

Theoretical Physics

USSR

TROITSKIY, V. Ye., TRUBENIKOV, S. V., SHIROKOV, Yu. M.

"The Connection Between Deuteron Form Factors and the Physical S Matrix, Part 2"

Moscow, Teoreticheskaya i Matematicheskaya Fizika, Vol 10, No 2, Feb 72, pp 209-214

Abstract: An expression is obtained in this theoretical paper for the electromagnetic form factors of the matrix element $\langle p'n' | j^\mu(x) | p'n \rangle$ through the Jost relativistic matrix for neutron-proton dispersion and through the single-particle form factors of neutron and proton. The relationships obtained relate the values of the form factors for the two-particle matrix element outside the mass surface with the Jost relativistic matrix. The first part of the article, published in the same journal named above (10, 45, 1972) yielded the relativistic parametrization of the matrix element for the electromagnetic current of the neutron-proton system and the two-particle form factors of the free current expressed through the single-particle factors. The present section of the article sets up the equations for finding the interaction form
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TROITSKIY, V. Ye. et al, Teoreticheskaya i Matematicheskaya Fizika,
Vol 10, No 2, Feb 72, pp 209-214

factors, in which the S matrix, in the form of the ratio of the two matrices, is principally used in a sense similar to the Jost matrices. The form factors are found by solving these equations and are expressed through integrals over the physical n-p dispersion region as obtained in the first part of the article. The results obtained by the article as a whole are also discussed. The authors are connected with the Moscow State University and the V. A. Steklov Mathematical Institute of the USSR Academy of Sciences.

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Acc. Nr: 4P0042262 ^T

Ref. Code:

UR0103

PRIMARY SOURCE: Avtomatika i Telemekhanika, 1970, Nr 1, pp 54-64

COMPLETE PROBABILITY OF ERROR IN CLASSIFICATION
OF NORMAL AGGREGATES DIFFERING IN AVERAGE VECTORS

Levin, B. R.; Troitskiy, Ye. V.

There is investigated a complete probability of error in the classification of two normal aggregates with a general and known matrix of covariances. There is elucidated the asymptotic behaviour of the probability of error of the classification under large dimensions of the space properties. There have been formulated the requirements to the property «quality» for the compensation of the multidimensional effect. There is presented a comparative analysis of the asymptotic behaviour of the probability of error of the classification when using various statistics. The data of a statistic experiment are stated.

REEL/FRAHE
19760196

21

USSR

UDC 621.375.82

AVTONOMOV, V. P., ANTRCPOV, Ye. T., SOBOLEV, N. N., TROITSKIY, Yu. V.

"Separation of Rotational Lines of a CO₂-Laser by a Film Selector in a Resonator"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No. 3, Moscow, "Sov. radio", 1972, pp 112-115 (from RZh-Fizika, No 1, Jan 73, Abstract No 1D922)

Translation: A technique is proposed for the selection of rotational-vibrational lines of radiation and for producing a single-frequency oscillation mode for a CO₂-laser. Selection is achieved by tuning a reflecting interferometer formed by a thin absorbing film and one of the mirrors of the resonator. Separation of individual rotational-vibrational lines of CO₂ was achieved experimentally. The possibility of separation of rotational lines under retuning is shown. 8 ref. I. O. S.

1/1

USSR

UDC: 621.375.826

MALYSHEV, G. P., TROITSKIY, Yu. V., KHANOV, V. A., and KHYUPPENEN, V. P.

"Stabilized Single-Frequency Helium-Neon Laser"

Novosibirsk, Avtometriya, No 5, 1972, pp 86-93

Abstract: A description of a frequency-stabilized He-Ne laser, of 0.63 μ wavelength, is given. The stable passive resonator of this device is inside the laser resonator and is also used for obtaining single-frequency oscillation. A cross-sectional view of the instrument is provided, and an explanation of its operation given. Its construction is based on the single-mode industrially manufactured LG-36A, with the discharge tube and the power source unmodified but with the laser resonator modified by replacing its mirror with a reflecting interferometer, by being lengthened, by increasing the transmission factor of the spherical mirror, and by improving thermal insulation of the resonator from the discharge tube. The automatic frequency tuning system is described and the circuit of its electronic components given. It is noted that this laser's frequency can be smoothly varied and can therefore be stabilized 1/2.

USSR

UDC: 621.375.826

MALYSHEV, G. F., et al, Avtometriya, No 5, 1972, pp 86-93

according to the spectral line. The authors express their gratitude to N. N. Kamenev and Yu. G. Vasilenko.

a/a

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USSR

UDC 621.375.8

~~TROITSKIY, Yu. V.~~

"A Laser Cavity"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztzy, Tovarnyye Znaki, No 4, Feb 72, Author's Certificate No 326677, Division H, filed 5 Aug 63, published 19 Jan 72, p 203

Translation: This Author's Certificate introduces a laser cavity containing two reflecting mirrors. As a distinguishing feature of the patent, the cavity is designed for improved monochromaticity by suppression of undesired modes. A film of light-absorbing material with a thickness no more than $\frac{1}{10}$ of the wavelength of the working mode of the laser is placed perpendicular to the optical axis of the laser at a distance from one of the mirrors corresponding to the node of the standing wave on the operating frequency.

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Masers and Lasers

USSR

UDC 621.378.33

TROITSKIY, YU. V.

"Strong Coupling between Modes and Frequency Pulling in Helium-Neon Lasers"

Gor'kiy, Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, Vol XIV, No 12, 1971, pp 1795-1800

Abstract: A study was made of the possibility of a strong coupling between two modes of a gas laser without introduction of an absorbing medium into the resonator. This possibility is demonstrated, and the condition of a strong coupling in the form of a relation between the intermode distance and three relaxation constants of the operating junction is found. The strong coupling was detected experimentally in an He-Ne laser ($\lambda = 0.63$ microns) where it is expressed in pulling the generation frequency when tuning the resonator. The quantitative estimate of the pulling threshold approximately corresponds to the calculation. The frequency pulling interval was measured for five pressures of the working medium. A sharp variation in nature of the generation spectrum of the laser occurs on transition through the pressure which is the boundary between the regions of strong and weak coupling.

The described phenomena permit understanding of the process of the transition from multimode generation in the inhomogeneous-broadened spectral
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USSR

TROITSKIY, YU. V., Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, Vol XIV, No 12, 1971, pp 1795-1800

line to single-mode generation in the presence of homogeneous broadening and also obtaining of qualitative couplings between the relaxation constants and the intermode distances for which discontinuous variation of the nature of the generation spectrum takes place. The strong coupling between the modes as a result of the active medium permits significant narrowing of the generation spectrum, in particular, obtaining single-frequency generation of significant power without introducing mode discrimination with respect to Q-factor.

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1/2 032 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EXPERIMENT WITH THE NONABSORBING, LONGITUDINAL MODE DIFFRACTION
SELECTOR OF AN OPTICAL RESONATOR -U-
AUTHOR--(02)-GOLDINA, N.D., TROITSKIY, YU.V.
COUNTRY OF INFO--USSR
SOURCE--OPT. SPEKTROSK. 1970, 28(3), 595-7
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ZINC SULFIDE, LIGHT DIFFRACTION, MONOCHROMATOR, RESONATOR,
HELIUM NEON LASER, SULFIDE LAYER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1135 STEP NO--UR/0051/70/028/003/0595/0597
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2/2 032

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124790

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE 3 LAYER NONABSORBING
DIFFRACTION SELECTOR WITH A ZNS LAYER OF THICKNESS 3 LAMBDA-4 WAS ABLE
TO GENERATE A SINGLE FREQUENCY EMISSION OF THE HE,NE LASER WITH
60-70PERCENT EFFICIENCY.

UNCLASSIFIED

1/2 043
UNCLASSIFIED
TITLE—SCANNING INTERFEROMETER WITH SPHERICAL MIRRORS FOR STUDYING HELIUM
PLUS NEON LASER SPECTRA -U-
AUTHOR—(02)—TCROPOV, A.K., TROITSKIY, YU.V.
COUNTRY OF INFO—USSR
SOURCE—PRIB. TEKH. EKSP. 1970, 1, 192-3
DATE PUBLISHED—70
SUBJECT AREAS—PHYSICS
TOPIC TAGS—HELIUM NEON LASER, LASER RADIATION SPECTRUM, LASER MIRROR,
INTERFEROMETER
CONTROL MARKING—NO RESTRICTIONS
DOCUMENT CLASS—UNCLASSIFIED
PROXY REEL/FRAE—1988/1477
STEP NO—UR/0120/70/001/000/0192/0193
CIRC ACCESSION NO—AP0106233
UNCLASSIFIED

2/2 043

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0106233

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SCHEME AND ALIGNMENT OF A
SIMPL CCNSTRUCTION SCANNING INTERFEROMETER WITH SPHERICAL MIRRORS ARE
DESCRIBED. SPECTRA OF HE PLUS NE (λ EQUALS 0.63 μ) OBTAINED WITH
THIS DEVICE ARE GIVEN. FACILITY: SIB. GOS. NAUCH- ISSLED. INST.
METROL., NOVOSIBIRSK, USSR.

UNCLASSIFIED

1/2 037
UNCLASSIFIED
TITLE--COMPARISON OF METHODS OF SELECTING LONGITUDINAL MODES OF AN OPTICAL
RESONATOR -U- PROCESSING DATE--23OCT70
AUTHOR--TROITSKIY, YU.V.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL PRIKLADNOI SPEKTROSKOPII, VOL. 12, MAR. 1970, P. 425-431
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--RESONATOR, MICHELSON INTERFEROMETER, LASER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1024 STEP NO--UR/0368/70/012/000/0425/0431
CIRC ACCESSION NO--AP0107538
UNCLASSIFIED

2/2 037

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0107538

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EVALUATION OF FIVE METHODS OF SELECTING LONGITUDINAL MODES OF AN OPTICAL RESONATOR. THE FIVE METHODS CONSIDERED INCLUDE THREE VARIANTS OF SELECTORS USING A MICHELSON INTERFEROMETER, A METHOD INVOLVING THE USE OF AN INTERNAL SLANTED FABRY PEROT INTERFEROMETER, AND AN ABSORBING FILM METHOD. THE MINIMUM LOSSES INTRODUCED BY THE SELECTOR INTO THE GENERATED MODE ARE DETERMINED. THE RESONATOR CHARACTERISTICS ARE INVESTIGATED FOR THE CASE OF MODES WHICH ARE CLOSE TO THE ONE BEING GENERATED AND IN WHICH THE LOSSES INCREASE IN PROPORTION TO THE SQUARE OF THE MISMATCH. FOR THESE MODES THE CONCEPT OF SELECTION ACUITY IS INTRODUCED. GRAPHS ARE PRESENTED WHICH MAKE IT POSSIBLE TO DETERMINE THE PARAMETERS OF A SELECTOR ENSURING A GIVEN SELECTION ACUITY AND TO ESTIMATE THE LOSSES AT THE GENERATED MODE. ON THE BASIS OF A COMPARISON OF THE INVESTIGATED METHODS OF MODE SELECTION, IT IS SHOWN THAT IN THE CASE OF LASERS OF LOW AND AVERAGE POWER THE USE OF THE ABSORBING FILM METHOD IS PREFERABLE OWING TO ITS SIMPLICITY OF DESIGN AND THE LOW LOSSES INTRODUCED BY IT.

UNCLASSIFIED

USSR

UDC 621.372.824

7
YERUKHIMOV, A. Kh., SAVCHUK, L. L., TROK, R. A., USOV, A. F.

"Analysis of Optimal Relations in a Coaxial System with Combined Insulation"

Elektrofiz. apparatura i elektr. izolyatsiy (Electrophysics Equipment and Electrical Insulation), Moscow, Energiya Press, 1970, pp 387-392 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8H149)

Translation: This article contains an analysis of optimal relations in a coaxial system with combined insulation formed by dielectrics with different dielectric constants. Three cases are investigated: a dielectric with a smaller dielectric constant is applied to the internal electrode, the external electrode and both electrodes simultaneously. The auxiliary conditions are constancy of the thickness of the dielectric with lower dielectric constant or constancy of the cross section of the dielectric with higher dielectric constants. The relations permitting selection of the parameters of the system which insure minimum field intensity in the given dielectric are obtained. There are three illustrations.

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TROKHACHEV, G. V.

JPRS 57409

13 November 1972

SOE CALCULATED AND EXPERIMENTAL DATA CONCERNING THE DEVELOPMENT OF SYNCHROTRONS WITH A STEADY-STATE FIELD IN THE ENERGY RANGE OF 35-300 GIGAELECTRON-VOLTS

Preprint of article by N. I. Deynkov, N. A. Kozlov, B. V. Koshkavonov, Yu. P. Sivkov (deceased), A. H. Steyer, and G. V. Trokhachev, Scientific Research Institute of Electrophysical Apparatuses, Institute of Atomic Energy, State Committee for the Use of Atomic Energy of the USSR, Leningrad, Leningradskaya inzhenernyy i eksperimentalnyy tsentr po razrabotke akceleratorov no skladovaniyu i obrabotke raznitsy 35-300 GeV, Rossiya, 1971

Calculation data and considerations are given on the reconstruction of synchrotrons with rotating superconducting electromagnets with steady-state (fixed) fields, as well as the results of experimental investigations of models of the elements of the accelerators.

In reference [1, 2] the possibility of the development of proton synchrotrons on the basis of superconducting electromagnets with a steady-state field was considered, with these devices relating synchronously relative to an equilibrium orbit. Such a system makes it possible to charge the average field in the orbit when the superconducting windings are supplied by direct current. In this case it is no longer necessary to have a parallel excitation system for the magnetic field, losses of alternating current in the superconductors are excluded, the design of the windings and supports is simplified, heat inputs are decreased, and the capacity of the refrigerators and liquidators is reduced. Among the number of the most important problems to be solved in the development of such synchrotrons is provision for stability of motion of the particles near the equilibrium orbits of double curvature and precise synchrotron rotation of the superconducting electromagnets.

Some problems of the dynamics of the particles are considered below, and also problems associated with the accomplishment of synchronous rotation of the electromagnets. On the basis of this consideration, two variations of the basic parameters of possible accelerators for an energy of tens or hundreds of gigaelectron-volts are given.

Acc. Nr.: AP0046492

Ref. Code: 7180115

USSR

UDC 532.507.088

BARANOVA, G. R., and TROKHAN, A. M.

"Analysis of Errors in Measurement of Turbulence by an Optical Method"
Moscow, Izmeritel'naya Tekhnika (Measurement Technology), No 1, 1970, pp 20-23

Translation: The possible sources of errors in the transit time optical photoelectric recording method are presented, the errors are analyzed and two limiting cases of the optical scheme with an evaluation of the sensitivity of photoelectric recording are discussed. Relations were obtained of the effect of inertia of the particles on measurement results under different ripple frequency rates and different particle sizes. (3 figures, 7 biblio. ref.)

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Real/Frame
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USSR

UDC 8.74

BABENKO, L. P., DOVGOPOLAYA, L. I., TROKHIMENKO, V. S., USENKO, R. D., YUSHCHENKO, YE. L.

"Debugging Media in a Programming System"

V sb. Teoriya yazykov i metody postroyeniya sistem programmir. (Language Theory and Methods of Constructing Programming Systems--collection of works), Kiev-Alushta, 1972, pp 309-314 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V486)

Translation: A study was made of means controlled by the user in the COBOL programming system for the Dnepr-21. In order to retain the general organization of the COBOL program the debugging instructions in the indicated system are in the form of an auxiliary division of the COBOL program, the so-called debugging section which is an instruction for the operations system with respect to the problem statement mode on the computer. The language of giving this instruction is similar with respect to form to the COBOL language and is based on its concept and terminology. All of the debugging operators in the COBOL-Dnepr-21 system are divided into the following categories: 1) the operator for initial running of the program; 2) the operators for interrupting the normal course of execution of the program on occurrence of certain situations which are provided for; 3) operators permitting additional information

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USSR

BABENKO, L. P., et al., Teoriya yazykov i metody postroyeniya sistem programmir., Kiev-Alushta, 1972, pp 309-314

to be obtained on the process of execution of the program on occurrence of an interrupt situation or before beginning its execution; 4) operators permitting halting of execution of the program or continuation of it after an interrupt by transferring control to a section of the COBOL program. The syntax of the debugging section of the COBOL program is presented as an example.

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USSR

TROKHIMENKO, Ya. K.

"Microelectronics and Training of Radio Engineers"

Kiev, IVUZ, Radioelektronika, Vol 14, No 11, Nov 71, pp 1387-1389

Abstract: The author discusses the new requirements which have arisen for the training of radio engineers as a result of the recent development of microelectronics. In particular, special preparation is needed in such areas of physics as electricity, thermodynamics, acoustics, solid state physics, and the corresponding fields of mathematics. The use of computers has become very important in microelectronic engineering. Development and design of integrated circuitry requires basic knowledge of modern technological processes and equipment. A system is proposed whereby the severe requirements for microelectronics engineers would be shared by three classes of specialists: engineers specializing in semiconductors and dielectrics, radio engineering specialists, and engineers specializing in the design and production of radio equipment. The academic training of these specialists is discussed.

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USSR

UDC 621.372.061

TROKHIMENKO, Ya. K.

Metod Obobshchennykh Chisel i Analiz Lineynykh Tsepey (The Method of Generalized Numbers and an Analysis of Linear Circuits), Moscow, "Sovetskoye Radio," 1972, 312 pp

Translation of Annotation: The book describes a new method of analysis of linear systems called the method of generalized numbers and its use for an analysis of electric circuits with lumped values not depending on time and with weak signals. The method is based on the representation of the characteristics of a given linear system by sets of numerical indices and a strict sequence of operations over these sets. The advantage of this method lies in the reduced volume of calculations during analysis of complex circuits and in the possibility of simplifying the programming of digital computers for obtaining results not only in the form of numbers but also in the form of analytic (literal) expressions of unknown circuit functions.

The book is intended for specialists in the field of planning and designing circuits of electrical and radioelectronic devices and can also be useful to specialists in related technological fields and to graduate and other students in senior courses of the appropriate higher educational institutions.

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USSR

TROKHIMENKO, Ya. K., Metod Obobshchennykh Chisel i Analiz Lineynykh Tsepey
(The Method of Generalized Numbers and an Analysis of Linear Circuits),
Moscow, "Sovetskoye Radio," 1972, 312 pp

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TROKHIMENKO, Ya. K., Metod Obobshchennykh Chisel i Analiz Lineynykh Tsepey (The Method of Generalized Numbers and an Analysis of Linear Circuits), Moscow, "Sovetskoye Radio," 1972, 312 pp

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TROKHIMENKO, Ya. K., Metod Obobshchennykh Chisel i Analiz Lineynykh Tsepey
(The Method of Generalized Numbers and an Analysis of Linear Circuits),
Moscow, "Sovetskoye Radio," 1972, 312 pp.

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USSR

UDC: 621.317.77

MAYEVSKIY, S. M., BATUREVICH, Ye. K., SHPIL'KO, V. N., TKACHENKO, L. F.,
TROKHIMETS, A. P.

"A Wide-Band Automatic Phase Meter Frequency Converter"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Re-
ports of the All-Union Scientific and Technical Conference on Radio Engineer-
ing Measurements. Vol. 2), Novosibirsk, 1970, pp 99-101 (from RZh-Radiotekh-
nika, No 12, Dec 70, Abstract No 12A332)

Translation: To measure phase displacements over a broad frequency range,
frequency conversion is used in many phase meters in order to transfer the
measured displacement to a fixed low frequency. The authors describe one
circuit for this kind of conversion with a frequency shifter as the hetero-
dyne voltage source. Block diagrams are presented, and the properties of
the shaper and converter are described. The proposed circuit was used by
the authors to transfer measured phase shifts to a frequency of 277 Hz in
the frequency band from 500 Hz to 100 kHz. An estimate is given for the
phase error when the voltages to be compared are distorted by odd harmonics.
Bibliography of one title. E. L.

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USSR

UDC: 621.376.5

TROKHIN, V. M., AYDYNAN, A. A., Ukrainian Polytechnical Correspondence
Institute

"A Digital Pulse Duration Modulator"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
No 18, Jun 71, Author's Certificate No 305577, Division H, filed 20 Feb 70,
published 4 Jun 71, p 191

Translation: This Author's Certificate introduces a digital pulse duration
modulator which contains a cadence pulse oscillator, end-around shift
register, synchronization modules, flip-flop counters, a control and pro-
tection unit which includes gating cells, shift registers, controlling
flip-flops and protection flip-flops, and also AND gates, analog-digital
converters and a summing amplifier. As a distinguishing feature of the
patent, the operating precision of the modulator is improved by connecting
the outputs of the most significant digital places in the counters through
the gating cells to the input of end-around and reversible registers whose
outputs are connected to the inputs of three controlling flip-flops and two
protection flip-flops whose outputs are connected to the input of the sum-
ming amplifier.

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Magnesium

USSR

UDC 669.018.29:669.018.672

DRITS, M. Ye., SVIDERSKAYA, Z. A., YELKIN, F. M., and TROKHOVA, V. F.

Sverkhlegkiye Konstruktsionnyye Splavy (Superlight Structural Alloys), Moscow, Izdatel'stvo "Nauka," 1972, 145 pp

Translation of Annotation: This monograph summarizes experimental studies on the structure and properties of magnesium-lithium alloys carried out in the Soviet Union and elsewhere. Systematized data are presented on the nature of the reaction of magnesium with lithium and other elements, as well as the dependence of properties of Mg-Li alloys on their composition, structure, and treatment. Information on the application of superlight alloys in various new branches of technology is also presented.

This monograph is intended for scientists and engineers at scientific research institutes, planning organization, and industrial design institutions dealing with the development, production, and application of light alloys. It may also be useful to teachers and students at higher educational institutions specializing in the metallurgy of light metals.

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DRITS, M. Ye., et al., Sverkhlegkiye Konstruktsionnyye Splavy, Moscow, Izdatel'stvo "Nauka," 1972, 145 pp

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Magnesium

JSSR

UDC 669.721:5'884:539.43

DRITS, M. YE., SVIDERSKAYA, Z. A., ~~TROKHOVA, V. F.~~"Ultralight Magnesium-Lithium Alloys Based on the Two-Phase $\alpha + \beta$ Domain"

V sb. Struktura i svoystva legk. splavov (Structure and Properties of Light Alloys — collection of works), Moscow, Nauka Press, 1971, pp 118-122 (from RZh-Metaliurgiya, No 4, Apr 72, Abstract No 4I655)

Translation: The properties of two ultralight Mg-Li alloys with $\alpha + \beta$ structure are defined: 1) 7.0-9.0% Li, 4.0-6.0% Al, 2.0-4.0% Sn, 0.8-2.0% Zn, 0.15-0.5% Mn, and the rest Mg; 2) 7.0-10.0% Li, 4.0-6.0% Al, 3.0-5.0% Cd, 0.8-2.0% Zn, 0.15-0.5% Mn, and the rest Mg. With respect to strength characteristics both alloys are somewhat inferior to the Mg-Li alloys based on the α -phase, but they are significantly superior to the richer Li alloys based on the β -phase. With respect to plasticity, the alloys with $\alpha + \beta$ structure also occupy an intermediate position between the two indicated groups of alloys. The mechanical properties of the indicated alloys (σ_B 24-27 kg/mm², $\sigma_{0.2}$ 15-22 kg/mm²) are quite stable. At 100°, σ_B and $\sigma_{0.2}$ were the same or even somewhat higher than for the Mg-Li alloys based on the β -phase at room temperature; σ_{100} is 5-5.5 kg/mm². The data on the strength characteristic and the stress-rupture strength indicate

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USSR

DRITS, M. YE., et al., Struktura i svoystva legk. splavov, Moscow, Nauka Press, 1971, pp 118-122

that the indicated alloys can be used not only at room temperature but also on heating to 100°. The specific weight of the alloys (1.57-1.6 g/cm³) is lower than the specific weight of the pure Mg. Three illustrations, 4 tables, and a 10-entry bibliography.

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USSR

UDC 669.721.6:621.78

SVIDERSKAYA, Z. A., and TROKHOVA, V. F.

"Heat Treatment of Magnesium-Lithium Alloys with ($\alpha + \beta$) Structure"

Metallovedeniye Splavov Legkikh Metallov-Sbornik, Moscow, "Nauka", 1970, pp 189-195, resume

Translation: The effect of different types of heat treatment (annealing, hardening, natural and artificial aging) on properties of the three alloys Mg-8%Li-5%Al, Mg-8%Li-5%Al-3%Sn-1%Zn-0.5%Mn, and Mg-8%Li-5%Al-4%Cd-1%Zn-0.5%Mn was investigated. The highest level of strength properties ($\sigma_b = 27-30$ kg/mm² and $\sigma_{0.2} = 20-22$ kg/mm²) was found as a result of hardening (350°C) after heating for 1 hr and natural aging (1-3 days). Properties of heat-treated alloys after aging for 5 months at room temperature dropped negligibly; after heating at 60°C and 100°C for 24 hrs they dropped more substantially but, in both cases, they remained higher than in the hot-pressed condition. Five figures, six tables, six bibliographic references.

1/1

USSR

UDC 539.4

GOLOVIN, V. N., RYBAL'CHENKO, N. D., SOMOV, A. I., TRON', A. S., Khar'kov

"The Problem of the Strength of Nickel, Reinforced with Tungsten Fibers"

Problemy Prochnosti, No 11, 1971, pp 91-94.

ABSTRACT: Vacuum rolling is used to produce a nickel-tungsten fiber sheet composition material with a volumetric fiber content of from 4 to 16%. The specifics of deformation of fibers are studied in the process of combined rolling with the plastic matrix. Certain mechanical properties of the composition are studied in extension, along with the nature of its rupture at 20-800°C.

1/1

USSR

UDC 619:615.92:636.51

POLOZ, D. D., Candidate of Veterinary Sciences, and TRONDINA, G. A., All-Union
Institute of Experimental Veterinary Medicine

"Distribution of Methylnitrophos in Chicken Tissues and Dynamics of Excretion
in Acute Poisoning"

Moscow, Veterinariya, No 1, 1972, pp 73-74

Abstract: The pesticide methylnitrophos is less toxic to warm-blooded animals than other organophosphorus compounds because it is hydrolyzed in their tissues more quickly than in insect tissues. Injection of chickens with 300 to 600 mg/kg of methylnitrophos resulted in inhibition of blood acetylcholinesterase activity by 65 to 74% within 24 hours. Full restoration in the surviving animals occurred in 20 days. In chickens sacrificed 4 to 5 days after injection of the pesticide, small amounts were found in the kidneys, brain, lungs, heart, gizzard, and muscles. No traces could be detected in the organs and tissues 6 to 27 days after intoxication. Excretion of methylnitrophos in feces started within an hour or two of injection of the preparation, reached a peak after 7 or 8 hours, decreased sharply by the end of the day, and ceased entirely after 9 days.

1/1

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UNCLASSIFIED
 TITLE--DENITRATION OF SULFURIC ACID IN THE PRODUCTION OF AMMONIUM SULFATE
 -U-
 AUTHGR--(05)--ZLATIN, L.YE., TRONDINA, G.I., ARTAMONOV, YU.P., SHETEYN,
 A.L., YUKHNOVETS, YU.D.
 COUNTRY OF INFO--USSR
 SOURCE--KOKS KHIM. 1970. (3), 45-7
 DATE PUBLISHED-----70
 SUBJECT AREAS--CHEMISTRY
 TOPIC TAGS--INDUSTRIAL PRODUCTION, AMMONIUM SULFATE, NITROBENZENE, COKE,
 GAS, UREA, SULFURIC ACID, DENITRATION
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--1990/1386
 CIRC ACCESSION NO--AP0109455
 STEP NO--UR/0068/70/000/003/0045/0047
 UNCLASSIFIED

2/3 011

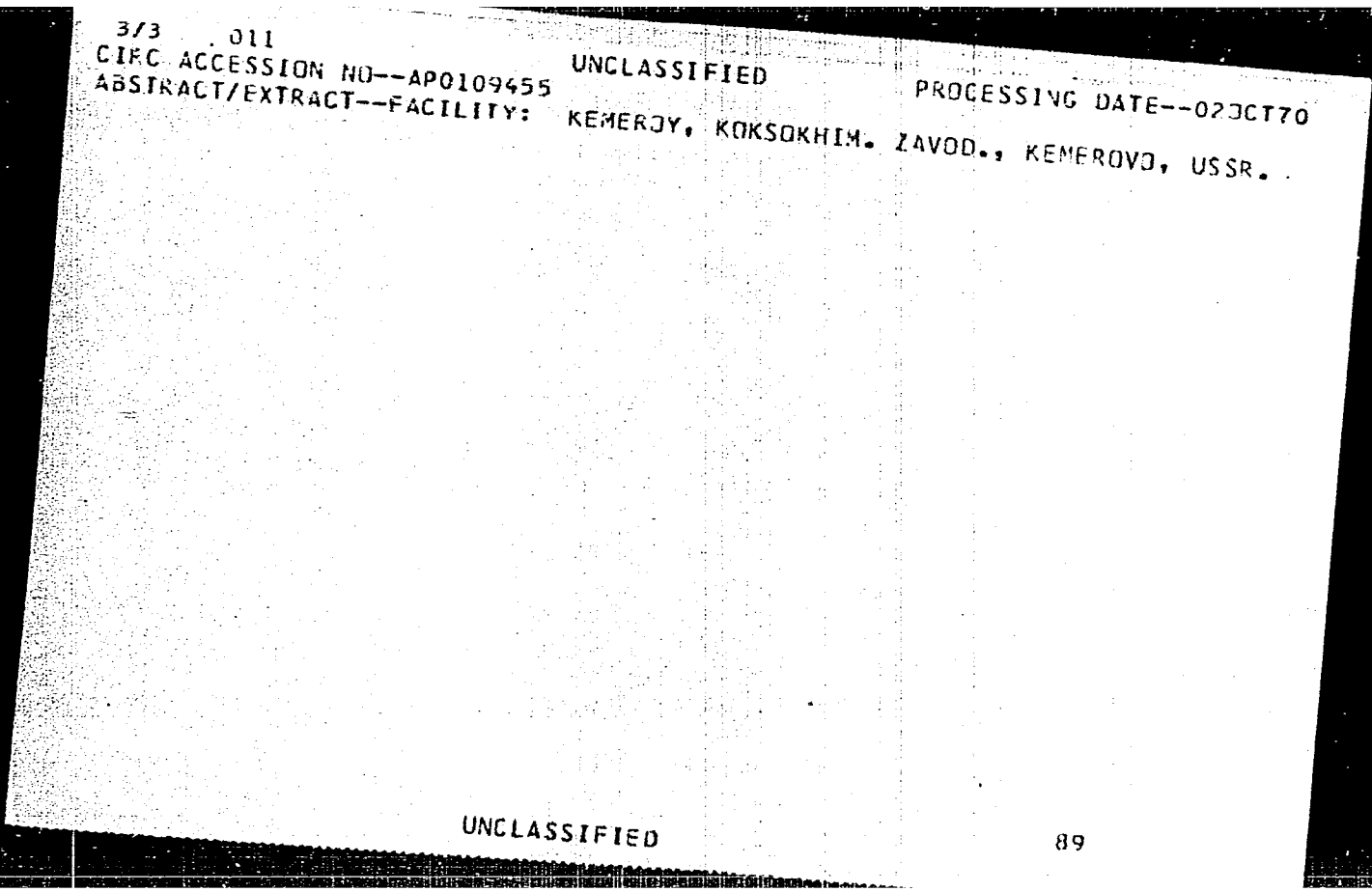
CIRC ACCESSION NO--AP0109455

UNCLASSIFIED

PROCESSING DATE--02OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WHEN THE SPENT H SUB2 SO SUB4, TAKEN FROM PHNO SUB2 PRODUCTION FOR (NH SUB4) SUB2 SO SUB4 MANUF. IN COKE-CHEM. PLANTS, IS CONTAMINATED WITH N OXIDES, IT CONTAMINATES THE COKE GAS AND THE USE OF THIS GAS FOR NH SUB3 SYNTHESIS IS PREVENTED. THE N OXIDES IN THE COKE GAS FOR THIS SYNTHESIS SHOULD BE SMALLER THAN 8 CM PRIME3-M PRIME3, AND THE GAS CANNOT BE USED IF IT CONTAINS LARGER THAN OR EQUAL TO 10-12 CM PRIME 3 OXIDES-M PRIME3. LAB. DENITRATION OF THE ACID WITH UREA REDUCED THE N OXIDES HARPLY BY THE REACTION: 2HNO SUB2 PLUS (NH SUB2) SUB2 CO YIELDS 3H SUB2 O PLUS CO SUB2 PLUS 2N SUB2. IN PHNO SUB2 PLANTS, THIS REACTION WAS SLOW. SINCE THE SPENT H SUB2 SO SUB4, OF 72PERCENT STRENGTH, CONTAINED OTHER KNOWN COMPODS., SYNTHETIC SOLNS. WERE PREPD. TO DET. THE EFFECT OF EACH OF THESE ON DENITRATION. DURING A 17 HR PERIOD AND IN 72.4-2.6PERCENT H SUB2 SO SUB4, THE DENITRATION WAS SATISFACTORY IN THE PRESENCE OF THE H SUB2 SO SUB4, HNO SUB3, AND THE N OXIDES. THE PHNO SUB2 CONTENT WAS 0.3PERCENT OF THE H SUB2 SO SUB4 AND THE PROCESS WAS COMPLETE EVEN AT HIGHER HNO SUB3 AND THE H SUB2 SO SUB4 CONCNS. IN THE PHNO SUB2 PLANT, THE SPENT H SUB2 SO SUB4 AND THE UREA WERE INTRODUCED SIMULTANEOUSLY AND COMPRESSED AIR WAS USED FOR MIXING. THE FORCED AIR ALSO REMOVED THE N FORMED FROM THE H SUB2 SO SUB4 TREATMENT, THUS ACCELERATING THE REACTION. SULFATE SEPN. FROM THE DENITRATED ACID DID NOT INCREASE THE N OXIDES IN THE COKE GAS. THE UREA WHICH DID NOT REACT WITH THE OXIDES BUT ENTERED THE MOTHER LIQUOR WITH THE ACID WAS BENEFICIAL, SINCE IT IMPROVED THE PARTICLE SIZE COMPN. OF THE (NH SUB4) SUB2 SO SUB4.

UNCLASSIFIED



USSR

UDC 543.70

TRONEVA, N. V., RENEV, V. K., SPITSYN, P. K., and ANTONOV, A. V.,
State Scientific Research and Planning Institute of the Rare Metal
Industry, Moscow, State Committee for Ferrous and Nonferrous
Metallurgy USSR

"Determination of Total Rare Earths and Yttrium in Industrial Solutions by the X-Ray Absorption Method"

Moscow, Zhurnal Analiticheskoy Khimii, Vol XXV, No 2, Feb 70,
pp 378-380

Abstract: The authors devised and tested experimentally a new variant of X-ray absorption for testing industrial solutions used in the production of rare-earth elements.

Using a "Mineral-3" analyzer, they were able to determine yttrium on the basis of absorption jump, and total rare earths on the basis of the absorption coefficient for $M\alpha_K$ -radiation.

Data thus obtained did not differ by more than 3 - 5% from those obtained with the usual chemical means. The new method is equally advantage of being more rapid than the chemical method.
1/1

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UNCLASSIFIED

PROCESSING DATE--13NOV70

DETERMINATION OF THE AMOUNT OF RARE EARTH ELEMENTS AN YTTRIUM IN INDUSTRIAL SOLUTIONS BY AN X RAY ABSORPTION METHOD -J-
AUTHOR--(04)--TRCNEVA, N.V., RENEV, V.K., SPETSYN, P.K., ANTONOV, A.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(2), 378-80

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--X RAY ABSORPTION, RARE EARTH COMPOUND, YTTRIUM, SOLUTION CONCENTRATION, NITRIC ACID, SOLUTION ACIDITY, X RAY ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1994/1878

STEP NO--UR/0075/70/025/002/0378/0380

CIRC ACCESSION NO--AP0115697

UNCLASSIFIED

CIRC ACCESSION NO--AP0115697
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--13NOV76

ABSTRACT. A NEW MODIFICATION OF THE X RAY
ABSORPTION METHOD FOR THE ANAL. OF INDUSTRIAL SOLNS., INTERMEDIATES OF
RARE EARTH PRODUCTION, WAS DEVELOPED. THE METHOD PERMITS THE USE OF A
SINGLE INSTRUMENT TO DET. THE TOTAL CONTENT OF THE RARE EARTH BY THE
ABSORPTION COEFF. OF THE MO TARGET IRRADN. AND THAT OF Y BY THE
ABSORPTION JUMP. IN HNO SUB3 SOLNS., PH HAS NO EFFECT ON THE SHAPE OF
THE CALIBRATION GRAPH.

UNCLASSIFIED

USSR

UDC: 621.319.4

BAKHRAKH, V. P., TRONIN, A. L.

"Determining the Optimum Granulometric Composition of Tantalum Powder for K-52-2 70 V × 150 μF Capacitors by the Method of Linear Programming"

Elektron. tekhnika. Nauch.-tekhn. sb. Radiodetali (Electronic Technology. Scientific and Technical Collection. Radio Components), 1970, vyp. 4(21), pp 45-54 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V324)

Translation: The authors present an example of using the method of linear programming to solve the problem of determining the optimum granulometric composition of tantalum powder in the production of K-52-2 capacitors.
Resumé.

1/1

- 156 -

Acc. Nr: **AP0052336**

Ref. Code: **UR0238**

PRIMARY SOURCE: *Fiziologichny Zhurnal*, 1970, Vol 16, Nr 1, pp 10-13

EFFECT OF *o, p'*-DDD ON TRANSCORTIN-BINDING ABILITY IN DOGS

V. P. Komi sarenko, O. S. Mikosha, M. D. Trońko

Department of Patophysiology, Institute of Endocrinology and Metabolism, Kiev

Summary

Hydrocortisone content and the level of transcortin in plasma of dogs were determined before and after *o, p'*-DDD administration.

It is noted that due to *o, p'*-DDD administration a complete inhibition of 11-oxycorticosteroid synthesis takes place.

Injections of *o, p'*-DDD raised the transcortin level. The application of the inhibitor did not change the protein concentration in plasma.

REEL/FRAME
19820922

Lch

2

USSR

UDC 535.511.082.52

VANYURIKHIN, A. I., KUZNETSOV, Yu. A., MAYSTRENKO, V. F., TRON'KO, V. D.
"Recording the Oscillation Plane Angle of Linearly Polarized Infrared Radia-
tion"

Leningrad, Optiko-Mekhanicheskaya Promyshlennost', No 8, August 1970, pp 30-33

Abstract: An efficient, compact Faraday modulator has been developed, with a ferrite-garnet magneto-optical element. On the basis of this modulator has been constructed a highly sensitive polarization unit which permits an angle to be recorded with an accuracy of 0.0002 degree. An analysis is made of the relationship of the sensitivity to the parameters of the optical system and the modulator. 3 figures, 9 bibliographic entries.

1/1

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013
UNCLASSIFIED
PROCESSING DATE--13NOV70
TITLE--FARADAY EFFECT LIGHT MODULATOR WITH CLOSED MAGNETIC CIRCUIT -U-
AUTHOR--(04)-DANILOV, V.V., DERYUGIN, I.A., MELISHCHUK, I.S., TRONKO, V.D.
COUNTRY OF INFO--USSR
SOURCE--RADIOTEKHNIKA I ELEKTRONIKA (RADIO AND ELECTRONICS), 1970, NO 2,
PP 362-364
DATE PUBLISHED-----70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--FARADAY EFFECT, LIGHT MODULATOR, MAGNETIC CIRCUIT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1858
CIRC ACCESSION NO--AP0130685
STEP NO--UR/0109/70/000/002/0362/0364
UNCLASSIFIED

2/2 013
CIRC ACCESSION NO--AP0130685
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT. THE CONSTRUCTION OF A FARADAY
MODULATOR BASED ON YIG WITH THE MAGNETOOPTIC ACTIVE SPECIMEN IN THE FORM
OF A CLOSED MAGNETIC CIRCUIT IS DESCRIBED. THIS MAKES IT POSSIBLE TO
IMPROVED THE MODULATOR PARAMETERS SIGNIFICANTLY.

UNCLASSIFIED

Acc. Nr.

AP0050440

Abstracting Service:
CHEMICAL ABST. 5/70

Ref. Code

4R0051

105447r Photoelectric infrared polarimeter. Deryuzin, I. A.; Kuznetsov, Yu. A.; Tron'ko, V. D. (USSR) *Opt. Spektrosk.* 1970, 28(2), 415-18 (Russ). The construction of a Faraday cell with $Y_2Fe_3O_7$ crystals is described. It made possible obtaining amplitude of polarization plane variation of 45° and higher in magnetic fields $10^3 - 10^4$ Oe and with time const. of $10^{-4} - \sim 10^{-7}$ sec.; operating output was 0.01 - 0.02 W. This modulator was used in photoelec. ir polarimeter. The theoretical anal. of its parameters is given. This type of cell enabled receiving large angles of oscillation at low magnetization fields.

The modulator enabled different ways of a change of oscillation angle of light polarization plane with time. M. Tichy

1/1

REEL/FRA
19810419

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USSR

UDC: 638.61

BUDOVSKIY, I. I., MAKOSSEVSKIY, V. V., MELISHCHUK, I. S., REZNIKSKIY, M. S.,
SOLOMKO, A. A., TRON'KO, V. D., PALENCHUK, M. R., Kiev State University

"A Meter for Determining High-Frequency Power Transmission With the Use of
a Laser Signal"

Moscow, Pribory i Tekhnika Eksperimenta, No 3, May/June 72, pp 110-112

Abstract: The paper describes an instrument for measuring high levels of power passing through transmission lines which operate in the 10 kHz - 30 MHz range. The meter is shown schematically in Fig. 1a. A laser beam with wavelength $\lambda = 1.15 \mu$ passes successively through electro-optical and magneto-optical crystals of GaAs and $Y_3Fe_5O_{12}$ located between polarization prisms P_1 . The relative intensity of the laser signal at the output of the optical system is $S/S_0 = [A - B(1 - \cos \Delta\phi)] [1 + \cos 2\delta]$, where $A = \frac{1}{2} \cos^2(\alpha - \beta)$, $B = \frac{1}{4} \sin 2\alpha 2\beta$, $\Delta\phi = \Delta\phi_0 + \Delta\phi_1$, $\Delta\phi_0$ is the phase shift which is independent of the field, $\Delta\phi_1$ is the phase delay induced by the electric field, $\delta = \gamma + \Delta\phi_1$, $\Delta\phi_1$ is the rotation of the polarization plane of the optical beam determined by the Faraday effect and dependent on the current in the magnetizing system, γ is the angle between polarization prisms P_2 and P_3 , α and β are the angles

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USSR

BUDOVSKIY, I. I. et al., Pribory i Tekhnika Eksperimenta, No 3, May/June 72, pp 110-112

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between the axis x_1 of the GaAs crystal and polarization prisms P_1 and P_2 . Angles α , β and γ are illustrated in Fig. 1b.

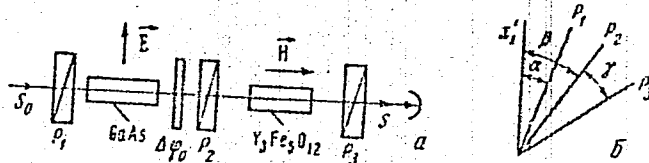


Fig. 1: a--schematic of the power meter; b--relative orientation of the polarizers.

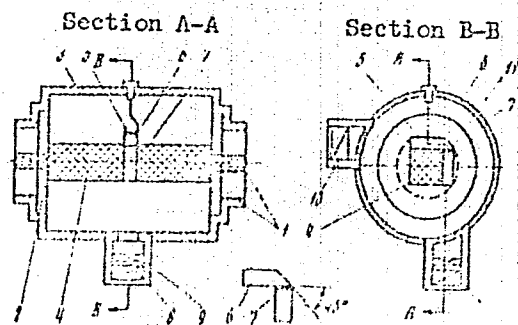
A diagram of the power meter is shown in Fig. 2. The unit is a section of coaxial channel with wave impedance of 75Ω with rectangular inner conductor 4 fastened between washers 2. Crystals of GaAs 6 and $Y_3Fe_5O_{12}$ 7 are fastened to inner conductor 4 at right angles to each other. The crystals measure 2×2 mm in cross section. The GaAs crystal has a 45° cut which acts as a rotating mirror. Conductive cement is used to fasten electrode 5 to

2/4

USSR

BUDOVSKIY, I. I. et al., *Pribory i Tekhnika Eksperimenta*, No 3, May/June 72, pp 110-112

the top of the GaAs crystal. The electrode is connected to the outer conductor 3. The central polarizer P_2 is a polaroid film 11, cemented between two crystals. Polarization prisms 10 and 8, as well as $\frac{1}{4}$ -wave plate 9, are used for the necessary adjustment. The meter is connected to the coaxial channel by means of rf disconnects 1.



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Fig. 2. Simplified diagram of the power meter.

USSR

BUDOVSKIY, I. I. et al., Pribory i Tekhnika Eksperimenta, No 3, May/June 72,
pp 110-112

A study of the frequency response of the meter showed a sharp drop in the band above 600 kHz. This is caused by a temperature increase due to losses from high hysteresis impedance. This impedance is appreciably reduced by placing the $Y_3Fe_5O_{12}$ crystal in a transverse magnetic field. The optimum field strength was found to be close to 500 oersteds.

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TRON'K

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TECHNICAL TRANSLATION

ANN | PSICHT-23-2015-72

29 Nov 72

ENGLISH TITLE: PROBLEMS OF LASER BEAM DATA TRANSMISSION
PROCEEDINGS OF THE FIRST ALL-RAJION CONFERENCE, KIEV,
SEPTEMBER 1968

FOREIGN TITLE: PROBLEMY PEREDACHI INFORMATSII LAZERNYI IZDUCHENIYEH

AUTHOR: I. A. DERJUGIN, ET AL.

SOURCE: KIEV ORDER OF LENIN STATE UNIVERSITY
IHENI. F.G. SCHEGHEKO

Translated for FSTC by ACS1

NOTICE

The contents of this publication have been translated as presented in the original text. No attempt has been made to verify the accuracy of any statement contained herein. This translation is published with a minimum of copy editing and graphics preparation in order to expedite the dissemination of information.

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- First Page -

1/2 015
UNCLASSIFIED
TITLE--REACTION OF RARE EARTH CHLORIDES WITH 1,3,5-TRINITROBENZENE AND
CHLORANIL -U-
AUTHOR--(02)-TRONOV, B.V., GURNITSKAYA, T.S.
COUNTRY OF INFO--USSR
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 838-42
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--RARE EARTH COMPOUND, NITROBENZENE, COMPLEX COMPOUND, CHLORIDE,
ELECTRON SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/1326
CIRC ACCESSION NO--AP0138336
STEP NO--UR/0079/70/040/004/0838/0842
UNCLASSIFIED

2/2 015

CIRC ACCESSION NO--AP0138336

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FROM SPECTROSCOPIC DATA THE
 FOLLOWING VALUES OF COMPLEXFORMATION CONSTS. WERE CALCD. FOR 1,3,5,C
 SUB6 H SUB3 (NO SUB2) SUB3 AND INDICATED CHLORIDES IN MEQH: PRCL SUB3
 0.45 L.-MOLE; SMCL SUB3 0.52; TBCL SUB3 0.81; DYCL SUB3 0.88; HOCL SUB3
 0.84; ERCL SUB3 0.77. THE CORRESPONDING VALUES FOR SYSTEMS WITH
 CHLORANIL WERE: PRCL SUB3 1.4; SMCL SUB3 2.04; TBCL SUB3 1.56; DYCL
 SUB3 0.85; HOCL SUB3 0.90; ERCL SUB3 0.97. IN THE ELECTRONIC SPECTRA OF
 THE COMPLEXES THERE IS ENHANCED ABSORBANCE IN THE 290-350 NM REGION.

UNCLASSIFIED

Thin Films

USSR

UDC 539.216.2:669.24.26

MOVCHAN, B. A., USHAKOVA, S. Ye., FAT'YANOV, V. M., and TRONOV, L. P.,
Kiev, Kursk

"Investigation of the Structure and Some Properties of Ni-Cr Vacuum
Condensates"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 6, Nov-Dec 72, pp 56-59

Abstract: Electron-beam-remelted NP-2 nickel and ERKh galvanic chromium were vaporized from water-cooled copper crucibles with their vapors condensed on glass samples suspended 250 mm above the crucibles. The condensates were then tested for microhardness, bonding strength, and electrical resistance. Test results showed that the structure of the vacuum-deposited condensates corresponds to the Ni-Cr phase diagram; specific resistance depends on chemical composition, condensate thickness, and substrate temperature; microhardness varies in relation to chemical composition and substrate temperature; the condensates have good thermal stability of electrical resistance at a substrate temperature of 500°C; and the condensate has satisfactory adhesion with the glass substrate at a substrate temperature 350-500°C. It was noted that the thicker the condensate the less adhesion it has with the substrate, and as substrate temperature is increased the condensate

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USSR

MOVCHAN, B. A., et al., Fizika i Khimiya Obrabotki Materialov, No 6,
Nov-Dec 72, pp 56-59

acquires better bondability and stability up to 500°C, after which the
magnitudes of the properties begin to drop off. Two figures, 8 bibliographic
references.

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- 45 -

Therapy

USSR

UDC 616.988.25-002.395.42-085.355:577.155.2

TROP, I. YE., KANTER, V. M., KAZANTSEVA, S. I., ALEKSANDROV, V. I., POSTNOVA, L. S., and NIKOLAYEVA, S. P., Khabarovsk Scientific Research Institute of Epidemiology and Microbiology Clinic of Nerve Diseases of the Khabarovsk Medical Institute, Khabarovskiy Kray Hospital, Khabarovsk City Hospital No 3, and City Hospital No 7, Komsomol'sk-on-Amur

"The Use of Ribonuclease in the Treatment of Patients With Tickborne Encephalitis"
Moscow, Sovetskaya Meditsina, No 3, Mar 71, pp 104-107

Abstract: The beneficial effect of RNA-ase in the treatment of tickborne encephalitis has been established at foci of this disease in Western Siberia. In this instance, clinical studies pertaining to treatment with RNA-ase were conducted on 79 cases that originated in the Far East, where the disease occurs in a much more severe form. RNA-ase was administered to the patients intramuscularly, intravenously, or in the endolumbar region in doses of 300-500 mg per day and 3-5 g per course of treatment. The treatment was carried out in the majority of cases in combination with serum therapy that consisted of administration of titrated human placental or fetal gamma-globulin. Comparison of the results obtained with those for a control group of patients treated with gamma-globulin only showed that application of RNA-ase in addi-

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USSR

TROP, I. YE., et al., Sovetskaya Meditsina, Vol 34, No 3, Mar 71, pp 104-107

tion to gamma-globulin shortened the length of the fever period, led to a more rapid disappearance of meningeal symptoms, accelerated return of the cerebrospinal fluid to a normal state, and had the effect of bringing about a considerably more favorable outcome of the disease. While treatment with RNA-ase was effective in focal forms of encephalitis, reducing the mortality (8 deaths among 42 patients vs. 13 among 26 in the control group) and the number of cases in which paralysis developed, it was ineffective in two cases of the polyencephalomyelitic form of the disease.

2/2

- 90 -

USSR

UDC: 621.372.852.5

FEL, S. S., GARB, Kh. L., ~~TROPA, A. D.~~

"A Waveguide Coupler for Multimode Power of Frequency and Space Harmonics"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki, No 12, Apr 72, Author's Certificate No 334612, Division H, filed 24 Jul 70, published 30 Mar 72, p 193

Translation: This Author's Certificate introduces a waveguide coupler for multimode power of frequency and space harmonics which consists of a section of rectangular multimode waveguide and two rectangular single-mode separator waveguides joined by a Y and connected to the wide wall of the multimode waveguide section by coupling elements. As a distinguishing feature of the patent, in order to provide transition attenuation which is identical for different wave modes, and to reduce overall dimensions, the coupling elements are made in the form of two slots cut through rotating cylindrical insets on the wide walls of the multimode waveguide which are located in a single cross section symmetrically relative to the longitudinal axis.



1/1

USSR

UDC 632.95

TROPIN, B. P., BEZUGLYY, S. F., BOROVIKOVA, L. N., GOLYSHIN, N. M., ZAIKIN, B. A., KRASNOVA, M. V., and MIKHULYA, S. A.

"Method to Decrease Evaporation of Pesticide Droplets"

USSR Author's Certificate No 33913, filed 13 Oct 69, published 6 May 72
(from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom (I, L-S), No 1(II), 1973,
Abstract No 1N467P by T. A. Belyayeva)

Translation: In order to decrease evaporation of pesticide droplets during aerial application (from airplane), 0.1-5% of antievaporating agent is added to pesticide. A mixture consisting of high-molecular weight synthetic aliphatic alcohol fractions C₁₀ - C₁₆, C₁₀ - C₁₈, C₁₀ - C₂₀, nonionogenic surface-active substances (OP-4, OP-7, OP-10) and calcium dodecylbenzenesulfonate can be used as antievaporating agent. Example. 85-93% primary aliphatic alcohols C₁₀ - C₁₆ or C₁₀ - C₁₈, 7-15% OP-7 or OP-10 are mixed to prepare the antievaporating agent (AE). One part of antievaporating agent is emulsified with 2-3 parts of water, the obtained emulsion is mixed with a suspensoid containing 8 parts of finely-dispersed wetting agent of copper oxychloride (90% strength), and water is added to make 100 parts. The emulsion-suspensoid prepared in this manner is used for aerial spraying of

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USSR

TROPIN, B. P., et al., USSR Author's Certificate No 333913, filed 13 Oct 63, published 6 May 72

plants in the amount of 50 liters/ha. The fungicide layer on plants in this case is usually more dense than without the addition of AE. Data are presented on preparation of spraying mixtures consisting of different fungicides and insecticides with AE, as well as evaporation rates of different size of droplets with AE-3P and AE-4P and without them, both under laboratory and field conditions (spraying of sugar beets).

2/2

-- 35 --

USSR

UDC 632.95

KHANNANOV, T. M., FATKULLINA, N. S., KULAKOV, V. N., LOZBEN', I. F.,
GOLUBEVA, V. A., and TROPIN, I. V.

"Synthesis of α -(Dimethylnaphthyl)-methylcarbamates From Petroleum Raw
Material"

Tr. NII neftekhim. proiz-va (Works of the Scientific Research Institute of
the Petrochemical Industry), 1970, vyp. 2, pp 84-86 (from RZh-Khimiya, No
3, 10 Feb 71, Abstract No 3N533)

Translation: The starting material used for synthesis of alpha-dimethyl-
naphthyl methylcarbamates is 2,6-dimethylnaphthalene and dimethylnaphtha-
lene concentrates prepared from a narrow light gas-oil fraction by catalytic
cracking and sulfonated with H_2SO_4 or chlorosulfonic acid. The resultant
sodium sulfonates are subjected to alkaline fusion with excess KOH at
280-310°C. Dimethyl-alpha-naphthols are converted by a conventional method
to the corresponding methylcarbamates: α -2,6-dimethylnaphthyl methylcarba-
mate, boiling point -- 134-6°C; α -dimethylnaphthyl methylcarbamate, boiling
point -- 158-68°C/5-6. Preliminary tests of both specimens showed that
they are close to Sevin in their biological activity.

1/1

USSR

KULIKOVA, L. V., VASIL'YEV, A. F., TROFIN, V. P., et al

"IR Method for the Analysis of a 45-% Wetting Powder PCC and DDT"

V sb. Khim. sredstva zashchity rast. (Chemical Plant Protective Agents),
Moscow, Vyp 3, 1973, pp 128-132 (from RZh-Khimiya, No 20, Oct 73, Abstract
No 20N470)

Translation: An IR method has been proposed for the analysis of a 45-%
wetting powder PCC (polychlorocamphene) and DDT. It has been established
that presence of fillers, PAV and adhesion additive in the powder does not
interfere with the analysis of PCC and DDT. Prior to the analysis the PCC
and DDT solutions were filtered to remove the filler. Analytical bands used
are 1310 cm^{-1} for PCC and 1100 cm^{-1} for DDT.

1/1

USSR

BEZUGLIY, S. F., and TROPIN, V. P.

UDC 632.95

"Wettability of Pesticide Powders, and a Method of Studying It"

V sb. Khim. sredstva zashchity rast. (Chemical Agents for Plant Protection -- collection of works), vyp 1, Moscow, 1970, pp 270-276 (from Rzh-Khimiya, No 11, Jun 72, Abstract No 11N414).

Translation: A method has been developed for determining the wettability of wettable powders. In order to determine wettability, a 2g powder sample, presifted through a screen with 250 μ mesh, is placed on a hemispherical cup with counterweight, which is mounted on a 500 ml graduate. The time required for complete wetting after tipping the cup is determined. Determinations are done in distilled water at 20°C. Experimental data are presented on the wettability of a number of wettable powders of Soviet and foreign pesticides. It is shown by the example of 50% wettable simazine powder that wettability depends on the composition of the insecticide and its grain size.

1/1

USSR

UDC 632.95

STONOV, L. D., ZHIRMUNSKAYA, N. M., TROPIN, V. P., GOLYADKINA, A. G., and
BOROVIKOVA, L. N.

"Herbicidal Activity of Atrazine and Simazine as a Function of the Physical
and Chemical Properties of the Preparations"

Vsb. Khim. Sredstva zashchity rast. (Chemical Agents for Plant Protection --
collection of works), vyp 1, Moscow, 1970, pp 201-209 (from RZh-Khimiya,
No 11, Jun 72, Abstract No 11N458)

Translation: When the moisture content of the soil was fairly high, the
degree of dispersion of particles of atrazine and simazine had no effect on
their herbicidal activity. Changes in the concentration of auxiliary material
OP-7 and sulfite-alcohol residues from 3 to 25% and also the sorption capacity
had no effect on the herbicidal activity of the chemicals. The best wett-
ability for powdered preparations of atrazine and simazine and the optimum
stability of aqueous suspensions were observed when the specific surface
was 15,000-20,000 sq. cm per gram.

1/1

TITLE—MODIFIED PRODUCTION OF ERGOTOL —U— UNCLASSIFIED
AUTHOR—(03)—BOZHKO, N.G., SKORKIN, L.V., TROPP, M.YA. PROCESSING DATE—13NOV70
COUNTRY OF INFO—USSR
SOURCE—KHIM. FARM. ZH. 1970, 4(1), 52
DATE PUBLISHED—70
SUBJECT AREAS—BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS—ALKALOID, PROCESSED PLANT PRODUCT
CONTROL MARKING—NO RESTRICTIONS
DOCUMENT CLASS—UNCLASSIFIED
PROXY REEL/FRAME—1990/0996
CIRC ACCESSION NO—AP0109153
STEP NO—UR/0450/70/004/001/0052/0052
UNCLASSIFIED

CIRC ACCESSION NO--AP0109153
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT. ERGOT ALKALOIDS WERE EXTD. WITH
DILD. HCl (PH 1.7-1.9) AT 10DEGREES, ADSORBED ON KIENSELGHUR OR SILICA
CONTG. ABSORPTIVE IN THE PRESENCE OF 10PERCENT NaCl, AND ELUTED BY CHCl
SUB3 OR CH SUB2 C1 SUB2 MIXED WITH A 10PERCENT ALC. SOLN. CONTG. A BASE.
THE NEXT ELUATION OF THE ALKALOIDS WAS WITH CHCl SUB3 MINUS C SUB6 H
SUB6 IN VARIOUS RATIOS AND THE ELUATE DRIED. AFTER SOLN. OF THE POT
RESIDUE IN ACETONE, I WAS PPTD. BY ADDN. OF AN ALC. SOLN. OF H SUB3 PO
SUB4. THE MOTHER LIQUOR AFTER SEPN. OF THE PHOSPHATES WAS NEUTRALIZED
BY ADDN. OF NH SUB3 TO PH 7.0, CAUSING THE PPTN. OF ADDNL. PHOSPHATES
WHICH WERE ADDED TO THE BASIC PRODUCT. THE TOTAL YIELD OF H SUB3 PO
SUB4 ERGOT ALKALOID SALTS WAS NOT SMALLER THAN 80PERCENT. THIS METHOD
YIELDED ERGOTOL, THE TOTAL ALKALOID CONTENT BEING 98PERCENT, THE
COMBINED BASES HAVING (ALPHA) 20 OVER 0 MINUS 130 TO 140DEGREES (C 0.5,
CHCl SUB3).

UNCLASSIFIED

USSE

UDC 537.521

ALEKSEYEV, V. A.; BASOV, N. G., Academician; BELENOV, E. M.;
DANILEYKO, M. V.; VOL'NOV, M. I.; GUBIN, M. A.; NIKITIN, V. V.;
TROSHAGIN, V. N.; P. N. Lebedev Physics Institute, Moscow

"Spectroscopy Inside a Uniform (Radiation) Line"

Moscow, Doklady Akademii Nauk SSSR, vol 207, No 6, 1972, pp 1306-1307

Abstract: A method is proposed and realized for finding the shift, 2Δ , between the spectral components of a line in the radiation of atoms or molecules, and in such cases when the 2Δ value is much less than the uniform or radiation width. The method is based on the concurrence of spatial and frequency attenuation effects of the medium in a ring laser. The dependence of the frequency difference Δ permits recording the presence of the Doppler broadening of the line for Δ by an amount much less than for the uniform width. It is found that, from the viewpoint of the accepted criterion of spectral line resolution, the sensitivity of the proposed method can be multiplied by 10^2 - 10^4 times. The theory of the method is developed, and an experiment for resolving the fine

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USSR

ALEKSEYEV, V. A., et al, Doklady Akademii Nauk SSSR, vol 207, No 6,
1972, pp 1306-1307

structure of the line, conducted with a laser containing a mixture
of Ne²⁰ and Ne²², is described.

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2/2

USSR

UDC 539.4

TROSHCHENKO, V. T., AFONIN, A. I., and KHAMAZA, L. A., Kiev

"Investigation of Fatigue Failure Energy Criteria for Certain Metals at Low and High Loading Frequencies"

Kiev, Problemy Prochnosti, No 6, 1973, pp 3-7

Abstract: Results are presented from an investigation into the fatigue strength and energy dissipation in the process of cyclic loading of nickel alloys EI826 and EI437B and steel 1Kh17N2Sh when tested at very different loading frequencies -- 16 hz and 10 khz. An analysis is given on existing energy criteria of fatigue failure in metals which was based on consideration of irreversible energy dissipation in the process of cyclic loads. It is shown that the functional relationship

$$N_p/D - D_r(D/D_r)^Q / = \text{constant}$$

can be used as the criteria of fatigue failure in metals. This relationship is independent of loading frequency and number of cycles. 4 figures, 1 table, 12 bibliographic references.

1/1

USSR

UDC: 620.178.37

TROSHCHENKO, V. T., POKROVSKIY, V. V., Kiev

"Study of Regularities of Fatigue and Brittle Rupture of 15G2AFDps Steel at Low Temperatures"

Kiev, Problemy Prochnosti, No 3, Mar 63, pp 11-17.

Abstract: Type 15G2AFDps steel, a ferritic-perlitic type, is studied. The influence of temperature and stress form on endurance of the steel, kinetics of development of fatigue cracks and brittle rupture resistance are determined. It is demonstrated that the endurance limit of the steel, both with harmonic and with combined loads, increases with decreasing temperature with transition temperature from fatigue to brittle rupture for this steel lying between -95 and -120°C. Fatigue tests using known dependences are utilized to determine the critical stress intensity factors and to show the nature of their change with decreasing temperature. It is demonstrated that the additional application of an impact load of the intensity used has no influence on the conditions of transition to brittle rupture. 1 table, 8 figures, 10 biblio. refs.

1/1

USSR

UDC 431.3

TROSHCHENKO, V. T., GETMAN, A. F., Institute of Strength Problems, Academy of Sciences, Ukrainian SSR

"Investigation of the Influence of Small Elastoplastic Deformations Upon the Carrying Capacity of Samples With Stress Concentrations Under Conditions of Repeated Alternating Loading"

Kiev, Problemy Prochnosti, No 2, Feb 72, pp 18-23

Abstract: The influence of stress redistribution, brought about by the presence of cyclic elastic deformations, upon the carrying capacity of cylindrical specimens with a deep round hyperbolic groove, was studied for pure alternating flexure with rotation on the basis of 10^5 -- 10^7 loading cycles. The experimental investigation was conducted on steels 40Kh, 1Kh17N2Sh, EI612, EI826, and alloy D16T at room temperature, and on steel EI612 at a temperature of 600°C after mechanical polishing of the working part of the specimens. Specimens of steel 40Kh and alloy EI437B were subjected to deep electric polishing in order to remove the cold-hardened layer which originated as a result of machining. On the basis of an approximate solution of an elastoplastic problem for a specimen with a deep round hyperbolic groove, a procedure was developed for taking inelastic cyclic deformations into account when calculating

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USSR

TROSHCHENKO, V. T., and GETMAN, A. F., Problemy Prochnosti, No 2, Feb 72,
pp 18-23

the limit carrying capacity of a specimen with stress concentration during cyclic flexure. It was shown that for the materials under investigation, decreased sensitivity to stress concentration cannot be explained by the presence of cyclical inelastic deformations. Five tables, 4 figures, 2 references.

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USSR

UDC 539.385

~~TROSHCHENKO, V.T.~~, KHAMAZA, L.A. and SHESTOPAL, L.F., Institute of Metallurgy imeni A.A. Baykov, Academy of Sciences USSR

"Study of Deformation Criteria for Fatigue Failures of Metals in Extension-Compression and Torsion Tests"

Moscow, Sb. "Ustalost' metallov i splavov", "Nauka" Press, 1971, pp 31-41

Translation: Described is a method of studying inelastic deformations and the irreversibly dispersed energy in fatigue tests using extension-compression and torsion. The data on fatigue and inelasticity of EI612 and EI437 alloys are presented in the form of cyclic deformation diagrams and fatigue curves based on various strength theories. It is shown that the cyclic deformation diagrams obtained by extension-compression and torsion in the low elastic-plastic deformation region show best agreement in octahedral stresses-octahedral coordinates. (6 illustrations, 2 tables; summary).

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USSR

UDC 539.385

TROSHCHENKO, V. T., KHAMAZA, L. A., SHESTOPAL, L. F.

"Investigation of Deformation Criteria for the Fatigue Fracture of Metals Under Tension-Compression and Twisting"

V sb. Ustalost' met. i splavov (Fatigue of Metals and Alloys -- Collection of Works), Moscow, "Nauka", 1971, pp 31-41 (from RZh-Mekhanika, No 12, Dec 71, Abstract No 12VI459)

Translation: A technique is described for investigating inelastic deformations and irreversibly scattered energy in metals during tests for fatigue under tension-compression and twisting. Results of a study of fatigue and inelasticity of EI612 and EI437B alloys are given which are represented in the form of diagrams of the cyclic deformation and fatigue curves in accordance with various strength theories. It is shown that cyclic deformation diagrams for tension-compression and twisting in the region of small elastic-plastic deformations are closer to the coordinates of octahedral stresses-octahedral shift. Authors' abstract.

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USSR

UDC 621.178.3

TROSHCHENKO, V. T., STRIZHALO, V. A., SINYAVSKIY, D. F., Kiev. Institute of Strength Problems, Ukrainian SSR

"Rules Governing the Destruction and Modification of High-Melting Alloys in a Highly Plastic State With Low-Cycle Fatigue"

Kiev, Problemy Prochnosti, No 6, 1971, pp 32-37

Abstract: In the repeated static loading of high-melting metals under conditions of high temperatures in excess of 0.5 of the melting point, the mechanism of their modification differed essentially from the modification mechanism of heat-resistant and structural alloys, and this is apparently explained by the high plasticity of high-melting metals at these temperatures. For metals having such high plasticity, a new approach is required for evaluating their work capacity as structural metals under conditions of alternating low-cycle loading. Results of an investigation of the kinetics of the deformation and modification of highly plastic metals undergoing low-cycle loading permits the conclusion to be drawn that there exists a unique mechanism of deformation, based upon the cyclical transfer of material from certain deformed zones into others, and that this mechanism determines the

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USSR

TROSHCHENKO, V. T., et al., Problemy Prochnosti, No 6, 1971, pp 32-37

onset of destruction in the material under alternating repeated static deformation only after complete realization of its plasticity. The strength of such materials can be evaluated only with account taken of the kinetics of their modification, and is determined only upon complete exhaustion of plasticity in the dangerous cross sections. 8 figures, 1 table, 4 references.

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Materials

USSR

UDC 431.3

~~TROSHCHENKO, V. T.~~, GETMAN, A. F., KHAMAZA, L. A., Kiev
"Study of Load-Bearing Ability of Specimens in Continuous Stressed State With Cyclical Elastic-Plastic Deformation"

Kiev, Problemy Prochnosti, No 12, Dec 70, pp 11-19

Abstract: A study is made of the influence of stress redistribution caused by the presence of cyclical nonelastic deformations on the load-bearing capacity of cylindrical specimens of steels types 40KH, E1612 and E1437B alloy at 20°C, steel type E1612 at 600°C and E1437B alloy at 700°C with circular bending in the range of 10⁵-10⁷ loading cycles to rupture. A method is developed for considering nonelastic cyclical deformations in calculating the limiting load-bearing capacity of cylindrical specimens for the case of cyclical bending. It is demonstrated that the actual bending stresses for this number of loading cycles to rupture is considerably higher than the corresponding stresses in extension and compression, resulting from the influence of the stress gradient.

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UNCLASSIFIED

PROCESSING DATE--27NOV70

1/2 015
TITLE--METHOD OF INVESTIGATING ENERGY DISSIPATION IN MATERIALS UNDER
STATIONARY CYCLIC LOADING -U-
AUTHOR-(03)-TROSHCHENKO, V.T., BELYDERDIN, V.S., KOKOVIN, A.G.

COUNTRY OF INFO--USSR

SOURCE--PROBLEMY PROCHNOSTI, VOL. 2, MAY 1970, P.18-20

DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS, METHODS AND
EQUIPMENT
TOPIC TAGS--HYSTERESIS, STRESS, FATIGUE TEST, CYCLIC LOAD TEST

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3006/1434

STEP NO--UR/3663/70/002/000/0018/0020

CT&C ACCESSION NO--AP0135105

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0135105
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF A FACILITY DEVELOPED
 FOR MEASURING THE ENERGY DISSIPATION IN MATERIALS DURING FATIGUE
 TESTING. A DISTINCTIVE FEATURE OF THE FACILITY IS THAT ENERGY
 DISSIPATION IS MEASURED BY MEASURING THE DISPLACEMENT ANGLE BETWEEN THE
 STRESS AND STRAIN IN THE SAMPLE UNDER CONDITIONS OF UNIFORM STRESSED
 STATE. THIS MAKES IT POSSIBLE TO MEASURE ENERGY DISSIPATION BY THE
 DYNAMIC HYSTERESIS LOOP METHOD AT VERY LOW STRESS LEVELS.
 FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, INSTITUT PROBLEM PROCHNOSTI,
 KIEV, UKRAINIAN SSR.

UNCLASSIFIED

Acc. Nr:

APO045917

Abstracting Service: S/70
INTERNAT. AEROSPACE ABST.

Ref. Code:
UR3663

A70-22463 # Study of the durability of turbine blade alloys and structural elements under cyclic heating conditions (Issledovanie vynoslivosti turbolopatochnykh splayov i konstruktivnykh elementov v usloviakh termotsiklirovaniia). V. T. Troshchenko, B. A. Griaznov, Iu. M. Shemegan, and E. G. Konobliannikov (Akademia Nauk Ukrainiskoi SSR, Institut Problem Prochnosti, Kiev, Ukrainian SSR). *Problemy Prochnosti*, vol. 2, Jan. 1970, p. 19-25. 11 refs. In Russian.

Study of the effect of a cyclic heating accompanied by large changes in thermal stresses, on the fatigue strength and durability of heat resistant alloys Ef612, and ZhS6-K. An expression is derived for calculating the durability of heat resistant alloys when subjected to thermal cycles.

Z.W.

ALS

REEL/FRAME
19780952

18

AN0026673

7

TITLE-- THE PRIDE OF UKRAINIAN SCIENCE

UR9013

NEWSPAPER-- PRAVDA UKRAINY, FEBRUARY 21, 1970, P 1, COLS 6-7

ABSTRACT-- G. S. PISARENKO, DIRECTOR, THE INSTITUTE OF PROBLEMS IN STRENGTH OF THE UKRAINIAN ACADEMY /SMCLN/ G. S. PISARENKO, UKRAINIAN ACADEMICIAN /SMCLN/ V. I. TROSHCHENKO, DEPUTY DIRECTOR OF THE INSTITUTE, CORRESPONDING MEMBER OF THE UKRAINIAN ACADEMY /SMCLN/ G. N. TRÉT. YACHENKO, DOCTOR OF TECHNICAL SCIENCES, BOTH DEPARTMENT CHIEFS OF THE INSTITUTE /SMCLN/ UKRAINIAN ACADEMICIAN A. S. DAVYDOV, DEPARTMENT CHIEF AT THE INSTITUTE OF THEORETICAL PHYSICS OF THE UKRAINIAN ACADEMY /SMCLN/ UKRAINIAN ACADEMICIAN F. D. OVCHARENKO /SMCLN/ N. N. KRUGLITSKIY, DEPUTY DIRECTOR, THE INSTITUTE OF COLLOIDAL CHEMISTRY AND CHEMISTRY OF WATER OF THE

1/2

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19661723

AN0026673

UKRAINIAN ACADEMY, DOCTOR OF CHEMICAL SCIENCES /SMCLN/
S. P. NECHIPORENKO, DOCTOR OF TECHNICAL SCIENCES, DEPARTMENT CHIEF
OF THE INSTITUTE /SMCLN/ E. G. AGABALYANTS, CANDIDATE OF CHEMICAL
SCIENCES, SCIENCE ASSOCIATE OF THE INSTITUTE /SMCLN/ I. A. SERIKOV,
DIRECTOR, KHARKOV ENGINE CONSTRUCTION PLANT "SERPI MOLOT" /SMCLN/
A. D. POTAYKO, CHIEF ENGINEER OF THE PLANT /SMCLN/ L. M. KARAS,
ACTING DEPUTY CHIEF ENGINEER OF THE PLANT /SMCLN/ B. S. YEREMENKO,
DEPUTY CHIEF OF THE STATE SPECIAL DESIGN BUREAU, ET AL, HAVE BEEN
AWARDED THE UKRAINIAN STATE PRIZES FOR 1969.

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19661724

USSR

UDC 620.178.5

TROSHCHENKO, V. T., GRYAZNOV, B. A., GORODETSKIY, S. S., ROYTMAN, A. B.,
NALIMOV, Yu. S., (Kiev)

"Study of the Influence of Technological Factors on the Endurance of Gas
Turbine Blades"

Kiev, Problemy Prochnosti, No 8, 1972, pp 8-12.

Abstract: This work presents an analysis of the influence of certain technological factors on the endurance of the third stage of a gas turbine engine. The blade manufactured by mechanical working of stamped blanks of EI437B vacuum-arc remelted alloy. The deviations in the technology of manufacture of the working turbine blades (scratches, burns, and additional operation called "lustering") have no significant influence on the fatigue strength of blades with a test base of 10^7 cycles at 20 and 570°C. The range of change of fatigue limits in the test blades in comparison with a control group of blades at 20°C was from -0.5% to +7%, at 570°C -- from 0 to +5%. The technological deviations studied do increase the scattering of blade test results in the area of limited durability.

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USSE

UDC 539.43

TROSHCHENKO, Valeriy Trofimovich, Institute of Strength Problems, Academy of Sciences Ukrainian SSR

USTALOST' I NEUPRUGOST' METALLOV (Fatigue and Inelasticity of Metals), Kiev, 1971, 266 pp, biblio, illus, 2,300 copies printed

The monograph:

1. presents an analysis of the signs of occurrence of structural inhomogeneities in metals and methods of computing them in strength problems on the basis of statistical theory;
2. describes methods of studying fatigue and inelasticity in metals, considers the fundamental rules of fatigue failure and inelastic strain in metals;
3. gives general results of research on deformation and energy criteria involved in fatigue failure based on the calculation of inelastic strains and energy irreversibly disseminated within the material during cyclic loading;
4. explains methods of getting a more rapid determination of the fatigue limits of metals, with constructive factors taken into account.

The monograph is intended for use by engineers and specialists in research in the strength of materials and machine parts.

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USSR

3 5 5

TROSHCHENKO, V.T., USVALOCST' I NEUPRUGOCST' METALLOV (Fatigue and Inelasticity of Metals), Kiev, 1971, 268 pp

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Computing Them On the Basis of Statistical Theory 5

Chapter II. Fatigue of Metals 52

Chapter III. Inelasticity of Metals 119

Chapter IV. Strain and Energy Criteria in the Fatigue Failure of
Metals 206

Appendix. 10 tables listing fatigue strengths of various metals 247-258

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USSR

UDC 620.178.322.4

TROSHCHENKO, V. T., SHESTOPAL, L. F., Institute of Problems of Strength
of the Academy of Sciences UkrSSR, Kiev

"Study of the Laws of Fatigue Breakdown and Inelastic Deformation of Metals
Under Twisting"

Kiev, Problemy prochnosti, No. 5, May 72, pp 15-23

Abstract: An installation was developed at the Institute of Problems of Strength of the Academy of Sciences UkrSSR for studying fatigue and energy dispersion in metals under alternating twisting. It is noted that the majority of studies of deformation and energy criteria for fatigue breakdown of metals had been made under conditions of a linear stress state, but that such conditions do not always correspond to the operating conditions of parts breaking down from fatigue, the majority of which operate under a two- or three-dimensional stress state. The installation described here was therefore developed and research was conducted under a two- and three-dimensional stress state. Twisting, the simplest form of a two-dimensional stress state, is discussed here. The machine achieved a smooth change in the twisting moment, which is measured with an elastic dynamometer in a

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USSR

TROSHCHENKO, V. T., SHESTOPAL, L. F., Problemy prochnosti, No. 5, May 72,
pp 15-23

microscope. The studies were conducted under conditions close to resonance and the accuracy of maintaining the load was within $\pm 1\%$. Tests were conducted on EI612 and 1Kh17N2Sh steels and EI437B and EI226 alloys. It was found that there is a considerable difference between the proportionality limits observed for static and cyclic loads and that the fatigue limits do not at all correspond to the proportionality limits determined under static deformation. It is concluded that the magnitude of the inelastic deformation is very small under stresses equal to the fatigue limit on the basis of 10^7 cycles and that this quantity does not lead to a considerable difference between the real and rated stresses.

USSR

UDC 620.178.325

TROSHCHENKO, V. T. and POKROVSKIY, V. V., Institute of Strength Problems,
Academy of Sciences Ukrainian SSR

"Method of Investigating the Principles of Fatigue Failure of Metals Using
Harmonic and Combination Load Under Low Temperature Conditions"

Kiev, Problemy Prochnosti, No 2, Feb 73, pp 32-38

Abstract: The apparatus described was developed for studying the fatigue strength of metals, the kinetics of crack development, and conditions for their transition to brittle fracture under conditions of the combined action of harmonic and impact loads at low temperatures (+20 to -196 C). This apparatus consists of the following systems: a system of loading a sample by harmonic and combination cycles of load, a system of load control and matching of the force vectors of harmonic and impact loads, a system of cooling and temperature regulation of the sample, and a system for observing the instant of crack appearance and development in the sample. A diagram of the apparatus is given with its 55 parts and the article is devoted to verbal discussion of the apparatus design. It is noted that cracks 0.1 mm in size can be detected on the surface of a smooth sample. 6 figures, 8 bibliographic references.

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USSR

UDC 620.172.251.2

TROSHCHENKO, V. T., USKOV, Ye. I., (Kiev)

"Some Regularities of the Deformation and Rupture of Refractory Alloys Based on Molybdenum, Niobium and Tantalum with Programmed Temperature Change"

Kiev, Problemy Prochnosti, No 12, Dec. 1972, pp 8-14.

Abstract: Results are presented from a combined study of creep and long-term strength of a number of refractory alloys based on Mo, Nb and Ta under conditions of cyclically changing temperature; the regularities of deformation and rupture of refractory alloys are studied under these conditions. It is demonstrated that thermal cycling causes an increase in the creep rate, a reduction in plasticity and a significant reduction in time to rupture of the alloy studied in comparison to isothermal tests. An exponential dependence is established for the alloy studied between the stress and time to rupture.

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USSR

UDC 612.274
TRCSHIKHIN, G. V., Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

"Respiration at High Atmospheric Pressure"

Leningrad, Fiziologicheskii Zhurnal SSSR, No 12, 1971, 1,808-1,812

Abstract: The electrical activity of the respiratory muscles was studied in Wistar rats in relation to the amount of excess pressure and density of the gaseous mixture (nitrogen-oxygen, helium-oxygen, sulfur hexafluoride-oxygen). An increase in the density of the inhaled mixture intensified the electrical activity of the external intercostal muscle and lengthened the duration of the respiratory cycle, i.e., it slowed respiration, either because of the increase in external pressure or change in the gas used to dilute the oxygen. These shifts resulted from greater stress on the respiratory muscles due to inhalation of a dense mixture and increased resistance to the flow of air in the air passages.

1/1

USSR

Physiology

UDC 612.74+612.273+612.745

TROSHIKIN G. V. Laboratory of Respiratory Physiology, Institute of
Physiology imeni I. P. Pavlov, USSR Academy of Sciences, Leningrad

"Changes in Gas Metabolism and Thermoregulatory Muscular Activity in Animals
Maintained in a Hyperoxic Atmosphere"

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenova, Vol 57, No 3,
Mar 71, pp 438-441

Abstract: The study of physiological reactions of the body under conditions
of increased oxygen concentration in the atmosphere is of importance also for
biological analysis of the toxic action of this gas as well as for oxygen
therapy and subaquatic medicine. The gas metabolism of animals and man kept
for a time in a hyperoxygenated medium is enhanced. The thermoregulatory
effect of the muscles in gas-metabolic reactions during oxygen breathing was
studied with 40 male Wistar rats. The animals were kept in a 20-liter pneu-
matic chamber where they breathed air for one hour, oxygen for one hour, and
again for one hour air. The gas metabolism was determined in the conventional
way. The thermoregulatory activity of the muscles was established electro-
physiologically. Three series of experiments were run at temperatures of
16-18, 20-22, and 25°C. It was found that both gas metabolism and muscular
1/2

USSR

TROSHIKIN, G. V., Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenova, Vol 57,
No 3, Mar 71, pp 438-441

thermoregulatory activity increased in oxygen at 20-22°C. When the temperature was decreased to 16-18°C, the observed changes were even more pronounced; when the temperature was increased to 25°C, the changes in muscular activity and gas metabolism disappeared. The level of the gas metabolism in the state of oxygen breathing depends to a significant degree on the thermoregulatory activity of the muscles.

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USSR

UDC 612.273.1

TROSHIKHIN, G. V., Institute of Physiology imeni , I. P. Pavlov, Academy of Sciences USSR, Leningrad

"Effect of a High Content of Atmospheric Oxygen on Animal Lungs"
Kiev, Fiziologichniy Zhurnal, No 3, 1971, pp 397-401

Abstract: Mice were exposed for 1-1/2 to 15 days to air containing 60, 80, and 90% oxygen. The animals tolerated the 60% oxygen concentration fairly well and it was not until after 10 days' inhalation of the mixture that the initial signs of inflammation appeared. The 80% concentration produced a distinct inflammatory reaction with edema in the lungs of some of the mice after 36 hours. The same effects were observed after inhalation of 90% oxygen, but they were more pronounced. A few animals died after 7 days' exposure to this mixture. The inflammatory reaction disappeared 3 days after air was substituted for the 90% oxygen.

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USSR

UDC 612.014.41

TROSHCHENKO, G. V., and SHALYAPINA, V. G., Laboratory of Respiratory Physiology, Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR

"Indices of Sympathetic Adrenal Activity and Gas Exchange in Animals Exposed to High Partial Pressure of Oxygen"

Leningrad. Fiziologicheskii Zhurnal SSSR imeni E. N. Sushcheyev, No 1, 1970, pp 119-122

Abstract: Exposure of white mice to 60 and 80% oxygen-nitrogen mixtures for 10 days reduced the content of norepinephrine in the brain, while elevating the corticosteroid level in the peripheral blood. In 60% oxygen, the norepinephrine content was 1.5 times lower than in controls, and the corticosteroid level rose by 16%. In 80% oxygen, the norepinephrine content was 3 times lower than in controls, while the corticosteroid level rose 47%. In another series of experiments, exposure of animals to 3 and 3.5 atm of oxygen for 1-2 hours also reduced the norepinephrine content of the brain, while raising the blood corticosteroid level. Exposure to 1 atm of oxygen only elevated the blood corticosteroid level.

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USSR

EROSHNIKHEV, G. V., et al., Leningrad, *Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenov*, No 1, 1970, pp 115-122.

Thus, the experimental results showed that increasing the oxygen concentration of the atmosphere intensifies sympathetic adrenal activity. Oxygen under pressure has a similar effect, but the changes in content of norepinephrine and the corticosteroids appears sooner.

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Eksperimental'naya Terapiya, 1970, Vol 14,
Nr 1, pp 75-76

THE EFFECT OF INCREASED PARTIAL OXYGEN TENSION IN THE INSPIRED AIR
ON THE LUNGS OF ANIMALS

G. V. Troshikhin

A study was made of the effect of air with 60, 80 and 90% oxygen concentration on the pulmonary tissue of mice kept in the mentioned media for 1.5, 3, 5, 10 and 15 days. The animals tolerated the 60% hyperoxic mixture well. An 80% hyperoxic mixture caused in some of the animals an inflammatory reaction of the lungs, with edema. In 90% oxygen the character of lung changes was the same, but they were more pronounced. In mice kept in a medium with 90% oxygen for 5 days, resolution of inflammatory reaction in the lungs was observed on the third day after replacement of this medium with air.

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INDICES OF SYMPATHO-ADRENAL ACTIVITY
AND GAS METABOLISM UNDER INCREASED OXYGEN PRESSURE IN ANIMALS

By G. V. Trushikhin, and V. G. Shaluzhina

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USSR Ac. Sci., Leningrad

A decrease in noradrenaline content in brain tissue and a rise in corticosteroid level in peripheral blood occur in mice following 10-days exposure to gas media with 60% oxygen. In an 80% hyperoxic mixture similar shifts are considerably deeper manifested. Unidirectional changes in the same indices were revealed following the exposure of animals to shortterm pressure of 3-3.5 atm oxygen. 60% oxygen content in the media fails to exert any significant toxic effect and 80% content results in a lowering of rectal t° and gas metabolism in mice. When exposed to 3-3.5 atm oxygen for 1 hr mice develop convulsions.

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