $\text{UOF(OH)} \cdot 0.5 \text{H}_2\text{O}$ was synthesized by adding fluorine ions at a ratio of 1:1 to U(IV) solutions in perchloric acid. Upon addition of a base the color of the solution changes from greenish-blue to brown and a fine crystalline black precipitate falls out at pH 1.8. The product contains 79.76% of uranium, agreeing well with the proposed structure. Thermogravimetric and infrared analyses carried out also supported the proposed structure for the above product. This compound is insoluble in water, and dissolves easily in aqueous solutions of mineral acids forming a fluoride complex UF_3^{4-} . When heated to 250° it converts to UOF(OH) .

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USSR

UDC: 621.385.644.2

SOBOLEV, G. L., SOLOVIEVA, V. B., editorial staff of "Radiotekhnika i elektronika", Academy of Sciences of the USSR

"Frequency Response Analysis of a Multicavity Magnetron"

Analiz chastotnykh kharakteristik mnogorezonatornogo magnetrona (cf. English above), Moscow, 1971, 16 pp, ill., bibliography of six titles (2642-71 Dep.) (from RZh-Elektronika i yeye primeneniye, No 6, Jun 71, Abstract No 5A144 DEP)

Translation: Electronic frequency displacement and voltage retuning of the frequency are observed in a multicavity magnetron. In the voltage retuning mode, the frequency is a nearly linear function of constant potential, and in accordance with Welch's theory this is determined by low rf potentials. Experiments by Wilbur and Peters show that the rf potentials accompanying voltage retuning are not necessarily small. Bogolyubov's asymptotic method is used for approximate calculation of the trajectories of motion of electrons with regard to the space charge in a cylindrical type 4/50 magnetron; the method of Green's functions is used. The active and reactive components

1/2

SOBOLEV, G. L., SOLINTSEVA, V. B., Analiz chastotnykh kharakteristik mnogo-rezonatornogo magnetrona, Moscow, 1971

of the power of interaction are calculated as well as the emission frequency. The computational cycle was repeated after finding the rf potential. The results of the analysis are as follows. At constant potentials of 21-22.4 kV and rf potentials $U_1 = 14.1-23.2$ kV, $B = 0.69$ Wb/cm² under conditions of unlimited emission temperature, the current and power increase in satisfactory correspondence with experiment. A change in constant potential from 22.4 kV to 25 kV while limiting the density of the space charge causes a slight change in direct current and power, and a nearly linear increase in frequency. Frequency tuning is 30 MHz when $U_1 = 23$ kV, $Q_L = 222$. Thus voltage retuning takes place at high rf potentials and comparatively high Q. Bibliography of six titles. Authors' abstract.

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USSR

UDC 539.216.2

SOLNTSEVA, YU. M., Irkutsk State University imeni A. A. Zhdanov

"Rotational Hysteresis in Permalloy Films Produced at a High Substrate Temperature"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 3, 1973, pp 655-658

Abstract: A study was made of the rotational hysteresis in anomalous films of different thicknesses. A method, based on the Hall plane effect, was employed to measure the rotational hysteresis and determine magnetic parameters of a film (coercive force H_c and filed anisotropy h_k). The films were produced by thermal vaporization of permalloy 79NMA onto optically polished glass substrates in a vacuum of 10^{-5} - 10^{-6} mm Hg. Graphs show the relationship of the ratio W_r/K_u (loss in rotational hysteresis to the constant of uniaxial anisotropy) to the applied field $h' = H/H_k$ for films of different thicknesses. An unusual shape was noted for some of the curves where one minimum and two maximums were observed, indicating that these samples possessed a rotating susceptibility. The two maximums were explained by magnetic reversal of regions with a high anisotropy for the first maximum and the second maximum occurring from strong fields when the rotational hysteresis forms during magnetic reversal of unordered orientated regions.

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USSR

SOLNTSEVA, YU. M., Fizika Metallov i Metalloveceniye, Vol 36, No 3, 1973,
pp 655-658

The minimum on the graphic curves is explained by the plane Hall effect where during magnetic reversal in rotating fields, some sections of the film possess conditions for unidirectional hysteresis, and other local sections have already reached the switchover angle at which uniaxial hysteresis forms. Two figures, one table, ten bibliographic references.

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USSR

UDC: [621.313.3.013+621.3.045.3:537.312.62.]001

BORZOV, G. G., ~~SOLNYSHKIN, N. I.~~, Leningrad

"Calculating the Magnetic Field of Superconducting Coils of Saddle Shape With Ferromagnetic Shield"

Moscow, Izv. AN SSSR: Energetika i Transport, No 4, Jul/Aug 72, pp 77-80

Abstract: An algorithm is proposed for solving the three-dimensional nonlinear problem based on the method of calculating magnetic eddy fields by means of a scalar magnetic potential in combination with expansion of current sources into their spatial harmonics. The paper presents the results of calculation of the induction and magnetic flux in the armature of a cryogenic machine with ferromagnetic shield; the program for calculating these parameters was compiled on the basis of the proposed algorithm. The computational data are compared with experimental results.

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USSR

UDC: [621.3.013+621.313]536.483.001

DEMIRCHYAN, K. S., SOLNYSHKIN, N. I., Leningrad

"A Finite-Difference Method of Studying Magnetic Fields of Cryoelectric Machines in Unbounded Regions"

Moscow, Izv. AN SSSR: Energetika i Transport, No 4, Jul/Aug 72, pp 97-100

Abstract: A procedure is proposed for refining boundary conditions in the case of limiting the computational region when using the finite difference method. The procedure is based on the method of reducing a magnetic eddy field to the problem of calculating the field from a system of magnetic charges. A procedure is given for calculating the magnetic field of a cryoelectric generator by the finite-difference method with correction of the scalar magnetic potential on the boundary of the computational region. The finite-difference method of solving magnetic field equations in unbounded regions can be used with elimination of the influence of limitation of the region; for this purpose, it is sufficient to successively improve the accuracy of the constant magnetic field distribution in the iteration process, and to use the more accurate values to refine the value of the magnetic potential on the boundary of the region. Solution of the three-dimensional problem gives a two-dimensional representation of the magnetic field in the form of a set of space harmonics.

1/1

USSR

UDC 621.384.6.01

KUZNETSOV, V. S., ABROYAN, M. A., SOLNYSHKOV, A. I., and FIDEL'SKAYA, R. P.

"Measurement and Investigation of the Redistribution of the Phase Density of Charged Particles in Real Fluxes"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol XLI, No 8, 1971, pp 1611-1617

Abstract: The density distribution of the charged particles of a beam in a four-dimensional phase space of transverse coordinates and velocities determines all the basic characteristics of the flux. The authors' actual measurements of this distribution for proton beams with a current of approximately 400 milliamperes and particle energies of 30 and 650 kiloelectron volts showed that the actual distribution of charged particles differs substantially from the distribution as it is usually calculated theoretically. Most methods of computing the parameters of intensive fluxes assume a microcanonical distribution in which the phase density of the particles does not change from one cross section of the beam to another. In actual fact, the phase density of the particles does change and, consequently, so do such basic characteristics of the flux as the density distribution of the current and the magnitude and configuration of the phase volume.

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1/2 017

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--PARTICULARS ASSOCIATED WITH THE TECHNOLOGY OF ELECTRO PULSE
MACHINING DIE IMPRESSIONS UNDER CONDITIONS OF INDIVIDUAL MANUFACTURE -U-

AUTHOR--SULCO, A.V.

COUNTRY OF INFO--USSR

SOURCE--KIEV, TEKHNLOGIYA I ORGANIZATSIYA PROIZVODSTVA, NO 1, 1970, PP
64-66

DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, BEHAVIORAL AND SOCIAL
SCIENCES

TOPIC TAGS--DIE, ELECTROSPARK MACHINING, BIBLIOGRAPHY, MACHINERY
MANUFACTURING PLANT, MACHINE TOOL INDUSTRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1319

STEP NO--UR/0418/70/000/001/0064/0066

CIRC ACCESSION NO--AP0123278

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123278

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TECHNOLOGY IS PRESENTED FOR ONE PASS, ELECTRO PULSE MACHINING OF THE FORMING CAVITIES OF DIES. THE TECHNOLOGY IS BEING USED AT THE NOVOKRAMATORSK MACHINE BUILDING PLANT (NOVOKRAMATORSKIY MASHINOSTROITEL'NYY ZAVOD) UNDER CONDITIONS OF INDIVIDUAL MANUFACTURE. FORMULAS ARE GIVEN FOR CALCULATING ALLOWANCES FOR ELECTROPULSE MACHINING. THE TECHNICO ECONOMIC EFFECTIVENESS OF THIS PROCESS IS GIVEN.

UNCLASSIFIED

USSR

UDC: 621.317.77

DERYABIN, Yu. F., MOROZOV, V. I., SOLODAR', G. G.

"A Digital Phase Meter"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Report of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 87-89 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A336)

Translation: The authors describe a phase meter which converts the difference in phases of two SHF signals to numbers in four-digit parallel binary code. The proposed instrument is distinguished from conventional digital phase meters by its high speed. The phase meter consists of two parts: the SHF section in which the measured phase is converted to a series of five voltages, and an analog-digital converter where these voltages are converted to four-digit binary code. Tests of a model of the phase meter showed that its error in a frequency band of 10% is no more than $\pm 10^\circ$ when input powers are changed by ± 3 DB, and speed is at least 0.5 μ sec.

E. L.

1/1

USSR

UDC 547.62.24

DOKUNIKHIN, N. S., SOLODAR', S. L., and STAVINCHUK, V. G., Scientific Research Institute of Organic Intermediate Products and Dyes, Moscow

"Conversions of Polycyclic Ketones. The Action of Phosphorus Oxychloride on Phenalene and 1,3(2H)-Phenalendione"

Leningrad, Zhurnal Organicheskoy Khimii, Vol 9, No 2, Feb 73, pp 375-377

Abstract: On heating with phosphorus oxychloride phenalene and 1,3(2H)-phenalendione form 1-chloroperopyrene, m.p. 327-329°, and 1,3,7-trichloroperopyrene, m.p. 336-337°, respectively which can then be reduced to peropyrene. Oxidation of 1-chloroperopyrene with dilute nitric acid gave perylene-3,4,9,10-tetracarboxylic acid. The structure of 1,3,7-trichloroperopyrene was established by oxidizing it to 2-chloroperylene-3,4,9,10-tetracarboxylic acid, followed by conversion to the known 2-hydroxyperylene-3,4,9,10-tetracarboxylic acid.

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Acc. Nr:

AP0053445

Abstracting Service:
CHEMICAL ABST.

Ref. Code:

4R0366

11055d Reactions of polycyclic ketones. III. Mechanism of action of polycyclic ketones with carboxylic acid chlorides. Dokunikhin, N. S.; Solodan, S. L.; Shapiro, B. I. (Nauch.-Issled. Inst. Org. Poluprod. Krasitel., Moscow, USSR). Zh. Org. Khim. 1970, 6(2), 371-4 (Russ). The reaction of phenalene (I) with AcCl gives acyloxyphenalenyl free radical, detected by EPR spectroscopy. The formation of this free radical led to the postulation of a mechanism for the formation of acyloxy-pyrene. CPJR

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USSR

UDC 614.73:[541.15:542.2

CHISTOV, Ye. D., OSIPOV, V. Ye., SPRYGAYEV, I. F., SOLODIKHINA, L. D., and
DZHAGATSPANYAN, R. V.

"Radioactive Contamination in a Radiochemical Reactor"

Moscow, *Figiyena i Sanitariya*, No 6, 1970, pp 76-80

Abstract: A study of the design and mode of operation of the RS-2.5, the first Soviet industrial radiochemical reactor, which is used to sulfochlorinate saturated hydrocarbons and initiates Co^{60} gamma radiation is presented. It consists of a central axial irradiating unit, Co^{60} sources hermetically sealed in spherical cassettes, nonradioactive spheres, storage place for sources, distributing mechanisms, and biological protection. Radiocontamination of the inactive spherical elements of the reaction is well below the level permitted for radioactive preparations. Additional sealing of radioactive Co^{60} preparations in cassettes would decrease the possibility of the casing of the sources breaking and contaminating the atmosphere.

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USSR

UDC 547.558.1

PROKOF'YEV, A. I., SOLODNIKOV, S. P., MALAKHOVA, I. G., TSVETKOV, Ye. N.,
and KABACHNIK, M. I., Institute of Metal Organic Compounds, Academy of
Sciences USSR

"EPR Spectra of Phosphorus-Containing Ethyl Benzoates"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 12, Dec 73, pp 2621-
2626

Abstract: Anion radicals of ethyl benzoates have been studied containing electron acceptor and electron donor groups such as phosphino- and phosphinyl groups in meta- and para- positions. A correlation function has been developed for the constants of superfine interaction with the ortho protons of ethylbenzoates a^H and the σ_{eff} constants ($\sigma_{eff} = \sigma_{R(M)} + 0.23T$). It has been shown that in all of the studied compounds the phosphine- and phosphinyl groups show an electron accepting character. The σ_{eff} constant values of the phosphorus containing substituents agree with the known characteristics of their electronic effects.

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USSR

UDC: 550.834

BALASHKAND, M. I., FILIPPOV, N. G., YEFIMENKO, M. D., CHEN, O. L., MAYOROV, V. V., KRASHOPOL'SKIY, A. D., SOLODILOV, I. I., YEVDOKIMOV, G. S., Ramenskoye Department of the All-Union Scientific Research Institute of Geophysical Methods of Prospecting

"A Device for Emission of a Seismic Signal"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztzy, Tovarnyye Znaki, No 8, Mar 72, Author's Certificate No 330407, Division G, filed 20 Jan 70, published 24 Feb 72, p 142

Translation: This Author's Certificate introduces: 1. A device for emission of a seismic signal. The device contains compressed-air and liquid-fuel supply systems and a pneumatic chamber with movable piston which opens and closes the outlet port of the chamber. As a distinguishing feature of the patent, the compressed-air discharge energy is increased and the heat and force load on the chamber is reduced by fitting the movable piston with atomizers which break up the fuel in the compressed air during gas exhaust and by attaching a device for ignition of the fuel mixture to the chamber housing. 2. A modification of this device distinguished by the fact that

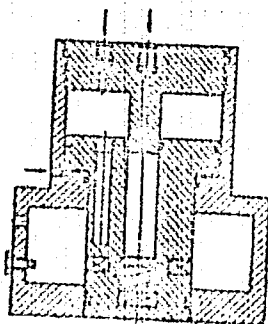
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SR

JALASHKAND, M. I. et al., USSR Author's Certificate No 330407

the movable piston has a channel filled with fuel and communicating with the atomizer through a check valve, and the cover of the chamber has a rod which enters the channel of the piston and feeds fuel into it through the check valve. 3. A modification of this device distinguished by the fact that the attachment for igniting the fuel mixture is made in the form of a wedge.



2/2

USSR

UDC: 624.074.4.04

SOLODILOV, YU. I., Moscow

"On Calculation of Pneumatic Lenticular Shells with Large Deformations"

Moscow, Stroitel'naya Mekhanika i Raschet Sooruzheniy, No 3, 1971, pp 64-66

Abstract: An analysis is made of inflated lenticular shells symmetrical about the vertical axis and provided with an elastic reinforcing ring along the horizontal plane of symmetry.

It is assumed that there are no bending moments in the shell and that the volume of the shell wall remains constant (wall thickness decreases as the shell stretches).

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USSR

SOLODILOV, YU. I., *Stroitel'naya Mekhanika i Raschet Sooruzheniy*, No 3, 1971,
pp 64-66

The general equations are applied to two particular cases:

1. The case of two initially plane membranes attached to a ring. It is shown that the maximum possible deformations corresponds to the wall thickness at the pole of 0.526 of the initial. Beyond this point the shell is unstable, the deformation increases with decrease of internal pressure.

2. The case of initially spherical shell with a ring along its equator.

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- 31 -

USSR

PERMINOV, V. D., SOLODKIN, E. E., Moscow

"Axisymmetric Bodies of Minimum Resistance and Minimum Heat Flow to the Body Surface With Various Boundary Layer Flow Characteristics"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No. 2, March-April, 1971, pp 94-102

Abstract: Approximate formulae are obtained for the determination of friction shear and heat flow distribution along the surface of a body of given shape and pressure distribution.

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USSR

PERMINOV, V.D., et al, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 2, March-April 1971, pp 94-102

With large Reynolds numbers the pressure distribution can be obtained by solving the Euler equations with suitable boundary conditions. Exact solution of these equations is not available. Therefore approximate methods have to be used.

The formulae of friction and heat flow distribution are used to determine the shape of axisymmetric bodies of minimum resistance and minimum heat flow with a hypersonic flow of viscous gas. The method of variations is used for this purpose.

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- 9 -

SOLODKIN, Ye. Ye.

RND / 18-160 / 5.11A / 93
Lue '92 24

Perminov, V. D., and Ye. Ye. Solodkin.
Axisymmetric bodies with minimum resistance at a specific heat flow to the surface. IN: Uchenyye zapiski Tsentral'nogo aerodinamicheskogo instituta, v. 2, no. 6, 1971, 32-40. (RZhMekh, 5/72, no. 5B345)

For axisymmetric bodies with a flat leading edge and a mildly sloping lateral surface, an approximate solution is given to a variational problem of the shape of a body of minimal resistance in a hypersonic gas under a specific total heat flow to the surface. A modified Newtonian formula is used for calculation of the pressure distribution. The formulated isoperimetric problem of the pressure an axisymmetric body of given dimensions with a flat leading edge and minimum resistance at a given total heat flux, is solved numerically by a modified method of local variations at values of $M_\infty = 6, 10, \text{ and } 30$, and $R_0 = 10^6$. It is shown that, under the specified conditions, the requirements of minimal resistance and minimal heat flow to the body surface are contradictory.

Popov, F. D., and I. M. Breyev. Calculation of supersonic flow around blunt bodies by the finite-difference method. IN: Trudy II Respublikanskoy konferentsii po aerodinamicheskoy teorii i massoobmenu. Sektsiya "Aerodinamika bol'shikh skorostey". Kiyev, Kiyevskiy universitet, 1971, 50-55. (RZhMekh, 5/72, no. 5B336)

A finite-difference scheme is proposed for the calculation of static, mixed, axisymmetric flow over the nose section of a blunt body in a supersonic ideal gas. The shock layer considered is transformed

USSR

UDC 620.195

TOLSTAYA, M. A., KHVOROSTUKHIN, L. A., LOGVINENKO, V. V., SOLODKINA, V. P.,
and MUKHINA, M. G., Moscow Aviation Technological Institute

"The Effect of Diamond Smoothing of the Surface of Kh18N9T Steel on its
Corrosion and Electrochemical Behavior"

Moscow, Zashchita Metallov, Vol 9, No 1, Jan-Feb 73, pp 16-21

Abstract: An experimental study was made of the corrosion and electrochemical behavior of relaxed specimens of 1Kh18N9T steel after processing their surfaces by the diamond smoothing method. To correlate properties of differently processed surfaces of 1Kh18N9T steel, smoothed and burnished specimens were tested together. The corrosion variations of the tested specimens in 3% NaCl and their anodic polarization curves in solutions of NaCl (0.1 and 3%) and H₂SO₄ are discussed by reference to diagrams. The surface of 1Kh18N9T steel subjected to diamond smoothing was found to possess, in comparison with burnished specimens, a considerably higher anodic polarizability and resistance to general pitting corrosion. A mechanism of this phenomenon is suggested. The experimental data prove conclusively the increased stability of the passive condition of 1Kh18N9T steel in corrosive media after finishing treatment of its surface with a spherical diamond tip. Four figures, one table, eighteen bibliographic references.

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USSR

UDC 616.003.96+359.6

SOLOVYOV, A. S. and BERDYSHEV, V. V.

"Development of Physiological Stress in Sailors During Cruises in the Low Latitudes"

Moscow, Voenno-Meditsinskiy Zhurnal, No 7, 1972, pp 86-90

Abstract: The dynamics of the following biochemical and physiological parameters was traced in 52 sailors during a 6-week cruise in the low latitudes on a ship lacking air conditioning: adrenal activity, content of some metabolites in urine and sweat, thermoregulation, cardiovascular, central nervous system, and analyzer function, and nonspecific reactivity. The results of the studies showed an intensification of adrenal activity, increased excretion of 17-ketosteroids, total nitrogen, creatine, and vitamin B₁, decreased excretion of sodium and potassium, elevated body temperature and intensification of perspiration, accelerated heart beat, decrease in systolic and pulse pressures, slowing of various reflexes, decrease in lability of the visual analyzer, and marked decrease in phagocytic activity of white blood cells and decrease in osmotic resistance of red blood cells. It is noted that prolonged physiological stress caused by heat not only does not necessarily result in adaptation, it may even give rise to mental and physical disorders. The article concludes 1/2

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SOLODKOV, A. S. and BERDYSHEV, V. V., Voenno-Meditsinskiy Zhurnal, No 7, 1972, pp 86-90

with recommendations for preventing or minimizing stress, e.g., installation of air conditioning, suitable work and rest routines, rational diet, systematic physical exercise, and use of certain drugs (adaptogens).

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1/2 008

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--SYNTHESIS AND STEREOCHEMISTRY OF C SUB10 HYDROCARBONS OF THE CIS
BICYCLO,3.3.0,OCTANE SERIES -U-
AUTHOR--(05)-AREFYEV, O.A., VOROBYEVA, N.S., MAKUSHINA, V.M., SOLGOKOV,
V.K., TSEDILINA, A.L.
COUNTRY OF INFO--USSR

SOURCE--NEFTEKHIMIYA 1970, 10(2), 165-73

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY.

TOPIC TAGS--STEREOCHEMISTRY, ORGANIC SYNTHESIS, CYCLOALKANE HYDROCARBON,
OCTANE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0937

STEP NO--UR/0204/70/010/002/0165/0173

CIRC ACCESSION NO--A0134663

UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134663

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

1,2-DIMETHYLBICYCLO(3.3.0)OCT, 2, EN, 4, ONE (I) WAS PREPD. BY CONDENSATION OF 2-METHYLCYCLOPENTANONE WITH VINYLACETYLENE, DEHYDRATION OF THE CARBINOL WITH H SUB2 SO SUB4 TO II, AND FINALLY CYCLOHYDRATION WITH H SUB3 PO SUB4. BY A SEQUENCE OF REDNS. OF I, CIS, 1,2-DIMETHYLBICYCLO(3.3.0)OCTANE WAS OBTAINED. 1,3-DIMETHYLBICYCLO(3.3.0)OCTANE WAS PREPD. BY DIENE CONDENSATION OF 1,FORMYL,1,CYCLOPENTENE WITH 1,3,BUTADIENE AND REDN. OF 1,FORMYL,3A,6,7,7A,TETRAHYDROINDAN INTO 1,METHYL,3A,6,7,7A,TETRAHYDROINDAN, WHICH WAS OXIDIZED (KMNO SUB4) TO 1,METHYL,1,2,CYCLOPENTANEDIACETIC AICD, WHICH, AFTER HEATING WITH BAO GAVE III. III WITH METHYL GRIGNARD AND THEN DEHYDRATION GAVE IV WHICH AFTER HYDROGENATION GAVE THE 1,3,COMP. THE 3,7-DIMETHYLBICYCLOOCTANE WAS OBTAINED FROM THE CORRESPONDING DIKETONE BY HENGI, DEHYDRATION ON AL SUB2 O SUB3, AND THEN HYDROGENATION OF THE UNSATD. COMP. MIXT. OF 2,7-DIMETHYL AND 2,8-DIETHYL COMPS. WERE SIMILARLY OBTAINED AS THE 1,2-DIMETHYL COMPS. THE CONFORMATIONS OF THE DIMETHYL CIS,BICYCLO(3.3.0)OCTANES WAS DETD. FROM GAS LIQ. CHROMATOG. RETENTION TIMES AND CALCD. B.P. DATA. FACILITY: INST. GEOL. RAZRAB. GORYUCH. ISKOP., MOSCOW, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--BICYLIC NAPHTHENES, C SUB8-9, IN PETROLEUMS OF THE DAGADZHIK AND
GRYAZEVAYA SOPKA DEPOSITS -U-
AUTHOR--(03)-SOLODKOV, V.K., MIKHNOVSKAYA, A.A., PETROV, A.A.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK TURKM. SSR, SER. FIZ-TEKH., KHIM. GEOL. NAUK 1970,
(2), 99-105
DATE PUBLISHED-----70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS

TOPIC TAGS--AROMATIC NITRO COMPOUND, CHEMICAL COMPOSITION, PETROLEUM
DEPOSIT, GEOGRAPHIC LOCATION, ADSORPTION, ISOMERIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/1708

STEP NO--UR/0202/70/000/002/0099/0105

CIRC ACCESSION NO--AP0138682

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0138682

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

ABSTRACT. BICYCLIC C SUB8-9 NAPHTHENES
 COMPRISING 5.2 AND 16.5PERCENT OF DAGADZHIK AND GRYAZEVAYA SOPKA
 PETROLEUMS WERE SEPD. FROM FRACTIONS B, 120-60DEGREES BY SUCCESSIVE
 ADSORPTION ON SILICA GEL AND THERMAL DIFFUSION. IN THE RESP.
 PETROLEUMS THE C SUB8 BICYCLIC NAPHTHENES WERE: (SHOWN ON MICROFICHE).
 IN EQUIL. MIXTS. FROM ISOMERIZING BICYCLO(4.3.0)NONANE THE CONTENT OF
 METHYLBICYCLO(3.3.0), METHYLBICYCLO(3.2.1.), AND
 METHYLBICYCLO(2.2.2)OCTANES CHANGED FROM 18.3, 60.8, AND 7.3 TO 39.1,
 38.6, AND 10.9 AS THE TEMP. WAS INCREASED FROM 35 TO 150DEGREEES. AT
 150DEGREES THE CONTENT OF THE RESP. (SHOWN ON MICROFICHE). THUS, THE
 PETROLEUM BICYCLIC NAPHTHENE WERE NOT EQUIL. MIXTS. AT ANY TEMP.
 FACILITY: INST. GEOL. RAZRAB. GORYUCH. ISKOP., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 62-50

SOLODOV, A. V., and PETROV, F. S.

Lineynyye avtomaticheskkiye sistemy s peremennymi parametrami (Linear Automatic Systems With Variable Parameters), Moscow, "Nauka," 1971, 620 pp

Translation: Annotation: This monograph is devoted to an examination of the theoretical bases of investigating linear automatic control systems with time-variable parameters (linear nonstationary systems). The authors examine in considerable detail several typical classes of such systems and their characteristics (impulse transition and parametric transfer functions) as well as methods for determining these characteristics and questions concerning the travel of determinate and random signals through the systems. Considerable attention is paid to the structural transformation and modeling of the systems by solving various problems of analysis and synthesis of the control systems. The theoretical material of the book is illustrated with numerous examples and figures. To read this book it is sufficient to have mathematical preparation in an ordinary course in higher mathematics presented at the Higher Technical Schools. The book is intended for specialists working in the field of automatic control. It may also be useful for graduate students and students in the higher courses of the respective specialties. (215 illustrations, 27 tables, and 73 bibliographic entries)

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USSR

SOLODOV, A. V., and PETROV, F. S., Lineynyye avtomaticheskiye sistemy s peremennymi parametrami (Linear Automatic Systems With Variable Parameters), Moscow, "Nauka," 1971, 620 pp

Table of Contents

- Chapter 1. Linear Systems With Variable Parameters
- Chapter 2. Impulse Transition Function of a Linear System
- Chapter 3. Structural Transformations of Linear Systems With Variable Parameters
- Chapter 4. Approximation Algorithms for Seeking Impulse Transition Functions of Systems With Slowly Varying Parameters
- Chapter 5. Systems With Variable Parameters Acted on by Determinate Signals
- Chapter 6. Systems With Variable Parameters Acted on by Random Signals
- Chapter 7. Controllability, Observability, and Stability in Systems With Variable Parameters
- Chapter 8. Investigation of Nonstationary Processes in Systems With Variable Parameters Using Modeling Methods

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USSR

UDC 546.833.5.825:538.113

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KASIMOV, G. G., ROZHDESTVENSKIY, F. A., KRYLOV, YE. I., PILIPENKO, G. I., and SOLODOV, V. P.

"Magnetic Properties of Titanium, Vanadium, Chromium, and Iron Orthotantalates"

Moscow, Neorganicheskiye Materialy, Vol 6, No 1, Jan 70, p 186

Abstract: An investigation was made of the magnetic properties of $TiTaO_4$, $VTaO_4$, $CrTaO_4$, and $FeTaO_4$ by the methods of magnetostatics and electron parametric resonance in a broad temperature range. The studies made it possible to obtain new data. The anomalous behavior of $FeTaO_4$ at low temperatures is explained by the phase transition at $223^{\circ}K$ as a result of which the spin-lattice relaxation time decreases (the width of the electron paramagnetic resonance line increases sharply), and the intensity of the electron paramagnetic resonance spectrum becomes insignificant at nitrogen temperature. The magnetic susceptibility of the remaining orthotantalates varies according to the Curie-Weiss law. The negative value of the constant θ permits the assumption of the presence of antiferromagnetism in the investigated compounds.

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1/2 016 UNCLASSIFIED PROCESSING DATE--18SEP70
 TITLE--MAGNETIC PROPERTIES OF TITANIUM, VANADIUM, CHROMIUM, AND IRON
 ORTHOTANTALATES -U-
 AUTHOR--(05)-KASIMOV, G.G., ROZHDESTVENSKIY, F.A., KRYLOV, YE.I.,
 PILIPENKO, G.I., SOLODOV, V.P. S
 COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSR, NEORG. MATER. 1970, 6(1), 186

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--TITANIUM COMPOUND, VANADIUM COMPOUND, CHROMIUM COMPOUND,
TANTALATE, EPR SPECTRUM, MAGNETIC SUSCEPTIBILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1984/0146

STEP NO--UR/0363/70/006/001/0186/0186

CIRC ACCESSION NO--AP0054942

UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC-ACCESSION NO--AP0054942

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MAGNETIC PROPERTIES OF TITAO SUB4, CRTAO SUB4, AND FETAO SUB4 WERE INVESTIGATED BY MAGNETOSTATIC AND EPR METHODS WITHIN A WIDE TEMP. RANGE, WHICH MADE IT POSSIBLE TO OBTAIN NEW DATA AS COMPARED TO THE KNOWN ONES. THE ANOMALOUS BEHAVIOR OF FETAO SUB4 AT LOW TEMPS. IS EXPLAINED BY THE PHASE TRANSITION AT 223DEGREES K, AS A RESULT OF WHICH THE TIME OF THE SPIN LATTICE RELAXATION DECREASES AND THE INTENSITY OF THE EPR SPECTRUM BECOMES INSIGNIFICANT AT THE N TEMP. THE MAGNETIC SUSCEPTIBILITY OF THE REMAINING ORTHOTANTALATES VARIES ACCORDING TO THE CURIE WEISS LAW. THE NEG. VALUE OF THE CONST. THETA ALLOWS THE ASSUMPTION OF THE PRESENCE OF ANTIFERROMAGNETISM IN THE COMPS. INVESTIGATED.

UNCLASSIFIED

USSR

UDC 669.71:548.53

BOGHVAR, O. S., ORLOVA, A. I., KUNYAVSKAYA, T. M., SOLODOVA, V. F.

"Kinetics of Technical Aluminum Recrystallization Process"

V sb. Struktura i svoystva legk. splavov (Structure and Properties of Light Alloys -- collection of works), Moscow, Nauka Press, 1971, pp 58-61 (from RZh-Metallurgiya, No 4, Apr 72, Abstract No 4I626)

Translation: A study was made of the effect of the chemical composition and annealing conditions on the kinetics of the process of recrystallization of technical aluminum sheets type ADQO (99.7% Al) and ADI (99.4% Al). The sheets 2 mm thick were obtained by the method of roll rolling from ingots with globular macrostructure homogenized at 560° for 24 hours with a 300 × 1,200 mm cross section cast by the continuous casting method. Hot deformation of the ingots was done at 400-360° with a total degree of deformation of 96.5%. Cold deformation was carried out with a degree of deformation of 80% without intermediate annealing. The kinetic curves were constructed for 200-600° every 50°. The controllable properties were σ_B , $\sigma_{0.2}$, and δ . The isochrons σ_B and δ were constructed for holding 10 and 60 minutes. The characteristic microstructures of the annealed specimens of sheet technical aluminum of two compositions are presented. The process of recrystallization of the cold-rolled ADQO and ADI aluminum

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USSR

BOCHVAR, O. S., et al., Struktura i svoystva legk. splavov, Moscow, Nauka Press, 1971, pp 58-61

develops as recrystallization in situ. The difference in the kinetics of the recrystallization process is caused by different type of substructure arising during the process of polygonization at increased temperatures. The consequence of the different dislocation structure of the cold-rolled aluminum is a different mechanism of the polygonization process at increased temperatures. This different dislocation structure is, in turn, caused by a different nature of the phases and degree of heterophase nature of the initial structure of the ingot. Three illustrations and a 7-entry bibliography.

2/2

- 10 -

USSR

UDC 533.916

VOLOSHKO, A. Yu., ~~SOLODOVCHENKO, S. I.~~, CHECHKIN, V. V.

"Heating a Moving Plasma With Fast, High-Amplitude 'Whistlers'"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 11, 1971,
pp 1822-1828

Abstract: An investigation is made of the absorption of high-frequency energy by a moving plasma at the resonant frequency of the fast, high-amplitude magnetoacoustical waves known as "whistlers." A Doppler shift of the whistler resonance frequency is discovered; it is caused by the motion of the plasma. It is found also that a plasma with a density of about $10^{13}/\text{cm}^3$ or higher is heated to a temperature of about 100 ev, a temperature rise requiring a high expenditure of the energy stored in the high-frequency arrangement. With further motion of the heated plasma bunching along the fundamental magnetic field, there is a reduction in plasma temperature of less than 10% at distances

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VOLOSHKO, A. Yu. et al, Ukrainskiy Fizicheskiy Zhurnal, Vol 16,
No 11, 1971, pp 1822-1828

of the order of 100 cm from the heated portion. This heated bunching does not go beyond the magnetic barrier, the height of which is three times the value of the fundamental magnetic field. The experimental method is described and the results of the measurements are given. The work was done in the Khar'kov Physico-Technical University.

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Physiology

USSR

UDC 523:611.95

SOLODOVNIK, F. A.

"Effect of Simultaneous Rotation in Two Mutually Perpendicular Planes on the Human Vestibular Apparatus"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1972, pp 103-111

Abstract: The mechanism of the effect of Coriolis acceleration on the vestibular apparatus has been studied by many researchers, and it has been established that simultaneous stimulation of the semicircular canals and the otolithic apparatus takes place. A study of the nature of stimulation of the vestibular apparatus when rotating a human simultaneously in two planes permits establishment of the direction of the inertial shift of the endolymph in the semicircular canals and the direction of the resultant rectilinear accelerations, that is, determination of the nature of the simulation of the vestibular apparatus under the given type of effect. The experimental procedure and results are described for rotating humans in the horizontal plane with a velocity of 180°/sec with simultaneous rotation in the vertical plane with a velocity of 60 and 120°/sec. An electrooculogram was recorded in all cases, and attention was given to the nature and direction of the illusory phenomena.

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SOLODOVNIK, F. A., *Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya*, No 1, 1972, pp 103-111

By comparing the theoretical calculations of the direction of the effective forces with the practical experimental results it was established that on simultaneous rotation of a human in two planes, stimulation of the horizontal and vertical semicircular canals and the otolithic apparatus by the resultant rectilinear accelerations takes place. The nature of stimulation of the vestibular apparatus depends on the direction and velocity of rotation of the examinee in each plane and also on the position of the head during rotation. The magnitude of stimulation of the semicircular canals is not constant but varies according to a sinusoidal law. The maximum stimulation of the horizontal semicircular canals takes place with the head inclined by 90° , and the maximum stimulation of the vertical canals, with the head erect. Consequently, the maximum stimulation of the horizontal and vertical semicircular canals does not coincide but is 90° out of phase. This depends on the mutually perpendicular arrangement of the horizontal and vertical semicircular canals.

The shift of the endolymph in one direction relative to the ampullas in both vertical semicircular canals on each side caused the illusion of banking, that is, inclination of the head in the frontal plane. In accordance with the laws of functioning of the semicircular canals, the illusory phenomenon is always opposite to the movement of the endolymph.

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UNCLASSIFIED

PROCESSING DATE--30OCT77

TITLE--DIRECTICNAL INERT SHIFT OF ENDOLYMPH IN SEMICIRCULAR CANALS IN THE
COURSE OF MAN'S ROTATION PROVIDING THE SUBJECTS MOVEMENT OF THE HEAD

AUTHOR--(03)--SGLODOVNIK, F.A., VDROBYEV, L.M., PLATONOV, N.B.

COUNTRY OF INFO--USSR

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SOURCE--IZVESTIYA AKADEMII NAUK SSR, SERIYA BIOLOGICHESKAYA, 1970, NR 3,
PP 337-347

DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--VESTIBULAR APPARATUS, ROTATION, HUMAN PHYSIOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3001/1385

STEP NO--UR/0216/70/000/003/0337/0347

CIRC ACCESSIGN NO--AP0126925

UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0126925

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

ABSTRACT. THE HORIZONTAL AND VERTICAL COMPONENTS OF NYSTAGMIC REACTIONS WERE REGISTERED IN THE COURSE OF MAN'S ROTATION PROVIDING THE MOVEMENT OF THE SUBJECTS HEAD IS IN THE FRONTAL PLANE. THE AUTHORS CARRIED OUT A THEORETICAL ANALYSIS OF THE ORIGIN OF CORIOLIS FORCES IN SEMICIRCULAR CANALS AND ESTIMATED THE DIRECTION OF THE INERT SHIFT OF THE ENDOLYMPH, WHICH CORRESPONDS THE DIRECTION OF THE NYSTAGMIC REACTION. WHEN MAN ROTATES RIGHTWARD HIS HEADS MOVEMENT FROM THE LEFT SHOULDER TO THE RIGHT ONE INCITES AMPULOPETAL FLOW IN THE ANTERIOR SEMICIRCULAR CANALS AND AMPULOFUGAL FLOW OF ENDOLYMPH IN THE POSTERIOR ONES. THE HEADS MOVEMENT FROM THE RIGHT SHOULDER TO THE LEFT ONE CAUSES AMPULOFUGAL FLOW IN THE ANTERIOR SEMICIRCULAR CANALS AND AMPULOPETAL FLOW OF ENDOLYMPH IN THE POSTERIOR ONES. ROTATION IN THE LEFTWARD DIRECTION CAUSES AN ENDOLYMPH FLOW IN AN OPPOSITE DIRECTION. WHEN THE HEAD IS RAISED THE ENDOLYMPH OF THE HORIZONTAL SEMICIRCULARS CANALS SHIFTS IN AN OPPOSITE DIRECTION OF THE ROTATION OF THE TESTING SET UP AND WHEN THE HEAD IS TILTED THE ENDOLYMPH SHIFTS IN THE DIRECTION OF THE ROTATION.

UNCLASSIFIED

USSR

UDC: 611.85:613.693

SOLODOVNIK, F.A., VOROBYEV, L.M., PLATONOV, N.B.

"The Direction of Inertial Shift of Endolymph in Semicircular Canals During Rotation of a Man with Head Movements in the Frontal Plane"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 3, May/Jun 70, pp 337-347

Abstract: The horizontal and vertical components of nystagmic reactions were recorded in the course of rotation when movements of the subject's head were in the frontal plane. A theoretical analysis was conducted of the origin of Coriolis forces in the semicircular canals, and the direction of inertial shift of the endolymph was estimated, which corresponds with the direction of the nystagmic reaction. When a man rotates his head from the left shoulder to the right, the movement incites ampulopetal flow in the anterior semicircular canals, and ampulofugal flow of endolymph in the posterior semicircular canals. The movement of the head from the right shoulder to the left causes ampulofugal flow in the anterior and ampulopetal flow of endolymph in the posterior semicircular canals. Rotation to the left causes flow of endolymph in the opposite direction. When the head is raised the endolymph in the horizontal semicircular canals shifts in the opposite direction of rotation; and when the head is tilted, the endolymph shifts in the direction of rotation.

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Physiology

USSR

UDC 613.693

NIKONOV, A. V. and ~~SOLODOVNIK, E. A.~~

"Characteristics of Speech After Exposure to Coriolis Accelerations"

Moscow, Voenno-Meditsinskiy Zhurnal, No 7, 1972, pp 78-81

Abstract: Motion sickness was induced in a group of subjects by rotating them in a special chair at 180° sec and requiring them to bend their trunks forward 90° and then returning to the original position. The subjects were asked to pronounce a short sentence and 11 syllables containing all the Russian vowel sounds before and at various times after exposure to the Coriolis accelerations. In the individuals with high vestibular resistance (i.e., they did not exhibit the usual symptoms of vestibular disturbances -- perspiration, pallor, nausea, etc.), the intensity of speech exceeded the normal level by 0.5 to 1.5 db, whereas in those suffering from motion sickness it was 1 to 2 db lower. The pronunciation of the initial and final words of the standard sentence were most affected. Spectral analysis of the vowel sounds showed that the middle frequency of the main tone increased after 1 minute of exposure from 175 to 200 Hz and that of the first and second formants from 537 to 630 and 1400 to 1620 Hz, respectively. Ten minutes after the cessation of accelerations and onset of motion sickness, the frequency of the main tone decreased to 166 Hz while the frequency position of the first and second formants was close to the baseline value.

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USSR

UDC 611.85:613.693

SOLOBOVNIK, F. A.

"Direction of Movement of Endolymph in the Semicircular Canals of Man During Rotation While Inclining the Head in a Sagittal Plane"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1971, pp 60-68

Abstract: Head movements of human subjects in a sagittal plane during rotation in a vestibulometric chair elicited the horizontal component of the nystagmic reaction and the illusion of the head or head and trunk turning in a frontal plane. The movement of the endolymph in the anterior semicircular canals changed direction only when there was a change in the direction of head movement, whereas the endolymph in the lateral semicircular canals changed direction with every head movement. The effect of Coriolis accelerations was weakest on the canals and strongest on the anterior canals when the subject's head was upright. The reverse took place when the head was bent forward.
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SOLODOVNIK, F. A., Izvestiya Akademii Nauk SSSR, Seriya
Biologicheskaya, No 1, 1971, pp 60-68

These differences are ascribed to the fact that the anterior
and lateral canals are at right angles to each other.

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SOLODOVNIKOV, F. I.

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SO: JPAS 55609
03 APR 73

CHANGES IN INCENTIVES STRUCTURE PROPOSED

[Article by F. I. Solodovnikov, Director of the Scientific Research Institute of Automated Systems of Planning and Management; Novosibirsk, Ekonomika i Organizatsiya Promyshlennogo Proizvodstva, Russian, No 6, 1971, pp 52-66]

The Directives of the 24th CPSU Congress on the New Five-Year Plan of Development of the USSR National Economy outline ensuring further improvement in the system of planning and economic incentives for production and further growth in its effectiveness.

In this regard, the idea of possible changes in the system of planning and incentives must be towards interesting industrial enterprises to a greater extent in using the achievements of science, in mastering new articles, in higher output quality, and in the precise and timely meeting of economic contractual obligations for output delivery.

In this connection, we believe the following problems are of interest: planning wholesale prices; the system of directive prices; the system of developing plan indicators and approved norms; stimulating the mastering of new articles and higher output quality.

And we shall touch on these: Planning Wholesale Prices

In the new system of planning and the economic stimulation of industrial enterprises, prices are given a very important role. They must facilitate the establishment in the national economy of the most efficient ties, selection of the most effective areas for capital investment, reduction of individual expenditures for capital investment, socially necessary and below, and must stimulate higher article quality.

USSR

Corrosion

UDC 620.193.51019.39

KHIRNYI, YU. M., and SOLDOVNIKOV, A. P.

"Effect of Increasing the Corrosion Resistance of Metals Irradiated with Helium Ions"

Moscow, Doklady Akademii Nauk SSR, Vol 214, No 1, Jan/Feb 74, pp 82-83

Abstract: Experiments were conducted to test the hypothesis that a metal has increased corrosion resistance after being irradiated with helium ions due to the helium atoms forming a surface barrier which prevents the sorption of other gases from the surrounding medium. Samples of Fe, Cu, Al, and Ce were compared before and after helium-atom irradiation from a beam of helium ions at 20 kev. Accelerated tests were conducted with Ce where the Ce sample was placed in a container which was evacuated to a pressure of 0.1 torr and filled with helium to a pressure of 1.5 atom. The container was heated to a specified temperature and then filled with hydrogen. Corrosion initiation was determined by the start of the drop in hydrogen pressure within some time frame. Data from this test showed that helium-irradiated Ce has increased corrosion resistance and the general conclusion was that helium irradiation of metals can increase corrosion resistance. Two figures, one bibliographic reference,

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1/3 043

UNCLASSIFIED

PROCESSING DATE--02OCT70

TITLE--MEASUREMENT OF TOTAL ELECTRON CONCENTRATION IN THE POLAR IONOSPHERE
DETERMINED FROM SIGNALS OF THE THIRD ARTIFICIAL EARTH SATELLITE,
AUTHOR--(04)-SOLODOVNIKOV, G.K., MISYURA, V.A., MIGUNOV, V.M., GURBACHEV,
I.I.

COUNTRY OF INFO--USSR, ANTARCTICA

S

SOURCE--MOSCOW, GEOMAGNETIZIM I AERONOMIYA, VOL X, NO 2, 1970, PP 334-336
DATE PUBLISHED-----70

SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS, ATMOSPHERIC SCIENCES, SPACE
TECHNOLOGY, NAVIGATION
TOPIC TAGS--IONOSPHERE, POLAR AREA, ELECTRON DENSITY, SOLAR ACTIVITY,
ARTIFICIAL EARTH SATELLITE, ANTARCTIC STATION, SIGNAL
RECEPTION/(U)SPUTNIK 3 SATELLITE, (U)MIRNY ANTARCTIC STATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0203/70/010/002/0334/0336

PRJXY REEL/FRAME--1990/1662

CIRC ACCESSION NO--AP0109656

UNCLASSIFIED

2/3 043

CIRC ACCESSION NO--AP0109656
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--02OCT70

ABSTRACT. THIS PAPER GIVES THE RESULTS OF DETERMINATIONS OF THE TOTAL ELECTRON CONTENT IN THE POLAR IONOSPHERE OF BOTH HEMISPHERES DURING THE PERIOD OF HIGH SOLAR ACTIVITY ON THE BASIS OF DATA ON THE FARADAY EFFECT OF SIGNALS OF THE THIRD ARTIFICIAL EARTH SATELLITE AT A FREQUENCY OF 20 MC-SEC REGISTERED AT MURMANSK AND MIRNYI DURING THE PERIOD MAY-JULY 1968. AES SIGNALS WERE PICKED UP WITH PLAN POLARIZED ANTENNAS. DATA FROM 210 OBSERVATIONS AT MURMANSK AND 106 OBSERVATIONS AT MIRNYI WERE PROCESSED. THE RECORDS WERE DISTINCTLY DIFFERENT FROM THOSE FOR THE MIDDLE LATITUDES. WHEREAS FOR THE MIDDLE LATITUDES THERE IS USUALLY A CLEARLY EXPRESSED MONOTONIC VARIATION OF THE ANGLE OF ROTATION OF THE RADIO WAVE POLARIZATION PLANE Φ SUB Φ , THE POLAR REGIONS ARE CHARACTERIZED BY A NONMONOTONIC CHANGE IN Φ SUB Φ AT DIFFERENT TIMES OF DAY, REGARDLESS OF SATELLITE ALTITUDE. THIS NONMONOTONIC VARIATION OF Φ SUB Φ INDICATES THAT THE POLAR IONOSPHERE CONTAINS EXTREMELY STRONG INHOMOGENEITIES OF ELECTRON CONCENTRATION DURING BOTH DAYTIME AND NIGHTTIME. MEASUREMENTS WERE CONVERTED TO THE TOTAL NUMBER OF ELECTRONS IN A VERTICAL COLUMN OF THE IONOSPHERE OF A UNIT CROSS SECTION (N SUB0). THE N SUB0 VALUES WERE USED IN CONSTRUCTING DAILY CURVES OF THE DEPENDENCE OF TOTAL NUMBER OF ELECTRONS IN A VERTICAL COLUMN AS A FUNCTION OF TIME OF DAY. THESE CURVES ARE FOR 64 DEGREES N AND S. CURVES WERE CONSTRUCTED ONLY FOR THOSE ORBITAL SEGMENTS INTERSECTING 64 DEGREES. THIS LARGELY EXCLUDED THE LATITUDE EFFECT. IN BOTH HEMISPHERES THE N SUB0 MAXIMUM WAS AT APPROXIMATELY THE SAME TIME, ABOUT 1400 LT.

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PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109656
ABSTRACT/EXTRACT--

DURING THE COURSE OF THE DAY N SUBO IN THE SOUTHERN HEMISPHERE CHANGES BY A FACTOR OF ABOUT 4. THIS CANNOT BE ATTRIBUTED TO DIFFERENCES IN SATELLITE ALTITUDE SINCE IN ALL CASES IT WAS ABOVE THE F2 MAXIMUM. THE DIFFERENCE CAN PROBABLY BE ATTRIBUTED TO THE DIFFERENCE IN SEASONS IN THE TWO HEMISPHERES. DURING LOW ACTIVITY N SUBO IN THE POLAR LATITUDES IS APPROXIMATELY THREE TIMES LESS THAN DURING HIGH ACTIVITY. IN THE MIDDLE LATITUDES THESE CHANGES ATTAIN A FACTOR OF 7. DURING BOTH HIGH AND LOW ACTIVITY N SUBO IN THE MIDDLE LATITUDES IS 1.5-2 TIMES GREATER THAN IN THE POLAR REGIONS.

UNCLASSIFIED

USSR

UDC 576.851.315.095.18.547.962.2

ADAMOV, A. K. and SOLODOVNIKOV, N. S., All-Union "Mikrob" Plague Research
Institute, Saratov

"Effect of Histones and Specific Antibodies on the Viability of Cholera
Vibrios"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1972,
pp 82-87

Abstract: The vibriostatic and vibriocidal action of histones is pH-dependent. The proteins are more active in an acid medium than in a neutral one. Non-fractionated calf thymus histone is vibriocidal at a concentration of 0.05 to 0.01 mg/ml and pH 6.5 against El Tor and other vibrios. The histone fractions vary in activity: the f_1 fraction is weakly vibriocidal at 0.01 mg/ml and pH 6.5; the f_{2a} and f_{2b} fractions are vibriocidal at 0.01 mg/ml and pH 6.5 to 7.0 while the f_3 fraction is vibriocidal at 0.005 to 0.01 mg/ml and pH 6.5 to 7.0. Normal serum globulins inhibit the antivibrio activity of the histones, whereas cholera immunoglobulins intensify it.

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172 037

UNCLASSIFIED

PROCESSING DATE--09OCT70

TITLE--THE ANTIFRICTION PROPERTIES AND WEAR RESISTANCE OF THE HEAT
RESISTANT PLASTIC FENILON -U-

AUTHOR--(04)-TROFIMOVICH, A.N., PRIKUDKO, O.G., FOMICHEV, I.A.,
SOLODOVNIKOV, N.S.

COUNTRY OF INFO--USSR

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SOURCE--MOSCOW, VESTNIK MASHINOSTROYENIYA, NO 2, 1970, PP 50-51

DATE PUBLISHED-----70

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

TOPIC TAGS--WEAR RESISTANCE, HEAT RESISTANCE, POLYAMIDE RESIN, FRICTION
TEST, HIGH TEMPERATURE EFFECT, MACHINE INDUSTRY/(U)FENILON POLYAMIDE
RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/0889

STEP NO--UR/0122/70/000/002/0050/0051

CIRC ACCESSION NO--AP0113732

UNCLASSIFIED

2/2 037

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0113732

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LOW HEAT RESISTANCE OF POLYMERS RESTRICTS THEIR APPLICATION AS ANTIFRICTION MATERIALS AT FRICTION NODES OF MACHINES. RECENTLY A NUMBER OF HEAT RESISTANT POLYMERS HAS BEEN DEVELOPED, WHICH RETAIN THEIR BASIC PROPERTIES AT 250-300DEGREESC AND HIGHER. AMONG SUCH MATERIALS ARE AROMATIC POLYAMIDES, A REPRESENTATIVE OF WHICH IS FENILON, ITS VITRIFICATION TEMPERATURE IS 280DEGREESC. IT IS PROCESSES BY PRESSING INTO A PLASTIC WITH SUFFICIENTLY HIGH PHYSICAL AND MECHANICAL PROPERTIES. AN INVESTIGATION WAS MADE OF THE ANTIFRICTION PROPERTIES AND HEAT RESISTANCE OF FENILON UNDER CONDITIONS OF NORMAL AND INCREASED TEMPERATURES FOR VARIOUS FRICTION CONDITIONS IN ORDER TO DETERMINE THE POSSIBILITIES OF ITS APPLICATION IN FRICTION NODES OF MACHINES. FENILON MANIFESTED A COMPARATIVELY SAMLL AMOUNT OF WEAR UNDER TEMPERATURE CONDITIONS IN WHICH LESS HEAT RESISTANT POLYMER PLASTICS CANNOT FUNCTION. IN SPITE OF THE INCREASED WEAR WITH A HIGHER TEMPERATURE, THE SAMPLE REMAINED HARD, WITH NO SIGNS OF VOLUMETRIC DEFORMATION, OR OTHER SYMPTOMS OF HEAT DAMAGE. THE CONDUCTED TESTS INDICATE THAT FENILON CAN FIND APPLICATION AS A MATERIAL FOR FRICTION NODES OF HEAVILY LOADED MACHINES.

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