

172 028 UNCLASSIFIED PROCESSING DATE--40NOV70

TITLE--LIQUID EXTRACTION MASS TRANSFER COEFFICIENT CORRELATIONS FOR
 0.28-0.80-CM DIAMETER DROPLETS -U-

AUTHOR--(02)--LANDAU, A.M.; ZHELEZNYAK, A.S.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(5), 1074-9

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MASS TRANSFER, SOLVENT EXTRACTION, ACETIC ACID, BENZENE,
 PROPIONIC ACID, ALCOHOL, PHENOL, ANILINE, DROPLET ATOMIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRADE--3004/1956

STEP NO--UR/0040/70/043/005/1074/1079

CIRC ACCESSION NO--AP0132217
 UNCLASSIFIED

PROCESSING DATE--20NOV70

UNCLASSIFIED

2/2 028

CIRC ACCESSION NO--AP0132217

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. EXPTL. LIQ. EXTN. STUDIES IN 6
 SYSTEMS (H SUB2 O-ACGH-C SUB6 H SUB6, H SUB2 O-PROPIONIC ACID-C SUB6 H
 SUB6, ISOMYL ALG.-PFENOL-H SUB2 O, ETOAC-ANILINE-H SUB2 O, H SUB2
 O-ACOH-ETOAC, AQ. GLYCEROL SOLNS.-NITROBENZENE) YIELDED AN EQUATION FOR
 CALCG. MASS TRANSFER COEFFS. K SUBP FOR SYSTEMS IN WHICH THE DISPERSED
 PHASE HAS SMALLER THAN 20PERCENT DROPLETS OF 0.28-0.80 CM IN DIAM. WHERE
 THE CIRCULATION MODEL OF R. KRONIG AND I. BRINK (1950) AND THE TURBULENT
 MODEL OF A. HANLCS AND T. BARON (1957) DO NOT APPLY. THE EQUATION
 OBTAINED FOR K SUBP IS A MODIFICATION OF THAT OF K AND B. FOR DROPLET
 DIAMS. (D SUBD) OF 0.3-0.8 CM, THE K SUBP VALUE IS NEARLY CONST. AND IS
 GIVEN AS K SUBP SIMILAR TO D SUBD PRIME^{1.7}. EXPTL. DETD. K SUBP VALUES
 AGREE TO PLUS OR MINUS 9.4PERCENT WITH VALUES CALCD. BY USING K SUBP
 EQUALS K SUBKB (0.5 PLUS 0.7 (D SUBD-0.28) PRIME^{1.7}) WHERE K SUBKB IS
 THE MASS TRANSFER COEFF. CALCD. WITH THE K. AND B. EQUATION.
 FACILITY: VSES. NAUCH.-ISSLED, INST. NEFTEKHIM. PROTSESS., LENINGRAD,
 USSR.

UNCLASSIFIED

1/2 034 UNCLASSIFIED PROCESSING DATE--27NOV70
 TITLE--INVESTIGATION OF THE DYNAMIC INTERMEDIATE STATE OF SUPERCONDUCTORS
 -U-
 AUTHOR--(02)-SHARVIN, YU.V., LANDAU, I.L.
 COUNTRY OF INFO--USSR
 SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
 NR 6, PP 1943-1954
 DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS
 TOPIC TAGS--SINGLE CRYSTAL, INDIUM, SUPERCONDUCTOR, FINE WIRE, ELECTRIC
 RESISTANCE, OSCILLATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--2000/2244

STEP NO--UR/0056/70/053/006/1943/1954

CIRC ACCESSION NO--AP0125822
 UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125822

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

ABSTRACT. THE MOTION OF DOMAINS OF THE NORMAL AND SUPERCONDUCTING PHASES UNDER THE ACTION OF A DIRECT CURRENT (DYNAMIC INTERMEDIATE STATE) DISCOVERED PREVIOUSLY (PRIME10) IS STUDIED IN SINGLE CRYSTAL INDIUM SAMPLES BY OBSERVING OSCILLATIONS OF THE RESISTANCE OF THIN WIRES IN CONTACT WITH THE SAMPLE SURFACE. IT IS FOUND THAT MOVING LAMELLAR STRUCTURES POSSESS A SPATIAL PERIOD CLOSE TO THAT OF THE STATIC STRUCTURES. LAYERS ORIENTED BY AN EXTERNAL FIELD CAN MOVE AT VARIOUS ANGLES WITH RESPECT TO THE CURRENT DIRECTION. THE MEASURED VALUE OF THE VELOCITY SATISFACTORILY AGREES WITH THE PREDICTIONS OF THE THEORY (PRIME5, PRIME13). LAYERS PARALLEL TO THE CURRENT ARE DISPLACED WITH A VELOCITY WHICH IS PROPORTIONAL TO THE RESISTANCE OF THE NORMAL PHASE AND INVERSELY PROPORTIONAL TO H_{SUBC} . AT TEMPERATURES REMOTED FROM T_{SUBC} THE VELOCITY OF LAYERS PERPENDICULAR TO THE CURRENT IS PROPORTIONAL TO THE HALL CONSTANT AND CLOSE TO THE DRIFT VELOCITY OF THE CHARGE CARRIERS IN THE NORMAL PHASE.

FACILITY:

UNCLASSIFIED

USSR

LANDAU, I. Ya., POGOSYATS, G. M.

"A Language for Formal Description of Logic Circuits -- FOROS"

Tr. In-t Elektron. Upravl. Mashin [Works of the Institute of Electronic Control Machines], No 10, 1970, pp 3-27, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V669 by V. Mikheyev).

Translation: A language is studied, intended for formal description of the structure and behavior of logical digital devices. The basic objects of the FOROS language are memory elements: triggers and groups of triggers (registers), as well as groups of registers (memory). The description of each element consists of an indication of its name and length (number of digits, words, etc.). Transmission of information between elements is achieved using attachment operators, reflecting the structure of the combination circuits of the device. The dynamic characteristics of the device and its elements are described by means of time operators in a language allowing imitation of the simultaneous operation of various blocks of the device and various rates of operation of the actual elements, as well as indication of the time and logic relationships between the operation of individual blocks. The basic symbols of the language are those used in the set of characters of ATSPU, the letters of the Latin and Russian alphabets, numbers, action signs and punctuation marks. Illustrative examples are presented.

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1/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--ANOMALOUS QUANTUM OSCILLATIONS OF SURFACE IMPEDANCE --U-
AUTHOR--(02)-MINTS, R.G., LANDAU, L.D.
COUNTRY OF INFO--USSR
SOURCE--JETP LETTERS (USA), VOL. 11, NO. 2, P. 128-32 (JAN. 1970)
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--QUANTUM OSCILLATION, EXTERNAL MAGNETIC FIELD
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3007/1103 STEP NO--US/0000/70/011/002/0128/0132
CIRC ACCESSION NO--AP0136523

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--0409070

CIRC ACCESSION NO--AP0136523

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS POINT OUT SOME OF THE MOST ESSENTIAL FEATURES OF THE ANOMALOUS QUANTUM OSCILLATIONS OF SURFACE IMPEDANCE. IT IS NOTED THAT THE DEPTH OF PENETRATION CAN NEVER DECREASE BELOW THE RADIUS R OF THE CONDUCTION ELECTRON ORBIT. PHYSICALLY THIS IS CONNECTED WITH THE FACT THAT THE MAGNETIC MOMENT IS PRODUCED BY THE SELF CONSISTENT INDUCTION FIELD B AT DISTANCES ON THE ORDER OF R . THE AMPLITUDE Z_{SUBMAX} AND THE WIDTH OF THE OSCILLATION PEAKS (ΔH) SUBRES OF THE SURFACE IMPEDANCE, AND ALSO THE MAXIMUM VALUE OF THE DERIVATIVE OF THE SURFACE IMPEDANCE WITH RESPECT TO THE EXTERNAL MAGNETIC FIELD, ARE ESTIMATED.

FACILITY: USSR ACAD. SCIS.

UNCLASSIFIED

USSR

UDC 541.6:541.57:547.1.118

LANDAU, M. A., FOKIN, A. V., KABANKIN, A. S.

"Quantum Chemical Calculations of Some Compounds of Tetra and Pentacoordinate Phosphorus by the CNDO Method"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973, pp 2486-2490

Abstract: The CNDO method with the parameters described by J. A. Pople, et al., [J. Chem. Phys., No 43, 136, 1965; No 44, 3289, 1966; No 47, 153, 1967; J. Amer. Chem. Soc., No 90, 3309, 1968] was used to calculate 6 molecules of 4-coordinate phosphorus for which the geometric characteristics have been experimentally determined: $\text{P}(\text{O})\text{HF}_2$, $\text{P}(\text{O})(\text{CH}_3)_3$, $\text{P}(\text{O})(\text{OH})(\text{CH}_3)_2$, $\text{P}(\text{O})(\text{NH}_2)_3$ and also $\text{P}(\text{O})\text{F}_3$ and $\text{P}(\text{O})(\text{OH})_3$. For the last two molecules in the preceding calculations inexact geometric parameters were used and data were not presented on the populations of the individual atomic orbitals which are used in the present paper to calculate the paramagnetic component of the magnetic shielding constant of the ^{31}P nucleus. In the case of the $\text{P}(\text{O})(\text{NH}_2)_3$ special attention was given to the fact that according to the x-ray diffraction data [G. L. Buntjen, et al., J. Chem. Soc., A, 1804, 1969], one of the P-N bonds is 0.01 Å shorter than the 1/3

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LANDAU, M. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973, pp 2486-2490

other two. Five molecules of 5-coordinate phosphorus having trigonal-bipyramidal structure were also calculated. In the calculation the actual configuration was used taking into account the deviation in certain cases of the F_ePF_a angle from 90° (F_e denotes the equatorial fluorine atom in the trigonal bipyramid, and F_a , the axial fluorine atom): HPF_4 , CH_3PF_4 , $(CH_3)_2PF_3$, PF_5 and $(CH_3)_3PF_3$. Tabulated data are presented showing the results of calculating the POF_3 molecule by the CNDO method compared with the results of the nonempirical calculations. The relative variation of the charges of the different atoms in the molecule calculated by both methods has the same nature. The calculated charges of the atoms, the dipole moments and energies of the boundary orbitals of the 4 and 5-coordinate phosphorus molecules are also tabulated. In the case of fluorophosphoranes, consideration of the d-orbitals of phosphorus leads to better comparison of the calculated dipole moments with their experimental values.

The quantum chemical calculation of the six 4-coordinate phosphorus

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LANDAU, M. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya,
No 11, 1973, pp 2486-2490

molecules and five 5-coordinate phosphorus molecules revealed individual
details about the mechanism of certain reactions of these compound and the
variation of their reactivity.

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USSR

UDC 547.26'118

KRUGLYAK, YU. L., LANDAU, M. A., LEYBOVSKAYA, G. A., MARTYNOV,
I. V., SALTYKOVA, L. I.

"Reaction of O-Imino-O,O-Dialkylphosphites with α -Chloronitroso-
and α -Chloronitroalkanes"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 10, 1971,
pp 2338-2339

Abstract: A series of chemical conversions of O-imino-O,O-dialkyl phosphites (I) were carried out at a temperature in the -10 to 0 degrees, because of known instability of I at a temperature above 0 degrees. Particularly, the typical reactions of trialkyl phosphites with α -chloronitroso- and α -chloronitroalkanes gave, in the case of I, O,O-diimino-O-alkyl phosphites. The structure of the latter was determined by their NMR and IR spectra. The formulas and some physical constants of the prepared compounds are given.

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USSR

UDC: 539.192

LANDAU, M.A., SHELUCHENKO, V.V., DUBOV, S.S.

"Structure and Reactivity of Phosphorus Compounds With P=O Bond"

Moscow, Zhurnal Strukturnoy Khimii, Vol 11, No 3, 1970, pp 513-519

Abstract: Calculations were made of 25 molecules of organophosphorus compounds (OPC) of the (XYZ)PO type (where X, Y, Z - R, OR, SR, NR₂, and F) by the simple method of molecular orbitals. Results found afforded elucidation of several experimentally established details of the mechanism of OPC reactions with nucleophilic and electrophilic reagents. It was also found possible to compare quantitatively calculated energies of the lowest unfilled orbital and nucleophilic superdelocalizabilities of the phosphorus atom with rate constants and energies of activation of alkaline hydrolysis of different fluoro-anhydrides of phosphorus acids. A quantitative relationship between the total of Taft inductive constants of substituents X, Y, and Z and the total energies of the pi-system of the OPC molecule was found. A relationship was established between the energy of resonance and the total bond orders of the OPC molecule, on the one hand, and the size of the chemical shift of the P³¹ nucleus in a nuclear magnetic resonance spectrum, on the other.

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1/2 021 UNCLASSIFIED PROCESSING DATE--1108170
TITLE--EFFECTS OF SULFUR AND NITROGEN ATOMS ON THE PROPERTIES OF A
PHOSPHORYL BOND -U-
AUTHOR-(03)-STUKOV, O.G., DUBOV, S.S., LANDAU, M.A.
COUNTRY OF INFO--USSR
SOURCE--ZH. STRUKT. KHIM. 1970, 11(1), 148-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ORGANIC PHOSPHORUS COMPOUND, PHOSPHORUS SULFIDE, NITROGEN,
OXYGEN, CHEMICAL BONDING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY LABEL/FRAME--3008/1501 STEP NO--UR/C192/70/011/001/0148/0149
CIRC ACCESSION NO--AP0138502

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--11/14/79

CIRC ACCESSION NO--AP0138502

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SHIFTS IN THE IR FREQUENCY OF THE P(O) BOND WERE TABULATED FOR SOLNS. OF (ETS) SUB3 PG, (DUS) SUB3 PG, (ME SUB2 N) SUB3 PG, AND (ET SUB2 N) SUB3 PG IN CCL SMD4 AND CDCL SDB3. WHILE THE BAND FREQUENCIES AND FORCE CONSTS. OF THE PO GROUPS IN THESE COMPOS. ARE SIMILAR TO EACH OTHER IN MAGNITUDE, THE MECHANISM OF TRANSMISSION OF ELECTRONIC EFFECTS FROM SUBSTITUENTS TO PO DIFFERS GREATLY DEPENDING ON THE LINKING ELEMENT. THE BAND INTENSITIES VARIED CONSIDERABLY BETWEEN THE ESTERS AND THE AMIDES. THE RESULTS SHOWED MUCH GREATER BASICITY OF THE PHOSPHORYL O ATOM IN THE AMIDES THAN IN THE ESTERS. THE RESULTS AGREE WITH LOAD CALCN. OF NEG. CHARGE ON THE O ATOM BEING MINUS 0.896 IN THE AMIDES AND MINUS 0.709 IN THE ESTERS, WHILE THE CHARGE ON THE N ATOM IS PLUS OR MINUS 0.187 AND THAT ON S IS MINUS 0.004.

UNCLASSIFIED

UDC 543.39

USSR

ZHARIKOVA, G. G., MARKELOVA, S. I., BOBKOVA, T. S., LANDAU, N. S., SKOLINA, G. S., and SILAYEV, A. B., Moscow State University Leningh N. V. Lomonosov, Moscow

"Destruction of Lacquer and Paint Coatings by Bacteria and Actinomycoetes"
Moscow, Prikladnaya Biokhimiya i Mikrobiologiya, Vol 7, No 2, Mar-Apr 71, pp 236-242

Abstract: From the soil of various regions of the USSR, the following strains of bacteria and Actinomycoetes were isolated which were found to cause destruction of surface coatings: Bacillus sphaericus var. 2P, Bac. cohaerens var. 4P, Bac. subtilis var. 1B, Flavobacterium acetylicum var. 7P, Lycobacterium sp. var. 1P, Propionibacterium pentosaceum var. 4B, Micrococcus aurantiacus var. 14C, Micrococcus aurantiacus var. 16 C, Actinomyces globisporus var. 9B, Actinomyces globisporus var. 10C, Actinomyces sp. Var. 10B. The cultural, morphological, and biochemical characteristics of the eight bacterial strains were determined. The behavior of surface coatings based on epoxy resin, alkyd resin, teflon, pentaphthalic resin, PVC, and organosilicon resin with respect to the 11 microorganisms isolated was determined in tests in which a sample of the surface coating was kept for 1 yr in contact with
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USSR

UDC: 621.371.382.3

LANDE, B. Sh., KRASYUK, N. P., MEGRETSKAYA, I. I.

"On the Space-Time Characteristics of the Field of Scattering From a Rough Surface"

Tr. Sev.-Zap. zaach. politekhn. in-t (Works of the North-west Polytechnical Correspondence Institute), 1972, No 20, pp 16-18 (from *Elektronika*, No 12, Dec 72, abstract No 12024 [résumé])

Translation: Solutions are found for the problem of unscattering of microwaves on a statistically rough surface in the Kirchhoff approximation with small perturbations, and an expression is derived for space-time correlations in the envelope of scattered radio signals under conditions of high radar resolution.

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USSR

Zhurnal, G. G., et al., *Prilozheniya Biokhimiya i Mikrobiologiya*, No 2, Mar-Apr 71, pp 236-242

a culture medium containing (in g/l.) CaCO_3 3, MgSO_4 0.5, KCl_2FO_4 1, KCl 0.2, agar 20 (pH 7.0-7.5). The only source of C for the microorganism was the coating. The samples were examined every month. The behavior of alkyd resin, epoxy resin, and teflon coatings with respect to mixtures of some of the microorganisms was determined in similar tests. The results of the tests are tabulated. The bacteria and actinomucotes isolated can be used for determining whether or not a surface coating is resistant to the action of microorganisms.

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USSR

UDC 621.371

KRASYUK, N. P., LANDE, B. SH. HEGRETSKAYA, I. I.

"Effect of Radar Resolution on the Spectral Width of a Microwave Signal Scattered by the Sea Surface"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 10, 1972, pp 2182-2184

Abstract: The theory of radio wave scattering from the sea surface simulated in the form of a superposition of large and small unevennesses has been presented previously as applied to electromagnetic waves [I. M. Fuks, Izv. vuzov MVSSO SSSR (Radiofizika), Vol 9, No 5, 876, 1966]. The nondissipative mechanism of broadening of the spectrum as a result of the orbital motion of the particles is established in the form

$$\Delta f(\text{hertz}) = (q/2)\sqrt{gh}\gamma/\pi,$$

where h is the mean square height of the surface, γ is the dispersion of the slope angles, g is the gravitational constant and q is the wave number. Considering that the sea surface is a random surface with respect to heights with a normal distribution law, the question of the effect of the dimensions of the resolved section of the surface on Δf has remained unclear. Expressions are derived for this mechanism, and the band width $2\Delta f$ at the half power level is $1/2$

USSR

KRASYUK, N. P., et al., Radiotekhnika i Elektronika, Vol 17, No 10, 1972, pp 2182-2184

defined in the form

$$2\Delta f = \sqrt{2.88 + \delta^2} / \pi.$$

The values of $2\Delta f$ are plotted as a function of L -- the linear dimension of the resolved area. In the general case the graphs of the function contain two horizontal segments on the upper and lower levels. The first of these levels corresponds to the limiting high resolution and extends to $L = 30$ meters. In this case the spectral width is in accordance with the function presented by Fuks. The second horizontal segment corresponds to the limiting low resolution of the instrument and extends from $L = 1,000$ meters. In this case the spectral width arises from the dissipative mechanism of damping of the capillary waves and is in accordance with the function presented by F. G. Bass, et al., [Izv. vuzov MVSSO SSSR (Radiofizika), Vol 2, No 2, 290, 1963].

With high resolution of the instrument the value of $2\Delta f$ is larger, the higher the wind velocity and the slip angle of the radio beam. The minimum slip angle during irradiation of the surface opposite to the wind effect is approximately $3-4^\circ$ inasmuch as the distribution law of the slope angles differs from the normal in this case and has a shifted mean value.

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USSR

UDC: 621.396.377.5:536.5

Lander, V. A.

"Standard High-temperature SHF Noise Radiator"

Moscow, Metrologiya, No. 9, 1972, pp. 39-46.

Abstract: A standard high-temperature SHF-range noise radiator is theoretically designed and experimentally studied. It is shown that the error due to unevenness of distribution of power over the aperture is not over 4%. The radiator has a reflection factor of not over 0.1 and a broad radiation pattern. The radiator is not critical to adjustment errors due to its broad radiation pattern. The integral temperature of the radiator is $390,000 \pm 20,000^\circ\text{K}$.

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USSR

UDC: 536.5(088.76):533.9.07

Kandyba, V. V., Iosel'son, G. L. and Lander, V. A.

"The Problem of Creating an SHF Standard for High Plasma Temperatures"

Moscow, Metrologiya, No. 8, 1972, pp. 3-15.

Abstract: The metrological problems of reproduction of the international practical temperature scale in the superhigh frequency band for the area of high and super high temperatures are steady. A test system is discussed, designed for calibration and adjustment of radio pyrometers together with their antenna systems. A high temperature SHF radiator with a broad aperture is described and investigated. This device can be used as a basis for the creation of a high temperature SHF noise temperature standard. The error in calibration is 6-10%, depending on the method selected. The results of testing showed that the primary source of error in reproduction of the temperature scale in this frequency range is the error in the elementary noise generator--a gas-discharge tube. The method suggested allows operating radio pyrometers to be calibrated together with their antenna systems for the first time.

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USSR

UDX: 612.825.4+612.11/12

LANDORENKO, L. T., KUZ'MICH, N. S., and MOZZHUKHIN, A. S., Department of Normal Physiology, Academy of Military Medicine imeni S. M. Kirov, Leningrad

"Hematological Characteristics of Emotional Stress in Parachute Jumping"

Leningrad, Fiziologicheskii Zhurnal USSR, No 8, 1971, pp 1,140-1,144

Abstract: The quantity of red and white blood cells was determined in 130 males before and after parachute jumps. Some of the men made a parachute jump for the first time while others had previously made as many as 790 jumps. In those with little or no experience in jumping, the RBC count increased slightly before and after a jump whereas the number of eosinophils, lymphocytes, and monocytes decreased, especially before a jump. These hematological changes were much less pronounced in the veteran parachutists. The decrease in leukocytes is ascribed to excitation of the hypophyseal-adrenal system resulting from emotional stress.

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Plant Pathology

USSR

WDC 581.2

SLEPYAN, B. I., and LANDSBERG, G. S., Institute of Botany and V. L. Komarov, Academy of Sciences USSR, Leningrad

"The DNA Content in Nuclei of Epidermis Cells of Leaves of Zea mays L. Plants Infected With Ustilago maydis in Relation to the Problem of Reactivity of the Epidermis"

Moscow, Doklady Akademii Nauk SSSR, Vol 206, No 3, 1972, pp 755-758

Abstract: The DNA content was determined in nuclei of the epidermis of galls forming on leaves of corn plants (*Zea mays*) during smut caused by experimental infection with *Ustilago maydis*. It was established that the content of DNA in these nuclei was increased by a factor of 3-4 vs. that of nuclei of the uninfected leaf epidermis, and that the increase in DNA content was accompanied by a pathological hypertrophy of the nuclei. The increase in DNA content and hypertrophy were due to a reactive polyploidization, in which the number of chromosome sets was increased by an estimated factor of 10-15. The variation of the affected nuclei with respect to the DNA content was greater than that of nuclei of normal epidermis and reached its highest level during growth and differentiation of the epidermis cells.

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LANDSMAN, A. P.

PHOTOCELLS

High Voltage

INVESTIGATION OF HIGH-VOLTAGE PHOTOCELLS AT LOW RADIATION INTENSITIES
Prepared by A. P. Landsman, D. A. Semakova, V. A. Inshakov and V. A. Chuvpilo
Teashent, G. I. Gushchikova, Russian, No 1, 1972, Submitted July 1972, pp 1-9

UDC 621.381.3.001

ISSN 00137
16 November 1973

Abstract
Czech
Polish

This paper describes the voltage characteristics of high voltage photocells with β -type junctions of titanium ferrosilicide with Zn or SnO₂ films. On the basis of the results obtained, the endogenous intensity with the radiation intensity up to 300 lux.

High voltage photocells (VTV) with β -type p-n junctions have a voltage of about 10 volts from a working surface of one square centimeter and an efficiency of about 10% at the usual fill factor (0.1 volt/cm²). The VTV current increases more than 1000 times (I₀) when the radiation flux density increases with a linear rate observed to a reduction density of 10 to 20 volt/cm².

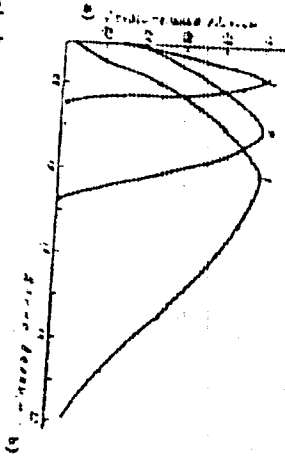
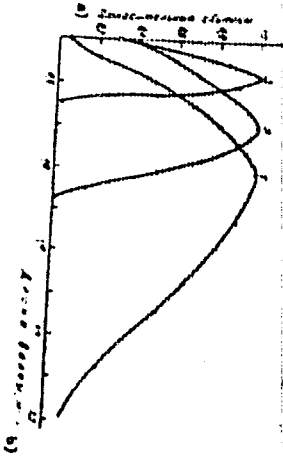


Fig. 1. Spectral characteristics: 1 -- radiator QI-19 (incandescent lamp); 2 -- VTV 3 -- selenium photocell.
Key: a -- relative units; b -- wavelength, nm.

[1 - USSR - P]

LANDSMAN, A. P.

Fig. 1. Spectral characteristics: 1 - radiator 01-19 (incandescent lamp); 2 - VPI; 3 - selenium photocell. Keys: a - relative units; b - wavelength, micron.



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High voltage photocells (VPC) with $p-n$ junctions have a voltage efficiency of about 10% at the small thickness of one square centimeter and an average intensity more than 1000 times P_0 when the radiation flux density increases with a linear rise observed to a radiation density of 10 to 25 Watt/cm^2 .

High voltage photocells with $p-n$ junctions of various thicknesses varying from 20 to 200 μm , on the basis of the results obtained, the cell varies linearly with the radiation intensity up to 100 Watt/cm^2 .

Article by A. P. Landsman, *Journal of Applied Physics*, Vol. 44, No. 11, p. 5167, November 1973. Reprinted from *Journal of Applied Physics*, Vol. 44, No. 11, p. 5167, November 1973. pp 2-6

Article by A. P. Landsman, *Journal of Applied Physics*, Vol. 44, No. 11, p. 5167, November 1973. Reprinted from *Journal of Applied Physics*, Vol. 44, No. 11, p. 5167, November 1973. pp 2-6

JPRS 60570
16 November 1973
C400

USSR

UDC 621.383.51:535.215.6

LANDSMAN, A. P., ZAYTSEVA, A. K., ZADDE, V. V., and STREBKOV, D. S.

"Method of Producing a Semiconductor Photoelectric Generator"

USSR Author's Certificate No 288160, filed 25 Apr 68, published 3 Feb 71
(from RZh-Elektronika i yeye primeneniye, No 8, August 1971, Abstract No
8B280)

Translation: A method is proposed for production of a photogalvanic generator on the basis of commutated microelements with p-n junctions. The coupling of the matrixes in the multilayer structure, which is cut into flat units perpendicular to the plane of the junctions, with subsequent creation of additional diffused junctions at the surface of a unit, makes it possible to obtain an efficiency of \sim 80 percent for monochromatic radiation. N.S.

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USSR

UDC 621.383.4(088.8)

LANDSMAN, A. P., ZAYTSEVA, A. K., ZADDE, V. V., STREBKOV, D. S.

"A Semiconductor Photoelectric Generator"

USSR Author's Certificate No 288161, filed 22 Apr 69, published 9 Mar 71
(from RZh-Elektrotehnika i Energetika, No 9, Sep 71, Abstract No 9A107P)

Translation: A semiconductor photoelectric generator is proposed which is a set of microphotoconverters with PN junctions arranged parallel to the incident radiation. As a distinguishing feature of the patent, a radiation detector is produced which is sensitive to the infrared region of the spectrum near 1.05μ with the width of the maximum being $0.1-0.2 \mu$ for silicon, by using microphotoconverters with IIPN or INP structure. The generator is also distinguished by the fact that commutation of the emitter and collector regions is implemented over the end faces of the set of microphotoconverters. In addition, commutation of the base regions in the generator is done on the rear surface of the set of microphotoconverters with preisolation of the emitter and collector regions from the contact. One illustration.

1/1

USSR

UDC 921.383.4(688.8)

LANDSMAN, A. P., ZAYTSEVA, A. K., ZANDE, V. V., STREBKOV, D. S.

"A Semiconductor Photoelectric Generator"

USSR Author's Certificate No 288159, filed 25 Jul 68, published 9 Mar 71
(from RZh-Elektrotehnika i Energetika, No 9, Sep 71, Abstract No 9A106P)

Translation: A semiconductor photoelectric generator is proposed which is a cellular monolithic structure made up of microphotoconverters with PN junctions. As a distinguishing feature of the patent, the efficiency is increased to 50% and more with any spectrum of incident radiation with microminiature generator construction by arranging the PN junctions on at least four faces of the microphotoconverters, which are made in the form of cubes, parallelepipeds and polyhedra. Two illustrations.

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1/2 047 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--STUDY OF HIGH VOLTAGE PHOTOELECTRIC GENERATORS AT SUPERHIGH LIGHT
FLUX CONCENTRATIONS -U-
AUTHOR-(02)-LANDSMAN, A.P., STREBKOV, D.S.
COUNTRY OF INFO--USSR
SOURCE--GELIOTEKNIKA, NO. 2, 1970, P. 13-20
DATE PUBLISHED-----70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS
TOPIC TAGS--SEMICONDUCTOR MATERIAL, PN JUNCTION, CIRCUIT DESIGN,
PHOTOELECTRIC EFFECT, IR LIGHT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1847 STEP NO--(JR/0377/70/000/002/0013/0020
CIRC ACCESSION NO--AP0130677

UNCLASSIFIED

2/2 047

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0130677

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF HIGH VOLTAGE PHOTOELECTRIC GENERATOR CONTAINING PLATES OF SEMICONDUCTOR MATERIAL WITHIN WHICH A LARGE NUMBER (UP TO SEVERAL THOUSAND) OF SERIES AND PARALLEL CONNECTED PN JUNCTIONS ARE ARRANGED IN THE FORM OF A SOLID CIRCUIT. THE PLANES OF THE PN JUNCTIONS AND THE METAL CONTACTS ARE PERPENDICULAR TO THE WORKING SURFACE OF THE GENERATOR. THE TWO SIDED WORKING SURFACE, THE TRANSPARENCY OF THE GENERATOR TO THE INFRARED PORTION OF THE SPECTRUM, AND THE METALLIC CONTACT LAYERS BETWEEN THE PN JUNCTIONS IMPROVE THE HEAT TRANSFER CONDITIONS AND MAKE IT POSSIBLE TO USE THE GENERATOR AT SUPERHIGH LIGHT FLUX CONCENTRATIONS.
FACILITY: VSESOUZNYI NAUCHNO-ISSLEDOVATEL'SKII INSTITUT ISTOCHNIKOV TOKA, KISHINEV, MOLDAVIAN SSR.

UNCLASSIFIED

USSR

UDC 662.997

GRIGOR'YEVA, G. M., KREYNIN, L. B., LAIDSMAN, A. P.

"Effect of Cosmic Radiation on Solar Elements"

Tashkent, Geliotekhnika, No 5, 1971, pp 3-17

Abstract: A survey of studies of the mechanism of radiation damage to solar elements, shielding of them and increased resistance to irradiation is presented. The discussion includes 1) the radiation environment in space, 2) the effect of hard radiation on silicon photoconverters -- the life of minority carriers in the material, the spectral distribution of the photosensitivity, the photoenergy characteristics -- 3) protection of solar cells from cosmic radiation and 4) improving the radiation resistance of solar cells. Graphs are presented showing the equal intensity lines in the plane of the magnetic meridian for two energies of electrons and protons in space, the inverse lifetime in the base region of n-p-photoconverters bombarded by electrons as a function of dosage, the energy dependence of the effectiveness of electron damage to n and p-silicon, the energy dependence of the effectiveness of proton damage to p-silicon with a specific resistance of one ohm-cm, the spectral distribution of silicon photoconverters bombarded with protons with an energy of $E = 19.6$ megaelectron volts and the spectral characteristics of 1/3

USSR

GRIGOR'YEVA, G. M., et al., Geliotekhnika, No 5, 1971, pp 3-17

silicon photoconverters bombarded by protons with an energy of $E = 0.2$ megaelectron volts, the cross section of a photoconverter with sharply nonuniform concentration distribution of defects with respect to depth, the spectral distribution of the collection factor of a photoconverter bombarded by protons with an energy of 400 kiloelectron volts at an angle of 45° , the load characteristics of a silicon photoconverter bombarded by protons with an energy of 6.3 and 0.2 megaelectron volts, and the power taken from a silicon photoconverter as a function of the load voltage in the case of bombardment by various integral proton fluxes with an energy of 6.3 megaelectron volts and 0.2 megaelectron volts. The characteristics of these plotted data are discussed. An equation is presented for calculating the damage to silicon photoconverters by protons and high-energy α -particles and, with some approximation, electrons. The equation is subjected to transformation making it applicable when experimental data are available on the effectiveness of damage to photoconverters with protection of a given thickness or preliminary calculations are performed which establish the equivalence between the omnidirectional unit fluxes of particles of various types and energies and the standard radiation flux -- in the given case, electrons with an energy of 1 megaelectron volt. The most prospective methods of improving radiation resistance are considered to be

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USSR

GRIGOR'YEVA, G. M., et al., Geliotekhnika, No 5, 1971, pp 3-17

high-temperature annealing of the converters and the manufacture of p-n-type photoconverters with an admixture of lithium. Replacement of silicon by GaAs for the manufacture of photoconverters may be useful from the point of view of sensitivity to hard radiation. A lengthy bibliography is presented as a basis for the indicated discussion and conclusions.

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USSR

UDC 621.356.67

LANDSMAN, M. S., VINNITSKAYA, D. N.

"The Short-Wave Tower of a Radio Center as a Medium-Wave Antenna"

Moscow, Radiotekhnika, Vol 26, No 9, Sep 71, pp 106-109

Abstract: The authors consider the possibility of using the towers carrying short-wave antennas at radio centers as the main antennas for medium wave transmission. The metal tower structures considered are typical steel units 65-110 meters in height between which cophasal horizontal dipoles are suspended. It is shown that the top-fed design is most feasible for this application. Formulas are derived for principal characteristics (impedances, currents and voltages), and the results are graphed and tabulated. A formula is presented for calculating the maximum power of the antenna, and it is shown that the antenna power can exceed that of the transmitter under completely realistic conditions. In conclusion the authors thank S. B. Mayorchik and V. F. Velikiy for designing the antenna and for assisting in measurement of its input impedance. Five figures, one table, bibliography of four titles.

1/1

USSR

Photoelectric Effect

UDC: 621.472:621.383 ²

GORODETSKIY, S. M., GRIGOR'YEVA, G. M., KREYNIN, L. B., LANDSMAN, A. P., LAZOVSKIY, V. V., and SOMINSKIY, K. S.

"Difference in Radiation Stability of n-Type and p-Type Silicon Photoelements"

Tashkent, Geliotekhnika, No. 1, 1971, pp 3-8

Abstract: The damaging effects of cosmic radiation on earth satellite solar batteries and the study of the behavior of silicon photocells in such fields are the subjects of this article. Such studies have shown that p-type silicon is more radiation-proof than n-type, the difference in the damage sustained by the two being a function of the kind and energy of the particles bombarding them. Research conducted by the authors on the temperature dependence of minority carrier lifetimes in irradiated p-type silicon with a resistivity of 1 ohm-cm showed that the recombination center subject to electron bombardment with an energy level of 1 Mev and 8 Mev retains the same position in the forbidden zone, with a ratio of the electron capture cross section to the hole capture cross section equal to 70. Similar effects are observed in n-type silicon subjected to electron irradiation. This is essentially a review article, with a bibliography of 19 titles.

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USSR

GORODETSKIY, S. M., et al, Geliotekhnika, No. 1, 1971, pp 3-8

The authors are associated with the All-Union Order of the Labor
Red Banner Scientific Research Institute of Current Sources.

USSR

UDC 621.383.567

GRIGOR'YEVA, G.M., KREYNIN, L.B., LANDSMAN, A.P.

"Investigation Of The Possibilities For An Increase Of The Stability Of The Photoelectric Characteristics Of Irradiated Silicon n-p Junctions"

V sb. Radiatsion. fiz.nemst. kristallov (Radiation Physics Of Nonmetal Crystals-- Collection Of Works), Minsk, "Nauka i tekhn.," 1970, pp 167-175 (from RZh--Elektronika i yeye primeneniya, No 1, January 1971, Abstract No 18270)

Translation: Methods are considered for increasing the stability of photoconverters operating in the conditions of hard radiation action. One of the methods in question is thermal annealing of the irradiated device. A change is considered in the process of annealing of the spectral distribution of photosensitivity and the diffusion length of the minority carriers in the base of irradiated n-p type photoconverters. Another possibility for assuring radiation resistance is doping them with lithium. The results are presented of irradiation and low-temperature annealing of p-n type photoconverters with an impurity of lithium and various concentrations of oxygen. In the case when the content of oxygen in silicon is small ($< 10^{17} \text{ cm}^{-3}$) devices with an impurity of lithium reveal an extremely high resistance to irradiation. The ability of lithium to neutralize recombination centers in silicon having a nonradiation origin is also shown.

5 ill. 5 ref. G.B.

1/1

USSR

UDO 535.215.6

GORODETSKIY, S.M., GRIGOR'YEVA, G.M., KREYNIN, L.B., LAZDYSKIT, V.V., LANDSMAN, A.P., SOMINSKIY, M.S.

"Effect Of Electron Irradiation On The Recombination Parameters Of p-Silicon And The Photoelectric Characteristics Of Silicon n-p Junctions"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics Of Nonmetal Crystals--Collection Of Works), Minsk, Nauka i tekhn., 1970, pp 159-266 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1E267)

Translation: The results are discussed of an investigation of the bombardment of silicon photoconverters by electrons in the 0.5--18 Mev range of energies. As follows from the photoelectric characteristics presented, impairment of the photoconverters by electrons is characteristic for the case of the action of penetrating hard radiation. The energy dependence was experimentally found of the damage factor of the p-silicon base with a resistivity of 1 ohm.cm. An analysis of the changes of the dependences of the lifetime on the injection level and the temperature made it possible to draw the preliminary conclusion that the center determining the decrease of the lifetime of the p-silicon irradiated by electrons is found at 0.2 ev above the top of the valence band and has a ratio of the electron and hole capture cross sections of ~ 100.6 ill. 17 ref.

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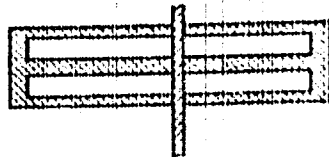
UDC: 621.317.738

YARIN, N. V., MINOV, O. N., LANDYK, V. A., DOBROVINSKIY, V. R.

"A Resonator for Measuring the Permittivity of Sheet Specimens of Dielectrics on Superhigh Frequencies"

Moscow, Otkrytiya, Izobreteniya, Promyshehnyye Obraboty, Toyarnyye Zashchi.
No 31, Nov 71, Author's Certificate No 317994, Division G, filed 3 Jun 69,
published 19 Oct 71, pp 171-172

Translation: This Author's Certificate introduces a resonator for measuring the permittivity of sheet specimens of dielectrics on superhigh frequencies. The device contains a coaxial section shorted at both ends. As a distinguishing feature of the patent, measurement accuracy is improved by making the length of the resonator close to an odd number of $\lambda/4$ -waves of the working frequencies, and making a transverse slot through the middle of the resonator to accommodate the dielectric specimen to be studied.



1/1

USSR

UDC 581.2:523.745:577.49

LANETSKIY, V. P., All Russian Scientific Research Institute of Plant Protection, Ramon'

"Cyclic Changes in Solar Activity and Epiphytotics"

Moscow, Zhurnal Obshchey Biologii, No 4, 1971, pp 439-444

Abstract: Each of the five major outbreaks of stem rust of wheat in North Dakota in the 20th century (1904, 1916, 1935, 1953, and 1954) was closely associated with increased solar activity between relative sunspot numbers of 50 and 90. Cyclic changes in solar activity tend to make wheat more susceptible to stem rust following shifts in temperature, atmospheric pressure, cloudiness, rain, and so forth. Solar radiation has a direct effect on phytopathogens, plants, and their interaction. The ultraviolet rays, in particular, intensify during periods of maximum solar activity.

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USSR

TYSOVSKAYA, L. D., and LANEVSKAYA, L. A., State Scientific
Research Institute of Quartz Glass

"Spectral Determination of Impurities in Various Aluminum Oxides"

Moscow, Zavodskaya Laboratoriya, Vol 36, No 11, 1970, pp 1347-
1348

Abstract: A direct spectral method is outlined for determining a number of impurities in aluminum hydroxide and in items made from it at high-temperature hardening. The method involves placing samples in carbon electrodes 5 mm deep and 4 mm in diameter and exciting them by a dc arc with $i = 14a$ for 120 sec. A mixture of oxides of the unknown elements with pure aluminum ammonium alums, which at subsequent hardening are transformed into aluminum oxide, are used as standards. A description is given of the preparation of standards containing 1% of every unknown element and others with decreasing content, as well as samples of aluminum hydroxide. The sample and standard spectra were photographed by the ISP-28 spectrograph with 12 micro slots. Diagrams in $\Delta S; \lg C$ coordinates were constructed for 1/2

USSR

TYSOVSKAYA, L. D., and LANEVSKAYA, et al., Zavodskaya Laboratoriya,
Vol 36, No 11, 1970, pp 1347-1348

analytical lines of various impurity elements. The sensitivity
of the method is $1 \cdot 10^{-3}$ - $5 \cdot 10^{-5}$, and the mean square error is
15-20%.

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1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--SYNAPTIC PROCESSES IN NEURONS OF CLARKE'S COLUMN PRODUCED BY AN
ANTIDROMIC VOLLEY FROM THE DORSO LATERAL FUNICULUS -U-
AUTHOR-(05)-KOSTYUK, P.G., PYATIGORSKIY, E.YA., LANG, E.

COUNTRY OF INFO--USSR

SOURCE--NEUROFIZIOLOGIYA, 1970, VOL 2, NR 3, PP 269-278

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NERVOUS SYSTEM, NEURON, BIOPOTENTIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1626

STEP NO--08/0680/70/002/003/0269/0278

CIRC ACCESSION NO--AP0123468

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123408

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESPONSES OF CLARKE'S COLUMN NEURONS TO STIMULATION OF AXONS ASCENDING IN THE DORSAL PART OF THE LATERAL FUNICULUS WERE STUDIED IN CATS UNDER NEMBUTAL CHLORALOSE ANAESTHESIA. THE ACTIVITY OF DESCENDING FIBERS IN THE FUNICULUS WAS ELIMINATED BY PREVIOUS (7-10 DAYS) IPSILATERAL HEMISECTION OF THE SPINAL CORD IN THORACIC REGION WHICH RESULTED IN THEIR DEGENERATION OR BY SEPARATE STIMULATION OF ASCENDING AXONS IN THE RESTIFORM BODY. IT WAS SHOWN THAT DURING BOTH TYPES OF THE EXPERIMENTAL PROCEDURE THE CELLS IN THE REGION OF CLARKE'S COLUMN COULD BE FOUND IN WHICH THE ANTIDROMICALLY DESCENDING VOLLEY PRODUCES NOT ACTION POTENTIALS BUT PRIMARY EXCITATORY POSTSYNAPTIC POTENTIALS (EPSP). THE LATENCY OF EPSP WAS IN AGREEMENT WITH THEIR MONOSYNAPTIC ORIGIN; THEIR DURATION REACHED 10-15 MSEC. SUCH NEURONS COULD BE ALSO SYNAPTICALLY ACTIVATED BY LOW AND HIGH THRESHOLD AFFERENTS FROM DIFFERENT MUSCLES. OBVIOUSLY THEY CORRESPOND TO "BORDER CELLS" DESCRIBED MORPHOLOGICALLY BY KETHELYI (1968) WHICH RECEIVE TERMINALS FROM AXON COLLATERALS OF ASCENDING AXONS OF THE DORSAL SPINOCEREBELLAR TRACT (DSCT). IN SOME NEURONS OF THE DSCT (THOSE WITH LOW AXON CONDUCTION VELOCITY) STIMULATION OF THE DORSO LATERAL FUNICULUS RESULTED NOT ONLY IN ANTIDROMIC SPIKES BUT ALSO IN SUBSEQUENT SYNAPTIC DEPOLARIZATION WHICH MIGHT BE PRODUCED THROUGH THE "BORDER CELLS". THE POSSIBLE FUNCTIONAL ROLE OF THE FEEDBACK SYSTEM FORMED BY AXON COLLATERALS OF THE DSCT NEURONS AND "BORDER CELLS" IS DISCUSSED. FACILITY: THE A. A. BOGUMOLETZ INSTITUTE OF PHYSIOLOGY, ACADEMY OF SCIENCES, UKRAINIAN SSR, KIEV.

UNCLASSIFIED

Phytology

USSR

UDC 577.45

LANG, F., VOROB'YEVA, L. H., and KRASNOVSKIY, A. A., Institute of Biochemistry
Imeni A. N. Bakh, USSR Academy of Sciences, Moscow

"Chlorophyll Synthesis and Formation of Chloroplasts in Greening Normal and
Mutant Maize Leaves"

Moscow, Molekulyarnaya Biologiya, Vol 5, No 3, May/June 71, pp 306-374

Abstract: The correlation between fluorescence spectra, quantity of chlorophyll pigments, and development of chloroplasts was studied in normal and carotenoid mutant maize leaves during the greening process at low intensity light (25 lux). In the fluorescence spectra of normal and mutant leaves recorded at low temperature (??°K), a maximum at 635 millimicrons corresponds to protochlorophyll; at 655 -- to protochlorophyllide; at 672 -- to chlorophyll; and at 686 -- to chlorophyllide. Exposure to light results in a fast photoconversion of protochlorophyllide and protochlorophyll in etiolated leaves, while no such conversion takes place in normal leaves. In the mutants, photolysis of chlorophyllide begins in earlier stages of greening and proceeds at a faster rate than in normal maize plants. Investigation of the chloroplast structure in different stages of the greening process revealed the presence of prolamellar

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USSR

LANG, F., et al, Molekulyarnaya Biologiya, Vol 5, No 3, May/June 71, pp 365-374

bodies in the proplastids of both the etiolated normal and mutant leaves. After 3-6 hours of illumination, circular lamellar systems are formed in normal and mutant plastids. After a 24-hour exposure to light, granules are formed in normal but not in mutant chloroplasts. After prolonged illumination, mutant chloroplasts also form granules, though of a different structure. Mutant chloroplasts are highly heterogenic. No correlation was found between chlorophyll synthesis and formation of chloroplast structures in greening leaves exposed to low intensity light even though, according to other investigators, such correlation exists during exposure to high intensity light.

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1/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--SPECTROFLUORIMETRY OF PIGMENTS OF THE INITIAL STRAIN AND
PROTOCHLOROPHYLL MUTANTS RHODOSPHEUDOMONAS PALUSTRIS -U-
AUTHOR-(04)-KRASNOVSKIY, A.A., FEDENKO, YE.P., LANG, F., KONDRATYEVA,
YE.N.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(1), 218-21 (BIOCHEM)
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--CHLOROPHYLL, BIOLOGIC PIGMENT, BIOSYNTHESIS, FLUORESCENCE,
BACTERIA MUTATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/1096 STEP NO--UR/0020/70/190/001/0218/0221
CIRC ACCESSION NO--AT0119955
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0119955

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHYTIN AND PHYTIN FREE FORMS OF PROTOCHLOROPHYLL PIGMENT WERE FOUND IN THE 5 MUTANTS OF THE TITLE ORGANISM; THESE MUTANTS CARRIED MUCH SMALLER AMTS. OF THE PIGMENTS THAN DID THE PARENT FORM. IN ADDN. ALL MUTANTS ALSO CONTAINED, AS DID THE PARENT FORM, CHLOROPHYLL LIKE PIGMENTS WITH MAXIMA OF FLUORESCENCE IN 658,674 AND 700 M MU REGIONS. THESE ARE POSSIBLY INTERMEDIATES IN BIOSYNTHESIS OF BACTERIOCHLOROPHYLL. FACILITY: INST. BIOKHIM. IM. BAKHA, MOSCOW, USSR.

UNCLASSIFIED

USSR

LANG, I. G.; PAVLOV, S. T. (Institute of Semiconductors, USSR Academy of Sciences, Leningrad)

"Deformation Interaction of Conduction Electrons with an Ultrasonic Wave"

Leningrad, Fizika Tverdogo Tela; August, 1970; pp 2412-20

ABSTRACT: The problem of the motion of a conduction electron in a crystal along which is propagated an ultrasonic wave is solved by means of the method of a density matrix. The scattering of electrons by impurity atoms is taken into account. The study is made in a laboratory system of coordinates. It is shown that intrazonal as well as interzonal elements of the density matrix contribute to the macroscopic density of the electron current. The equation for intrazonal matrix elements leads to a classical kinetic equation such that the classical Hamiltonian has the form $\xi_0(p) + L_{1k}(p)u_{1k}$. The physical meaning of the expression $L_{1k}(p)u_{1k}$ is that it describes the average increase in electron

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USSR

LANG, I. G., et al, Fizika Tverdogo Tela, August, 1970, pp 2432-20

energy with a quasi pulse p in a crystal subjected to deformation. A microscopic expression is obtained for the tensor $L_{ik}(p)$ from which it follows that $L_{ik}(p)$ vanishes for free electrons. A connection with the results of the existing phenomenological theories of Akhiezer, Kaganov, Lyubarskiy, and Kontorovich (ZhETF, 8, 1330, 1938; ZhETF, 32, 837, 1957; ZhETF, 45, 1638, 1963) and the theory of T. Holstein (Phys. Rev., 113, 479, 1959) is shown. It is proven that the introduction of the tensor $\lambda_{ik}(p)$ by Akhiezer, Kaganov, Lyubarskiy, and Kontorovich is equal to $\lambda_{ik}(p) = L_{ik}(p) - m_0 v_i v_k$, i.e., it does not vanish at the limit of the free electrons.

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USSR

UDC 534.6

BLINOVA, L. P., KOLESNIKOV, A. Ye., LANGANS, I. B.

"Acoustical Measurements"

Moscow, Izdatel'stvo standartov, 1971, p 2

Translation of Annotation: The book considers methods of measuring the parameters of acoustical processes in air, liquids, and solids and evaluates methods of measuring sonic pressure in various media as well as the effect of interference and diffraction phenomena on measurement results.

General problems of acoustical metrology are considered. Descriptions are given of modern electroacoustical sonic transmitters and receivers used in measurements. Problems in spectral, correlational, and statistical analysis, as applied to various cases of measurement practice, are discussed. Attention is given to questions connected with measurements in physiological acoustics. Methods of calibrating electroacoustical converters

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USSR,

BLINOVA, L. P. et al, Izdatel'stvo standartov, 1971, p 2

for the reception of sound and vibrations are analyzed in detail. Also, methods are described for estimating the measurement error, and recommendations are made for processing measurement results.

The book is designed for workers engaged in verification operations, for metrological organizations, for control and measurement laboratories, and for specialists in acoustical measurements.

There are 24 tables, 143 illustrations, and a bibliography of 89 titles.

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USSR

UDC 534.6

BLINOVA, L. P., KOLESNIKOV, A. Ye., LANGANS, I. B.

"Acoustical Measurements"

Moscow, Izdatel'stvo standartov, 1971, pp 270-271

Translation:

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- 1.2. Government standards in acoustical measurements
- 1.3. Measurement transmitters and receivers of sonic oscillations
- 1.4. Electronic equipment for exciting electro-acoustical converters

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USSR

BLINOVA, L. P., et al, Izdatel'stvo standartov, 1971, pp 270-271

- 1.5. Electronic equipment for amplifying, indicating, and recording signals.

Chapter 2. Conditions for Fundamental Acoustic Measurements

- 2.1. Operation modes in acoustical measurements. Use of harmonic, frequency-modulated, noise, and pulse signals.
- 2.2. Measuring sonic pressure in air. Dampening and reverberating chambers.
- 2.3. Measuring sonic pressure in liquids. Measuring hydroacoustical basins, devices for absorption of sound. Requirements of measurement basins. Measurements in open tanks.

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USSR

BLINOVA, L. P. et al, Izdatel'stvo standartov, 1971, pp 270-271

- 2.4. Effect of interference and diffraction phenomena on acoustical measurements.
- 2.5. Measuring the power of sonic transmitters, determining their efficiency.
- 2.6. Determining the directional characteristics and the directional factors of transmitters and receivers in various media.
- 2.7. Acoustical measurements in solids. Measurements in steel, concrete, and ice.
- 2.8. Measuring acoustical resistance.
- 2.9. Measuring vibrations: acceleration, velocity, and displacement.

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BLINOVA, L. P. et al, Izdatel'stvo standartov, 1971, pp 270-271

Chapter 3. Analysis of Measurement Signals

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- 3.2. Characteristics of typical analyzers.
- 3.3. Choice of optimal conditions for spectral analysis.
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- 3.6. Correlation analysis of acoustical processes.
- 3.7. Statistical analysis.
- 3.8. Measurement of nonlinear distortion.

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BLINOVA, L. P. et al, Izdatel'stvo standartov, 1971, pp 270-271

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Chapter 5. Calibrating Measuring Acoustical Equipment

- 5.1. General calibrating problems. Absolute and relative calibration. Rules for checking measuring equipment.

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USSR

BLINOVA, L. P. et al, Izdatel'stvo standartov, 1971, pp 270-271

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- 5.7. Calibrating hydrophones in a liquid oscillating column.
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BLINOVA, L. P. et al, Izdatel'stvo standartov, 1971, pp 270-271

Chapter 6. Conditions of Accurate Acoustical Measurements

- 6.1. Estimating measurement reliability.
- 6.2. Factors determining the accuracy of basic acoustical measurements.
- 6.3. Automation of measurement operations as a means of improving accuracy in measurement results.
- 6.4. Metrological processing of measurement results.

Appendix

Bibliography

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AND017114

UR9020

TITLE-- SCIENCE-INDUSTRY ALLIANCE

NEWSPAPER-- SOVETSKAYA LITVA, JANUARY 27, 1970, P 1, COLS 1+2

ABSTRACT-- ASSOCIATES OF THE KLAYPEDA NIGHT SCHOOL OF THE MAUNAS
POLYTECHNIC INSTITUTE, HEADED BY CANDIDATE OF TECHNICAL SCIENCES
E. LANGAS, JOINED V. KHALTUSHIN, CHIEF ENGINEER, N. KOMKOV, CHIEF
WELDING ENGINEER, AND V. BELSKIS, SENIOR SUPERINTENDENT OF THE
EXPERIMENTAL SECTION OF THE SHIPBUILDING PLANT "BALTIYA", IN
DEVELOPING A NEW WELDER FOR THE PLANT.

1/1
19600321

30

L/2 024 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--CATHODIC REDUCTION OF MANGANESE, II, IONS ON AN AMALGAM ELECTRODE

-U-
AUTHOR--(03)-LANGE, A.A., SHIRINSKIKH, A.V., BUKHMAN, S.P.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK KAZ. SSR, SER. KHIM. 1970, 20(12), 48-70

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--MANGANESE ALLOY, ION, AMALGAM, METAL CORROSION, OXYGEN CATHODE
REDUCTION, METAL ELECTRODE, SULFATE, CATHODE POLARIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1610

STEP NO--UR/0360/70/020/002/0068/0070

CIRC ACCESSION NO--AP0125232

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0125232
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOR THE CATHODIC REDN. OF 0.1 AND
0.25M MNSO SUB4 SOLNS. (PH 2.65-6.5), THE POLARIZATION CURVES WERE
MEASURED AT A STATIONARY AMALGAM ELECTRODE AT 20DEGREES. NEAR THE
EQUIL. POTENTIALS, THE CURVES OF POTENTIAL VS. LOG C.D. EXHIBITED A
PLATEAU, ITS LENGTH DECREASED WITH INCREASING PH. THE EFFECT IS CAUSED
BY THE CORROSION OF MN AMALGAMS IN ACID SOLNS., AS WAS SHOWN BY THE
MEASUREMENTS OF CURRENT EFFICIENCIES. FACILITY: INST. KHIM.
NAUK, ALMA ATA, USSR.

UNCLASSIFIED

USSR

UDC: 512.25/.26+519.3:330.115

CHERNOV, Yu. P., LANGE, E. G.

"Transport Problem in Fractional Programming"

V sb. Optimal'n. planirovaniye (Optimum Programming--collection of works), vyp. 16, Novosibirsk, 1970, pp 112-131 (from High-Kibernetika, No 9, Sep 71, Abstract No 9V485)

Translation: The following problem is considered. To find the minimum of

$$I(x) = \frac{\sum_{i=1}^m \sum_{j=1}^n \varphi_{ij}(x_{ij})}{\sum_{i=1}^m \sum_{j=1}^n \psi_{ij}(x_{ij})}$$

with limitations

$$\sum_{j=1}^n x_{ij} = a_i, \quad i=1, 2, \dots, m,$$

$$\sum_{i=1}^m x_{ij} = b_j, \quad j=1, 2, \dots, n,$$

$$\alpha_{ij} < x_{ij} < \beta_{ij}, \quad i=1, 2, \dots, m; \quad j=1, 2, \dots, n, \quad (1)$$

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USSR

CHERNOV, Yu. P., LANGE, E. G., Optimal'n. planirovaniye, vyp. 16, Novosibirsk, 1970, pp 112-131

where the functions $\varphi_{ij}(x_{ij})$, $\psi_{ij}(x_{ij})$ defined on segments $[a_{ij}, b_{ij}]$ are continuous and bounded for $i=1, 2, \dots, m$; $j=1, 2, \dots, n$. The denominator of the functional $\psi(x)$ is different from zero on the set R defined by limitations (1). Introduction.

2/2

Physiology

USSR

UDC 612(09)

CHERNIGOVSKIY, V. N., and LANGE, K. A., Leningrad

"Physiological Sciences in the USSR for the Past 50 Years"

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenov, Vol 58, No 12, 1972, pp 1789-1794

Translation [excerpt]: The 1971-1975 plan for scientific research calls for development of six major directions in physiology -- evolutionary and ecological physiology, neurophysiology and higher nervous activity, physiology of sensory systems (analysors), physiology of visceral systems, integrated studies of man, and physiology of agricultural animals. The table shows the number of laboratories, departments, and other scientific collectives participating in the development of particular directions in physiology as percentages of the total number of scientific institutions participating in the development of physiological sciences in the USSR.

USSR

CHERNIGOVSKIY, V. N., and LANGE, K. A., Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenov, Vol 58, No 12, 1972, pp 1789-1794

Table. Participation of Scientific Collectives (Laboratories, Departments) in the Development of the Principal Directions in the Physiology of Man and Animals in 1971-1975

Principal directions of physiological science	Number of Laboratories, departments (%)
Evolutionary and ecological physiology	15.7
Neurophysiology and higher nervous activity	26.2
Physiology of sensory systems	3.8
Physiology of visceral systems	19.4
Integrated study of man	21.4
Physiology of agricultural animals	13.5

An analysis conducted in the last few years on the trends in development of physiological science as well as of scientific disciplines associated with physiology has made it possible to work out a number of forecasts on the development of some directions in physiology. For example a forecast for the long-range development of research on the physiology of visceral systems has been made.

2/6

USSR

CHERNIGOVSKIY, V. N., and LANGE, K. A., *Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov*, Vol 58, No 12, 1972, pp 1789-1794

A forecast has also been worked out for problems involving human adaptation to various climatic conditions. It should be noted that the problem of the effects of ecological factors that act on the human body in nature is exceedingly pressing. The reason for this urgency is, in particular, the need for conquering outer space and the depths of the oceans, which has saddled civilization with the task of creating and organizing artificial ecological systems designed for long-term habitation. In addition the problem of adaptation affects the interests of the entire society and is a broad problem of general biology. Research in this field is exceedingly important considering the development of new geographic zones in our country -- areas of Siberia, the Far East, and the Far North. It is obvious that the continually expanding sphere of human habitation requires a most complete knowledge of the laws governing man's vital activities. In this regard we see the development of physiology in terms of recognizing the laws and function of ecosystems and using these laws to optimize living environments to be one of the most important "points of growth."

A study of emotional memory is important and development of a systems approach to physiological processes (P. K. Anokhin) should be one of the most important problems of modern physiology.

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1/2 010 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--RECOVERY OF SULFURIC ACID BY HIGH TEMPERATURE DECOMPOSITION OF
SPENT ACID -U-
AUTHOR--(05)-SISIN, M.F., LAKIZA, S.M., MANAYEV, A.KH., KOLBASIN, A.YA.,
LANGE, S.A.
COUNTRY OF INFO--USSR
SOURCE--NEFTEPERERAB, NEFTEKHIM. (MOSCOW) 1970, (1), 23-5
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--SULFURIC ACID, THERMAL DECOMPOSITION, WASTE TREATMENT

CONTROL MARKING--NO RESTRICTIONS.

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1996/1819

STEP NO--UR/0318/70/000/001/0023/0025

CIRC ACCESSION NO--AP0118783

UNCLASSIFIED

2/2 010
CIRC ACCESSION NO--AP0118783

UNCLASSIFIED

PROCESSING DATE--2300170

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SPENT H SUB2 SO SUB4 FROM
DITOLYLMETHANE MANUF. AND ALKYLATION WAS DECOMPO. IN A FURNACE AT
1200DEGREES, WHERE H SUB2 S WAS BURNT. THE TEMP. IN THE FURNACE WAS
CONTROLLED BY ENDOTHERMIC DECOMPN. OF THE ACID, THE LATTER BEING FED IN
DETD. AMTS. THE METHOD WAS RECOMMENDED FOR THE PRODUCTION OF H SUB2 SO
SUB4 BY DRY CATALYSIS. THE DECOMPN. CONDITIONS ARE TABULATED AND A FLOW
SHEET IS PRESENTED FACILITY: SALAVAT, NKHK, SALAVANT, USSR.

UNCLASSIFIED

1/2 006
UNCLASSIFIED
TITLE--SOLUBILITY OF SULFUR DIOXIDE IN SULFOLANE AND IN SULFOLENE
SOLUTIONS IN SULFOLANE -U-
AUTHOR--(02)-LANGE, S.A., YEVDOKIMOVA, ZH.A. PROCESSING DATE--04DEC70
COUNTRY OF INFO--USSR
SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (3), 27-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--SULFUR OXIDE, ORGANIC SULFUR COMPOUND, SOLUBILITY, THIOPHENE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0968 STEP NO--UR/0318/70/000/003/0027/0029
CIRC ACCESSION NO--AP0134686
UNCLASSIFIED

2/2 006

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134686

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SO SUB2 SOLY. IN PULFOLANE (I) IS EXPRESSED BY THE KRICHEVSKII L'IN EQUATION, WITH THE IN K AND T VALUES FROM WHICH THE DIFFERENTIAL HEAT OF SOLN. WAS 6700 CAL-MOLE. AT 30DEGREES, SULFOLENE, LIKE I IN ATTRACTING SO SUB2 MDLS, HAD NO EFFECT ON SO SUB2 SOLY. IN I. FACILITY: SALAVAT. NEFTKHM. KOMB., SALAVAT, USSR.

UNCLASSIFIED

Semiconductor Technology

USSR

UDC 546.682'19:535.232.1

VOROB'YEV, V. G., KOTRUBENKO, B. P., LANGE, V. N., and SCEOLEV, V. V.,
Institute of Applied Physics, Academy of Sciences, Moldavian SSR

"Reflection Spectra and Structure of Zones of Highly Alloyed Indium Arsenide"

Moscow, Neorganicheskiye Materialy, Vol 6, No 8, Aug 70, pp 1524-1525

Abstract: In order to continue studies on the influence of strong alloying on the optical transitions in the $E > E_g$ area in compounds such as $Al_{1-x}In_xB_3$, the authors studied the reflection spectra of etched mirror surfaces of InAs crystals, alloyed with tellurium (0.05, 0.1, 1, 2, and 5 at. %) and selenium (0.5, 1, 2, 5, and 10 at. %). In InAs-Te specimens with increasing alloying the maxima principally expand (particularly the long wave maxima), then the entire band is strongly spread with considerable displacement toward the long wave area. When alloyed with selenium, indium arsenide shows the expansion and displacement of the band with lower concentrations of the impurity. Alloying has comparatively little influence on the short wave portion of the band and a very strong influence on the long wave portion of the band.

USSR

UDC 620.119.18

LANGE, Yu. V., SHVARTSMAN, S. M.

"The IAD-3 Amplitude-Phase Impedance Defectoscope"

Defektoskopiya, No 5, 1971, pp 96-102.

ABSTRACT: The IAD-3 2-channel impedance defectoscope is described. This device can operate by the amplitude, phase and amplitude-phase versions of the impedance method. The device has a low-inertia contactless defect signaling circuit and output for a strip-chart recorder to record the results of testing on electrochemical paper. A schematic diagram of the vacuum-tube device is presented.

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USSR

KREYN, M. G. and LANGER, G. K.

"Defective Subspaces and Generalized Resolvents of the Hermitian Operator in the Subspace Π_X "

Moscow, Funktional'nyy Analiz i yego Prilozheniya, Vol 5, No 3, 1971, pp 54-69

Abstract: This article, dedicated to Mark Aronovich Kaymark on the occasion of his 60th birthday, is actually the second half of a paper begun in the above-named journal (vol. 3, No. 2, 1971, pp 59-71). The first half of the article deals with defective subspaces; and this second half, with generalized resolvents. These latter are defined by the operator-function R_λ from the expression $R_\lambda = \mathcal{P}(\tilde{A} - \lambda I)^{-1} | \Pi_X (z \notin \sigma(\tilde{A}))$, where A is some closed operator of the π -Hermitic variety in Π_X having equal defective numbers, and \tilde{A} is its regular π self-conjugate extension acting in some space $\tilde{\Pi}_X \supset \Pi_X$, while \mathcal{P} is the π -orthogonal projector of space $\tilde{\Pi}_X$ on Π_X . It is assumed, as it always can be assumed in the investigation of R_λ , that the generating extension \tilde{A} is a
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USSR

KREYN, M. G. and LANGER, G. K., Funktsional'nyy Analiz i ego Prilozheniya,
Vol 5, No 3, 1971, pp 54-69

minimum. A number of theorems concerning these generalized re-
solvents are stated and proved. The authors are connected with
the Odessa Engineering-Construction Institute and the Dresden
Technical University.

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USSR

UDC 621.791.753.9

LANGER, N. A., Candidate of Technical Sciences, ONOPRIYENKO, L. N., Engineer,
BLASHCHUK, V. YE., Engineer, GORBAN', V. A., Engineer, Electric Welding Institute
imeni Ye. O. Paton of the Academy of Sciences UkrSSR, ISANOV, M. M., Engineer,
All-Union Scientific Research Institute of the Hydrolysis Industry, Leningrad,
and SHELENKOV, G. M., Sumsk Machinery Manufacture Plant imeni N. V. Frunze

"Corrosion Resistance of Welded Joints of AT3 Alloy in Sulfuric Acid"

Kiev, Avtomaticheskaya Svarka, No 1(250), Jan 74, pp 67-68

Abstract: An experimental study was made of the corrosion resistance and the change of mechanical properties of AT3 titanium alloy and its compounds in 0.6-1.2% concentrated sulfuric acid at 180 and 200° C. The results of electrochemical investigation in 0.9% H₂SO₄ at 90° C show that automatically welded specimens behave analogously to the base metal and active zone. Manually welded specimens have an active zone of anodic dissolution; in their passive zone the current density is $2 \cdot 10^{-2}$ mA/cm², which is less than in the base metal ($4 \cdot 10^{-2}$ mA/cm²). Tests conducted with sample specimens revealed that the base metal corrodes after 44 weldings at a rate of 0.014 mm/year, automatically

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USSR

LANGER, N. A., et al., *Avtomaticheskaya Svarka*, No 1(250), Jan 74, pp 67-68

welded joint corrodes at a rate of 0.016 mm/year, and a manually welded joint corrodes at a rate of 0.013 mm/year. Two figures, one table, two bibliographic references.

2/2

USSR

UDC 621.791.011:546.821:546.833

2

BLASHCHUK, V. YE., GUREVICH, S.M., ZOTOVA, L.M., LANGER, H.A., GRINEVICH, V.V.,
and STENDER, N. V., Kiev

"Weldability and Corrosion Resistance of an Alloy of Titanium With 5% Ta"

Kiev, Avtomaticheskaya Svarka, No 6, Jun 71, pp 16-18

Abstract: Development of new chemical products, particularly those in which the basic component of the medium is hydrochloric acid, and introduction of rational technological processes requires the use of new corrosion-resistant structural materials. One of these is titanium and its alloys. An alloy of the system titanium - 5% tantalum with a stable alpha-solid solution has been designated for use in hydrochloric acid in the presence of oxidizers at an elevated temperature. Production of this alloy has been mastered and designated alloy grade 4204. The corrosion resistance of alloys 4204, VT1, and OT4 and their weld joints was studied in 16% HCl at 90°C and with a continuous flow of chlorine gas at the rate of 70 ml/min. It was found that alloy 4204 possesses higher corrosion stability than alloys OT4 and VT1. 4 figures, 1 table, 7 bibliographical references.

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USSR

UDC 621.791.05:620.193.013

MAKSIMOV, YU. A., Candidate of Technical Sciences, Institute of Metallurgy
imeni A. A. Baykov, and ONOPRIYENKO, L. M., Engineer, LANGER, N. A., Candidate
of Technical Sciences, and BLASHCHUK, V. YE., and GORBAN', V. A., Engineers,
Institute of Electric Welding imeni Ye. O. Paton, Academy of Sciences
Ukrainian SSR

"Corrosion Resistance of AK1 and AK2 Alloys Weld Joints in Hydrochloric Acid"
Kiev, Avtomaticheskaya Svarka, No 2, Feb 74, . pp 23-24

Abstract: Compositions of alloys, possessing satisfactory properties with an oxygen content of 0.25-0.35 wt%, were selected on the basis of complex studies of the corrosion resistance of titanium-base alloys and their weld joints in hydrochloric acid. Specifically, alloys of the system Ti-2.5% V (AK1), and Ti-2.5% V-3% Al (AK2), alloy AK1 having the higher oxygen content, were tested in 5, 10, 20, and 30% HCl at 50° C where it was found that the corrosion rate of AK2 is higher than AK1 due to the presence of aluminum, but in comparison with titanium alloy VT6, AK2 has better corrosion resistance. Weld Joints of the alloys studied had corrosion properties identical to the base metal. Two figures, two tables, four bibliographic references.

1/1

- 20 -

USSR

UDC 621.791.856.3:621.9-419:620.193

ZOTOVA, L. M., RYABOV, V. R., and LANGER, N. A., Institute of Electric Welding
imeni Ye. O. Paton, Academy of Sciences USSR

"Contact Corrosion of Aluminum-Steel Welded Joints"

Kiev, Avtomaticheskaya Svarka, No 9, Sep 70, pp 19-23

Abstract: A review is made of available data from experimental and industrial investigations on the corrosion resistance of aluminum-steel welded joints. Various methods and procedures for the protection of such joints against destruction by corrosion under service conditions are described. Data are given on aluminum-steel pair characteristics in sea and fresh water, polarization of various bimetallic joints, and potential distribution in welded joints of aluminum with steel.

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USSR

KREYS, M. G., and LANGER, G. K.

"Defective Subspaces and Generalized Resolvents of the Hermitian Operator in the H_κ Space"

Moscow, Funktsional'nyy Analiz i yego Prilozheniya, Vol. 5, No. 2, 1971, pp 59-71

Abstract: M. A. Naymark's ["Spectral Functions of a Symmetric Operator," Izv. AN SSSR, seriya matem. (News of the USSR Academy of Sciences, Mathematics Series), No 4, 1970, pp 277-318] classical definition of the generalized resolvent of a hermitian operator acting in a Hilbert space permits direct generalization to the case of the \mathcal{H}_κ -hermitian operator acting in the H_κ Pontryagin space with the scalar product containing exactly κ ($0 < \kappa < \infty$) negative squares. In the present paper a complete solution to the problem of description of all generalized resolvents of the \mathcal{H}_κ -hermitian operator A given in H_κ is presented for the case in which the defective numbers of the operator A are

$$n_+(A) = n_-(A) < \infty.$$

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USSR

KREYN, M. G., and LANGER, G. K., Funktsional'nyy Analiz i yego Prilozheniya, Vol 5, No 2, 1971, pp 59-71.

A brief historical review of studies of the theory of hermitian operators in Hilbert space is presented. Auxiliary information from indefinite geometry, the simplest properties of \mathcal{H} -hermitian operators, the signature of \mathcal{H} subspaces, and auxiliary propositions regarding dissipative operators (maximum dissipative operators, improper maximum dissipative operators, classes of $T(\mathcal{H})$ and $T(\mathcal{H})$ functions) and \mathcal{H} -dissipative operators are analyzed and discussed.

The conclusion of the article will be presented in the next issue of the same journal.

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- 12 -

USSR

UDC: 621.791.856.3:546.021

ZOTOVA, Ye. M., LANGER, N. A., PRILUTSKIY, V. P., and HANKOV, V. N.;
Institute of Electric Welding imeni Ye. O. Paton, Academy of Sciences
Ukrainian SSR

"Corrosion Resistance of Titanium Joints Made by Argon Arc Welding Using
AN-Tl7A Flux"

Kiev, Avtomaticheskaya Svarka, No 11, Nov 70, pp 54-56

Abstract: A study was made of the corrosion resistance of titanium joints produced by argon arc welding using flux. Various methods of removing the slag film were also assessed. Involved were two experimental alloys, one of which was TS5 of the titanium-aluminum-zirconium-tin-vanadium system and the other was OT4. The specimens were welded using AN-Tl7A flux and titanium powder metal wire. Hydrochloric, sulfuric, and nitric acids served as the corrosive media. Mechanical removal of the slag film was found to insure a corrosion resistance of the joints equal to two-sided plan. . Regardless of the method of slag film removal, welds made with the use of AN-Tl7A flux appear to have a higher corrosion resistance than those made by conventional argon-arc welding.

1/1

USSR

U.S. GOVERNMENT PRINTING OFFICE

PAVLIYCHUK, G. A., YUSHEVICH, Z. V., MISHUR, E. I., and KURKOVA, N. I.
Electric Welding Institute (Inst. Ye. O. Puzos), Academy of Sciences of the USSR

"Certain Properties of Welds of Extremely Low-Carbon Corrosion-Resistant
Austenitic Steels"

Kiev, Avtomaticheskaya Svarka, No 7, Jul 70, pp 10-15

Abstract: Together with some of their valuable properties, austenitic corrosion-resistant nickel steels have a grave shortcoming -- a tendency to intergranular corrosion when exposed to critical temperatures. This type of corrosion may be controlled by lowering the carbon content down to a level (0.02-0.03%) at which it dissolves in austenite at room temperature. A study has been conducted at the Electric Welding Institute (Inst. Ye. O. Puzos) to determine the corrosion resistance of extremely low-carbon (up to 0.02% C) 18%Ni, 11%Ni, 12%Ni, 20%Ni, and 21%Ni austenitic steels. The results of the mechanical tests of these steels at various temperatures are indicative of the high plasticity of the steels under conditions of deep cold (liquid nitrogen boiling temperature of -196°C). The steels are not susceptible to brittleness even after aging at 500°C for 500 hours. All the steels were tested for corrosion resistance of their welds. In

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USSR

PAVLIYONEN, G. A., et al, Avtomaticheskaya Svarka, No 7, Jul 70, pp 2-15

a boiling 15% solution of HNO_3 and 10% $\text{K}_2\text{Cr}_2\text{O}_7$ for 200 hours. The welds of the experimental steels, including those of the LKH189T control steel, were tested as welded. Similar tests were made for resistance of corrosion cracking in a boiling 42% aqueous solution of magnesium chloride, with the tensile strength equal to 90% of the yield point. Of all tested steels, the EP411 and EP554 grades appear to have the highest resistance to intergranular, total, and stress corrosion.

2/2

- 81 -

USSR

UDC: 51:801

LANGLEBEN, M. M.

"Experiment in Constructing a Metalanguage to Describe a Quasilinguistic Semiotic System"

V sb. Issled. po mat. lingvist. mat. logike i inform. yazykam (Research on Mathematical Linguistics, Mathematical Logic and Information Languages-- collection of works), Moscow, "Nauka", 1972, pp 94-146 (from Izh-Kibernetika, No 6, Jun 72, Abstract No 6V617)

Translation: The paper is one of the stages of linguistic research on non-native combinations used in chemistry texts to designate special objects-- organic compounds.

The unique morphology of these expressions, which differs sharply from the remainder of the text, leads to the assumption that a special semiotic system exists within the chemical subsystems of various natural languages, which has its own hierarchical structure and is like the natural languages in construction. From the introduction.

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172 020

UNCLASSIFIED

PROCESSING DATE--20NOV70

TITLE--METHODS OF EXPERIMENTAL DETERMINATION OF DIFFERENTIAL MAGNETIC PERMEABILITY OF FERROMAGNETIC SUBSTANCES UPON COMPLEX MAGNETIZATION -U-
AUTHOR--LANGVAGEN, YE.N.

COUNTRY OF INFO--USSR

SOURCE--NCVCCHERKASSK, IZVESTIYA VYSSHIKH UCHEBNIKH ZAVEDENIY, ELEKTROMEKHANIKA, NO 3, 1970, PP 250-256
DATE PUBLISHED--70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MAGNETIC PERMEABILITY, FERROMAGNETIC MATERIAL, MAGNETIZATION

CENTRAL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1674

STEP NO--UR/0144/70/000/000/0000/0000

CIRC ACCESSION NO--ATO123500

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AFO123500

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY WAS MADE OF THE EFFECT ON A FERROMAGNETIC OF THE TWO MAGNETIC FIELDS WITH ESSENTIALLY DIFFERENT FREQUENCIES, ONE OF WHICH WAS ASSUMED TO BE SO WEAK THAT IT DID NOT AFFECT THE PROPERTIES OF THE FERROMAGNETIC. THE EXPRESSION FOR A MAGNETIC INDUCTION WAS OBTAINED FOR AN ARBITRARY MUTUAL ORIENTATION OF VECTORS OF THE FIELD INTENSITY. SCHEMES ARE SUGGESTED FOR MEASURING COMPONENTS OF THE TENSOR OF MAGNETIC PERMEABILITY ENTERING INTO THE EXPRESSION FOR MAGNETIC INDUCTION. RESULTS ARE PRESENTED OF MEASUREMENTS OF COMPONENTS OF THE TENSOR OF MAGNETIC PERMEABILITY FOR SOME FERROMAGNETIC MATERIALS.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--ACTION OF SOME ADRENERGIC DRUGS ON THE DEVELOPMENT OF EXPERIMENTAL
NEURODYSTROPHY IN THE STOMACH WALL OF RATS -U-
AUTHOR--LANICH, YE.P.
COUNTRY OF INFO--USSR
SOURCE--FARMAKOL. TOKSIKOL. (MOSCOV) 1970, 33(1), 69-71
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ADRENERGIC DRUG, RAT, NERVE DEGENERATION, DIGESTIVE SYSTEM,
STOMACH, NURADRENALIN, DUODENUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1986/1669 STEP NO--UR/0390/70/033/001/0069/0071
CIRC ACCESSION NO--AP0103435
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--16OCT70

2/2 024

CIRC ACCESSION NO--AP0103435

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT, NORADRENALINE OR ISADRINE
 ADMINISTERED I.P. TO RATS AT 1-2 OR 10-25 MG PER KG, RESP., INDUCED
 LESIONS IN THE GASTRIC MUCOSA. ADMINISTRATION OF NORADRENALINE,
 ISADRINE, EPHEDRINE, OR PHENAMINE AT 0.5, 2.5, 2, OR 6 MG PER KG, RESP.,
 AGGRAVATED THE NEUROGENIC GASTRIC DYSTROPHY INDUCED BY SUBSEQUENT STRONG
 STIMULI (ELEC. SHOCK OF IMMOBILIZED RATS AND TRAUMATIZATION OF THE
 DUODENUM). P, AMINOPHENYLACETIC ACID BETA, PHENYLISOPROPYLAMIDE,
 P, DIETHYLAMINOPHENYLACETIC ACID BETA, PHENYLISOPROPYLAMIDE, AND
 P, DIMETHYLAMINOPHENYLACETIC ACID BETA, PHENYLISOPROPYLAMIDE AT 25, 30,
 AND 25 MG PER KG, I.P., RESP., BLOCKED BOTH THE ALPHA AND BETA
 ADRENERGIC SYSTEMS AND PREVENTED DEVELOPMENT OF DYSTROPHY IN RESPONSE TO
 THE STRONG STIMULI.
 FACILITY: LAB. EKSP. FARMAKOL., INST. EKSP.
 MED., LENINGRAD, USSR.

UNCLASSIFIED

UDC: 533.9...16

USSR

LANILKIN, I. S., SHPIGEL', I. S.

"A New Double-Path Stellarator Design"

Tr. Fiz. in-ta AN SSSR (Works of the Physics Institute, Academy of Sciences of the USSR), 1973, 65, pp 50-64 (from RZh-Fizika, No 6, Jun 73, abstract No 6G344)

Translation: A number of requirements are formulated for toroidal systems. A new double-path stellarator design is proposed which is capable of satisfying these requirements. The new system differs from preceding designs in the high stability of the field configuration as to structural errors, and has improved properties which ensure confinement of plasma and individual particles. The design of the system gives ready access to the working volume and provides excellent vacuum conditions, as well as having light mechanical loading of the most complicated elements of hardware. Bibliography of 11 titles.

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USSR

UDC 669.712

YEFIMOVSKAYA, T. V., LANIN, A. A., SHERMAZANYAN, YA. T., SHAKHAPETYAN, V. V., SHEKOYAN, M. G., and SMOKOVDINA, G. S., All-Union Order of the Labor Red Banner Scientific Research, Planning, Design, and Technological Institute of Sources of Current (VNIIT)

"Utilization of a High-Temperature Solar Installation for the Study of High-Melting Materials in an Oxidizing Medium (on the Basis of the Example of beta-Alumina)"

Yerevan, Izvestiya Akademii Nauk Armyanskoy SSR, Seriya Tekhnicheskikh Nauk, Vol 26, No 4, 1973, pp 3-7

Abstract: Experimental research has been conducted by the Armenian Department of the VNIIT in Yerevan, on the thermal dissociation of sodium and potassium beta-alumina in a high-temperature solar heating installation for the purpose of obtaining a solid electrolyte. Results of this research have demonstrated considerable stability of the beta-alumina under conditions of radiant heating in air: beta-alumina does not dissociate completely with an exposure of up to 30 minutes at the melting point (2,000-2050°C. Sodium beta-alumina is considerably less subject to dissociation than is potassium beta-alumina. 1 figure. 1 table. 2 references.

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UDC 620.17

USSR

GLAGOLEV, V. V., and LANTIN, A. G.

"Estimating the Strength of Brittle Materials by the Diametral Compression Method"

V sb. Metody issled. tugoplavk, materialov (Methods of Studying Refractory Materials -- collection of works). Moscow, Atomizdat, 1970, pp 148-156 (From RZhOMekhanika, No 12, Dec 70, Abstract No 12V1453, by Ye. A. Myakotin)

Translation: Methods of estimating strains for the case of tensile testing of brittle materials by the fracture technique are discussed. Results are presented from an experimental study of the effect that local indentation in the specimen-compressing surfaces contact zone has on strength in fracturing, and also of the effect of thickness and stiffness of inserts on strength in fracturing. The strength values obtained by the fracture technique in fracturing. The strength values obtained by the fracture technique upon diametral compression are shown to be 10-15% lower than the tensile strength values and 2-2.3 times lower than bending strength. Increasing specimen dimensions gives greater stability for the strength values obtained. A variation in the ratio of specimen diameter and length of the generatrix within the limits 1:4 to 1:0.25 does not markedly affect the resulting mean strength values. Bibliography: 41 entries.

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1/2 024 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--ROENTGENOLOGICAL METHODS IN MILK DUCT CARCINOMA "U"
AUTHOR--LANIN, A.N.
COUNTRY OF INFO--USSR
SOURCE--KHIRURGIYA, 1970, NR 5, PP 43-46
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
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PROCESSING DATE--06DECTO

CIRC ACCESSION NO--AP0138934

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. WITH THE AID OF SIMPLE MAMMOGRAPHY THE AUTHOR EXAMINED 1300 PATIENTS OUT OF WHOM MILK DUCT CARCINOMA WAS ESTABLISHED IN 343 CASES. THE ACCURACY OF THE DIAGNOSIS COMPRISED 91PERCENT. FOR THE PUPOSE OF WIDENING THE DIAGNOSTIC POSSIBILITIES OF THIS TECHNIQUE, ALONG WITH ROUTINE ROENTGENOGRAPHY THE AUTHOR EMPLOYED PNEUMOROENTGENOGRAPHY, AS WELL AS ROUTINE ROENTGENOGRAPHY AND PNEUMOTOMOGRAPHY OF THE MAMMARY GLANDS. PNEUMOGRAPHY WAS USED IN 214 PATIENTS, OF THIS NUMBER IN 69 CANCEROUS PATIENTS. ROUTINE TOMOGRAPHY WAS EFFECTED IN 73 PATIENTS, IN 36 OF THEM WITH CANCER. PNEUMOTOMOMAMMOGRAPHY WAS CARRIED OUT IN 67 PATIENTS IN 36 OF THEM WITH CANCER. THE ACCURACY OF THE DIAGNOSIS AUGMENTED UP TO 99PERCENT. FACILITY: LIPETSKIY OBLASTNOY ONKOLOGICHESKIY DISPANSER.

UNCLASSIFIED

USSR

UDC 51

LANIN, M. R., and LEYEN, A. K.

"Use of Discrete Programming in the Taxonomy Problem"

Tr. Vychisl. tsentra. Tartus. un-t (Works of Computer Center of Tartu University), 1972, vyp 26, pp 35-42 (from *RZh-Matematika*, No 3, Mar 73, Abstract No 3V550 by YU. FINKEL'SHTEYN)

Translation: The authors consider the classification problem, also called numerical taxonomy and cluster analysis (*RZh-Matematika*, 1970, Abstract No 8V380). In a coordinate space there is a set of objects; it is required to divide them into classes which are homogeneous in some sense (in other terminology: taxis, clusters). In an attribute space there is a set of objects (points) $P = \{P_1, P_2, \dots, P_N\}$. Initial information is given in the form of a square symmetric ($N \times N$) matrix $\|d_{ik}\|$, elements of which define the distance between points in the attribute space. It is required to divide the set of points P into a fixed number s of classes K_1, K_2, \dots, K_s ($s \leq N$), among which there may also be empty classes.

The authors introduce Boolean variables $x_{ij} = \begin{cases} 0, & \text{if } P_i \notin K_j, \\ 1, & \text{if } P_i \in K_j, \end{cases} \quad i=1, \dots, N, \quad j=1, \dots, s. \quad (1)$

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LANIN, M. R., et al., Tr. Vychisl. tsentra. Tartus. un-t, 1972, vyp. 26, pp 35-42

Here the condition for division into classes has the form:

$$\sum_{j=1}^s x_{ij} = 1, \quad i = 1, 2, \dots, N. \quad (2)$$

The objective function has the following form:

$$-Z_1(X) + rZ_2(X) \rightarrow \max, \quad (3)$$

where r is a nonnegative parameter,

$$Z_1(X) = \sum_{j=1}^s \max_{k,l} d_{jk}, \quad Z_2(X) = \sum_{j=1}^s \sum_{k,l} \min_{\substack{k,l \\ x_{ij} > 0}} d_{jk}$$

the term $(-Z_1(X))$ in the objective function allows for the requirement that points of the same class be as close to each other as possible, and the term $Z_2(X)$ allows for the requirement that the classes themselves be as far from each other as possible.

Since problem (1)-(3) can be solved as an integral, linear programming problem with an auxiliary condition, the authors suggest applying to it the algorithm proposed in the monograph by A. A. KORSHAK and this abstractor (Izv. Matematika, 1969, Abstract No. 12V435K, chapter 6). A numerical example is considered. Bibliography with 10 titles.

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AA0047093

LANIN N.O.

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 1/70

243270 PNEUMATIC INTEGRATOR, for use in pneumatic simulator systems in automatic control gear, was described under No. 191237. The present proposal includes a temperature error compensating arrangement. The diagram shows 1, the pneumatic integrator to No. 191237 with input channel 2, and a device with variable volume 3, the temperature sensor itself 4 and the differential pair of bellows 5, 6. Cavity 6 is connected to the sensor and 5 to the amplifier input. The sensor, in response to the ambient temperature in which it is immersed, provides pressure moving the integral bottom of the bellows pair, so that cavity 5 changes volume at another rate and provides the input with a temperature correction scaled according to the bellows design.

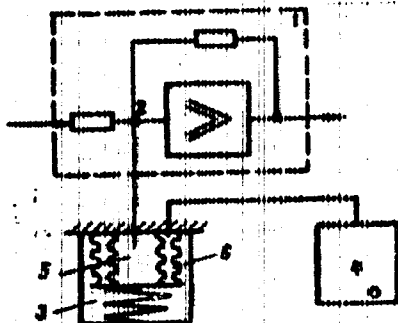
25.1.68 as 1212995/18-24 Add to 191237. A.A. GYRDINSKII & N.D. LANIN. COMPLEX AUTOMATION CENTRAL INST. (12.9.69.) Bul 16/5.5.69. Class 42m4. Int. Cl. G 06g.

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19790580

USSR

UDC 547.574.241

LANKINA, T. A., PAMFILOVA, Z. F., AMINOV, S. N., AND AKHMEYDOV, K. S.,
Institute of Chemistry, Academy of Sciences Uzbek SSSR

"Synthesis and Surface-Activity Characteristics of Glycol Esters of Alkyl-
phosphonic Acids"

Tashkent, Uzbekskiy Khimicheskii Zhurnal , Vol 17, No 3, 1973, pp 55-57

Abstract: By the interaction of dichlorides of alkylphosphonic acids with
glycol in the presence of triethylamine in ether solutions at a temperature
 $\leq 5^{\circ}$, esters $RP(O) \begin{matrix} \text{OCH}_2\text{CH}_2 \\ \text{OCH}_2\text{CH}_2 \end{matrix} O$ were synthesized, where $R = C_nH_{2n+1}$ and

$n = 6 - 14$. Cyclization of the diglycol esters which formed initially took
place during their distillation in vacuo. The esters with $n = 8 - 14$ showed
a high effectiveness as surface-active agents reducing the surface tension.

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