

1/2 022 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--TUNGSTEN THERMAL CONDUCTIVITY AS MEASURED BY MODIFIED METHOD OF  
EXPONENTIAL TEMPERATURE DISTRIBUTION -U-  
AUTHOR--(02)-CHECHOVSKOI, V.YA., VERTogradSKIY, V.A.

COUNTRY OF INFO--USSR

SOURCE--CONF-691002 PP 300-6

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--THERMAL CONDUCTIVITY, TUNGSTEN, ELECTRIC RESISTANCE, WIRE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1990/0296

STEP NO--UR/0000/70/000/000/0000/0000

CIRC ACCESSION NO--AT0108594

UNCLASSIFIED

272 022

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AT0108594

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MEASUREMENTS HAVE BEEN PERFORMED ON WIRE SPECIMENS HEATED BY PASSING ELECTRICAL CURRENT IN VACUUM. USE HAS BEEN MADE OF EXPONENTIAL TEMPERATURE DISTRIBUTION GRADUALLY DISPLACED ALONG THE SPECIMEN DUE TO THE RIDER TEMPERATURE VARIATION. THE EXPONENT HAS BEEN DETERMINED FROM THE COMPARISON OF THE RESISTIVITY CHANGE OF TWO SPECIMEN SECTIONS WITHOUT USING THE TEMPERATURE COEFFICIENT OF ELECTRICAL RESISTIVITY. RESISTANCE BRIDGE HAS ALSO BEEN USED. TUNGSTEN THERMAL CONDUCTIVITY HAS BEEN DETERMINED FOR THE TEMPERATURE INTERVAL OF 1300 TO 2500DEGREEŠK ON THE SPECIMENS OF 99.9PERCENT PURITY WITH 0.1PERCENT ADDITION OF MO. THE CALCULATED MAXIMUM RANDOM ERROR OF A SINGLE MEASUREMENT DOES NOT EXCEED 6PERCENT.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--ON PREVALENCE OF HELMINTHIASES IN ONE OF THE REGIONS OF THE CHAD  
REPUBLIC -U-  
AUTHOR-(02)-SHABELNIK, V.I., CHECHUGO, I.S.  
COUNTRY OF INFO--CHAD  
SOURCE--MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI, 1970, VOL  
39, NR 1, PP 96-98  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SCHISTOSOMIASIS, FILARIAE, SELECTIVE DRUG EFFECT, DISEASE  
INCIDENCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/0411

STEP NO--UR/0358/70/039/001/0096/0098

CIRC ACCESSION NO--AP0100893

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100893

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN OCTOBER DEC 1967 IN GERA PREFECTURE OF THE CHAD REPUBLIC THE AUTHORS EXAMINED 4253 SCHOOL CHILDREN AND 1000 PATIENTS. THEY TESTED STOOLS FOR THE PRESENCE OF EGGS OF PARASITES BY THE NATIVE SMEAR METHOD, THE URINE FOR THE PRESENCE OF EGGS OF URINARY SHISTOSOMA, THE THICK DROP OF THE BLOOD FOR THE PRESENCE OF MICROFILARIA. FOURTEEN SPECIES OF PARASITES WERE DETECTED. URINARY SCHISTOSOMIASIS WAS FOUND IN 26.59PERCENT OF SCHOOL CHILDREN AND 37PERCENT OF PATIENTS, ANCYLOSTOMIASIS IN 12.69 AND 32.2PERCENT FILARIASIS (TWO SPECIES) IN 8.37 AND 15.7PERCENT RESPECTIVELY, TAENIASIS IN 6.67 AND 8.3PERCENT ASCARIDIASIS IN 3.29 AND 6.8PERCENT, RESPECTIVELY. TREATMENT WITH AMBILGAR WAS GIVEN TO 103 PATIENTS WITH URINARY SCHISTOSOMIASIS, WITH SUCCESSFUL RESULTS ACHIEVED IN 89. IN SOME PATIENTS THE DRUG CAUSED NAUSEA, ABDOMINAL PAINS, VOMITING, HEADACHE, VERTIGO, ASTHENIA. THE AUTHORS CONSIDER AMBILGAR IN A DOSE OF 25 MG PER 1 KG OF BODY WEIGHT TO BE SUFFICIENTLY EFFECTIVE, BUT TOXIC, ITS USE REQUIRES FURTHER STUDY.

UNCLASSIFIED

1/2 029 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--POLAROGRAPHIC STUDY OF THE ENERGY METABOLISM OF DOG LUNG  
MITOCHONDRIA IN THE COLD -U-  
AUTHOR-(04)-YELISEYEVA, S.V., KOTOVA, YE.N., RABINOVICH, YU.YA.,  
CHECHULIN, A.S.  
COUNTRY OF INFO--USSR  
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(3), 705-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--POLAROGRAPHY, DOG, LUNG, MITOCHONDRION, METABOLISM,  
RESPIRATION, PHOSPHORYLATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3005/1663 STEP NO--UR/0020/70/191/003/0705/0707  
CIRC ACCESSION NO--AT0133568  
UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AT0133568

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FRESHLY ISOLATED DOG LUNG MITOCHONDRIA CONSUMED O FOR UP TO 3 DAYS UNDER ALL BASIC METABOLIC CONDITIONS WITH RESPIRATORY CONTROLS (LARDY-WELLMAN) OF THE ORDER OF 2.6. THE ADP-G PHOSPHORYLATION COEFF. FOR SUCCINATE WAS ABOUT 2.7, CONSIDERABLY HIGHER THAN THE P-O PHOSPHORYLATION COEFF. CITED IN EXISTING LITERATURE FOR LUNG HOMOGENATES AND MITOCHONDRIA. PRESERVATION OF THE LUNG AT 2DEGREES FOR 1 DAY DID NOT MATERIALLY AFFECT MITOCHONDRIAL BEHAVIOR, BUT IN 2 DAYS DISTURBED METABOLISM APPEARED IN THE CHAIN OF ENERGY ACCUMULATION, INDICATED BY DOUBLING OF THE PHOSPHORYLATION TIME, ALTHOUGH THE CAPABILITY FOR PHOSPHORYLATION OF ADDED ADP WAS MAINTAINED. IN 3 DAYS MATERIAL DAMAGE TO PHOSPHORYLATION AND OXIDN. WAS EVIDENT. FACILITY: MOSK. MED. INST. IM. SECHENOVA, MOSCOW, USSR.

UNCLASSIFIED

Pharmacology and Toxicology

USSR

UDC 591.477.4

CHECHULIN, A. S., SHAPIRO, A. M., VAL'TSEVA, I. A., and TALYZIN, F. F., First Moscow Medical Institute im. I. M. Sechenov

"Some Data on the Effect of Central Asian Cobra Venom on Blood"

Moscow, Nauchnyye Doklady Vysshey Shkoly, Biologicheskiye Nauki, No 7, 1972, pp 58-59

Abstract: Examination of the peripheral blood of animals 20 to 40 min after subcutaneous injection of sublethal doses of Central Asian cobra venom revealed an increase in the number of leukocytes, reticulocytes, and especially immature forms of erythrocytes. However, the resistance of the erythrocytes was unaffected. This suggests that hemolysis did not occur under experimental conditions, for the permeability of the membrane of these cells did not increase in response to the neurotropic toxin.

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USSR

UDC 621.391.17

CHECHULINA, L. A.

"Inference Resistance of the Coherent Reception of a Frequency Modulated Signal Limited with Respect to Frequency"

Moscow, Elektrosvyaz', No 11, 1970, pp 37-43

Abstract: The author studies the actual interference resistance ensured by a coherent frequency modulated signal receiver when the signal is limited with respect to the spectrum as the result of passing through the communication channel and the selective units of the receiver. The results show that the interference resistance of the coherent reception of an FM signal, limited with respect to the spectrum with a phase discontinuity, is significantly inferior to the potential calculated without considering the transient processes which occur with spectrum limitation. In the particular case of an FM signal with zero frequency deviation, which corresponds to a phase modulated signal, the decrease in interference resistance in comparison with the potential does not depend on the extent of phase discontinuity at the sending boundaries and constitutes 1.82db. Decrease in the interference resistance of the coherent reception of an FM signal without phase discontinuity is relatively small at low modulation indices and increases smoothly with the increase of  $\beta$  in comparison with the potential and without considering transient processes. Original article: four figures, 12 formulas, and four bibliographic entries.

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USSR

UDC 621.391:519.2

CHECHULINA, L. A.

"Potential Noise-Proofness of Reception of an FM Signal Limited with Respect to Spectrum Without a Phase Break"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi, 1970 g. Vyp. 1 (Materials of the Scientific and Technical Conference. Leningrad Electrotechnical Communications Institute, 1970, Vyp. 1), Leningrad, 1970, pp 68-74 (from RZh Radiotekhnika, No 8, Aug 70, Abstract No 8A54)

Translation: This article contains an investigation of the potential noise proofness of an FM-signal without a phase break and with a low modulation index considering the limitation of its spectrum in the communications channel and the selective receivers.

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Industrial and Mining

USSR

UDC: 663.14.08

CHECHURA, A. A.

"A Device for Aerating a Liquid"

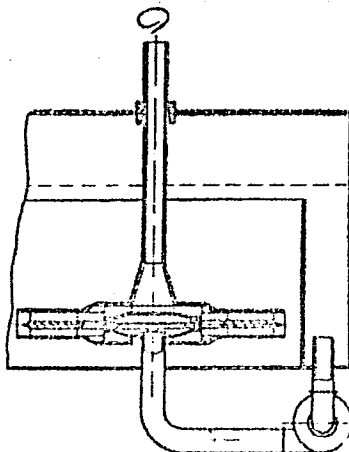
Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 10, Apr 72, Author's Certificate No 332127, Division C, B, filed 2 Jun 70, published 14 Mar 72, pp 100-101

Translation: This Author's Certificate introduces: 1. A device for aerating a liquid. The device contains an ejector fastened to a hollow air duct. The ejector is made in the form of concentrically arranged chambers formed by plates. These chambers are used for feeding in the nutrient medium and air and for mixing them. The device also contains a circulation system which consists of a pressure line connected to the inner chamber, a pump, and an exhaust line. As a distinguishing feature of the patent, the process of saturating the liquid with air is intensified by fitting horizontal discs to the chambers for feeding in the medium and for mixing the medium with air. These discs are located at the periphery of the chambers and are securely held to the plates by radial blading. 2. A modification of this device distinguished by the fact that the air duct is installed so that it can be rotated.

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USSR

CHECHURA, A. A., USSR Author's Certificate No 332127



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USSR

UD3 621.318.42:550.38

CHECHURINA, Ye. N., and SHIFRIN, V. Ya.

"Principles of Metrological Maintenance of Instrument Making in the Region of Geomagnetism"

Tr. Metrol. In-tov SSSR / Works of Metrological Institutes of the USSR /, No 120 (180), 1971, pp 24--30 ( from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, No 32. Single Issue No 1, 1972, Abstract No 1.32.1577 )

Translation : On the basis of analyses used in geomagnetic investigations of instruments, the demands for standard apparatus designated for their check up are formulated. In individual cases, the required exactness reaches the level of up-to-date technical potentialities ( 0.001 % ). It is demonstrated that methods based on inner-atomic phenomena do not yet guarantee unity and exactness of measurements. That can be achieved by the use of an absolute measure, a standard coil substantially reproducing the unit of

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USSR

CHECHURJNA, Ye. N. and SHIFRIN, V. Ya., Tr. Metrol. In-tyov SSR, No 120, (180), 1971, pp 24-30

magnetic field induction by units of length and current intensity. A transmission system is suggested of the value of the magnetic field induction unit in the region of weak magnetic fields ( $10^{-6} - 2 \cdot 10^{-2} T$ ), the main purpose of which is to make sure of the harmony of geomagnetic measurements. A short description is presented of the individual components of the scheme. It is demonstrated that the suggested checking methods and the standard apparatus ensure the required transmission accuracy of the unit. One illustr., two tables, three biblio. refs.

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USSR

UDC 621.372.21.001.24

AVDEYEV, Ye. V., CHEGIS, I. L.

"Calculation of Meander-Twisted Sections of Strip Lines With a Nonhomogeneous Dielectric"

Moscow, Radiotekhnika i Elektronika, Vol 16, No 10, Oct 71, pp 1808-1815

Abstract: The paper describes a method of calculating meander-twisted sections of strip transmission line with a two-layer dielectric filler in the absence of losses in the TEM-approximation. A simplified model of a meander-like structure is compiled which lends itself to approximate calculation with regard to capacitive coupling between its elements. The structural singularities of the strip line which forms the meander are accounted for in calculating the matrix of capacitances and parameters of propagation. The problem of finding the matrix of capacitances of a system of coupled strip lines which completely defines the parameters of propagation in the structure reduces to solving a system of nonhomogeneous Fredholm's integral equations of the first kind for charge distributions. The results of computer calculation of the resonance frequencies

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USSR

AVDEYEV, Ye. V., CHEGIS, I. L., Radiotekhnika i Elektronika, Vol 16, No 10, Oct 71, pp 1808-1815

of a meander section are compared with the results of an experiment which confirms the applicability of the proposed computational procedure. Three figures, bibliography of six titles.

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USSR

UDC 681.325.65

KOSHCHEYEV, A. A., CHEGLAKOV, V. A.

"Problems of Improving the Accuracy of Converters"

Sb. nauch. tr. Chelyabinsk. politekhn. in-ta (Collected Scientific Works. Chelyabinsk Polytechnical Institute), 1972, No 88, pp 85-91 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11, Nov 72, abstract No 11B317)

Translation: The paper analyzes errors of converters which change analog voltage to angular displacement of a shaft for matching an analog computer to an actual device. The way that the speed control range limits the accuracy of input signal processing is accounted for. A method is proposed which enables determining the required gain of the servo amplifier to obtain a given range of converter speed control, in which the control error does not exceed the permissible value. It is noted that the method of moments can be used to calculate the converter error. Calculations show that when precision feedback elements are used, drift of the DC amplifier is the main source of converter error. Three illustrations, bibliography of five titles. L. P.

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USSR

UDC: 681.32.001

BURTOV, A. I., PETROV, V. A., SAVUTKIN, V. V., SHAGULIN, V. I., VOLKOV, A. F.,  
SOROKIN, G. K., TRAPEZNIKOV, V. A., CHEGLAKOV, Ye. A., CHEZEMAREV, Yu. D.

"A Device for Determining the Region of Operability of a Digital Computer  
With Respect to Supply Voltages"

USSR Author's Certificate No 291206, filed 7 Aug 68, published 29 Mar 71,  
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct  
71, Abstract No 102246 P)

Translation: There is a well-known device which determines the region of operability of a digital computer with respect to supply voltages. This device contains a control unit, voltage commutation module, an element for controlling the sign of the independent voltage increment, and a device for visual display. However, such devices are incapable of monitoring the changes in digital computer elements which occur as a result of various ambient factors while the computer is in operation. To speed up determination of the limits of the region of operability and improve the reliability of measurements, the signal input of the element for controlling the sign of the independent voltage increment in the device proposed by this Author's Certificate is connected to the output of the voltage commutation module, while the controlling input and the  
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TOV, A. I. et al., Soviet Patent No 291206

Output of the sign controller are connected to the control unit, the auxiliary output of the control unit being connected to the device for visual display, which is connected in turn to the voltage commutation module. This enables observation of the change in the region of operability of the digital computer with respect to supply voltages during operation, as well as evaluation of various computer characteristics (e.g., the availability factor, operability margin with respect to drift of element parameters, operating stability with respect to random perturbations of the power supply and the ambient medium). One illustration.

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:c. Nr.

AP0107157

Abstracting Service:

CHEMICAL ABST. 3-70

CHEGODAYEV D.D.

Ref. Code

4R0303

123011v Preparation of high-quality pentaplast [poly-  
 [3,3-bis(chloromethyl)oxacyclobutane]] coatings. Bugorkova,  
 N. A.; Chegodaev, D. D.; Chereshevich, L. V.; Nikolaev, A. F.  
 (USSR). *Lakokrasoch. Mater. Ikh Primen.* 1970, (1), 34-7  
 (Russ). Coatings of the title polymer (I) on steel or Al were ob-  
 tained by brushing on the I suspensions and heating at 200°. The  
 coatings were cooled at various rates: in a thermostat at  
 1-2°/min, in air at 3-7°/min, or by quenching in water. The best  
 films were obtained by quenching; they had no shrinkage, 16.0%  
 crystallinity, no internal stresses, 4.5-5.0 kg/mm adhesion  
 strength to metals, 380-400 kg/cm<sup>2</sup> tensile strength at break, ~50  
 kg cm impact strength, 20% elongation at break, and 1 × 10<sup>16</sup>  
 ohm cm vol. resistance at 20°. There was no corrosion of metals  
 coated with I after 3 months immersion in 30% HNO<sub>3</sub> soln., or 8  
 months immersions in 37% HCl, 98% H<sub>2</sub>SO<sub>4</sub>, or 40% NaOH solns.  
 CPJR

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CK

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REEL/FRAME  
19890552

1/2 014 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--LACQUERS AND LACQUER COATINGS BASED ON FTORLONS -U-  
AUTHOR--(03)-BUGORKOVA, N.A., CHEGODAYEV, D.D., CHERESHKEVICH, L.V.  
COUNTRY OF INFO--USSR  
SOURCE--(USSR). PLAST. MASSY 1970, 1(5), 65-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--LACQUER, FLUORINATED ORGANIC COMPOUND/(U)FTORLON FLUORINE  
PLASTIC, (U)F42 FLUORINE PLASTIC, (U)F32L FLUORINE PLASTIC  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3006/0995 STEP NO--UR/0191/70/001/005/0065/0067  
CIRC ACCESSION NO--AP0134707  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134707

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SOLY. OF FTORLONS (F-42 AND F-32L) IN HCONME SUB2, KETONES, AND ESTERS SUGGESTS THEIR USE AS COATINGS. HOWEVER, DUE TO PARTIAL CRYSTALLINITY, THE SWELLING OF F-42 OR F-32L FILMS IN SOLVENTS IS NOT UNIFORM AND SURFACE CRAZING OCCURS MIXED SOLVENTS, SUCH AS ACETONE 15, ACOET 30, ACO(CH SUB2) SUB4 ME 30, CYCLOHEXANONE 10, AND ET CELLOSOLVE 15 PARTS REMEDY THE SITUATION. COATINGS BASED ON F-42 OR F-32L WITHSTOOD A 1 MONTH CONTACT WITH 37PERCENT HCL, 98PERCENT HNO SUB3, 50PERCENT ACOH, 40PERCENT NAOH OR 98PERCENT H SUB2 SO SUB4 AT 50DEGREES WITHOUT CHANGE.

UNCLASSIFIED

USSR

UDC 62-567.2

BELOUSOV, A. I., CHEGODAYEV, D. YE., and NESOLENOV, G. F., Kuybyshev Order of the Labor Red Banner Aviation Institute imeni S. P. Korolev

"Bilateral Hydrostatic Bearing"

USSR Author's Certificate No 366286, Filed 9 Jun 70, Published 16 Jan 73 (from Otkrytiya, Izobreneniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7, Mar(a) 73, Claim No 1445447/25-28)

Translation: A bilateral hydrostatic bearing containing a cylindrical pivot with a ring-shaped section, forming a ring-shaped central chamber in the pivot, with a radial-throttling aperture, two ring bands with scrolls, in one of which an axial aperture is formed for delivery of the working medium, distinguished by the fact that in order to improve the shock-absorbing properties of a socket, the front parts which penetrate the scroll band rings, forming with each of them a supporting chamber and two concentric ring-shaped apertures, serving as delivery and outlet of the working medium for the chamber.

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1/2 007 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--COMPLEXING OF IRON,III, WITH PHENOL -U-  
AUTHOR--(05)-NIKOLSKIY, B.P., PALCHEVSKIY, V.V., CHEGODAYEVA, A.D.,  
YAKUBOV, KH.M., SAMBUR, T.V.  
COUNTRY OF INFO--USSR  
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 192(1), 102-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--IRON COMPOUND, COMPLEX COMPOUND, PHENOL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3006/1204 STEP NO--UR/0020/70/192/001/0102/0104  
CIRC ACCESSION NO--AT0134878  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0134878

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPLEXING OF FE(III) WITH PHOH AND THE POSSIBLE FORMATION OF THE (FEOPH) PRIME2POSITIVE COMPLEX WAS STUDIED BY MEASURING THE CHANGE IN THE OXID. POTENTIAL OF THE FE(III)-FE(II) SYSTEM (USING FE(CLO SUB4) SUB3 AND FE(CLO SUB4) SUB2 IN NACLO SUB4 SOLN.) AT 25DEGREES AS A FUNCTION OF PH, THE ADDUCT CONC., AND THE CONCNS. OF THE OXIDIZED AND REDUCED FE. THE PH DEPENDENCE CURVES OF THE OXID. POTENTIAL IN THE PRESENCE AND IN THE ABSENCE OF PHOH INDICATE THAT PHOH HAS NO EFFECT ON THE HYDROLYSIS OF FE(III). THE BLUE COLOR WHICH APPEARS AT PH GREATER THAN OR EQUAL TO 0.9 CHANGES TO YELLOW AT PH GREATER THAN 2. ADDNL. SPECTRUPHOTOMETRIC STUDY OF THE FE(III) PHENOL SYSTEM AT 550 NM REVEALED THAT THE ABSORBANCE OF THE SYSTEM INCREASES WITH INCREASING PHOH CONC. AND WITH PH OF THE SYSTEM. THE EXPTL. DATA SUGGEST THAT THE COMPLEX RESPONSIBLE FOR THE BLUE COLOR IS FORMED BY THE ADDN. OF PHOH TO THE PRODUCTS OF THE PRIMARY HYDROLYSIS OF FE(III) COMPS.: (FE (H SUB2 O) SUB6) PRIME3POSITIVE FORMS AND IS FORMED FROM (FE(OH)(H SUB2 O) SUB5)PRIME2POSITIVE PLUS H PRIMEPOSITIVE, (FE(OH)(H SUB2 O) SUB5) PRIME2POSITIVE PLUS PHOH FORMS AND IS FORMED FROM FE(OH)(H SUB2 O) SUB4 PHOH) PRIME2POSITIVE. FACILITY: LENINGRAD. GOS. UNIV. IM. ZHDANOVA, LENINGRAD, USSR.

UNCLASSIFIED



USSR

UDC: None

CHEGOLIN, P. M. and ALEKSEYEV, G. I.

"Device for Extrapolating Functions Specified by a Digital Code"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,  
No 14, 1973, p 148, No 373733

Abstract: This device contains two memory cells in series. To improve its accuracy, a third cell is introduced into the circuit with its input connected to the input of the second cell and to an input of a digital-analog unit for computing polynomials.

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USSR

UDC: 8.74

CHEGOLIN, P. M., POYDA, V. N.

"Methods, Algorithms and Programs of Statistical Analysis"

Metody, algoritmy i programy staticheskogo analiza (cf. English above), Minsk, "Nauka i tekhn.", 1971, 224 pp, ill. 1 r. 26 k. (from RZh-Kibernetika, No 1, Jan 72, Abstract No 1V1032)

Translation: The book deals with the problem of experiment automation based on use of electronic computer technology. The authors consider problems of automatic computation of statistical characteristics with regard to effective methods of condensing primary information and the measure of nonlinearity of the objects being studied.

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1/2 019 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--NATURE OF THE INTERACTION OF PHENYL AND IMIDAZOLE RINGS IN  
N,ARYLIMIDAZOLES. IV. DERIVATIVES OF 1,PHENYLIMIDAZOLE WITH SUBSTITUENTS  
AUTHOR--POZHARSKIY, A.F., SITKINA, L.M., SIMONOV, A.M., CHEGOLYA, T.N.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN 1970, (2), 209-13

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--BENZENE DERIVATIVE, IMIDAZOLE, ELECTRON ACCEPTOR, ELECTRON  
DONOR, DIPOLE MOMENT, IONIZATION CONSTANT, UV SPECTRUM, MOLECULAR  
INTERACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/1803

STEP NO--UR/0409/70/000/002/0209/0213

CIRC ACCESSION NO--AP0100377

UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0100377

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE UV ABSORPTION SPECTRA OF SUBSTITUTED 1-PHENYLIMIDAZOLES WERE RECORDED. THE INTRODUCTION OF ELECTRON ACCEPTOR GROUPS INTO THE BENZENE RING EXERTS A BATHOCHROMIC SHIFT WHILE THE ELECTRON DONOR GROUPS HAVE LITTLE EFFECT. THE DIPOLE MOMENTS  $\mu$  (IN D), IONIZATION CONSTS. (PK SUBA), AND THE RATE CONST. K OF THE REACTION WITH ETI (10 PRIME NEGATIVE 6 L. MOLE PRIME NEGATIVE 1 SEC PRIME NEGATIVE 1) FOR I WERE (R  $\mu$ , PK SUBA, AND K GIVEN): H, 3.50, 5.10, 15.7; P-ME, 3.90, 5.24, 19.0; M-ME, 3.73, 5.24, 16.9; O-MICRON-ME, 3.79, -, -; P-BR, 2.20, 4.91, 11.0; P-OH, 5.48, 5.35, 22.6; P-AC, 2.89, 4.54, 10.8; P-O SUB2 N, 1.55, 3.96, U.8; M-O SUB2 N, 3.63, -, -; P-MED, -, 5.23, 19.6. THE IMIDAZOLE GROUP IN I BEHAVES AS AN ELECTRON DONOR.

UNCLASSIFIED

USSR

UDC 620.179

AVERBUKH, I. I., VAYNBERG, V. YE., CHEGORINSKAYA, O. N.,  
GRADINAR, V. V., All-Union Scientific Research Institute of  
Nondestructive Control, Kishinev

"The Use of Ultrasonic Emission in Nondestructive Control"

Sverdlovsk, Defektoskopiya, No 1, 1972, pp 26-32

Abstract: An experimental investigation was made of the possibility of using ultrasonic emission for the detection of defective parts of welded constructions and determining the bonding strength of bimetallic sheets and strips. The frequency spectrum and the character of the increase in the emission intensity make it possible to evaluate the characteristics of the material. In supersonic emission investigations, difficulties arise which are connected with the reception and separation of signals of supersonic emission on the noise background. Tuning out from acoustic low-frequency noises is done by appropriate selection of transducers and electronic equipment. 9 illustrations, 7 bibliographic references

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USSR

UDC: 620.179.16

CHEGORINSKY, V. A., VNIINK, Kishinev

"On the Optimum Level of Flaw Registration in Ultrasonic Flaw Detection by the Echo Method"

Sverdlovsk, Defektoskopiya, No 3, May/Jun 71, pp 75-80

Abstract: The author considers the possibility of optimum adjustment of an ultrasonic echo-type flaw detector with constant depth sensitivity with regard to monitoring conditions, the predetermined size of a borderline (threshold) flaw, the flaw size probability distribution, and the requirements for inspection. The case where excessive rejection and insufficient rejection are equal is presented. Three figures, bibliography of seven titles.

1/1

1/2 022 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--RELIABILITY TEST UNIT FOR ULTRASONIC DEFECTOSCOPES -U-

AUTHOR--(021)-CHEGORINSKIY, V.A., VZOROV, V.S. C

COUNTRY OF INFO--USSR

SOURCE--SVERDLOVSK, DEFEKTOSKOPIYA, NO. 1, 1970, PP 13-16

DATE PUBLISHED-----70

SUBJECT AREAS--METHODS AND EQUIPMENT

TOPIC TAGS--RELIABILITY ENGINEERING, CYCLIC TEST, DEFECTOSCOPE, ULTRASONIC  
TEST APPARATUS/(U)UOMIM ULTRASONIC DEFECTOSCOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1985/0136

STEP NO--UR/0381/70/001/000/0013/0016

CIRC ACCESSION NO--AP0100667

UNCLASSIFIED

272 022

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--A0100667

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS ARTICLE IS A DESCRIPTION OF A SPECIAL TEST UNIT, DEVELOPED BY THE VNIINK, TO INVESTIGATE THE ACTION OF CYCLICAL OPERATION ON EQUIPMENT RELIABILITY WHICH THE AUTHORS ASSERT HAS BEEN INSUFFICIENTLY INVESTIGATED. THE BASIC ELECTRICAL CIRCUIT OF THE TEST UNIT IS GIVEN, AND ITS OPERATION EXPLAINED. THE UNIT WAS USED FOR TESTING THE CYCLICAL OPERATION OF THE UDM-1M ULTRASONIC DEFECTOSCOPE MANUFACTURED BY THE "ELEKTRODCHPROBOR" PLANT IN KISHINEV. A PHOTOGRAPH OF THE TEST INSTRUMENT CONNECTED TO THE DEFECTOSCOPE IS SHOWN. THE AUTHORS FIND THAT THE CYCLICAL OPERATION OF THE DEFECTOSCOPE LEADS PRIMARILY TO WEAR AND TEAR ON THE ELECTRONIC TYBES AND THAT THE TESTS CONDUCTED HELP CORRECT THE RELIABILITY LEVEL OF THE DEFECTOSCOPE WITH THE LENGTH OF ITS OPERATING PERIOD TAKEN INTO ACCOUNT.



1/2 011 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--POLARIZATION PHENOMENA IN TWO NUCLEON TRANSFER REACTIONS AT LOW  
ENERGIES -U-  
AUTHOR-(02)-VYSOTSKIY, G.L., CHEGORYAN, M.O. C  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(1), 147-52  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--NUCLEON INTERACTION, NUCLEAR RESONANCE, COMPOUND NUCLEUS,  
COULOMB SCATTERING, PROTON POLARIZATION, EXCHANGE REACTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1988/0236 STEP NO--UR/0048/70/034/001/0147/0152  
CIRC ACCESSION NO--AP0105312  
UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--16OCT70  
CIRC ACCESSION NO--AP0105312  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POLARIZATION EFFECTS ARE INVESTIGATED ARISING IN THE 2-N TRANSFER REACTIONS OF THE TYPE (PRIME3 HE, P), (T, P), (ALPHA, D), ETC., IN THE ENERGY REGION WHERE ALONG WITH THE DIRECT MECHANISM THE EXCITATION OF RESONANCES OF THE COMPD. NUCLEUS IS POSSIBLE. INTERFERENCE BETWEEN THE DIRECT PROCESSES AND THE EXCITATION OF THE ISOLATED RESONANCE LEADS TO THE OCCURRENCE OF THE POLARIZATION OF THE PARTICLES EMITTED. THE AMPLITUDE OF THE DIRECT PROCESSES WAS CALCD. WITH ALLOWANCE MADE FOR THE COULOMB SCATTERING OF LOW ENERGY PARTICLES OF THE NUCLEUS. THE POLARIZATION OF P FROM THE REACTION PRIME12 C(PRIME3 HE,P) PRIME14 N CALCD. BY USING THE DIMENSIONAL PARAMETER IS GRAPHICALLY REPRESENTED AS A FUNCITON OF ENERGY. THE DIFFERENTIAL CROSS SECTION OF THIS REACTION OF 34DEGREES AS A FUNCTION OF ENERGY IS GIVEN. THE GENERAL FORMULAS OBTAINED CAN BE USED FOR THE INTERPRETATIONS OF EXPTL. DATA IN 2-N TRANSFER REACTIONS.  
FACILITY: FIZ.-TEKH. INST., KHARKOV, USSR.

UNCLASSIFIED

Polymers and Polymerization

USSR

UDC 54--126+546.56+546.81

2

DUSHCHENKO, V. P., BARANOVSKIY, V. M., KUZ'MOVICH, V. V., CHEGORIAN, V. M., VYSOTSKAYA, V. N., and IVKINA, N. A., Institute of Colloidal Chemistry and Chemistry of Water, Academy of Science Ukrainian SSR

"Thermophysical Properties of Metallopolymers Derived From Inorganic Heteropolyacids"

Kiev, Ukrainskiy Khimicheskiy Zhurnal, Vol 37, No 6, Jun 71, pp 618-620

Abstract: Coefficients of heat- and electroconductivity of copper and tin metallopolymers derived from silicomolybdic and silicotungstic acids were studied as functions of temperature. The acids were reduced by respective metals employing a ratio of 6 electrons per acid molecule. Highly dispersed metals were produced in aqueous solutions of complex blues by electrolytic or chemical methods; the complexes were coagulated on the surface of metal particles, and then the system was treated with barium oxide or glycerine at 200°C. The resulting powdery metallopolymers were compressed into tablets and studied by the method of dynamic heating. It was shown that the inorganic base of these metallopolymers exhibits some crystalline structure. Metal particles appear to be isolated from each other by layers of the inorganic

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USSR

DUSHCHENKO, V. P., et al., Ukrainskiy Khimicheskii Zhurnal, Vol 37, No 6,  
Jun 71, pp 618-620

polymer. The relationship between the coefficient of heat conductivity and temperature is analogous to the case of crystalline polymers. An increase in the concentration of metal in metallopolymers results in different increases of the coefficient of heat conductivity, depending on the polymer.

2/2

- 69 -

USSR

UDC 54-126+546.73+546.81

NATANSON, E. M. (deceased), KUZ'MOVICH, V. V., CHEGORYAN, V. M., IVKINA, N. A., and SHEVTSOVA, A. F., Institute of Colloidal Chemistry and Chemistry of Water, Acad. Sc. UkrSSR

"Formation of Metallopolymers on the Basis of Silicontungstic Acid"

Kiyev, Ukrainskii Khimicheskii Zhurnal, Vol 39, No 3, Mar 73, pp 249-253

Abstract: The reduction of silicontungstic acid with tin and cobalt has been investigated. Blue forms of silicontungstic acid have been prepared stable towards tin and cobalt. Conditions have been studied for the formation of tin and cobalt metallopolymers starting from the barium salts of silicontungstic acid blues. The heat conductivity and electroconductivity of the metallopolymers obtained have been evaluated. The data obtained indicated that the metallic phase is in highly dispersed state, stable to oxidation; the metallic particles are isolated from each other by a film of the barium salt of silicontungstic acid blues.

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USSR

UDC 614.777:632.95

KOSTOVETSKIY, Ya. I., TOLSTOPYATOVA, G. V., and CHEGRINETS, G. Ya.,  
A. N. Marzeyev Kiev Institute of General and Communal Hygiene

"Pollution of Open Bodies of Water by Pesticides Used in Agriculture"

Moscow, Gigiyena i Sanitariya, No 10, 1973, pp 99-100

Abstract: Of 456 soil samples, 224 water analyses, and 216 determinations of bottom sediments from ponds and small streams and adjacent fields and shelter-belts in different soil and climatic zones of the Ukraine, DDT, sevin, metaphos, chlorophos, etc. were detected in 97 (21.3%), 16 (7.1%), and 54 (25%), respectively. Mostly organochlorine pesticides were found in the soils and bottom sediments (in 92.9 and 85.2% of the cases) and organophosphorus compounds in the ponds and streams (in 75% of the cases). The surface runoff from the fields and orchards is a major factor in the pollution of the ponds and streams, for the concentrations of the pesticides are highest after the first rains following spraying.

1/1

- 16 -

USSR

UDC 621.671: 621.187.13.001.5

TURKIN, A. N., CHEGURKO, V. E.

"Tests of a Stand-by PE-600-300 Electric Feed Pump"

Chelyabinsk, V sb. "Osvoyeniye blokov moshchnosr'yu 300 Mvt na Ekibastuzsk. ugle" (Collection of Works-Assimilation of 300 Mw Power Units Burning the Ekibastuz-Region Coal), 1972, pp 115-121 (from Referativnyy Zhurnal-Teploenergetika, No 6, June 72, Abstract No 6 C 75)

Abstract: Pump efficiency was found to be 0.728 during industrial tests. Low hydraulic efficiency (0.86) of working components, widening of the diffusor channel of the guiding apparatus, which is due to blades trimming and the enlargement of clearances in packings of the flow - through section are the causes of low economy of the pump. Thermal regime of the case and discharge cover of the PE-600-300 feed pump is unfavorable for functioning of

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USSR

TURKIN, A. N. and CHEGURKO, V. E., Chelyabinsk, v. sb., 1972, pp 115-121

packings, due to the occurrence of appreciable temperature differences between the "top" and "bottom," resulting in possible grazing in packings at start. At nominal slip of 3%, the efficiency of hydraulic coupling is being 0.95. 2 figures, 1 table, 2 references.

CSO: 1861-W

- END -

2/2

- 130 -



USSR

UDC 629.78:533.1

CHEKALIN, E. K., SHUMANOV, V. S., AFINOGENOV, YE. P.

"Interaction of an Ionized Metal Vapor Flow with a Body at  $M > 1$ "

V sb. Teplofiz. svoystva i gazodinamika vysokotemperatur. ored. (Thermophysical Properties and Gas Dynamics of High-Temperature Media--collection of works), Moscow, Nauka, 1972, pp 96-106 (from RZh-Raketostroyeniye, otdel'nyy vypusk, No 12, Dec 72, Abstract No 12.41.122)

Translation: The experimental results of studies of sonic and supersonic flows of ionized copper and lithium vapors are discussed. A description was given of contact methods of measuring the flow parameters. The flow velocity, the Mach number, the temperature, the density and pressure of an erosion plasma flux which was formed during electric explosion of a wire and electrode erosion were determined by means of two planar oriented calorimeters, a ballistic pendulum, supersonic photography and measurement of the emf induced in the magnetic field. The results of the studies were checked by other methods, for example, by the Stark broadening of the  $H_{\alpha}$  hydrogen spectral line. There are 5 illustrations, 1 table and a 15-entry bibliography.

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USSR

UDC 621.375.82

KRYUKOV, P. G., MATVEYEV, YU. A., SENATSKIY, YU. V., FEDOSIMOV, A. I.,  
CHEKALIN, S. V., and SHATBERASHVILI, O. B.

"On Mechanisms for Radiation Energy and Power Limitation During the Amplification of Ultrashort Pulses in Neodymium Glass Lasers"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No 2(14), Moscow, "Sov. Radio," 1973, pp 102-105 (English summary) (from RZh-Fizika, No 10, Oct 73, Abstract No 10D334; from authors' abstract)

Translation: It is shown that a limitation of the energy and power of ultrashort pulses during amplification in Nd glass lasers sets in as a result of the nonlinear interaction of the laser radiation with the optical medium of the laser itself. Emerging as limitation mechanisms here are breakdowns due to self-focusing in the case of the propagation of light beams close to parallel through the amplifier, and spectrum broadening and radiation scattering in the case of divergent beams.

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USSR

UDC: 533.9...16

BASOV, N. G., ZARITSKIY, A. R., ZAKHAROV, S. D., KRYUKOV, P. G., MAT-  
VEYETS, Yu. A., SENATSKIY, Yu. V., FEDOSIMOV, A. I., CHEKALIN, S. V.

"Producing High-Power Light Pulses on Wavelengths of 1.06 and 0.53  $\mu\text{m}$   
and Using Them to Heat a Plasma. II. A Neodymium Glass Laser With Con-  
version of Emission to the Second Harmonic"

Moscow, Kvant. elektronika--sbornik (Quantum Electronics--collection of  
works), "Sov. radio", 1972, pp 50-55 (from RZh-Fizika, No 6, Jun 73,  
abstract No 6G375)

Translation: Investigations of processes of heating by means of laser  
sources with different wavelengths are of considerable importance for  
explaining mechanisms of energy transfer in laser heating of a plasma.  
This paper tells of the development of a high-power light source for  
heating experiments with emission on two wavelengths: the wavelength of  
a neodymium laser (1.06  $\mu\text{m}$ ) and its second harmonic (0.53  $\mu\text{m}$ ). An ef-  
ficiency of greater than 50% in converting 1.06- $\mu\text{m}$  emission to the second  
harmonic is achieved in a KDP crystal. The emission energy on the 0.53- $\mu\text{m}$   
wavelength is 10 j with a pulse duration of 1.0 ns. Part I, see RZhFiz,  
1973, 5G239.

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- 16 -

USSR

UDC 621.378.325 + 543.46

BASOV, N.G., ZARITSKIY, A.R., ZAKHAROV, S.D., KRYUKOV, P.G., MATVEYETS, YU.A.,  
SENATSKIY, YU.V., FEDOSIMOV, A.I., CHEKALIN, S.V.

"Achievement Of Powerful Light Pulses At A Wavelength Of 1.06 And 0.53 Micron  
And Their Use For Plasma Heating. II--Nd-Glass Laser With Conversion Of Radi-  
ation To The Second Harmonic"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 6(12), 1972, pp 50-55

Abstract: The construction is described and the characteristics presented of a  
multistage Nd-glass laser. The laser assembly consists of the following: 1)  
Active elements of GLS-1 neodymium glass, 700 mm long with ends cut at a  
Brewsterian angle; 2) Resonator mirror; 3) Cells with clearing absorber; 4)  
Aperture diaphragms; 5) Selectors of longitudinal types of oscillations in  
oscillator; 7) Lenses; and 8) Electrooptical gate with a laser discharger.  
A driving oscillator assembled according to the scheme of an oscillator with  
self-synchronization of modes serves as the source of short light pulses in the  
device. The length of the oscillator resonator, formed by two mirrors with re-  
flection coefficients of 100 and 20 percent, amounts to 6 m. Cells with a non-  
linear absorber -- a solution of No. 5955 dye in nitrobenzene -- were in con-  
tact with an opaque mirror. Two selectors of axial modes in the form of  
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USSR

BASOV, N.G., et al, Kvantovaya elektronika, Moscow, No 6(12), pp 50-55

inclined Fabry-Perot interferometers were used for narrowing of the generation spectrum. With the aid of these interferometers the generation spectrum was narrowed to  $\sim 0.05 \text{ \AA}$  and in so doing the pulses emitted by the oscillator were expanded to 1 nanosec. In the KDP crystal the radiation at the output is converted into a second harmonic with an efficiency greater than 50 percent. The radiation energy at a 0.53 micron wavelength amounts to 10 joule. The authors thank M.F. Stel'makh, I.S. Rezi, A.I.Kovrigin, and V.P.Polov for assistance in conducting experiments with KDP crystals. 3 ill. 16 ref. Received by editors, 25 Oct 1971.

2/2

- 70 -

USSR

UDC: None

KRYUKOV, P. G., MATVEYETS, Yu. A., CHEKALIN, S. V., and SHATBERASH-VILI, O. B.

"Forming Ultrashort Laser Pulses With a Two-Component Medium"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 16, No 3, 1972, pp 117-120

Abstract: The purpose of this letter is to investigate the possibility of forming single ultrashort laser pulses using a medium which amplifies and is a nonlinear absorber with fast relaxation time in the light-transmission state. Since such a medium is absorbent for weak signals and amplifying for strong, powerful amplification, discrimination is exerted on the input pulse. If the relaxation time for the absorber is low enough, the already short pulse derived from a laser with autosynchronization can be made even shorter. A diagram of the experimental arrangement for this investigation is given and comparison diagrams of the pulse before and after passage through the two-component medium are shown. Associated with the P. N. Lebedev Physics Institute of the USSR Academy of Sciences, the authors express their gratitude to S. A. Churilova, A. N. Zherikhin, and Ye. V. Kurganova for their assistance with the experimental work.

1/1

USSR

UDC: 621.378.325

BYKOVSKIY, N. Ye., KAN, V., KRYUKOV, I. G., MATVEYEV, Yu. A.,  
NI, K. L., SEMAKSHIY, Yu. V., and CHEKALIN, S. V.

"Increasing the Energy Ratio of Ultrashort Laser Pulses to Noise"

Moscow, Kvantovaya elektronika, No 7, 1972, pp 68-70

Abstract: The purpose of this paper is to investigate the contrast, i.e., the ratio of the basic pulse energy to the background noise radiation energy, of a laser generating ultrashort pulses. The laser considered uses neodymium glass. In real lasers, the limiting contrast is reached not because of the nonlinear losses in the interaction of the radiation with the optical material of the laser equipment, as some researchers insist, but for other reasons. These losses weaken the most intense of the pulses, and consequently reduce the contrast. This brief communication demonstrates how these losses can be reduced in exchange for a reduction in the energy density of the resonator. The theory behind this procedure is presented, and the schematic of an amplifier for the laser in a stable two-component medium is reproduced. Estimates, made from oscillograms, indicated that the contrast was at least doubled by this device.

1/1

CHEKALIN, S.V.  
300 3.2/ 3.7345 72  
8 June 73

ACADEMY OF SCIENCES OF THE USSR  
P. N. LUBCHV PHYSICAL INSTITUTE

Preprint 8 82

DIRECT MECHANISM OF THE EXPLANATION OF A

NON-LOCAL NONCLASS LASER EMISSION

E.G. Pozov, M.F. Stalov, P.G. Zhukov, Yu.A. Gerasimets,  
K.A. Goligova, S.D. Fanchenko, S.V. Chekalin, S.V. Chikina

Presented at the Conference on Nonlinear

Optics, Minsk, 27 June - 1 July, 1972

U-12836  
Approved for release 24 March 1974 from  
Special Agent, Office of Security,  
Department of Defense, Washington, DC  
Source: D-312, Executive Summary, 50

400004, USSR, 1972



DIRECT PROPOSED MEASUREMENT OF A LOCKED  
ELECTROMAGNETIC RADIATION

N.S. Zubov <sup>\*)</sup>, N.S. Zubov <sup>\*\*)</sup>, P.S. Zubov <sup>\*)</sup>,  
Yu.A. Zvezda <sup>\*)</sup>, A.A. Gerasimov <sup>\*\*)</sup>, D.B. Varchenko <sup>\*\*)</sup>,  
M.V. Chukhin <sup>\*)</sup>, M.V. Chukhin <sup>\*\*)</sup>

INTRODUCTION

Presently the mode-locked Nd-glass lasers are the subject of extensive research efforts aimed at the determination of their radiation shape and duration. As the expected single pulse duration is  $\sim 10^{-10}$  sec, all the conventional diagnostic techniques (wide-band oscilloscopes with channel photocells, ordinary image converter struck screens) fail to provide detailed information on the radiation pulse shape.

There are some indirect methods (for 1-3) for evaluating the duration of the laser ultrashort pulses (LUP). Unfortunately, these methods based upon the measurement of second and higher-order correlation functions are unable to give unambiguous results unless some assumptions are made concerning

<sup>\*)</sup> P.N. Lebedev Physical Institute of the Academy of Sciences of the USSR

<sup>\*\*)</sup> All-Union Research Institute of Optical-Physical Measurements

<sup>\*\*)</sup> I.V. Kurchatov Institute of Atomic Energy

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Magnetohydrodynamics

USSR

UDC 621.378.9:533.9.02

BASOV, N. G., ZAKHAROV, S. D., KROKHIN, O. N., KRYUKOV, P. G., SEMATSKIY, Yu. V., TYURIN, Ye. L., FLDOSIMOV, A. I., CHEKALIN, S. V., SHCHELEV, M. Ya.

"Studies of a Plasma Formed by Ultrashort Laser Pulses"

Moscow, Kvantovaya Elektronika, No. 1, 1971, pp 4-28

Abstract: Experimental studies of processes occurring in the high-temperature heating of a plasma by focusing ultrashort laser radiation on the surface of lithium deuteride are described. Studies of plasma heating with laser radiation of duration  $10^{-11}$ - $10^{-12}$  sec were begun in 1968 at the Laboratory of Quantum Radio-physics of the Physics Institute imeni P. N. Lebedev. Fast neutrons were recorded upon focusing these pulses on the surface of a lithium deuteride target, indicating the rise of conditions for a thermonuclear reaction and for obtaining a plasma of high temperature and density. Subsequent research raised the following questions: how does absorption of energy by a solid occur if the laser radiation is concentrated in a pulse with a duration of several picoseconds? How is the strong reflection of laser radiation from the target explained? What are the possibilities of raising ion temperature, and consequently neutron yield, in

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USSR

BASOV, N. G., et al, Kvantovaya Elektronika, No. 1, 1971, pp 4-28

heating a plasma with ultrashort pulses? Shadow photographs of the plasma with illumination by ultrashort pulses and the recording of plasma dispersion with the aid of an electron-optical converter are described. The same electron-optical converter was used to study the change in the reflection of laser pulses with time, and x-ray measurements were made of the electron temperature of the plasma. A review of the basic experimental data indicates that the results are from laser pulses consisting not of one, but of several subpulses. Experiments show that the interaction of each subpulse with the target is not the same but a function of the previous history and repetition time of the subpulse relative to the beginning of the process. Heating of the plasma occurs as follows: one of the first subpulses incident on the target ionizes it to a depth approximately equal to the wavelength of the laser radiation. When the value of  $n_e$  becomes comparable to the value of  $n_{cr}$ , the remaining part of the subpulse is reflected. Heating of the plasma to a temperature of several electron-volts occurs simultaneously with ionization. As a result, the plasma formed is slowly dispersed. All subpulses incident on the target at this stage will be reflected until the particle density drops, as a result of dispersion, to a value corresponding to  $n_{cr}$ . At this time high-temperature heating of the plasma is possible. It is thus established that reflection of ultrasonic pulses arises in plasma regions where the electron density is close to critical. Other subjects discussed in the article include plasma radiation and heat conductivity, the effect of laser radiation pressure, and electron-ion relaxation in a plasma formed by a powerful ultrashort laser pulse.

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USSR

UDC: 621.385:530.145-6:53

BASOV, N. G., ZAKHAROV, S. D., KROKHIN, O. N., KRYUKOV, P. G., SENATSKIY, Yu. V., CHEKALIN, S. V., FETOSIMOV, A. I., SHCHELEV, N. Ya.

"Investigation of Heating of a Plasma Formed by Ultrashort Laser Pulses"

Kratk. soobshch. po fiz. (Brief Reports on Physics), 1970, No 8, pp 48-52  
(from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12D464)

Translation: In order to form a plasma, ultrashort pulses of emission from a neodymium glass laser operating under conditions of self-synchronization of modes on a wavelength of  $1.06 \mu$  were focused on a target of LiD in a vacuum. The period between pulses was 15 nsec. The individual laser pulse is not simple, but rather consists of a series of peaks, the interval between them and the number of peaks varying from flash to flash. The overall pulse duration reaches 10 nsec, the duration of an individual peak being in the range of  $10^{-11}$ - $10^{-12}$  s. The output energy is  $\sim 0.1$  J. The diameter of the focal spot on the target is  $2 \cdot 10^{-2}$  cm. Heating of the plasma was studied by the methods of shadow photography and schlieren photography. A. K.

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- 102 -

USSR

UDC: 681.142.644.3

CHEKALIN, V. G., Tadzhiik Polytechnical Institute

"The Moving Integration Method in Identification Systems"

Leningrad, Priborostroyeniye, Vol 13, No 5, 1970, pp 37-40

Abstract: This is an analytical identification method, involving the formulation of algebraic equations to describe the state of a system characterized by a differential equation. The first step is to select a standard time interval and integrate the differential equation repetitively over the time interval until all the expressions containing derivatives of the output variable have been moved out from under the integration sign. The resulting integral expressions are considered as time dependent coefficients of the original coefficients in the differential equation. Continuous calculation of these integrals is equivalent to moving or sliding integration over time.

Although such coefficients can be calculated for any time, they can be used only in further computations when a complete system of algebraic equations has been developed; this is most easily achieved by selecting integration points at which one or more of the integral expressions, now considered the variables, is zero.

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USSR

CHEKALIN, V. G., Priborostroyeniya, Vol 13, No 5, 1970, pp 37-40

It is not difficult to set up automatic apparatus for carrying out these calculations, either in sequence or in parallel methods.

The methods considered are valuable in the design of identification systems whenever it is possible to give an a priori determination of the structure of a mathematical model of the system up to the point of interest.

The computations involved can be done on a general-purpose digital computer or with specific apparatus designed for this purpose. The article includes a diagram of such a circuit.

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1/3-040 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--"IN THE 'CHEMICAL INDUSTRY' PAVILION" -U-  
AUTHOR-(02)-SYURBIS, R.K., CHEKALINA, V.YE.  
COUNTRY OF INFO--USSR C  
SOURCE--MOSCOW, MEKHAIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, NO. 1  
1970, PP 23-27  
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, BEHAVIORAL AND SOCIAL SCIENCES, MATERIALS

TOPIC TAGS--AUTOMATIC CONTROL SYSTEM, CHEMICAL INDUSTRY, PYRITE, SULFUR  
DIOXIDE, INDUSTRIAL FURNACE, THERMOPLASTIC MATERIAL, PNEUMATIC  
EQUIPMENT, METAL COATING, CHROMATOGRAPHIC ANALYSIS, DRILLING MACHINE,  
CHEMICAL LABORATORY APPARATUS/(U)SAK6P64M AUTOMATIC CONTROL, (U)E215 8  
DRILL, (U)RAN62B LABORATORY APPARATUS, (U)RRH5 CHROMATOGRAPH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

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PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100769

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A RECITAL OF SOME OF THE MORE IMPORTANT EXHIBITS ADDED TO THE "CHEMICAL INDUSTRY" PAVILION. A SYSTEM OF AUTOMATIC CONTROL FOR POWDERED PYRITE CALCINATION FURNACES HAS BEEN DEVELOPED BY THE UKRAINIAN SCIENTIFIC RESEARCH CHEMICAL INSTITUTE (UNIKHIM) TO STABILIZE THE CONCENTRATION OF SULPHUR DIOXIDE GAS. IN THIS SYSTEM, THE AMOUNT OF POWDERED PYRITES SUPPLIED TO THE OVEN IS CONTROLLED DEPENDING ON THE TEMPERATURE OF THE EXHAUST GASES WITH CONSTANT FEEDING OF PRIMARY AND SECONDARY AIR. A PICTORIAL DIAGRAM OF THE CONTROL SYSTEM AND A TEXTUAL EXPLANATION ARE PROVIDED. ANOTHER EXHIBIT IS A COMPLEX MECHANIZED PNEUMATIC TECHNOLOGY FOR PROCESSING SHEET THERMOPLASTICS, A METHOD FOR PRODUCING LARGE SIZE PLASTIC OBJECTS SUCH AS BATHTUBS, SKYLIGHTS, WASH STANDS, REFRIGERATOR BOXES, AND THE LIKE. THIS INVOLVES THE USE OF PNEUMATIC PRESSURE PLUS MECHANICAL AND HYDRAULIC STRESSES IN A RANGE OF FROM 0.5 TO 25 KG-CM PRIME<sup>2</sup>. A THIRD FEATURE OF THE PAVILION IS A MULTI PROCESS AUTOMATICALLY OPERATED LINE FOR GALVANIZED COATINGS, IN WHICH OPERATIONS IN ANY SEQUENCE CAN BE PROGRAMMED WITHOUT JALTING THE LINE. THIS LINE WAS CONSTRUCTED BY THE CENTRAL GALVANIZED COATING EQUIPMENT CONSTRUCTION BUREAU. A FOURTH IS A CONTROL SYSTEM FOR GALVANIZING PROCESSES WITH THE USE OF THE "DNIEPER" ELECTRONIC COMPUTER. THIS DEVICE COMPUTES THE OPTIMUM QUANTITY OF FUNDAMENTAL PARAMETERS OF THE TECHNOLOGICAL PROCESS, ESTABLISHES AND CONTROLS THE QUANTITY OF PARAMETERS IN THE ELECTROPLATING PROCESS, CONTROLS THE MECHANISM FOR MOVING THE LINE OF DETAILS TO BE PLATED.

UNCLASSIFIED



3/3 040

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100769

ABSTRACT/EXTRACT--THE NEXT EXHIBIT IS THE RKH-5 INDUSTRIAL AUTOMATIC CHROMATOGRAPH FOR THE ANALYSIS OF ORGANIC COMPOUNDS IN COMPLEX MIXTURES AND FOR AUTOMATIC CONTROL OF TECHNOLOGICAL PROCESSING FOR SINGLE OR GROUPED COMPONENTS. THERE IS ALSO THE SAKGP-64M SYSTEM FOR AUTOMATIC CONTROL OF DEPTH PARAMETERS FOR CONTINUOUS MEASUREMENT OF GEOMETRIC AND TECHNOLOGICAL PARAMETERS IN OIL AND GAS DRILLING WITH THE E-215-8 ELECTRIC DRILL. OTHER DEVICES SUCH AS A THERMORADIATION CONVECTION CHAMBER DRIER WITH ELECTRICAL HEATING TO SPEED UP PAINT DRYING, THE LTK-1 LABORATORY CONCENTRATION METER FOR MEASURING SULPHURIC ACID, THE RAN-62B AUTOMATIC FLOW REFRACTOMETER OF THE SUBMERSIBLE TYPE FOR CONTINUOUS CONTROL AND RECORDING OF THE COMPOSITION OF FLUID PETROLEUM AND CHEMICAL PRODUCTS, THE ARP-2 DISTILLATION ANALYZER FOR AUTOMATIC CYCLICAL DETERMINATION OF THE FRACTIONAL COMPOSITION OF LUCID PETROLEUM PRODUCTS. DIAGRAMS OF THE DRIER, REFRACTOMETER, AND ARP-2 ARE ALSO SHOWN.

UNCLASSIFIED

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*CHEKALIN, Y.P.B.*

JPRS 56236  
12 June 1972

*Gyroscopes*

IMC 531.383  
NOTION OF A GYROSCOPE WITH A HOOK'S JOINT AND EXTRA ROTOR

[Article by V. Ya. Rasnopyov, A. Ya. Shaydenko, V. I. Gorin, Ye. B. Chekalin, Tula Polytechnical Institute; Leningrad, *Izvestiya Vysishikh Uchebnykh Zavedeniy, Prihorosroeniye, Russian, Vol 15, No 3, 1972, signed to press 17 November 1970, pp 75-78]*

The notion of a gyroscope whose flywheel is driven through a Hook's joint, equipped with an extra kinetic moment of precession theory.

The motion of a gyroscope whose flywheel (rotor) is driven by a Hook's joint (Arnold-Wonder gyroscope) is investigated in [1, 2]. It is shown that which is perpendicular to the input axis of the Hook's joint, possesses the property of being a high-speed gyroscope and can be classified as a rotor vibration gyroscope [2]. It is shown [2] that an extra rotor (extra kinetic moment carrier) built into the gyroscope changes the coordinates of the position of equilibrium of the gyroscope.

In connection with some of the uses to which a gyroscope with a Hook's joint is put, the character of its motion to the equilibrium position is important. This problem is solved below for such a gyroscope, installed on a fixed platform (Figure 1).

The flywheel (rotor) 2 is driven through a Hook's joint, the entrance shaft of which is denoted by the index 1, and the exit by the index 3. If we draw an analogy between the kinematics of the Hook's joint and kinematics of the free gyroscope, the frame of which rotates around the axis perpendicular to the axis of rotation of the outer frame of the suspension, we see that they are quite identical, i.e., part 1 in Figure 1 corresponds to the frame of the ordinary free gyroscope, part 4 to the outer gimbal frame, and part 3 is obviously the analog of the inner gimbal frame. Extra rotor 5 is fixed in exit shaft 3 of the Hook's hinge. That the angular rate of rotation of the rotor of the additional gyromotor (the term "extra rotor" is

*Gyroscopes*

[I - USSR - G]

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UDC: 531.883

RASPOPOV, V. Ya., SHAYDENKO, A. Ya., GORIN, V. I., ~~CHEKALIN, Ye. B.~~, Tula Polytechnical Institute

"Concerning the Problem of Motion of a Gyroscope Based on a Universal Joint With Additional Rotor"

Leningrad, Izvestiya VUZov, Priborostroyeniye, Vol 15, No 3, 1972, pp 75-78

Abstract: Motion of the gyroscope shown in the figure to its equilibrium position is considered. The flywheel mass (rotor) 2 is rotated through a universal joint with input axle 1 and output axle 3. If an analogy is drawn between a kinematic universal joint and a kinematic three-degree gyroscope whose body rotates about an axis perpendicular to the axis of rotation of the outer frame of the suspension, then it can be stated that their kinematics are completely identical, i. e. part 1 in the figure corresponds to the body of a conventional three-degree gyroscope, part 4 corresponds to the frame of the Cardan suspension on the outside, and part 3 is the analog of the inner frame of the Cardan suspension. An additional rotor 5 is fastened on the output axle 3 of the universal joint. It is found that an increase in the kinetic moment of the additional rotor in-

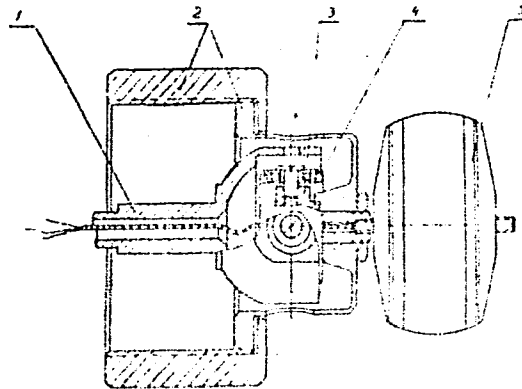
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RASPOROV, V. Ya. et al., Izv. VUZov, Priborostr., Vol 15, No 3, 1972, pp 75-78

creases the time constant of the gyroscope. If the vector of the angular rotational velocity of the additional rotor does not coincide with that of the input axle of the universal joint, motion of the gyroscope is unstable, and is a divergent oscillatory process.



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USSR

UDC 632.95.02

FADEYEV, Yu. N., Doctor of Biological Sciences, UNTERBERGER, V. K., Candidate of Agricultural Sciences, CHEKALINA, V. I., and MARKOVA, L. I., All-Union Scientific Research Institute of Plant Pathology

"The Acaricide Activity of O-Butyl-S-Methylbenzylidithiophosphate"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 11, No 2, 1973, pp 29-31

Abstract: The active ingredient of the acaricide which is also called 228-F was tested on the common spider mite *Tetranychus urticae*. A natural Moscow region mite was used as the sensitive breed, since it had not previously been treated with pesticides and had been cultivated on bean plants in the laboratory for some time. A resistant breed was acquired in the laboratory by treating sensitive mites with methylethylthiophos. Infested leaves were doused with a water-acetone emulsion containing the preparation and a mortality count was taken 72 hours later. To determine contact, intestinal and ovicide action infested leaves were submerged in the solution for 5 seconds. A mortality count was made in 72 hours and unhatched eggs were counted in 4 days. To determine length of action mites were placed on treated bean leaves 3, 5, and 10 days after treatment, then a mortality count was made 72 hours later. The preparation was also used on broad beans against

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USSR

FADEYEV, Yu. N., et al., Khimiya v Sel'skom Khozyaystve, Vol 11, No 2, 1973, pp 29-31

aphis craccivora Koch, with a mortality count made after 48 hours. O-butyl-S-methylbenzylidithiophosphonate showed a high contact acaricidity not only with sensitive but also with resistant mites. The acaricide had poor lasting and ovicide results, but did affect the vitality of larvae from treated eggs. Mixture with BI 58 did not lessen toxicity and increased both lasting effects and the time required for the mites to become resistant to the acaricide.

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Optics & Spectroscopy

USSR

UDC: 535.51:621.378.3

CHEKALINSKAYA, Yu. I. and CHECHENINA, Ye. P.

"Polarization Characteristics of a Regenerative Laser Amplifier by a Faraday Cell and a Partial Polarizer"

Minsk, Zhurnal Prikladnoy Spektroskopii, No 6, 1973, pp 989-997

Abstract: This article is the continuation of an earlier article published by the first of the authors named above (in the collection Kvantovaya elektronika i lazernaya spektroskopiya -- Quantum Electronics and Laser Spectroscopy -- Minsk, 1971, p 552) in which a method was proposed for computing the polarization characteristics of a regenerative laser amplifier based on the matrix description of anisotropic optical elements. This same method is used in the present paper to investigate the characteristics of a regenerative laser amplifier with a linear resonator whose anisotropic element consists of a Faraday cell and a partial polarizer. The advantage of such an element is that its parameters can be varied to produce various forms of polarization: linear, elliptical, and circular. With the polarization characteristics of the amplifier known, the effect of noise on the polarization characteristics of lasers with anisotropic elements can be evaluated. The authors  
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UDC: 535.51:621.378.3

CHEKALINSKAYA, Yu. I., et al, Zhurnal prikladnoy spektroskopii,  
No 6, 1973, pp 989-997

thank B. I. Stepanov of the Belorussian Academy of Sciences and  
V. S. Rubanov for their advice and discussions.

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USSR

UDC 621.375.8

CHEKALINSKAYA, Yu. I., and CHECHENINA, Ye. P.

"On Calculating the Output Power of Gas Lasers"

Minsk, Zhurnal Prikladnoy Spektroskopii, vol 15, No 5, Nov 71, pp 925-926

Abstract: An approximation expression is derived for calculating the output power of gas lasers over a broad range of variations in the length of the active element. One table, bibliography of two titles.

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1/2 039 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--AMPLIFICATION OF A SIGNAL OF BROAD SPECTRAL COMPOSITION BY AN  
OPTICAL QUANTUM AMPLIFIER -U-  
AUTHOR-(02)-CHEKALINSKAYA, YU.I., CHECHENINA, YE.P.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL PRIKLADNOI SPEKTROSKOPII, VOL. 12, APR. 1970, P. 657-667  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--QUANTUM DEVICE, LASER POWER AMPLIFIER, SIGNAL FREQUENCY,  
RESCNATR Q FACTOR  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/1311 STEP NO--UR/0368/70/012/000/0657/0667  
CIRC ACCESSION NO--AP0124962  
UNCLASSIFIED

2/2 039

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0124962

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE EFFECT OF THE INTENSITY OF AN AMPLIFIED SIGNAL OF BROAD SPECTRAL COMPOSITION AND OF THE EFFECT OF THE RESONATOR PARAMETERS ON THE FREQUENCY CHARACTERISTICS OF A REGENERATIVE OPTICAL QUANTUM AMPLIFIER. THE PROBLEM IS SOLVED TAKING INTO ACCOUNT SATURATION OF THE AMPLIFICATION FACTOR OF THE ACTIVE MATERIAL IN THE CASE OF HOMOGENEOUS LINE BROADENING. IN A REGION SUFFICIENTLY CLOSE TO THE LASING THRESHOLD IN THE PRESENCE OF SMALL INCIDENT SIGNALS THE GAIN PASSBAND CONTOURS ARE DISTINCTLY EXPRESSED. WITH INCREASING DISTANCE FROM THE LASING THRESHOLD, OR WITH AN INCREASE IN THE SIGNAL, THESE CONTOURS BROADEN. AN EXPRESSION IS PRESENTED FOR THE OPTIMAL SIGNAL CORRESPONDING TO MAXIMUM ENERGY REMOVAL FROM THE ACTIVE ELEMENT OF THE AMPLIFIER.

UNCLASSIFIED

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UDC: 621.385:530.145.6:621.317.17

DERYUGIN, L. N., CHEKAN, A. V.

"Limitations on Resolution in the Method of Multiple-Beam Interferometry"

V sb. Radiofiz. i rasprostr. elektromagnitn. voln (Radio Physics and Propagation of Electromagnetic Waves--collection of works), Moscow, 1970, pp 115-120 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11D549)

Translation: A general theory of multiple-beam interferometers is developed which covers spectral analyzers of the prism type, diffraction grating type, Michelson echelon type, etc. The proposed system is based on the theory of antennas with frequency beam scanning, and equivalent waveguide circuits of the interferometers. An expression is derived for resolution which is applicable to any multiple-beam interferometer. Ways of improving resolution are pointed out. Limiting resolution is determined for a fixed radiating aperture length, as well as for the case of an unrestricted increase in the length of the aperture and an unrestricted increase in  $Q$  for a fixed length. One illustration, bibliography of five titles. N. S.

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USSR

UDC 621.396.677.835

DERYUGIN, L. N., DEREZA, S. S., and CHEMAN, A. V.

"Some Problems of Construction and Design of Mirror Antenna Systems for Investigating the Propagation of Submillimeter Waves"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses--collection of works) "Nauka," 1972, pp 117-121 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 1CB48)

Translation: Results are given of an investigation into mirror antennas of large electrical dimensions used for researching the propagation of submillimeter waves over short ranges. The transfer factor of an experimental communications line is computed; the effect on it of various phase errors is considered. Results are given of measuring the characteristics of the antenna systems. A method of tuning and adjusting antennas in the Fresnel zone is described. Four illustrations, bibliography of one. N. S.

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USSR

UDC 551.508.7.08

CHEKANOV, A.A., and POLONSKAYA, S.L.

"Moisture Measuring of Contaminated High-Temperature Gases"

Tr. VNII Izpol'z. Gaza v Nar. Kh-ve i Podzem. Khraneniya Nefti, Nefteproduktov i Szhizh. Gazov [Works of the All-Union Scientific Research Institute of Gas Utilization in the National Economy and of Underground Storage of Petroleum, Petroleum Products, and Liquefied Gas], 1971, Vol 5, pp 34-38 (from Referativnyy Zhurnal, No 4, Apr 72. 32. Metrologiya i Izmeritel'naya Tekhnika. Abstract No 4.32.1039, by V.S. Krasnova)

Translation: The principle of operation is discussed and designs are presented of moisture meters (V) for measuring the moisture of dusty industrial gases of over 100°C temperature. For conducting continuous measurements, V of the VDK-1 type was designed in which the investigated gas passes through a condensation system, a thermocorrector, and a reducing system. after which it is discharged into air. The level of moisture developed in the condensation system is measured by a float rigidly connected with a core. The measuring results are recorded on a second device DSL-01, the scale of which is graduated in units of moisture. In the VDK-1 moisture meter a constant gas flow rate through the device is maintained with the help of the reduction system. Constructionally, the VDK-1 type consists of the block V of the VDK controller, a removable filter, and a second unit DSL-01. VDK-1 is a cyclic operation unit. The duration of the cycle is determined by the selected measuring range and realized by the cycle controller. On the end of each

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CHEKANOV, A.A., et al, Tr. VNII Izpol'z. Gaza v Nar. Kh-ve i Podzem. Khraneniya Nefti, Nefteproduktov i Szhizh. Gazov, 1971, Vol 5, pp 34-38

cycle, the condensate is poured off and the chamber is scavenged. For measurements in points distant from each other, the moisture meter VP-1M was designed with a 10 min working cycle and a measurable timer mounted on the cover of V. The timer is synchronously connected with the upper cock which admits the gas into the unit, that is to say, it interlocks by cock opening and turns off by its shutting. On finishing the measuring and taking readings, the condensed water is poured off through the lower cock, after which the unit is ready for the next measurements. Technological characteristics of both V are presented. The relative measuring errors are 5%. Three illustr., two biblio. refs.

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USSR

UDC 678.06

FIALKOV, A. S., and CHEKANOVA, V. D.

"Polymeric Carbon-Graphite Material Glass-Carbon"

Moscow, Plasticheskiye Massy, No 6, 1973, pp 65-66

Abstract: Glass-carbon is obtained by thermal decomposition of some carbonaceous materials which during pyrolysis are converted to carbonized products, by-passing the liquid phase. The starting materials consist of synthetic resins or aromatic hydrocarbons. The carbonization takes place with or without catalysts by slow heating in a reducing or neutral atmosphere. Glass-carbon remains solid up to 4000°K, its properties depending on the treatment temperature. The material has a very high mechanical strength, chemical stability, low gas penetration and very good electroconductivity. In neutral media it can be utilized instead of such expensive materials as platinum, titanium, and molybdenum.

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USSR

UDC 539.216.2

GLADKIKH, N. T., ZHUKOVA, N. A., PROTSENKO, I. YE., and CHEKAREV, M. A.,  
Kharkov State University imeni A. M. Gor'kiy

"Structure of Vanadium and Chromium Thin Films"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 1, 1973, pp 84-90

Abstract: The phase composition of vanadium and chromium films was investigated in relation of thickness and temperature of the substrate, rate of condensation and pressure of residual gases ( $\sim 10^{-5}$  and  $\sim 10^{-8}$  torr). It is shown that in a vacuum of  $10^{-5}$  torr, FCC phases are formed in the films which are close in their composition to VO and CrO. Structural transformations during aging or annealing of these phases were studied along with the conditions of formation of a phase with the structure of the beta-tungsten type in the chromium films. Relationships of the BCC lattice parameter to thickness for vanadium and chromium films, condensed in a vacuum, were obtained. Thus, the film phase composition is not determined by the absolute pressure of residual gases but by the ratio of the number of metal atoms on the substrate and gas impurity atoms which depends on the condensation rate, substrate temperature, and pressure in the vacuum chamber. Five figures, 18 bibliographic references.

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USSR

UDC 632.95

CHEKAREVA, T. G., VASSERMAN, A. M., VORONKOVA, V. V., UAKIMENKO, Ye. F., and BASKAKOV, Yu. A.

"Photochemical Decomposition of Meturin, Its Derivatives and Analogs"

V sb. Khim. sredstva zashchity rast. (Chemical Protection of Plants -- collection of words), No 2, Moscow, 1972, pp 285-291 (from RZh-Khimiya, No 22, 25 Nov 73, Abstract No 22N575 by G. A. Kosminskaya)

Translation: The photochemical decomposition of the herbicide meturin (I) and some of its derivatives and analogs following UV irradiation was studied. The end product of the photochemical decomposition of I is PhNHCONHMe (II). EPR-spectroscopy was used to show that the photochemical decomposition of I proceeds through the formation of the N-methylcarbamoyl-N-phenyl nitrate radical (III). Identical EPR spectra can be obtained by the oxidation of I by PbO<sub>2</sub>. I and II are found by thin-layer chromatography among the decomposition products of III. There is a direct relationship between the sensitivity of the derivatives and analogs of I to UV light and their herbicidal activity.

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USSR

UDC 632.95

VGRONKOVA, V. V., CHEKAREVA, T. G., and BASKAKOV, YU. A.

"Thin Layer Chromatography of N-Carbamoyl-N-aryl(alkyl)hydroxylamines and Their O-Acyl Derivatives"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protectants -- collection of works), vyp 1, Moscow, 1970, pp 187-191 (from RZh-Khimiya, No 13, 10 Jul 72, Abstract No 13N536 by T. G. Chekareva)

Translation: A study was made of the chromatographic behavior of 20 N-carbamoyl derivatives of aryl(alkyl)-hydroxylamine of the general formula  $RR'NC(O)NR''R'''$  (I) [R=H, OH, OMe, OC(O)NH<sub>2</sub>, OC(O)NHMe; R'=Me, aryl; R''=H, Me, R'''=H, C<sub>1</sub> - C<sub>4</sub>-alkyl, Ph] on plates with silica gel KSK [expansion unknown] (5-80 microns). R<sub>f</sub> values are given for I in seven systems of solvents. Iodine vapors, an 0.05-percent solution of bromophenol blue in a 1% solution of AgNO<sub>3</sub>, an acid solution of KMnO<sub>4</sub> are used for detection of I on the chromatograms. TLC sensitivity: 0.1-2 mcg. Silica gel with acetic or citric acid is used to separate substances of the general formula PhN [OC(O)X] C(O)NHMe, where X=C<sub>1</sub> - C<sub>4</sub>-alkyl. Values are given for R<sub>f</sub> in seven systems of solvents. Detection sensitivity 1-5 mcg.

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USSR

UDC 632.95

VORONKOVA, V. V., BASKAKOV, YU. A., CHEKAREVA, T. G., SVIRSKAYA, P. I.

"A Method of Making Derivatives of N-Carbamoyl-o-phenylene-diamine"

USSR Author's Certificate No 292965, filed 24 Sep 69, published 5 May 71  
(from *EZh-Khimiya*, No 1(II), Jan 72, Abstract No 1N378)

Translation: Physiologically active derivatives of o-phenylene diamine of the general formula  $X_n C_6 H_{4-n} NHR-2-NHCONR'R''-1$  (I) (R = alkyl, R', R'' = H, alkyl, X = Cl, Br, Me, MeO, NO<sub>2</sub>, n = 1-2) are obtained by heating an aqueous suspension of O,N-biscarbamoylated arylhydroxylamines at 35-100°C. A solution of 0.496 g of O,N-bis-(methylcarbamoyl)-phenyl-hydroxylamine in 10 ml of water is heated at 40-45°C until CO<sub>2</sub> is no longer evolved, and the mixture is extracted with EtOAc (15 ml x 5) yielding 0.39 g of I from the organic layer (R = R' = Me, R'' = X<sub>n</sub> = H). The yield is 97% mp 136°C. The compounds (I) (R = Me, X<sub>n</sub> = H) are similarly obtained (given are R' = R'', yield in %, mp in °C): Me, 99, 184; H, 86. ). I. A. Mel'nikova.

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USSR

UDC 621.791.856:669.15-194

CHEKATILO, I. V., MARTYN, V. M., ARTAMONOV, V. L., Institute of Electric Welding imeni Ye. O. Paton, YERMILOV, YU. F., MASKIMOV, V. T., and PCHELIN, YU. I., Biysk "Elektropech" Plant

"Welding of Heat Resistant Kh25N20S2, Kh23N18, and Kh25N13 Steels in Protective Gases"

Kiev, Avtomaticheskaya Svarka, No 8, Aug 70, pp 50-53

Abstract: An investigation was conducted at the Institute of Electric Welding imeni Ye. O. Paton for the purpose of developing a technology for the gas-arch welding of Kh25N20S2 steel and its combinations with Kh23N18 and Kh23N13 steels in argon, CO<sub>2</sub>, and technical nitrogen containing 3-5%O<sub>2</sub>. The use of EP532 austenitic boride wire 1.2 and 2 mm in diameter containing 0.45-0.75 B and 2.5-3.0% Si made it possible to obtain welds without cracks. Welding techniques in different gases are described. Tables are presented which show the chemical contents of steels and wire and the transient mechanical properties of rolled EI253 steel joints welded with EP532 wire in protective gases, and figures show the microstructure of a butt weld and the microstructure of the metal deposited by EP532 wire. The results show that the strength of welds made with EP532 wire in argon, CO<sub>2</sub>,  
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CHEKATILO, I. V., et al., Avtomaticheskaya Svarka, No 8, Aug 70,  
pp 50-53

and nitrogen is equal to that of the basic metal and that  
austenization increases weld plasticity.

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USSR

UDC 632.95

RYZHIKOV, A. A., GEYD, YU. P., BABIN, YE. P., SVIRIDENKO, A. S., CHERKAVSKAYA,  
L. A.

"Analysis of 2-Methoxy-3,6-dichlorobenzoic Acid by Gas-Liquid Chromatography"

Tr. 2-go Vses. soveshch. po issled. ostatkov pestitsidov i profilakt. zaprvaz-  
neniya imi produktov pitaniya, kormov i vnesh. sredy (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 116-  
119 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12N504)

Translation: For extraction of 2-MeO-3,6-Cl<sub>2</sub>C<sub>6</sub>H<sub>2</sub>COOH (I) from an aqueous so-  
lution, 1 ml of dilute H<sub>2</sub>SO<sub>4</sub> (1:1) is added to 100 ml of sample, it is agi-  
tated for 5 minutes, and extracted with 100 ml of ether. For extraction of  
the compound from the soil, 50 ml of ether and 1 ml of H<sub>2</sub>SO (1:1) are added to  
50 grams, it is agitated for 5 minutes and filtered. By a mixture of ether and  
H<sub>2</sub>SO<sub>4</sub>, the I is extracted from the plant mass. The extracts are dried over  
Na<sub>2</sub>SO<sub>4</sub>, they are concentrated to a volume of 3-5 ml, methylated with a solution  
of CH<sub>2</sub>N<sub>2</sub> in ether (15 minutes) and evaporated. The residue is analyzed on a  
chromatograph with a flame-ionization detector in a column with TWD-TS-M of a  
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USSR

RYZHKOVA, A. A., et al., Tr. 2-go Vses. soveshch. po issled. ostatkov pesti-  
tsidov i profilakt. zasryazneniya imi produktov nitrobenzola, kormov i vnesh.  
sredy, Tallin, 1971, pp 116-119

0.17-0.18 mm fraction treated with a 4% liquid phase PMFS-4 or SKFT. For the calculation, the internal standard method was used for which 2,4-Cl<sub>2</sub>C<sub>6</sub>H<sub>3</sub>COOMe was applied. The sensitivity of the method was 0.4-1.5 mg/kg.

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USSR

UDC: 8.74

POPOV, A. A., LAVRIV, Ya. M., STARCHIK, V. P., CHEKAYLO, M. A.,  
SHUL'GA, V. A., SHCHITKO, V. N., YANENKO, V. M.

"Automated System for Statistical Analysis of Medical and Biological Data"

Kibernet. i vychisl. tekhn. Resp. mezhved. sb. (Cybernetics and Computer Technology. Republic Interdepartmental Collection), 1972, vyp. 14, pp 76-82 (from RZh-Kibernetika, No 5, May 73, abstract No 5V778 by the authors)

Translation: The paper discusses the functioning of an automated system for analysis of medical and biological data. Requirements for the software system are given. Statistical methods and criteria are presented which are realized in the system.

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USSR

UDC 621.38:61

SHAMAYEVA, G.G., CHEKHLOV, V.I., LIKHOVETSKAYA, L.L.

"To The Problem Of The Precision Of Definition Of The Energy Density Of Laser Emission During Irradiation Of Experimental Animals"

V sb. Ispol'z. optich. kvant. generatorov v sovrem. tekhn. i med. Ch.2-3 (Use Of Lasers In Contemporary Technology And Medicine. Parts 2-3--Collection Of Works), Leningrad, 1971, pp 89-90 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 2A506)

Translation: The principal factors are considered which influence the precision of definition of the energy density during irradiation, among them the precision of definition of the object distance, the effect of the focal distance of the optical system, and the effect of the curvature of the surface irradiation. Optimum geometrical conditions of irradiation are selected for an energy density in the range of 1,000--10,000 Joule/cm<sup>2</sup>. T.V.

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USSR

UDC: 621.375.82

VENKIN, G. V., DERYUGIN, L. N., PROTASOV, V. P., SOTIN, V. Ye.,  
and CHEKHLOVA, T. K.

"Laser Using a Traveling Wave, Ring Waveguide Resonator"

Moscow, V sb. Kvant. elektronika (Quantum Electronics--collection  
of works) "Sov. radio," No 1(13), 1973, pp 108-109 (from RZh--  
Fizika, No 7, 1973, Abstract No 7D1007)

Translation: Oscillations are obtained from rhodamine 6Zh in a  
traveling wave, ring resonator in the excitation of the second  
harmonic in a neodymium laser. The ring resonator is a fine gela-  
tin film on a glass rod. The concentration of the rhodamine in  
the film is  $10^{-2}$ - $10^{-2}$  moles/liter. Authors' abstract

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CHEKHOV O.M.

Acc. Nr.: AN0104123

Ref. Code: UR 9003

TITLE-- ANNOUNCEMENT OF THE COMMITTEE ON LENIN AND STATE PRIZES, U.S.S.R.

49

NEWSPAPER-- IZVESTIYA, MAY 28, 1970, P 4, COLS 1-5

ABSTRACT-- NINETY ONE BASIC AND APPLIED RESEARCH WORKS HAVE BEEN NOMINATED FOR THE STATE PRIZES. TWO OF THESE, "THE MULTI-PURPOSE INDUSTRIAL HELICOPTER KA-26", BY N. I. KAMOV, V. B. AL, PEROVICH, V. B. BARSHEVSKIY, A. A. DMITRIYEV, G. I. IOFFE, M. A. KUPFER, L. A. POTASHNIK, N. N. PRIOROV, A. G. SATAROV, I. M. VEDENEYEV, S. B. BREN, AND V. A. NAZAROV, AND "THE DEVELOPMENT OF TURBOFAN JET ENGINES NK-8 AND NK-8-4, AND THE DEVELOPMENT AND REDUCTION TO SERIAL PRODUCTION A SYSTEM OF TECHNOLOGICAL PROCESSES WHICH ASSURED WIDE USES FOR TITANIUM ALLOYS", BY N. D. KUZNETSOV, M. T. VASILISHIN, V. A. KURGANOV, P. M. MARKIN, V. D. RADCHENKO, P. A. SUKHOV, A. A. MUKHIN, V. G. SHITOV, G. I. MUSHENKO, L. A. SHKODO, AND G. P. DOLGOLENKO, HAVE BEEN SUBMITTED BY THE MINISTRY OF THE AVIATION INDUSTRY.

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Acc. Nr.: ANO104123

"A SERIES OF INVESTIGATIONS INTO THE DYNAMICS OF A BODY WITH FLUID-FILLED CAVITIES", /65-68/, BY N. N. MOISEYEV, A. A. PETROV, V. V. RUMYANTSEV AND F. L. CHERNOUS, KO AND "ULTRA HIGH PRECISION JIG BORING MILLS WITH 1,000 X 1,600 AND 1,400 X 2,240 MM PLATENS", BY A. I. KIR, YANOV, V. G. ABRAMOVICH, I. V. GUTKIN, A. S. ALIMPIEV, G. B. PAUKOV, AND A. S. YEGUDKIN, HAVE BEEN SUBMITTED BY THE COMPUTATION CENTER OF THE ACADEMY OF SCIENCES AND THE MINISTRY OF THE MACHINE TOOL CONSTRUCTION AND TOOL INDUSTRY, RESPECTIVELY.

"THE RADICALLY IMPROVED MELTING TECHNOLOGY OF CRITICAL-PURPOSE HIGH-ALLOY STEELS AND ALLOYS OF IMPROVED QUALITY ACHIEVED BY THE INERT GAS TREATMENT OUTSIDE THE FURNACE" BY YU. V. GERASIMOV, O. M. CHEKHOMOV, N. V. SIDOROV, S. K. FILATOV, B. A. CHEREMNYKH, R. M. KHAYRUTDINOV, I. P. BARMOTIN, L. K. KOSYREV, K. P. BAKANOV, N. N. VLASOV, P. I. MELIKHOV, AND N. A. TULIN, HAS BEEN SUBMITTED BY THE ZLATOUST METALLURGICAL PLANT,

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Aerospace Medicine

UDC: 611.85

CHEKHONADSKIY, N. A., VENTTSEL', M. D., and PAVLOV, G. I.

"Function of the Otolithic Apparatus in Sinusoidal Acceleration Activity"

Moscow, Izvestiya Akademii nauk SSSR--Seriya biologicheskaya, No 5, 1972, pp 707-716

Abstract: The authors find that neither foreign nor domestic literature has shed much light on the functional activity of the otolith apparatus. Yet, such clarification is needed in the study of the peculiarities of manned aircraft since the activity of the human pilot is affected by the influences of acceleration and weightlessness on his organism. For the purpose of adding to such clarification, the authors describe experiments on cats for studying the bioelectrical activity of the vestibular nerve in the middle ear on the level of the Scarpa ganglion under the action of sinusoidal accelerations. The special stand used in the experiments, with the animal subject shown, is reproduced in a photograph. It is so arranged as to permit periodically varying motion of the subject animal in the vertical plane. The experimental method is explained, and a mathematical model of the

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UDC: 611.85

CHEKHONADSKIY, N. A., et al, Izvestiya Akademii nauk SSSR--Seriya biologicheskaya, No 5, 1972, pp 707-716

Scarpa ganglion is set up. It is found that the experimental data agrees with the data of the mathematical model.

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Acc. Nr:

AP0049906

Abstracting Service:

CHEMICAL ABST. 5-70

Ref. Code:

UR0492

102190r Analysis of the operation of isobutane columns. Rudov, G. Ya.; Chekhov, O. S.; Ovchinnikov, P. A.; Khodak, V. S. (USSR). ~~Chem. Eng. Prog.~~ 1970, 15(1), 38-40 (Russ). An anal. was conducted on 4 com. distn. columns for the sepn. of iso- from n-butane in a light hydrocarbon mixt. Columns 1 and 2 (diam. 240 cm) were of the bubble-cap tray type and operated with the feed entering trays no. 38, 40, and 42. Columns 3 and 4 (diam. 180 cm) were of the slotted grid-plate type and operated with the feed entering plates no. 42, 46, and 50. The pressure of the system was 7 atm. The free cross-section areas were ~25% of the tray or plate areas. Some data obtained on columns 1, 2, 3, and 4 were, resp.: iso-C<sub>4</sub> in the feed 22.0, 32.0, 29.0, and 23.0 wt. %; feed rate 5.0, 10.0, 3.7, and 12.0 ton/hr; reflux rate 36.0, 41.0, 37.5, and 60.0 ton/hr; iso-C<sub>4</sub> distillate rate 1.1, 2.4, 0.9, and 2.8 ton/hr; iso C<sub>4</sub> distillate compn. (C<sub>3</sub>) 4.0, 0.9, 3.5, 0.9, (iso-C<sub>4</sub>) 95.0, 98.8, 95.5, 98.8, (n-C<sub>4</sub>) 1.0, 0.3, 1.0, 0.3 wt. %; residue stream rate 3.9, 7.6, 2.8, and 9.2 ton/hr; residue stream compn. (C<sub>3</sub>) 5.0, 6.8, 4.0, 6.8, (iso-C<sub>4</sub>) none, (n-C<sub>4</sub>) 95.0, 93.2, 96.0, 93.2 wt. % The calcd. values for the stripping sections of columns 1, 2, 3, and 4 were,

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resp.: reflux ratio 33.0, 18.0, 41.0, 21.5 to 1.0; vapor velocity in the free cross section 0.15, 0.18, 0.26, and 0.41 m/sec; liq. velocity in the free cross section 0.075, 0.135, —, — m/sec; equation for the flow pattern  $y = 1.10x - 0.0051$ ,  $1.14x - 0.0099$ ,  $1.07x - 0.0029$ , and  $1.15x - 0.0030$ . Correlating equations were developed for detg. the actual no. of trays operating in the stripping section; and the mass-transfer coeff.,  $K_{y,f}$ , for both the vapor and liq. phases, expressed as (kg mole)/ $(m^2 \text{ hr})$ , where  $m^2$  is the area of a bubble-tray. Values of  $K_{y,f}$  for the vapor phase of the stripping sections of columns 1, 2, 3, and 4 were 34, 74, 78, and 134, resp. Values of  $K_{y,f}$  are in good agreement with the mass-transfer coeff.,  $\beta_{y,f}$ , calcd. by the method of V. A. Ivanov, *et al.* (*Ch 67: 118601h*). A new type of fractionating tray is proposed, which includes 2 zones of vapor-liq. contact, higher velocity of vapor in the free cross section of the tower, and a spacing of 500 mm between trays. L. U. Franklin

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1/2 017 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--DETERMINATION OF MASS TRANSFER COEFFICIENTS DURING FRACTIONAL  
DISTILLATION -U-  
AUTHOR--(03)-RUDDOV, G.YA., CHEKHOV, O.S., TETIVKIN, YU.V.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. TEKHNOLOG. TOPPL. MASEL 1970, 15(3) 34-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--MASS TRANSFER, DISTILLATION, GAS STATE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRACTION--1992/1488 STEP NO--UR/0065/70/015/003/0034/0037  
CIRC ACCESSION NO--AP0112482  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0112482

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESISTANCE TO MASS TRANSFER FOR 3 MIXTS. TO BE DISTD. WAS MAINLY IN THE VAPOR PHASE. THE ANAL. OF THE PHASE RESISTANCE IN PLATE DISTN. COLUMNS WAS BASED ON A COMPARISON OF THE MASS TRANSFER COEFFS. FOR 2 SYSTEMS, PROVIDED THAT THE CONTENT OF 1 COMPONENT IN THE BINARY MIST. WAS LESS THAN OR EQUAL TO 1PERCENT. THE METHOD SHOWED THE EFFECT OF THE DISPERSION COEFF. AND COULD BE USED IN THE CASE OF LINEAR EQUIL. DEPENDENCE. COEFFS. AND RESISTANCE FOR SOME SYSTEMS ARE GRAPHICALLY PRESENTED.

UNCLASSIFIED

1/2 033 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--HYDRODYNAMICS OF FLOW PLATES EQUIPPED WITH BAFFLES -U-  
AUTHOR--(02)-MANSUROV, E.M., CHEKHOV, O.S. C  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. PROM., MOSCOW, 1970, 46,1, 50-3  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--GAS, MASS TRANSFER, HYDRODYNAMICS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1989/0926 STEP NO--UR/0064/70/046/001/0050/0053  
CIRC ACCESSION NO--AP0107455  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0107455

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HYDRAULIC RESISTANCE OF THE GAS LIQ. FILM ON FLOW PLATES WITH BAFFLES DECREASES WITH INCREASING GAS VELOCITY; THE MAX. MASS TRANSFER RATE IS OBSD. IN 2 ZONES: THE ENTRY SECTION (IN WHICH THE LIQ. IS DISPERSED) AND AT THE BAFFLE SEPN. SECTION. THE TOTAL AMT. OF LIQ. ON FLOW PLATES IS MUCH SMALLER AND THE SP. GR. OF THE LIQ. IS SMALLER THAN ON BUBBLE TRAYS.

UNCLASSIFIED

USSR

UDC 539.3:539.4.013

CHEKHOV, V. N., Institute of Mechanics, Academy of Sciences, Ukrainian SSR

"Stress Distribution in a Cylindrical Shell With Reinforced Openings"

Kiev, Prikladnaya Mekhanika, NA 6, Jun 72, pp 51-57

Abstract: An investigation is made of problems of the decrease of perturbation stresses in multiply connected circular cylindrical shells by the identical reinforcement of two large openings by means of thin elastic rings. The problem is reduced to the solution of infinite systems of linear algebraic equations. An electronic computer is used to deal with a case in which the shell is weakened by two equal circular openings, situated along a common generatrix, which are reinforced by equal rings with a rectangularly shaped cross section. The ratio of the moduli of elasticity of the shell- and ring material is determined, at which the perturbation stresses disappear completely for specific forms of an external load. 2 figures. 2 tables. 9 references.

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USSR

UDC 621.735.032

VORONTSOV, V. K., MOSHKOV, V. I., PETROV, V. A., and CHEKHOVA, L. L.

"On the Effect of the Forging Reduction Ratio on the Macro and Micro-Structure of Heat-Resistant E1481 Steel"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya," 1970, pp 205-208

Translation: A study is made of the macro- and micro-structure of E1481 steel in all reductions of an ingot 500 millimeters in diameter and 1.17 tons in mass. It is established that during forging on flat hammer blocks to the point where the forging reduction ratio is nine, inadequate working of the central part of the ingot can be observed. The micro-structure is studied in the central and peripheral parts of the ingot. It is shown that the micro-structure of steel in forged pieces obtained with a forging reduction ratio less than nine is characterized by a microconsertal nature. The macro- and micro-structure of forged pieces forged in cut hammer blocks is studied, and the advantage of such technology from the point of view of cemented carbides and consertal nature is demonstrated. Four figures and two bibliographic entries.

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172 028 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--RECOMMENDATIONS FOR ELECTROMAGNETIC SHIELDING OF PREMISES -U-  
AUTHOR--(02)--CHEKHOVICH, V.V., POLONSKIY, N.B.  
COUNTRY OF INFO--USSR  
SOURCE--(CERN TRANS 69-21) 147P. DEP. CFSTI  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES, ELECTRONICS AND ELECTRICAL ENGR.  
TOPIC TAGS--ELECTROMAGNETIC SHIELDING, INDUSTRY, SCIENTIFIC INSTITUTE, MEDICAL FACILITY  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3001/1911 STEP NO--UR/0000/70/000/000/0001/0147  
CIRC ACCESSION NO--AT0127312  
UNCLASSIFIED



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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0127312

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SHIELDED PREMISES AND ROOMS HAVE A LARGE UTILIZATION IN INDUSTRY, SCIENTIFIC INSTITUTES, MEDICAL CENTERS, ET. IN THE MAJORITY OF THESE CASES, THE PREMISES AND ROOMS ARE DEVELOPED BY THE INSTITUTE ITSELF, AS AT THE PRESENT HERE IS NO UNIFIED PROJECT OF RECOMMENDATIONS AND CONSTRUCTIONS OF ELEMENT TYPES. THE PRESENT RECOMMENDATION HAS THE PURPOSE OF CONTRIBUTING A TECHNICAL AID IN THE CHOICE, SELECTION, AND MOUNTING OF SHIELDED PREMISES AND ROOMS, DESIGNED TO GIVE A SHIELDING EFFICIENCY OF THE ORDER OF 80 TO 100 DB AND 40 TO 60 DB IN THE FREQUENCY RANGE FROM 0.15 TO 1000 MHZ AND A SHIELDING EFFICIENCY OF 80 TO 100 DB IN THE RANGE FROM 0.15 TO 150 MHZ. QUESTIONS ON THE APPLICATION OF SHIELDED PREMISES AND ROOMS, THEIR CONSTRUCTION, THE FILTERING OF THE ELECTRIC NET, AND THE REPORT OF METHODS OF VERIFICATION OF THE SHIELDING EFFICIENCY OF THE PREMISES AND OF THE FILTER PARAMETERS ARE GIVEN. A GROUP OF CONTRACTORS HAVE PARTICIPATED IN THE DEVELOPMENT OF THE ELEMENTS OF SHIELDED PREMISES AND ROOMS. THE PRINCIPAL ELEMENTS DESCRIBED IN THEIR RECOMMENDATIONS ARE USED IN PRACTICE AND HAVE BEEN TESTED FOR THEIR FLEXIBILITY AND EASE OF USE.

UNCLASSIFIED

Equipment / Machinery

USSR

UDC: 621.313.322-81:66.045.5

ROZENFEL'D, L. M., SERDAKOV, G. S., CHEKHOVICH, V. Yu., and  
FILIPPOV, I. F.

"Experimental Rack for Investigating Low-Temperature Vaporization  
Cooling for Turbogenerator Piping"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR--  
Seriya Tekhnicheskikh Nauk, No 5, 1972, pp 50-57

Abstract: This article represents part of the continuing search for new systems of cooling turbogenerators. A description is here given of an important stage in cryogenic cooling of the electrical windings in the generator by direct Freon vaporization in the form of an experimental rack for investigating this type of cooling. It consists of a measuring section, a double system of cooling, a power supply block, blocks for readoff, recording, and writeout devices, automation and protection systems, and a control panel. A drawing for the overall system is given together with a photograph of the rack and the measuring block. A diagram for the structure of the heating system and the temperature sensors plus a schematic of the power supply block are also presented. The experiments performed with the aid of the device are described; they can determine the temperature distribution of  
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UDC: 621.313.322-81: 66.045.5

ROZENFEL'D, L. M., et al, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR--Seriya Tekhnicheskikh Nauk, No 3, 1972, pp 50-57

on the conductor wall surfaces and the current of the working fluid inside the channel, the hydraulic resistance distribution over the length, and other factors. The authors are associated with the Institute of Thermal Physics, Novosibirsk.

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USSR

UDC 681.355

SHVETSKIY, B. I., VISHENCHUK, I. M., and KRAVTSOV, R. S., Leningrad, and  
RYLIK, M. G. and CHEKHOVSKIY, E. M., Lvov Ploytechnical Institute

"A Digital Integrating Voltammeter"

USSR Author's Certificate No 347909 klh 03 K 13/20, filed 9 Aug 68, published  
4 Sep 72 (from RZh Avtomatika Telemekhanika i Vychislitel'naya Tekhnika, No 11,  
Nov 73, abstract No 11 A425P)

Translation: A digital integrating voltammeter is proposed, containing an input apparatus with an amplifier, a source of base voltage, switches, a timer, integrator, zero unit, transfer and discharge instruction shaper, cyclic pulse generator, phase detector, counter, sign flipflop and frequency divider, transfer apparatus, memory apparatus, binary-decimal code-to-decimal converter and indicator display.

To convert bi-polar voltages and improve noise resistance, the voltammeter contains a zero determination device, the output of which is connected through a switch to the input of an integrator, the output of the zero unit, and one of the inputs of the transferring discharge instruction shaper; the other inputs of the latter are connected to the output of the cyclic impulse generator, the outputs of the sign flipflop, and the output of the frequency dividers, respectively.

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