

1/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--CRITERIA OF THE DIRECTIONAL CHARACTER OF MINERALIZING SOLUTION
MOVEMENT -U-
AUTHOR--ZHILINSKIY, G.B.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK KAZ. SSR, SER. GEOL. 1970, 26(1), 22-32
DATE PUBLISHED-----70
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY
TOPIC TAGS--MINERAL, COPPER SULFATE, CRYSTAL GROWTH
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/0414 STEP NO--UR/0462/70/026/001/0022/0032
CIRC ACCESSION NO--AP0124165
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0124165

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BECAUSE CRYSTAL GROWTH IN MAX. IN THE DIRECTION TOWARD THE ONCOMING FLOW OF THE CRYSTAL FORMING SOLN., THE INFLUENCE OF THE DIRECTIONAL FLOW ON THE CRYSTAL FORMATION IN THE FIELD SHOULD BE RECOGNIZABLE. IN A LAB. STUDY THE RATE OF GROWTH OF $CuSO_4 \cdot 5H_2O$ CRYSTALS IN A FLOWING SATD. AQ. SOLN. OF $CuSO_4 \cdot 5H_2O$ WAS STUDIED UNDER A MICROSCOPE WITH A CAMERA. THE RATE OF GROWTH OF THE FACES VARIED FROM 1 TO 1000, BUT WAS ALWAYS MAX. TOWARD THE ONCOMING FLOW; IN NAT. SOLNS. THE BEHAVIOR WAS REVERSED. MINERALOGICAL OBSERVATIONS WERE MADE WEST OF LAKE BALKASH ON QUARTZ-CASSITERITE VEINS CONTG. VARIOUS OTHER MINERALS. IN MANY CASES, ASYM. FORMED CRYSTALS WERE FOUND, BUT NO CLEAR CONNECTION BETWEEN THE ANISOTROPY AND MINERAL FORMING WATERS COULD BE DETECTED. NEVERTHELESS, SOME WEAK INDICATIONS OF SUCH FLOW INFLUENCE WERE OBSERVED. FACILITY: INST. GEOL. NAUK. IM. SATPAEVA, ALMA-ATA, USSR.

UNCLASSIFIED

UDC 615.388.03:617-001.36-08

USSR

PAFOMOV, G. A., and ZHILIS, B. G.

"Blood of Suddenly Deceased Persons and Its Use in the Treatment of Patients Suffering From Traumatic Shock"

Moscow, Problemy Gematologii i Perelivaniya Krovi, No 11, 1971, pp 38-42

Abstract: An analysis is made of treatment of 448 patients suffering from traumatic shock who were given transfusions of cadaver blood. This treatment was no less effective than that with donor blood. Steady normalization of hemodynamics and progressive improvement in the rhythm and frequency of respiration were observed. Not a single patient exhibited signs of hemorrhagic diathesis of the tissues nor increased metabolic acidosis. Steady improvement was shown on EKG and EEG readings. The results confirm the value of cadaver blood for this type of treatment.

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Acc. Nr: **AP0044596**

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Ref. Code: **UR0497**

PRIMARY SOURCE: *Klinicheskaya Meditsina*, 1970, Vol. 48,
Nr **1**, PP **42-45**

THE DYNAMICS OF ELECTROCARDIOGRAPHIC CHANGES
IN PATIENTS OPERATED FOR SEVERE INJURY
OF THE SKULL AND BRAIN

B. G. Zhilis, L. L. Stazhadze, B. V. Chetverushkin

Summary

The authors studied problems relevant to the influence of severe injury of the skull and brain on electrocardiographic indices in 87 patients. During the first hours there were noted a disturbance in the correlation between the duration of P-Q and R-R intervals. The notch below the ascending and descending curve of R wave, displacement of the S-T segment below the isoline in a smoothened T wave. Cardiac and narcotic preparations exerted no essential effect on the electrocardiogram. The greatest electrocardiographic changes appeared during manipulations on the dura mater and brain matter. In the postoperative period the lability of the heart to pharmacological agents was marked significantly. And there was a dependence between electrocardiographic changes and the localization of the pathological focus.

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REEL/FRAME
19771272

44 02

USSR

UDC 621.039.512.45

BASS, L. P., BRODER, D. L., ZHILKIN, A. S., KUTUZOV, A. A., SMETANIN, A. A., SUVOROV, A. P., SHESTOPALOV, Ye. V., SHIPILOV, A. Ye.

"Reactor Neutron Spectra in a Cylindrical Neutron Duct Surrounded by Water"

V sb. Vopr. fiz. zashchity reaktorov (Problems in Reactor Safety Physics -- Collection of Works), No. 5, Moscow, Atomizdat, 1972, pp 123-129 (from RZh-50. Yadernyye reaktory, No 5, May 72, Abstract No 5.50.61)

Translation: The energy and spatial distributions of neutrons with energies above 200 kev in an iron cylindrical neutron duct at distances up to 66 cm from its origin are discussed. The experimental data are compared with computational results made by two-dimensional programs using the P_1 -approximation of the spherical harmonics method and the $2D_{10,5}$ -approximation of the characteristic method. The presence of experimental data on the neutron energy spectra makes possible a corrective check on the methods for calculating the parameters of shields of limited transverse dimensions. 7 ill., 8 ref.

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USSR

UDC 621.039.512.4

BRODER, D. L., ZHILKIN, A. S., KUTUZOV, A. A., POPKOV, K. K.,
SHESTOPALOV, Ye. V.

"Reactor Neutron Spectra in Water and Iron"

V sb. Vopr. fiz. zashchity reaktorov (Problems in Reactor Safety Physics --
Collection of Works), No. 5, Moscow, Atomizdat, 1972, pp 79-90 (from
RZh-50. Yadernyye reaktory, No 5, May 72, Abstract No 5.50.59)

Translation: The change in the spectrum of the scalar flux of neutrons with
energies above 0.1 Mev in water and iron shields is of interest from the
viewpoint of establishing quantitative characteristics of the attenuation of the
flux by the shielding substance and determining the accuracy of certain
methods for calculating the passage of neutrons, particularly the semi-
empirical method based on calculations of fluxes of intermediate neutrons
in lower approximations of the spherical harmonics method and the assignment
of a group of fast neutrons in accordance with experimental data. 12 ill.,
11 ref.

1/1

Acc. Nr: AP0038021

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 1, pp 3-13

ANOMALOUS BROADENING OF SPECTRAL LINES
IN NONLINEAR LIQUIDS AND ITS EFFECT ON STIMULATED
SCATTERING PROCESSES

Bol'shov, M. A; Venkin, G. V.; Zhilkin, S. A.; Nurminskiy, I. I.

Results of an experimental investigation of the spectral structure of laser radiation passing through a self-focussing liquid are reported. For complete isolation of the generator from the scattering medium the second harmonic of a neodymium laser is employed as radiation source. The generator can operate under incoherent mode or mode-locked conditions. The spectral structure of the radiation was investigated in the direction of the incident light as well as at an angle of 180°. Broadening of a quasicontinuous nature and broadening involving a set of discrete lines, the distance between which was, as a rule, not related to the incident radiation spectrum, are recorded. An analysis of the experimental results shows that the spectral line broadening may be ascribed to interaction between space and time modulation of the beam during its self-focussing.

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REEL/FRA
19731061

21

AP0038021

Some data pertaining to stimulated combinational scattering under conditions of anomalous broadening of a laser pulse spectrum are reported. In particular the strong sensitivity of the scattering indicatrix to modulation of the initial radiation is noted.

9/2

19731062

USSR

UDC 621.778-426.04:669.1

SEVERDENKO, V. P. and ZHILKIN, V. Z., Krasnoyarsk Institute of Non-Ferrous Metals imeni M. I. Kalinina and the Physico-Technical Institute of the Academy of Sciences Byelorussian SSR

"Drawing of Wire by the Use of Ultrasound"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Tekhnicheskikh Nauk, No 4, 1973, pp 12-16

Abstract: This article cites the results of drawing wire from several metals and alloys by applying ultrasonic oscillations on the wire. The authors have established the dependence of the force of drawing on the intensity of the ultrasonic oscillations under various conditions of the drawing process. The influence of ultrasound on the properties of the wire is explained.

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USSR

SEVERDENKO, V. P., and ZHILKIN, V. Z., Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Tekhnicheskikh Nauk, No 4, 1973, pp 12-16

The authors have given one table which compares various metals and alloys with respect to the dependence of drawing force on intensity of ultrasound; a second table compares the mechanical properties of wire from several metals by drawing with ultrasound and without.

Figure 1 shows standard indicator diagrams obtained by ordinary drawing and by drawing with ultrasound. Figure 2 shows the influence of voltage on certain aspects of the described process.

The article contains 2 illustrations, 2 tables, and 5 bibliographic references.

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USSR

UDC: 621.762.2:669.71

ZHILKIN, V. Z., KUZNETSOV, A. N., GORBUNOV, Yu. A., SHEPEL'SKIY, N. V.

"Influence of Temperature of Aluminum Melt and Rotation Rate of Cooling Fluid on Formation of Granule Shape During Centrifuging"

Liteyn. Proiz-vo, Metalloved. i Obrabotka Met. Davleniyem (Foundry Production Metal Science and Pressure Working of Metals -- Collection of Works), No 6, Krasnoyarsk, 1972, pp 92-94 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 86392, by the authors).

Translation: The influence of the temperature of a melt and rate of rotation of the cooling medium on the shape of Al granules produced by the centrifugal method is studied. The optimal intervals of values of these factors for the production of particles of equiaxial form are determined. 1 figure, 3 bibliographic references.

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USSR
Aluminum and Its Alloys

USSR

UDC: 621.762.2:669.71

ZHILKIN, V. Z., GORBUNOV, Yu. A., SHEPEL'SKIY, N. V.

"Methods of Granulation of Aluminum Melts"

Liteyn. Proiz-vo, Metalloved. i Obrabotka Met. Davleniyem [Foundry Production Metal Science and Pressure Working of Metals -- Collection of Works], No 6, Krasnoyarsk, 1972, pp 95-100 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 86391, by the authors).

Translation: Methods are studied for production of Al granules, based on centrifugation and vibration of a melt. The characteristics are presented for installations using these principles. Modes of production of granules satisfying the technological conditions of rolling are determined. Due to the low productivity of vibration installations, centrifugal casting of granules is recommended for production conditions. 3 figures.

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1/2 028 UNCLASSIFIED PROCESSING DATE—30OCT70
TITLE--VARIANTS OF VIBRATION DISEASE IN DRIFTERS OF THE DONBASS COAL MINES

-U-
AUTHOR--(05)-BASAMYGINA, L.YA., BONDARENKO, G.A., ZHILKO, S.M.,
LYUBCHUDROV, V.YE., SUKHARSKAYA, L.M.
COUNTRY OF INFO--USSR

SCURCE--VRACHEBNOYE DELO, 1970, NR 5, PP 137-140

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BIOLOGIC VIBRATION EFFECT, NERVOUS SYSTEM DISEASE, INDUSTRIAL
HYGIENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FAME--3002/1747

STEP NO--UR/0475/70/000/005/0137/0140

CIRC ACCESSION NO--AP0129115

UNCLASSIFIED

2/2 028

CIRC ACCESSION NO--AP0129115

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ANALYSIS OF VIBRATION DISEASE IN DRIFTERS OF COAL MINES INDICATES THAT THE CLINICAL PICTURE OF THE DISEASE IN DRIFTERS OF HORIZONTAL SHAFTS IS DOMINATED BY PHENOMENA OF VEGETATIVE POLYNEURITIS, MAINLY IN THE UPPER EXTREMITIES; IN COAL MINE BUILDING WORKERS VEGETATIVE POLYNEURITIS IS MARKED BOTH IN THE UPPER AND LOWER EXTREMITIES AND IS DETECTED AT THE BACKGROUND OF DISORDERS OF THE NERVOUS ACTIVITY AND ORGANIC LESIONS OF THE NERVOUS SYSTEM. FACILITY: DCHNETSKIY MEDITSINSKIY INSTITUT.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--RADIOLOGICAL CHARACTERISTICS AND THE COURSE OF EARLY STAGES OF
ANTHRACOSIS -U-
AUTHOR--(05)--LYUBOPUDKOV, V.YE., ZHILKO, S.M., KIRYUKHINA, N.V., SIROTA,
G.H., SKUCHELYAS, A.R.
COUNTRY OF INFO--USSR
SOURCE--FRUNZE, SOVETSKOYE ZDRAVDOKHRANENIYE KIRGIZII, NO 1, 1970, PP
42-44.
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--RESPIRATORY SYSTEM DISEASE, X RAY APPLICATION, INDUSTRIAL
HYGIENE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1212 STEP NO--UR/9093/70/000/001/0042/0044
CIRC ACCESSION NO--AP0123176
UNCLASSIFIED

2/2 021
CIRC ACCESSION NO--AP0123176

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHARACTERISTICS OF THE INITIAL STAGES OF ANTHRACOSIS, AS DETERMINED BY X RAY, WERE STUDIED, AND THE COURSE OF THE DISEASE WAS TRACED. COAL MINERS WERE STUDIED ON THE BASIS OF X RAYS REPEATED EVERY TWO TO THREE YEARS. IT WAS ESTABLISHED THAT LINEAR AND NODULAR LOCAL FIBROSES ARE THE INITIAL STAGES OF ANTHRACOSIS. SCLEROTIC FIBROSIS WAS FREQUENTLY COMBINED WITH BRONCHITIS OR EMPHYSEMA, WHICH SEVERLY COMPLICATE THE COURSE OF THE DISEASE.
FACILITY: MEDICAL INSTITUTE IMENI A. M. GOR^KIY, FACILITY:
OBLAST CLINICAL HOSPITAL OF OCCUPATIONAL DISEASES, DONETSK.

UNCLASSIFIED

USSR

UDC: 616.24-003.656.6

2
LYUBOMUDROV, V. Ye., ZHILKO, S. M., KIRYUKHINA, N. V., SIROTA, G. M., SKOCHELYAS, A. R., TAUSHAN, M. T., and YARTSEVA, P. A., Medical Institute imeni A. M. Gor'kiy, and Oblast Clinical Hospital of Occupational Diseases, Donetsk

"Radiological Characteristics and the Course of Early Stages of Anthracosis"

Frunze, Sovetskoye Zdravookhraneniye Kirgizii, No 1, 1970, pp 42-44

Abstract: Characteristics of the initial stages of anthracosis, as determined by x-ray, were studied, and the course of the disease was traced. Coal miners were studied on the basis of x-rays repeated every two to three years. It was established that linear and nodular local fibroses are the initial stages of anthracosis. Sclerotic fibrosis was frequently combined with bronchitis or emphysema, which severely complicate the course of the disease.

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USSR

UDC 621.317.382.023

SEREDNIY, V. P., ZHILKOV, V. S., KUKUSH, V. D.

"Model Ponderomotive Device for Reproduction of a Unit of Superhigh Frequency Power in the 8 Millimeter Wave Band"

Radiotekhnika. Resp. Mezhd. temat. nauch.-tekhn. sb. (Radio Engineering. Republic Interdepartmental Thematic Scientific and Technical Collection), No 19, 1971, pp 136-140 (from RZh-Radiotekhnika, No 1, 1972, Abstract No 1A412)

Translation: A model ponderomotive device for measuring power in the 8-mm radio wave band is described, the basic technical characteristics of which are the following: measurable power limit 0.1-1 watt, operating frequency 39.45 gigahertz, measurement error with well-matched load $\pm 1.2\%$. A study was made of the characteristic features of absolute calibration of ponderomotive wattmeters for the millimeter band, and the possibility of increasing the sensitivity of the instruments without worsening their input characteristics was demonstrated. It was concluded that the creation of a model device comparable with respect to accuracy to the calorimetric high-discharge wattmeters is possible. There are 2 illustrations and a 5-entry bibliography.

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USSR

UDC: 621.372.852.6

3

PIROTTI, Ye. L., BAKLANOV, G. D., BAL'ZAMOV, B. N., KRAVCHENKO, V. F.,
ZHILKOV, V. S., KHIZHNIK, N. A., USTIMENKO, V. V.

"A Method of Calculating Impedance Transformers Based on Rectangular Waveguides"

Pribory i sistemy avtomatiki. Resp. mezhved. nauch.-tekhn. sb. (Devices and Systems for Automation. Republic Interdepartmental Scientific and Technical Collection), 1970, vyp. 14, pp 11-15 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5B151)

Translation: The authors proposed a fundamentally new method of calculating an impedance transformer on the basis of a strict solution of the internal problem of electrodynamics using integrodifferential equations. An analysis of the results of computational and experimental research shows that the procedure for calculating and designing the proposed model may find extensive practical application in a number of microwave devices as well as in the development of an automatic waveguide line. Five illustrations, bibliography of five titles. Resumé.

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USSR

UDC: 621.372.65

KRAVCHENKO, V. F., ZHILKOV, V. S., SALYGA, V. I., USTIMENKO, V. V., BAL'-ZAMOV, B. N., BAKLANOV, O. D.

"On the Possibility of Constructing Automatic Matching Circuits in the Microwave Band"

Pribory i sistemy avtomatiki. Resp. mezhved. nauch.-tekhn. sb. (Devices and Systems for Automation. Republic Interdepartmental Scientific and Technical Collection), 1971, vyp. 15, pp 75-77 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6B188)

Translation: The authors consider circuit designs for automatic matchers for waveguide channels. Possible versions for practical realization of these circuits are considered, and it is also pointed out that impedance transformers based on using bodies of the proper shape can be used in automatic matchers. It is concluded that adaptive automatic matchers can be made for operation over a wide frequency band. Resumé.

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USSR

UDC: 621.372.852.6

BAKLANOV, O. D., BAL'ZAMOV, B. N., USTIMENKO, V. V., IVANOV, N. S., KRAV-
CHENKO, V. F., ZHILKOV, V. S., KHIZHNIK, N. A., PIROTTI, Ye. L.

"An Impedance Transformer Based on a Cylindrical Waveguide"

Pribory i sistemy avtomatiki. Resp. mezhved. nauch.-tekhn. sb. (Devices and
Systems for Automation. Republic Interdepartmental Scientific and Technical
Collection), 1970, vyp. 14, pp 11-15 (from RZh-Radiotekhnika, No 5, May 71,
Abstract No 5B152)

Translation: The paper describes the design of an impedance transformer based
on a cylindrical waveguide. An analysis of the results of experimental
studies shows that practical realization of the device is feasible in micro-
wave technology. The proposed design may find application in synthesis of
automatic lines based on cylindrical waveguides. Resumé.

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USSR

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JDC 621.317.78

ZHILKOV, V. S., KUKUSH, V. D., PRONENKOV, V. I., SAMOYLOVICH, A. I.

"Stationary Measuring Ponderomotive Device for Calibrating and Checking Superhigh Frequency Wattmeters"

Radiotekhnika. Resp. mezhved. nauchno-tekhn. sb. (Radio Engineering. Republic Interdepartmental Scientific and Technical Collection), No 11, 1969, Vyp. 11, pp 89-94 (from RZh-Radiotekhnika, No 1, Jan 70, Abstract No 1A284, Resume)

Translation: A stationary ponderomotive device is described for measuring superhigh frequency power the basic technical characteristics of which are the following: the power measurement limits 0.1-1 watt, frequency range 10 (1 + 0.05) gigahertz, measurement error with well-matched load + 0.7 percent. The results of mechanical and electrical calibrations of the ponderomotive wattmeter are presented, and procedures are proposed for improving their accuracy. The conclusion of the possibility of using ponderomotive devices in test practice is drawn. Two illustrations and a bibliography of five entries are included.

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1/2 023 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--PHYSICAL PROPERTIES OF CALCIUM OXIDE TITANIUM DIOXIDE SILICON
DIOXIDE, ALUMINUM OXIDE, MAGNESIUM OXIDE SLAGS CONTAINING 15PERCENT
AUTHOR--(04)-ZHILO, N.L., GRUZDEV, YU.A., GOROKH, A.V., PERSHINA, R.F.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (11), 65-9
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--CALCIUM OXIDE, ALUMINUM OXIDE, MAGNESIUM OXIDE, SILICON
DIOXIDE, TITANIUM DIOXIDE, SLAG, FLUID VISCOSITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1812 STEP NO--UR/0370/70/000/001/0065/0069
CIRC ACCESSION NO--AP0118776
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118776

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COMPN. VISCOSITY AND COMPN. FUSIBILITY DIAGRAMS FOR EXPTL. DATA AT 1400 AND 1500DEGREES WERE CONSTRUCTED FOR THIS SYSTEM. AN INCREASE IN THE CAO:SIO SUB2 RATIO IN THE TI SLAGS DECREASES THE VISCOSITY; THIS EFFECT IS GREATER AT LOW TIO SUB2 CONC. INCREASING THE TIO SUB2 CONC. IN THE SLAGS TO A CERTAIN LIMIT, DEPENDING ON THE CAO:SIO SUB2 RATIO, REDUCES THE VISCOSITY OF THE MELTS. ABOVE THIS LIMIT THE SLAG VISCOSITY RISES DUE TO CRYSTN. PROCESSES. THE GREATEST REDN. IN VISCOSITY WITH INCREASE IN TIO SUB2 CONC. OCCURS IN THE SLAGS WITH DECREASED CAO:SIO SUB2 RATIOS.

UNCLASSIFIED

USSR

UDC 612.843.324-053.2

ZHILOV, Yu. D., and BORISOVA, L. A., Institute of the Hygiene of Children and Adolescents, Ministry of Health USSR, Moscow

"The Effects of Artificial Light of Various Spectral Compositions on the Visual Functions of Children and Adolescents"

Moscow, Gigiyena i Sanitariya, No 3, Mar 73, pp 41-44

Abstract: A study was conducted to determine the optimum conditions of artificial lighting for visual perception by children and adolescents. It was established that at a high level of brightness (400 nt) the spectral composition of the light had no effect on the visual functions. At a low level of brightness (100 nt), the optimum results in tests measuring visual perception were obtained by using light sources with a color temperature of 3500°K, while the results obtained with light emitters having a color temperature of 6500°K were inferior to those in tests in which sources with a color temperature of 3500 or 2800°K were used.

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UDC 911.3.616.921.5(470.23)

USSR

YENIKOLOPOVA, L. S., and ZHILOVA, G. P.

"The Role of Swine in the Circulation of Influenza A₂ Virus in the 1969 Epidemic"

V sb. Virusn. bolezni s.-kh. zhivotnykh. Ch. 2 (Virus Diseases of Farm Animals — collection of works. Part 2), Moscow, 1970, pp 205-207 (from RZh-Meditsinskaya Geografiya, No 4, Apr 71, Abstract No 4.36.79)

Translation: Data was obtained confirming the participation of swine in the circulation of human influenza virus.

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UDC 547.254.9+547.256.83

USSR

ZHIL'TSOV, S. F., and KASHIN, V. M., Gor'kiy State Pedagogical Institute
Imeni M. Gor'kiy

"Reaction of Monoalkoxyderivatives of Organomercury and Organothallium
Compounds With Diethylamine"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, p 2103

Abstract: Earlier research indicates that $RHgOR'$ - and R_2TIOR' -type alkoxyderivatives are readily hydrolyzed to form corresponding $RHgOH$ and R_2TIOH hydroxides. It was therefore expected that these compounds will enter exchange reactions with compounds containing active hydrogen. Specifically, when reactions with diethylamine are involved, it was assumed that they would yield aminoderivatives. The experimental results indicate that propyl radicals disproportionate and that they dehydrogenate the solvent to form propane. The hydrolysis of the nonvolatile residue -- a mixture of organomercury compounds yielded tert.butyl alcohol (23%) and diethylamine (10%). Propylmercury hydroxide which formed as a result of the hydrolysis of the alkoxy- and aminoderivatives was identified (by titration with HCl) as propylmercury chloride. The amount of mercury

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USSR

ZHIL'TSOV, S. F., and KASHIN, V. M., Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, p 2103

precipitated by this reaction amounted to 40%. The reaction of alkylmercury t-butoxide with diethylamine yielded an unstable diethylaminoalkylmercury compound which decomposed with precipitation of mercury.

2/2

- 25 -

Organometallic Compounds

USSR

UDC 547.256.81+547.256.83

SHCHERBAKOV, V. I., ZHIL'ESSOV, S. F., and DRUZHKOV, O. N.

"Thermal Decomposition of Organometallics of Thallium and Indium with Metal-Oxygen and Metal-Nitrogen Bonds"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 7, Jul 70, pp 1542-1545

Abstract: The article describes results of a study of the thermal decomposition (150-230°) of alkoxy compounds of thallium and indium exemplified by $(C_2H_5)_2MOC(CH_3)_3$ and amino substituted derivatives of the type $(C_2H_5)_2$

$MN(C_2H_5)_2$. It was found that these alkoxy and amino derivatives of indium disproportionate to triethylindium and ethylindium di-tert-butylate and bis(diethylamino)ethylindium respectively. The stability of diethylindium tert-butylate was significantly higher than that of the corresponding thallium compound. Diethylthallium tert-butylate decomposed with cleavage of the Tl-C bonds and retention of the Tl-O bond. Thallous tert-butylate was formed quantitatively in the process. Diethylaminoethylthallium decomposed with cleavage of both the Tl-C and Tl-N bonds.

1/1

1/2 037 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--ENERGIZING AND LIFE OF CATHODELESS CIRCULAR FLASH LAMPS -U-

AUTHOR--(02)-ZHILTSOV, V.P., DOKTOROV, YU.A.

COUNTRY OF INFO--USSR

SOURCE--SVETOTEKHNIKA (USSR), NO. 2, P. 14-15, 1970

DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, ELECTRONICS AND
ELECTRICAL ENGR.

TOPIC TAGS--FLASH LAMP, TRIGGER CIRCUIT, SIGNAL TRANSMISSION, SPARK GAP,
THYRATRON, IGNITRON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3007/1736

STEP NO--UR/0311/70/000/002/0014/0015

CIRC ACCESSION NO--AP0136977

UNCLASSIFIED

2/2 037

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136977

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE USE OF CIRCULAR IMPULSE LAMPS IN AUTOMATIC SIGNALLING AND COMMUNICATION REQUIRES RELIABLE TRIGGERING SYSTEMS WHOSE SERVICE LIFE WOULD MATCH THAT OF THE LAMP ITSELF. THE PAPER CONSIDERS POSSIBILITY OF APPLICATION OF THREE TYPES OF TRIGGERING: SPARK GAP, IGNITRON AND THYRATRON; IT PROVIDES ANALYSIS OPERATION OF THE DEVICES AND DISCUSSES THEIR FREQUENCY AND POWER LIMITATION.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--ACTION OF NATURAL LIGHT ON PLASTIC SCINTILLATORS --U-

AUTHOR--(05)--GCLUTVINA, I.G., ZHILTSOVA, L.YA., MATVEYEVA, YE.N., MEDVEDEV,
M.N., RUBINA, O.G.
COUNTRY OF INFO--USSR

SOURCE--PRIB. TEKH. EKSP. 1970, 1, 88-9

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--POLYSTYRENE RESIN, SCINTILLATOR, LUMINESCENCE, LIGHT AGING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/1150

STEP NO--UR/0120/70/001/000/0088/0089

CIRC ACCESSION NO--AP0128572

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--ZON0Y70

CIRC ACCESSION NO--AP0128572

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF A 10 YR LONG EXPOSURE TO LIGHT OF POLYSTYRENE; LEASED 2PERCENT P, TERPHENYL, FILLED SCINTILLATORS WAS INVESTIGATED THE QUANTUM YIELD OF LUMINESCENCE WAS REDUCED BY 50PERCENT IN THE SURFACE LAYERS OF THE SPECIMENS. NO EFFECT ON THE LUMINESCENCE LIFETIMES WAS FOUND. FACILITY: OB'EDIN. INST. YAD. ISSLED., DUBNA, USSR.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--MECHANICAL QUENCHING OF THE LIGHT YIELD OF LIQUID SCINTILLATORS -U-
AUTHOR--(04)-ZEMSKOVA, I.I., ZHILTSOVA, L.YA., MATVEYEVA, YE.N., TYMINSKIY,
V.G.
COUNTRY OF INFO--USSR
SOURCE--PRIB. TEKH. EKSP. 1970, 1, 83-4
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--FLUID SCINTILLATION, LUMINESCENCE QUENCHING, QUANTUM YIELD,
IRON POWDER, TOLUENE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/C538 STEP NO--UR/0120/70/001/000/0083/0084
CIRC ACCESSION NO--AP0117768

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0117768

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DATA ARE GIVEN FOR DETN. OF QUENCHING FLASHES OF A LIQ. SCINTILLATOR BASED ON TOLUENE BY POWD. FE AND CU. IF N IS THE NO. OF READINGS IN A GIVEN TIME AND C IS THE CONC. OF THE QUENCHING MATERIAL, IT IS POSSIBLE TO DERIVE AN EQUATION C EQUALS C SUBONE HALF IN (N SUBO-N)-0.693, WHERE C SUBONE HALF IS THAT CONC. OF THE QUENCHING MATERIAL AT WHICH THE LUMINESCENCE YIELD DIMINISHES TO HALF OF THE INITIAL VALUE, AND N SUBO IS THE NO. OF READINGS WITHOUT THE QUENCHING MATERIAL. COMPARISON OF THE LIGHT YIELD OF A STD. LIQ. SCINTILLATOR WITH THAT OF A CONTAMINATED ONE PERMITS TO DET. THE AMT. OF QUENCHING MATERIAL PRESENT WITH AN ACCURACY OF SIMILAR TO 10 PRIME NEGATIVES G. FACILITY: OB'EDIN. INST. YAD. ISSLED., DUBNA, USSR.

UNCLASSIFIED

USSR

UDC 577.1:547.963.3

ZHIL'TSOVA, V. M., ZHIZHINA, G. P., KRUGLYAKOVA, K. Ye., and GINDIN, L. G.,
Institute of Chemical Physics, USSR Academy of Sciences, Moscow

"Structural Changes in Single-Strand DNA After Exposure to Ultraviolet Rays"

Moscow, Izvestiya Akademii Nauk SSR, Seriya Biologicheskaya, No 3, 1973,
pp 432-435

Abstract: Ultraviolet irradiation of aqueous solutions of single-strand DNA (isolated from rat spleen) caused an exponential decrease in viscosity and optical density at 260 nm. Dimerization of the thymine bases and rupture of the polynucleotide chains resulted in partial twisting of the DNA strands.

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1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--NEUTRON DIFFRACTION STUDY OF MAGNETIZATION IN LITHIUM FERRITE
ALUMINATES -U-
AUTHOR--(02)-NAYDEN, YE.P., ZHILYAKOV, S.M.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(4), 983-7
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, CHEMISTRY, MATERIALS
TOPIC TAGS--NEUTRON DIFFRACTION, MAGNETIZATION, FERRITE, ALUMINATE,
LITHIUM COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0938 STEP NO--UR/0181/70/012/004/0983/0987
CIRC ACCESSION NO--AP0121540
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121540

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY THE METHOD OF NEUTRON DIFFRACTION, TEMP. DEPENDENCES WERE INVESTIGATED OF SUBLATTIC MAGNETIZATIONS IN THE SYSTEM LI SUBO TIMES 5 FE SUB2 TIMES 5-X AL SUBX O SUB4 FOR COMPS. WITH X EQUALS 0, 0.2, 0.6, AND 1.0. MEASUREMENTS WERE CARRIED OUT AT 80-650DEGREE SK. FOR LOW SUBSTITUTION OF FE PRIME3 POSITIVE BY AL PRIME3 POSITIVE, CONSIDERATION OF BIQUADRATIC EXCHANGE IMPROVES THE AGREEMENT BETWEEN THEORY AND EXPT. FOR LARGE SUBSTITUTIONS (X EQUALS 0.6 AND 1.0), CONSIDERATION OF BIQUADRATIC EXCHANGE IS NOT NECESSARY. THE MAGNETIC MOMENTS OF TETRAHEDRAL AND OCTAHEDRAL SUBLATTICES WERE MEASURED AT 800DEGREE SK. A STRONGER DECREASE OF THE MAGNETIC MOMENTS ON ADDN. OF DIAMAGNETIC IONS WAS OBSD. THAN EXPECTED FROM THE NEEL THEORY. THE INDICATED VARIATION OF THE MAGNETIC MOMENTS CANNOT BE EXPLAINED IN TERMS OF THE THEORY OF GILLET. FACILITY: TOMSK. GOS. UNIV., TOMSK, USSR.

UNCLASSIFIED

USSR

ALFEROV, Zh. I., AMOSOV, V. I., GARBUZOV, D. Z., ZHILYAYEV, Yu. V.,
KONNIKOV, S. G., KOP'YEV, P. S., and TROFIM, V. G.

UDC: 621.382.3

3

"Investigating the Dependence of the Luminescent Characteristics
of n and p Type GaP_xAs_{1-x} and $Al_xGa_{1-x}As$ Solid Solutions"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 1879-
1887

Abstract: The present article is the latest of a series published by the first-named author in collaboration with these or other researchers regarding the nature of photoluminescence spectra in solid solutions of GaP_xAs_{1-x} and $Al_xGa_{1-x}As$. In the present paper, results are given of experimental investigations into the position of the fringe band maximum radiation and the relative radiation intensity in the band as they depend on the composition of the solid solutions of both n and p types. The experimental specimens were in the form of epitaxial layers obtained by the liquid and gas transport method, their compositions being determined by the microcentgen spectral method with the JXA-5A analyzer. The luminescence was excited by a DRSh-250 lamp with a filter system removing the yellow and green mercury lines, and the radiation spectra were recorded by the MDR-2 monochromator with a grating of
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UDC: 621.382.3

3

ALFEROV, Zh. I., Fizika i tekhnika poluprovodnikov, No 10, 1972,
pp 1879-1887

600 lines/mm. The radiation receivers were germanium photodiodes
or the FEU-22. The authors express their gratitude to N. V.
Klepikova and V. P. Kuz'min for their assistance with the experi-
ments, and V. M. Tuchkevich for his interest in the work.

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USSR

UDC 678.84:678.643'42'5.028

KRUSTALEVA, YE. N., GOLUBKOV, G. YE., ZHINKIN, D. YA., SEMENOVA,
YE. A., MARKOVA, N. V., and LUSHNIKOVA, M. N.

"A New Hardner Which Improves the Thermal Stability of Epoxy Resins"

Moscow, Plasticheskiye Massy, No 1, Jan 70, pp 12-14

Abstract: An investigation was made into the possibility of improving the physicomechanical and dielectric properties of epoxy resins in the high-temperature region by using hexamethylcyclotrisilazane $\text{[(CH}_3\text{)}_2\text{SiNH]}_3$ and polyorganosilazanes containing di- and trifunctional units of the general formula $\text{[R}_2\text{SiNH]}_n\text{[R}'\text{Si(NH)}_{1.5}\text{]}_n$ (R = CH₃, R' = CH₃, C₂H₅, n = 1, 3) as hardeners. Polymers based on ED-6 epoxy resin and MSN-7 resin (polymethylsilazane) were studied. The compositions were hardened at 120°C for 3 hours, and then additionally heat treated at 150-200°C for 24 hours. The resultant polymers have better thermal stability in the high temperature region than those in which endic anhydride is used as the hardner. The weight of the epoxy resin hardened by MSN-7 stabilizes after ten days at 250°C whereas the epoxy resin produced by using endic anhydride as a hardner is destroyed under the same conditions with a sharp increase in weight losses. Not only is the thermal stability of the new product improved, 1/2

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KHRUSTALEVA, YE. N., et al., *Plasticheskiye Massy*, No 1, Jan 70, pp 12-14

but its mechanical strength and dielectric properties as well. Of particular importance is additional heat treatment at 200°C, which increases the maximum tensile strength of the resin at 155°C from 38 kg/cm² (after heat treatment at 150°C) to 152 kg/cm², and reduces the relative longitudinal extension at fracture (155°C) from 4.5% (after heat treatment at 150°C) to 4.0%. The electrical strength of the new resin at 155°C is 9.8×10^{13} kW/mm as compared with 1.3×10^{13} kW/mm for resin hardened by endic anhydride. The corresponding figures for the dielectric dissipation factor at 50 Hz (155°C) are 0.002 and 0.085 respectively. The new resin also has a lower coefficient of linear expansion in both the vitreous and highly elastic states.

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Acc. Nr.

AP0045175

Abstracting Service:
CHEMICAL ABST

5-70

Ref. Code

UR0191

91097n New hardener which increases the thermal stability of epoxy resins. Khrustaleva, E. N.; Golubkov, G. E.; Zhinkin, D. Ya.; Semenova, E. A.; Markova, N. V.; Lushnikova, M. N. (USSR). *Plast. Massy* 1970, (1), 12-14 (Russ). The thermal stabilities of epoxy resins ED-5 and ED-6 hardened with hexamethylcyclotrisilazane, poly(methylsilazane) (resin MSN-7) (I), and poly(methylphenylsilazane) were detd. Thus, ED-6 was hardened with I (0.8 active H present in I per epoxy equiv. ED-6) at 120° for 3 hr followed by addnl. heating at 150-200° for 2 hr. ED-6 hardened with I had higher tensile strength, impact elasticity, and thermal stability than ED-6 hardened with Endic Anhydride.

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REEL/FRAME

19780075

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1/2 012 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--REACTION OF METHYLCYCLOSILAZANES WITH CARBOXYLIC ACIDS -U-
AUTHOR--(03)-ZHINKIN, D.YA., MORGUNOVA, M.M., SCHOLEVSKIY, M.V.
COUNTRY OF INFO--USSR Z
SOURCE--ZH. OBSCH. KHIM. 1970, 40(4), 809-12
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CYCLIC GRUP, ORGANOSILICON COMPOUND, AMINE DERIVATIVE,
AMMONIA, METHACRYLIC ACID, ETHER, EXOTHERMIC REACTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/1373 STEP NO--UR/0079/70/040/004/0809/0812
CIRC. ACCESSION NO--AP0128773
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128773

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TREATING CYCLO-(R SUB2 SINO) SUBX WITH ORG. ACIDS IN CALCD. AMT. RESULTS IN AN EXOTHERMIC REACTION WITH EVOLUTION OF NH SUB3, COMPLETED IN 3 HR AT 60-70DEGREES, TO YIELD THE DIACYLOXYSILAZANES LISTED BELOW. THUS, HEXAMETHYLCYCLOTRISILAZANE AND ACOH IN INDICATED AMOUNTS GAVE: (1:1), DIACETOXYHEXAMETHYLTRISILAZANE (I), B SUB15 1380-40DEGREES, D PRIME20 1.0156 N PRIME20 SUBD 1.4370; (1:2) SAME PRODUCT; (1:3) THE SAME PRODUCT ALONG WITH ME SUB2 SI(OAC) SUB2 AND DIACETOXYTETRAMETHYLDISILAZANE (II), B SUB15 109-10DEGREES, 1.0274, 1.4265; (1:6) ME SUB2 SI(OAC) SUB2. SIMILAR REACTION BUT WITH 2 MOLES ETCO SUB2 H GAVE DIPROPTIONOXYHEXAMETHYLTRISILAZANE, B SUB10 124-50DEGREES, 0.9962, 1.4370; SIMILARLY, 2 MOLES C SUB5 H SUB11 CO SUB2 H GAVE DICAPROXYHEXAMETHYLTRISILAZANE, B SUB15 163-50DEGREES, 0.9564, 1.4396; OCTAMETHYLCYCLOTETRASILAZANE AND 2 MOLES ACOH GAVE ME SUB2 SO(OAC) SUB2, I, II, AND DIACETOXYOCTAMETHYLTETRASILAZANE, B SUB14 159-61DEGREES, 1.0104, 1.4425. (ME SUB2 SINH) SUB3 AND NH SUB4 OAC IN 3 HR AT 50-50DEGREES GAVE NH SUB3 AND 85PERCENT I IDENTICAL WITH THE ABOVE; SIMILAR REACTION WITH METHACRYLIC ACID, RUN BEST IN ET SUB2 U 1 HR AT 40DEGREES, GAVE AMINUISOBUTYRIC ACID AND 24PERCENT BIS(METHACRYLOXY)HEXAMETHYLTRISILAZANE, B SUB4-5 630DEGREES, 0.9892, 1.4545; SIMILAR REACTION BUT WITH (ME SUB2 SINH) SUB4 GAVE 31PERCENT BIS(METHACRYLOXY)TETRAMETHYLDISILAZANE, B SUB18 96-8DEGREES, 1.0011, 1.4405.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--REACTION OF HEXAMETHYLDISILAZANE WITH BISPHENOLS -U-

AUTHOR--(03)-MIKHAYLOVA, A.N., MORGUNOVA, M.M., ZHINKIN, D.YA.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 613-15

DATE PUBLISHED--70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AMMONIA, ORGANOSILICON COMPOUND, PHENOL, ORGANIC NITROGEN
COMPOUND, ORGANIC SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--2000/0890

STEP NO--UR/0079/70/040/003/0613/0615

CIRC ACCESSION NO--AP0124553

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124553

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RAPID HEATING OF DIHYDROXY AROM.
COMPDS. WITH 25PERCENT EXCESS (ME SUB3 S1) SUB2 NH TO 130DEGREES AND
KEEPING TO ELIMINATE NH SUB3 GAVE AFTER 4-10 HR REACTION:
2,2,BIS(4,(TRIMETHYLSILOXY)PHENYL)PROPANE, 95PERCENT, B SUB1.5-2
173DEGREES, N PRIME20 SUBD 1.5230, D PRIME20 0.9971; 2,2,BIS(4,
(TRIMETHYLSILOXY),3,METHYLPHENYL)PROPANE, 92.5PERCENT, B SUB2-3
192DEGREES, 1.5208, 0.9946;
1,1,BIS(4,(TRIMETHYLSILOXY)PEHNYL)CYCLOPENTANE, 80PERCENT, B SUB2-3
208DEGREES, M. 20-1DEGREES;
1,1,BIS(4,(TRIMETHYLSILOXY)PHENYL)CYCLOHEXANE, 83.5PERCENT, B SUB2-3
205DEGREES, 1.5317, 1.0141; 1,1,BIS(4,(TRIMETHYLSILOXY),3,
METHYLPHENYL)CYCLOHEXANE, 94.3PERCENT, B SUB2-3 215DEGREES,-,-; 4,4
PRIME,BIS(TRIMETHYLSILOXY)BIPHENYL, 89.5PERCENT, B SUB2-3 174DEGREES, M.
59-61DEGREES.

UNCLASSIFIED

USSR

UDC 678.84.02:66.035.3

ZHINKINA, I. N., and SEVERNY, V. V.

"Polyphosphorushydroxymethylphenyl Siloxanes"

Moscow, *Plasticheskiye Massy*, No 3, 1971, pp 22-24

Abstract: Investigation was carried out on the reaction of polymethylphenyl siloxane (PMPS) with butyl ester of phosphoric acid (BPA) at 200°C. The effect of various quantities of BPA on the properties of PMPS synthesized was also studied. It was determined that BPA does not participate in a hetero-functional condensation reaction with PMPS; even prolonged heating of the starting materials to 200°C did not produce any butyl alcohol. BPA catalyzes the condensation of PMPS with production of water and formation of siloxane bonds which results in increased viscosity, all the way to the formation of insoluble polymer. Introduction of BPA into PMPS in quantities corresponding to a ratio Si/P = 400 results in structuralization of the system; the Si-O-Si and Si-C bonds become stabilized toward the action of high temperature.

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USSR

UDC: 8.74

ATSTOPAS, F. F., ZHINDELIS, G. B.

"Syntax of 'Algoritmik' Language Realized on the 'Ruta-110' Digital Computer"

V sb. Vychisl. tekhnika. T. 2 (Computer Technology. Vol 2--collection of works), Kaunas, 1971, pp 299-305 (from RZh-Kibernetika, No 1, Jan 72, Abstract No 1V999)

Translation: A formal description is given for the syntax of the input language "Algoritmik" which is realized on the "Ruta-110" digital computer. Authors' resumé.

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USSR

UDC: 8.74

ATSTOPAS, F. F., ZHINTELIS, G. B.

"Problems of Realizing the Recognition Phase of a Specialized Translator"

V sb. Vychisl. tekhn. T. 2 (Computer Technology. Vol 2--collection of works), Kaunas, 1971, pp 306-319 (from RZh-Kibernetika, No 1, Jan 72, Abstract No 1V1014)

Translation: The paper deals with problems of formal construction of the syntax of input languages for automated synthesis of a digital computer and organization of the recognition phase of a direct translator for languages of the above-mentioned type. The Algoritmik language developed by the authors and its realization is considered by way of example. Authors' abstract.

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USSR

UDC: 681.3.06:51

ABRAZAS, R. Yu., ZHINTELIS, G. B., KHOMSKIS, R. R.

"Minimizing the Mean Time of Access to Magnetic Discs" -

V sb. Avtomatika i vychisl. tekhn. (Automation and Computer Technology--collection of works), No 3, Vil'nyus, "Mintis", 1971, pp 155-164 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V957)

Translation: Optimum placement is considered for the data blocks in an external magnetic-disc memory, which makes it possible to minimize the mean access time. Solution of this problem involves the following stages: 1) arranging the data blocks on similar tracks on the magnetic disc; 2) putting the similar tracks of the magnetic discs in order. The methods developed are easily realized by means of a digital computer, and in most practical instances can be realized manually. Authors' abstract.

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USSR

UDC: 681.3.06:51

ATSTOPAS, F. F., ZHINTELIS, G. B.

"One Method of Minimizing Utilized Memory"

V sb. Avtomatika i vychisl. tekhn. (Automation and Computer Technology--
collection of works), No 3, Vil'nyus, "Mintis", 1971, pp 165-171 (from
RZh-Kibernetika, No 12, Dec 71, Abstract No 12V956)

Translation: A method is proposed for solving the problem of minimizing
utilized memory on the program flowchart level. The method has the fol-
lowing distinguishing features: 1) the method is a formal one and does
not depend on the variance of the volumes of data blocks; 2) all calcu-
lations are done with a square matrix whose order is no greater than the
number of data blocks considered; 3) the method is easily realized by
both the manual method and by digital computer. Authors' abstract.

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USSR

UDC 681.142.001:51

ATSTOPAS, F. F., ~~ZHINTELIS, G. B.~~

"A Matrix Method for Computing the Logical Conditions for Carrying out Micro-Operations"

Vil'nyus, Nauchnyye trudy vysshikh uchebnykh zavedeniy Lit. SSR. Avtomatika i vychislitel'naya tekhnika (Scientific Works of Institutions of Higher Education of the Lithuanian SSR. Automation and Computer Technology), No 2, 1970, "Mintis", pp 79-82

Abstract: A formal method is proposed for determining all logical conditions under which each micro-operation of a given microprogram is carried out. The computations are applicable to operations with matrices. The method is used in automated design of logic circuits. One illustration.

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USSR

UDC 681.142.001:51

ATSTOPAS, F. F., BELYAUSKAS, B. B., ~~ZHINTELIS, G. B.~~

"SID — a Formal Language for Describing the Algorithmic Structure and Dynamics of Digital Computers"

Vil'nyus, Nauchnyye trudy vysshikh uchebnykh zavedeniy Lit. SSR. Avtomatika i vychislitel'naya tekhnika (Scientific Works of Institutions of Higher Education of the Lithuanian SSR. Automation and Computer Technology), No 2, 1970, "Mintis", pp 31-65

Abstract: The authors consider the formal language SID designed for describing the algorithmic structure and dynamics of digital computers. SID is a metalanguage for systematizing the logical stage of digital computer design. The description of SID is presented by means of the Backus-Naur metalanguage. Nine illustrations, bibliography of six titles.

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USSR

UDC 681.142.001.51

ATSTOPAS, F. F., ~~ZHINTELIS, G. B.~~, KHOMSKIS, R. R.

"Optimizing Program Distribution in a Digital Computer Memory"

Vil'nyus, Nauchnyye trudy vysshikh uchebnykh zavedeniy Lit. SSR. Avtomatika i vychislitel'naya tekhnika (Scientific Works of Institutions of Higher Education of the Lithuanian SSR. Automation and Computer Technology), No 2, 1970, "Mintis", pp 95-98.

Abstract: A formal method is proposed for initial distribution of a program in a digital computer memory. The method does not require complex computations. The procedure is as follows: 1) program blocks of a given length are formulated; 2) initial distribution of the program is implemented between the immediate-access and auxiliary memories; 3) the program blocks are arranged in the auxiliary memory in the most likely order of input into the immediate-access memory. The proposed method is realized in the form of a program. Two illustrations, bibliography of one title.

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USSR

UDC: 681.3

VEPRIK, V. N., KAN, V. G., ZHIRATKOV, V. I., MIKHASHOV, A. I.

"Some Singularities in the Construction of Distributed Universal Computer Systems"

V sb. Vychisl. sistemy (Computer Systems--collection of works), vyp. 39, Novosibirsk, 1970, pp 137-146 (from RZh-Matematika, No 11, Nov 71, Abstract No 11V788)

Translation: Distributed universal computer systems are classified with regard to types of data transmission networks. The authors consider the peculiarities of distributed universal computer systems with fixed directional connections and universal computer systems with commutation of messages. Note is taken of the effect which these peculiarities have on the productivity of the computer system. V. Mikheyev.

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USSR

UDC: 681.3

VEPRIK, V. N., ZHIRATKOV, V. I., KAN, V. G., MIKHASHOV, A. I.

"Some Peculiarities in the Construction of Distributed Universal Computer Systems"

V sb. Vychisl. sistemy (Computer Systems--collection of works), vyp. 39, Novosibirsk, 1970, pp 137-146 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V788)

Translation: Distributed universal computer systems are classified with regard to types of data transmission networks. The authors consider the singularities of distributed universal computer systems with single and repeated establishment of communications as well as those with fixed directions of communications, and those with message commutation. Mention is made of the effect which these singularities have on the productivity of universal computer systems. V. Mikheyev.

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USSR

UDC: 51:155.001.57:681.3.06

VALIKOV, K. V. ZHIRKOV, V. F.

"The Problem of Occupying the Contours Set by the 'Ones' on a Rectangular Matrix of Binary Elements"

Sb. nauchn. tr. Vladimir. politekhn. in-t (Collected Scientific Works of Vladimir Polytechnical Institute), 1970, vyp. 9, pp 35-39 (from RZh-Kibernetika, No 7, Jul 71, Abstract No. 7V788)

Translation: Consideration is given to a problem involved in pattern recognition -- that of occupation of contours, including intersecting contours, given by the "ones" on a rectangular matrix of binary elements. An algorithm is given for solving the problem, and its computational aspects are considered. Authors' abstract.

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USSR

UDC 632.95

STONOV, L. D., ZHIRMINSKAYA, N. M., TROPIN, V. P., GOLEYADKINA, 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 wettability 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.

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Acc. Nr: AP0052086

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Ref. Code: UP0426

PRIMARY SOURCE: Zhurnal Nevropatologii i Psikiatrii imeni
S. S. Korsakova, 1970, Vol. 70, Nr 3,
pp 376-382

CHANGES OF CORRELATIONAL FUNCTIONS IN DIFFERENT
TYPES OF CHANGED BRAIN BIOELECTRICAL ACTIVITY

Ye. A. Zhirmunskaya, G. A. Vajenko, G. P. Korukhova

The paper deals with the study of distant synchronization of the cortical neuron activity, appearing as a result of morphological connections of some brain areas with the others. The amount of periodical and accidental components of the coefficient of cross correlations in 2 simultaneously registered oscillating processes was measured. These measurement were performed from identical leads of the hemispheres or from different points of one hemisphere. It was demonstrated that these indices change quite differently in different types of EEG disorders.

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UDC 629.19:533.6

ZHIRNIKOV, B. L., PETROV, K. P.

"Study of the Possibilities of Improving the Aerodynamic Quality of Conical Bodies"

Uch. zap. Tsentr. aerogidrodinam. in-ta (Scientific Notes of the Central Aerodynamics Institute), Vol 1, No 1, 1970, pp 140-144 (from RZh-Mekhanika, No 10, Oct 70, Abstract No 10 B312)

Translation: This article contains the results of experimental and calculated investigations of aerodynamic characteristics of truncated cones for which a wedge-shaped forward section was formed by intersection by two inclined planes. In some models the forward section was blunted still more. The experiments were performed for $M = 6.1$ and $R = 0.88 \cdot 10^6$ (reduced to the diameter of the bottom cut) and angles of attack from 0 to 18°. It is demonstrated that for defined geometric parameters the model with the wedge-shaped forward section has significantly greater supporting capacity and aerodynamic quality than the corresponding (inscribed) circular cone. A deficiency of models with a 1/2

USSR

ZHIRNIKOV, B. L., et al., Uch. zap. Tsentr. aerogidrodinam. in-ta,
Vol 1, No 1, 1970, pp 140-144

wedge-type section is a decrease in the degree of static stability. This is connected with shifting of the pressure center forward. The calculations of the aerodynamic characteristics by the Newton theory give qualitative comparison with the experimental results.

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USSR

UDC 621.039.538

BOLDYREV, G. N., VESELKIN, A. P., YEGOROV, Yu. A., YEMEL'YANOV, I. Ya.,
ZHIRNOV, A. D., ORLOV, Yu. V., KONSTANTINOV, L. V.

"Study of the Shielding Problems on Water Cooled - Water Moderated Research Reactors"

V sb. Vopr. fiz. zashchity reaktorov (Problems in Reactor Safety Physics -- Collection of Works), No. 5, Moscow, Atomizdat, 1972, pp 235-250 (from RZh-50. Yadernyye reaktory, No 5, May 72, Abstract No 5.50.62)

Translation: Several special installations were constructed to study shielding. The BSF and GTR installations were swimming pool reactors employing 1 and 3 Mw neutrons, respectively, placed on moving bridges in large water pools. The B-2 device on the BR-5 reactor was developed to study the laws of the attenuation of γ -quanta and reactor neutrons in the geometry of a unidirectional beam; the materials to be studied or models of the shielding were placed in a niche in the reactor shielding. A zero-power reactor was intended for studying processes in the shield directly adjacent to the reactor core. The reactor was equipped with filters in one of the directions making it possible to obtain an optimal relationship between the neutron and

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USSR

BOLDYREV, G. N., et al, Vopr. Fiz. zashchity reaktorov, No. 5, Moscow, Atomizdat, 1972, pp 235-250

γ -quanta fluxes. The OK-M experimental device is also intended for studying problems in reactor shielding. The 50-kw water cooled - water moderated research reactor is also equipped with devices for conducting experiments on shielding. Various studies associated with the radiation problems of shielding are carried out on this reactor. A description of the reactors, experimental devices, and characteristics of the devices and methods used in the research are given.

USSR

UDC 539.4

VANETSOV, L. A. and ZHIRNOV, A. F. (Moscow)

"The Expediency of Using Titanium Pipelines in the Hydraulic Systems of Gas Turbine Engines"

Kiev, Problemy Prochnosti, No 11, Nov 73, pp 85-86

Abstract: In an investigation of the possibility of replacing stainless steel as the material for the pipelines of gas turbine engines by titanium alloys and decreasing the wall thickness of stainless steel pipelines, consideration was given to the influence of the replacement of stainless steel by titanium alloys upon the strength of the pipelines at equal load conditions in the case of the constant and variable loads to which the pipelines of gas turbine engines are subjected. Formulas were derived, on the basis of which it was found that a decrease in the wall thickness of a steel pipe has virtually no effect upon the strain imposed on the pipelines, and that the replacement of steel pipes by titanium ones decreases the strain by a factor of more than three at the same temperature influences, and by approximately 70% at identical installation inaccuracies.

Comparative calculation of steel and titanium pipelines has shown that the level of dynamic stresses is 60-80% less in titanium pipelines. When steel

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USSR

VANETSOV, L. A. and ZHIRNOV, A. F., Problemy Prochnosti, No 11, Nov 73, pp 85-86

pipelines with thinner walls are introduced, stresses originate which are approximately 15% greater than in ordinary pipes. The conclusion is drawn that the replacement of steel pipes by titanium ones is advantageous not only with respect to weight, but also due to the decrease of tension under identical conditions of static and dynamic loads.

4 figures. 1 table.

2/2

USSR

UDC 578.084

ZHIPNOV, I. V., Central Laboratory for Nature Conservation, USSR Ministry of Agriculture

"A Study of the Diurnal Rhythm of Saiga Activity in Semideserts Employing a Night Vision Apparatus"

Sverdlovsk, Ekologiya, No 6, 1971, pp 38-41

Abstract: Diurnal activity of saiga antelope was observed during the lambing season in April-May 1970 in the semidesert of Kalmytskiy Rayon, Kalmyk ASSR. Night observations were conducted with newly developed portable apparatus consisting of an IR lamp and a 3X IR telescope. Behavioral data recorded on a herd of over 5,000 adults and young consisted of the time of browsing, movement, rest, feeding of young, and other characteristics. Weather characteristics were also recorded. Sex and age could be ascertained with the apparatus up to a range of about 200 meters; apparently it had no effect on behavior. The results indicated 2 periods of heightened activity from 0400 to 0900-1000 hours and from 1600-1700 to 0000-0100 hours, with at least part of the herd active throughout the day. Intensive feeding occurred during both periods. Activity was directly correlated with air temperature. It was concluded that such activity periods are an adaptation to heightened air humidity and feed moisture content at those times, and to the schedule of human economic activity.

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ZHIRNOV, V. D.

THE SUBJECT AND METHODS OF MEDICINE

SPRS 56019
17 MAY 72

Article by V. D. Zhirnov (Moscow); Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 3, 1972, pp 17-22

The question of the subject and methods of medicine is an age-long problem of medicine, and for this reason it could not, of course, help but acquire a certain imprint of archaistic academism. Nevertheless, it has never and will never be relegated to scientific oblivion, if not as such, then in relation to analysis of other theoretical and methodological medical problems; somehow or other it is discussed, it is being resolved, and even predetermined within the context of these problems. The latter remark makes it particularly understandable why it is imperative, once more, to draw attention to the problem set forth, bearing in mind that it is definitely the primary or original problem concerning investigation of the conceptual system of medicine. Such investigations in general (and of this problem in particular) are an organic component of the scientific and technological revolution. Without them, the revolution in medicine will be not so much scientific as it is technological.

The status of the problem with which we are concerned could be described schematically as mutually indifferent coexistence of two points of view. One of them insists upon the object specificity of medicine, but is not theoretically worked up and for this reason it is theoretically inaccessible. Social and historical practice which distinguishes medicine as an unquestionably special type of knowledge and action is the basis of its variability and the arsenal of its argumentation. Consequently, in this event, it only remains to resolve on the theoretical level what has already been resolved in practice.

The second point of view, in essence, "theoretically emptier" the positions of the subject and method of medicine. This is achieved from objectively insensitive and, in this sense, objectively universal analysis. Specifically, here argumentation is constructed on comparison of the attributes of tradition of traditional academic sciences, element by element, with the components of analytically segregated (split) medical activity. This

ZHIRNOV, V. D.

Philosophical
Sciences

V.I. LENIN'S VIEWS ON THE SIGNIFICANCE OF MILITANT MATERIALISM FOR DEVELOPMENT
OF SCIENTIFIC KNOWLEDGE

Article by V.I. Zhirnov, Candidate of Philosophical Sciences; Moscow, Soviet Union
Zbirnoyev, V.I., Moscow, No 2, 1972, submitted 15 November 1971, pp 3-8

STARS 26117
3 stars 12

On the significance of militant materialism," still in the but entirely
comprehensive in content, was published. It was written at the request of
the editorial board of a new journal, Izvestiya Akademii Nauk SSSR (Under the banner
of Marxism) [1] and was published in the third issue of this journal.

Constructing the living tissue of current events, this article also
became a remarkable landmark of the Lenin stage of development of Marxist philo-
sophy. The ideas of an alliance between philosophy and natural science, which
were clearly formulated in it, virtually refined the basic directions of
further development of general problems in theoretical sciences in those sections
to pressing objectives of building communism. And this justifies the view of
Soviet scientists, that this article is the philosophical legacy of V.I. Lenin.

The deepest foundations of the organic link between philosophical and
natural science were traced most attentively and comprehensively and
by V.I. Lenin in his laborious and convincing study of sporadic and
stages of overcoming (and preventing) the critical condition of science.
He did this as far back as 1909, in his book Materialism and Empirio-criticism.
Modern physics in proceeding toward dialectical materialism, "but it is not
going straight toward the naturally true method and only true philosophy of
natural science. It is traveling in zigzag, not consciously but blindly,
without seeing clearly its ultimate goal. Stopping toward it, unswerving,
sometimes even with its back toward it" [2].

Herein V.I. Lenin discloses the objective essence of the link between
philosophy and natural science, he demonstrates conclusively that dialectic-
materialistic methodology is an organic requirement for developing scientific

USSR

UDC 541.123:546.791.6

YEFIMOV, A. N., ZHIKHAREV, M. I., and ZHIRNOV, YU. P.

"Liquid-Vapor Equilibrium in the System $H_2O-HNO_3-UO_2(NO_3)_2$ at Pressures of 180, 360, and 720 mm. Hg"

Leningrad, Radiokhimiya, Vol 12, No 5, 1970, pp 766-768

Abstract: The equilibrium was studied by the recycling method on a specially designed apparatus in which the pressure was maintained by means of a 100 l receiver. Equilibrium was reached usually in 40 min. In order not to change the liquid composition during the experiment, acid was added in concentrations close to that of the equilibrium composition, and the volume of the solution corresponded to the capacity of the trap. It was shown that lowering of the pressure -- P -- lowers the acid content -- y -- in equilibrium vapor at small y values; when $y \gg 15\%$ the effect of pressure is the opposite. This relationship is quite linear in Othmer coordinates, permitting interpolation for technological purposes. The addition of uranyl nitrate to the binary system H_2O-HNO_3 increases the content of nitric acid in equilibrium vapor, the salt "salts out" the acid into the vapor phase. The salting-out effect of uranyl nitrate increases with higher salt concentration and with lower acid concentration.

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USSR

UDC 612.273.1+612.28

ZHIRONKIN, A. G., Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

"Regulation of Respiration During Hyperoxia"

Leningrad, Fiziologicheskij Zhurnal SSR, No 12, 1971, pp 1,762-1,767

Abstract: Man's respiratory reaction to an excess of oxygen is two-phase: initial decrease followed by normalization and then increase in the minute volume. This reaction is believed to result from blocking of the natural hypoxic stimulation of the arterial chemoreceptors. During normal breathing these receptors enable the respiratory center to function at an appropriate level. Inhalation of oxygen eliminates the hypoxic stimulus and the receptors become "silent," resulting in a temporary decrease in the minute volume. Studies on natives of mountainous regions (Pamirs, Himalayas, Andes) showed their response to hyperoxia to be different from those living at sea level. The oxygen depression was completely absent in most of the aborigines who apparently possess unusual "dumb" chemoreceptors that do not react to an oxygen deficiency. The author discusses some possible mechanisms to account for the phenomenon. He maintains that hyperoxia induces arterial hypocapnia and tissue hypercapnia which abolish peripheral stimulation of the chemo-

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USSR

ZHIRONKIN, A. G., Fiziologicheskiy Zhurnal SSR, No 12, 1971, pp 1,762-1,767

receptors by carbon dioxide and insufficient oxygen, thereby intensifying the effect on the respiratory center of the carbon dioxide that has accumulated in the brain.

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USSR

UDC 612.273

ZHIRONKIN, A. G., Director, and ISAAKYAN, L. A. and TROSHIKHIN, G. V.,
Laboratory of Physiology of Respiration, Institute of Physiology imeni I. P.
Pavlov

"The Effect of Increased Atmospheric Pressure on O₂ Content in the Muscle
Tissue of Animals"

Leningrad, Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenova, Vol 58, No 7,
Jul 72, pp 1109-1114

Abstract: In underwater diving and certain other areas, the effect of the density of gases inspired on physiological processes is of practical significance. In addition, discovering the mechanism of the toxic effect of high partial pressures of inert gases is important for theory. In this experiment, the aO₂ content in the quadriceps femoris muscle of 70 male Wistar rats (and their rectal temperature) was checked by the polarograph method during a 5-hour exposure in helium-oxygen and nitrogen-oxygen mixtures (21% oxygen) at different temperatures and pressures. In the helium-oxygen atmosphere at a temperature of 23°C, a marked decrease in the aO₂ level in the quadriceps femoris muscle was noted during a 5-hour exposure at a pressure of 20 kg/cm², and particularly at 40 kg/cm². Raising the temperature to 30°C lessened the reaction, indicating that it can be attributed to the cooling effect of helium.

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USSR

ZHIRONKIN, A. G., et al., Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenova, Vol 58, No 7, Jul 72, pp 1109-1114

At a pressure of 6 kg/cm² in the nitrogen-oxygen mixture (which corresponds to 40 kg/cm² in the helium-oxygen) the aO₂ level did not change over the 5-hour period. When the pressure was raised to 20 kg/cm² there was a notable drop in the aO₂ level, which could result from either the density of the gas being inspired or the narcotic effect of nitrogen. Further investigation is required to clarify this causality. It can be concluded that increasing the density of the gas being inspired in these mixtures by a factor of six (and eliminating the cooling effect of the helium) does not lead to a drop in the aO₂ level in a rat's quadriceps femoris muscle during a 5-hour exposure.

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USSR

PAK, V. P., ZHIROV, G. K., and KOROL', V. S., Kazakh Branch of the All-Union Scientific Research Institute of Exploration Geophysics

"Quantum Magnetometer"

USSR Authors' Certificate No 356615, Cl. G 01v 3/14, filed 17 May 71, published 23 Oct 72 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 32, 1972, p 136)

Abstract: The device contains a magnetosensing element on the principle of optical pumping, a signal pickup, an electronic counting frequency meter and an automatic graph plotter with a mechanical scanner. To increase recording resolution, a pulse generator is introduced, made in the form of a synchronous disk, rigidly joined to the drive of the scanner and uniformly quantizing the scale of the recorder for intervals whose graduation mark corresponds to the resolution of the low-order digit and the quantity equals the capacity of the interrogated counter, which is connected to the pulse generator output and during the recording cycle performs the role of zero organ, which controls the run-through of the recording mechanism according to the moment of overflow or coincidence of the readings of the interrogated counter.

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USSR

UDC 613.646

SHLEYFMAN, F. M., ZHIRNOVA, G. Ye., ZELENTSOVA, S. P., MARCHENKO, TASHKER, I. D.
and MOKROTOVAROVA, G. N., Kiev Institute of Industrial Hygiene and Occupational
Diseases

"Hygienic Assessment of the Effects of Exposure to Heat"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 3, 1973, pp 12-15

Abstract: Rabbits and rats exposed to infrared radiation at the rate of kcal/m²/hour for varying lengths of time exhibited changes in body weight, behavior, immunological reactivity (decrease in antibody titers and phagocytic activity of leukocytes), hormonal activity, tissue respiration in the liver and skeletal muscles, oxidative phosphorylation, etc. The magnitude of the changes varied with the duration and nature of the exposure (continuous or intermittent), intensity of radiation, relationship between time of irradiation and rest periods, etc. Infrared radiation also brought about changes in humans. The heart rate, blood pressure, body temperature, etc. were affected, the degree varying mainly with the intensity and duration of exposure, and the length of the interval between exposures.

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USSR

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ALIKHANYAN, A. I., ASATIANI, T. L., AVAKYAN, K. M., ZHIROVA, L. A.,
IVANOV, V. A., KRISHCHYAN, V. M., MATEVOSYAN, E. M.

"Measurement Accuracy of Charged Particle Pulses in Wide-Gap
Spark Chambers"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61,
No 4(10), Oct 71, pp 1273-1275

Abstract: The purpose of this article is to show how the accuracy of these pulse measurements can be improved. Corrections which must be made to achieve this accuracy are based on results obtained in an earlier paper (A. I. Alikhanyan, et al, 12-ya Mezhdunarodnaya konferentsiya po fizike vysokikh energiy -- Twelfth International Conference on High-Energy Physics -- Dubna, 1964, 2, Atomizdat, 1966, p 303) and were derived from new equipment with better parameters. These involved a reduction in the total delay time of up to 230 ns for applying the high-voltage pulses to the chamber, a reduction of up to 2 ± 0.5 ns in the rise time of the high-voltage pulse, and a high degree of electric field uniformity at the edges of the chamber through the use of distributed resistances and capacitances. Tables of the characteristics of various types of chamber are given. Analysis of the errors shows that
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USSR

ALIKHANYAN, A. I. et al, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61, No 4(10), Oct 71, pp 1273-1275

the measurement accuracy of the new equipment is limited by the optical distortion. A table of corrections for these distortions is provided. Gratitude is expressed to V. N. Semenyushkin, M. I. Novikov, A. F. Pisarev, Yu. V. Kulikov, L. N. Strunov, and I. N. Golutvin for performing the required experiments in the OIYaI (Joint Institute of Nuclear Research). The authors are associated with the Yerevan Physical Institute.

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Acc. Nr:

AP0100259

Abstracting Service:

CHEMICAL ABST

Ref. Code:

5770

4R0062

111139h Preparation of 9,9-bis(4-hydroxyphenyl)fluorene dimethacrylate—a new compound in a series of dimethacrylic esters of bisphenols. Frunze, T. M.; Sakharova, A. A.; Zhirava, L. V. (Inst. Elementorg. Soedin, Moscow, USSR). *Izv. Akad. Nauk SSSR, Ser. Khim.* 1970, (1), 183-4 (Russ). To 12 g NaOH in 60 ml H₂O was added at 1-5° 35 g 9,9-bis(p-hydroxyphenyl)fluorene, followed by 31.4 g CH₂:CMeCOCl to yield after 3 hr 50% 9,9-bis(p-methacryloyloxyphenyl)fluorene, m. 201-3°. G. M. Kosolapoff

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ZHIROVETSKIY, V. M.

Lasers

TECHNICAL TRANSLATION

AE 77 FTIC-RT-22-12-72

ENGLISH TITLE: On the Influence of the Stress State on the Character of Rupture of Transparent Polymers by a Laser Beam

RUSSIAN TITLE: O vliyenií napryazhennogo sostoyaniya na kharakter razryva pri razryve poliprozrachnykh polimerov luchem lazera

AUTHOR: G. V. P'yatkov, Ya. S. Podsternykh, V. M. Zhirovetskiy

SOURCE: Fiziko-khimicheskaya Mekhanika Materiyalov No. 4, Vol. 5, 1969

Translated for FSIIC by Leo Kanner Associates, Redwood City, Calif.

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USSR

UDC 620.186.5

ZHIBOVATSKIY, V. M., MOYSA, M. I., PLYATSKO, G. V., and
TURCHENKO, N. P., Institute of Physics and Mechanics of
the Academy of Sciences UkrSSR, D'vov

"Some Peculiarities of the Change in Properties of Alloys
After Laser Beam Treatment"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 8,
No 1, 1972, pp 84-87

Abstract: Investigation results of the effect of local pulsed heating with a laser beam on the structure and microhardness changes of different steel brands, including tool steels U8, U10, high-chromium steel Kh12M, nine other steel brands, and Arceo iron, are discussed by reference to microstructures and diagrams. After cooling, the structure and physico-mechanical properties of the metal of former smelted state differ substantially from its initial condition: specific needle-shaped desintegration of grains and increased microhardness resulted in all investigated cases, including Arceo iron. The laser beam
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USSR

ZHIROVETSKIY, V. M., et al., Fiziko-Khimicheskaya Mekhanika Materialov, Vol 8, No 1, 1972, pp 84-87

treated zone of tool steels U8 and U10 was found to consist of martensite, residual austenite, Fe_3C carbide, and Fe_3O_4 oxide. Supposedly, the high heating rates of steels affect favorably the dissolution process of carbides. The laser-beam treatment of annealed Kh12M steel, apparently, comminutes the net of carbides effecting a local conversion of Fe_3C in the VC carbide and the W_2C β -phase, developing by $2600^{\circ}C$, and at the same time the microhardness increases from 240 to 520 kg/mm^2 . The observed decrease in microhardness of the hardened Kh12M steel from 720 to 460 kg/mm^2 is probably due to the fact that Va, which decreases the overheating sensitivity, is bonding a part of carbon in poorly soluble VC carbides. Four illustr., seven biblio. refs.

2/2

" 61 "

USSR

UDC: 621.375.82

ZHIRYAKOV, B. M., RYKALIN, N. N., UGLOV, A. A., and FANNIBO, A. K.
"Some Principles of the Erosion of Material from the Action Zone
of Laser Radiation"

Moscow, V sb. Kvant. elektronika (Quantum Electronics--collection
of works) "Sov. radio," No 1(13), 1973, pp 119-121 (from RZh--
Fizika, No 7, 1973, Abstract No 7D1050)

Translation: Experimental data is presented concerning the erosion
of material from the action zone of quasi-stationary laser pulses
in the radiation density range close to the threshold. A qualita-
tive interpretation is given of the formation of teardrop-shaped
fractions in the decay products, which is based on representations
of explosion-type destruction of material due to overheating in the
melt. Bibliography of nine. Authors' abstract.

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USSR

UDC 535.211

19

BETANELI, A. I., DANILENKO, L. P., LOLADZE, T. N., SEMILETOVA, YE. F.,
ZHIRYAKOV, B. M., and FANNIBO, A. K., Tbilisi, Moscow

"Study of the Possibility of Additional Alloying of R18 Steel Using a Laser"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 6, Nov-Dec 72, pp 22-26

Abstract: A description is given of experimental results on the introduction of a number of alloying elements (carbon, VK3, VK6, T15K6 mixtures -- standard raw materials for producing solid solutions) into local sections of the surface of R18 high-speed steel with the aid of the quasi-static radiation of a ruby laser. The changes in microstructure and mechanical properties were investigated. Graphs showing the changes in microhardness with depth in the alloyed section according to depth are presented. From X-ray diffraction analyses it was established that the change in lattice parameters in the matrix material occurs as a result of the effect of the alloying elements and the dissolution of carbides in them. The selection of a quasi-continuous mode for local surface alloying proved to be most advantageous because this mode makes it possible to easily control mode parameters and thereby prevent metal failure which would result in the formation of a crater from the laser beam. Three figures, 2 tables, 6 bibliographic references.

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ZHISHKO, V.N.

SO: JPRS 54396
03 NOV 71

UDC 616.74-073.97
METHOD FOR PROCESSING MUSCLE BIOPOTENTIALS FOR INPUT INTO AN ELECTRONIC COMPUTER

(Article by V. N. Zhisiko, A. A. Isakov, V. D. ~~...~~ Sorokin and I. S. Shadrin, *Moskva, 1971, Zhurnal Vsesoyuznogo Nauchno-Issledovatskogo Instituta Fizicheskoy Meditsiny, Vol. 6, No. 1, pp. 77-79, 1971, submitted for publication 12 May 1970*)
Muscle Physiology/Electromyography

Electromyography is one of the principal methods making it possible to investigate the process of muscle contraction in the intact body. Electromyography plays an important role in clinical medicine and in study of motor acts and fatigue in the physiology of work and sports. Investigations of muscle biopotentials are of great interest for drawing conclusions concerning the mechanisms of coordination of movements, especially in the man-machine system.

Due to the complexity in analyzing electromyograms (EMG) many physiologists and physiologists make extensive use of the illustrative-descriptive method. A distinguishing feature of this method is a verbal description of changes in the EMG without citing any quantitative (numerical data), usually with a demonstration of the corresponding oscillograms.

In addition to the illustrative-descriptive method, work has now been undertaken on a method for qualitative analysis of the EMG based on the assignment of the EMGs to a certain type on the basis of their external appearance (V. S. Yusevich, 1958, 1963). Qualitative analysis of the EMG is of considerable diagnostic importance in clinical practice. However, a study of the fine dynamics of change in muscle biopotentials is possible only when using quantitative methods for their evaluation.

Methods for quantitative EMG analysis involve a mandatory conversion of one or more indices of the investigated process into digital form, that is, determination of the numerical value of this index. Several types of devices are now known for processing EMGs (N. G. Krol; S. P. Gurman; F. B. Solodkov; Jacobson).

*muscle physiology /
electromyography*

ZHISLIN, B. I.

SPRS 6/22/68

C-73

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VIIL-7. DISTRIBUTION OF DISLOCATIONS IN SINGLE CRYSTALS OF GALLIUM ARSENIDE ALLOYED WITH CHROMIUM OR TIN

Article by G. F. Kuznetsov, B. I. Zhislín, Institute of Radio Engineering and Electronics of the USSR Academy of Sciences, Moscow; Novosibirsk, 111 Siberian No. 101, Novosibirsk; Sibirskiy Poluprovodnikoviy Kristalloy I Plennyi Ruskiiy, 13-17 June 1972, p 100

The X-ray topographic method was used to study the characteristic features of the defect structure of single crystals of semiconducting GaAs alloyed with Cr ($n = 10^{18} \text{ cm}^{-3}$) and conducting crystals of GaAs alloyed with Sn ($n = 10^{18} \text{ cm}^{-3}$). The single crystals were grown by the Czochralski technique under industrial conditions. The interest in these crystals was caused by the fact that they are used as substrates when growing epitaxial monocrystalline layers of GaAs.

Along with some general features, the distribution of the dislocations in single GaAs crystals alloyed with Cr differ significantly from the dislocation distribution in single GaAs crystals alloyed with Sn. The basic feature of the dislocation distribution in single GaAs crystals alloyed with Cr is the well-developed cellular structure. The cell dimensions in the investigated GaAs bars vary from 50 to 300 microns from bar to bar, and also with respect to structure of single GaAs crystals alloyed with Sn is the extraordinary homogeneity of the dislocation distribution with respect to volume of the bar. In these crystals regions extending for several millimeters with very low dislocation density ($n = 30 \text{ cm}^{-2}$) whereas in the adjacent regions of the dislocation crystal intersecting with each other, dislocation grids are formed. In other regions the dislocations are distributed randomly and have a set of intersecting parallel segments of dislocations are observed in narrow bands. In other areas in the dislocation distribution in GaAs crystals alloyed with Cr and Sn can be explained by the fact that the donor admixture Sn essentially increases the plastic flow strength of GaAs and, consequently, promotes transmission of the plastic flow in these crystals. The compensating admixture Cr obviously lowers the fatigue strength and therefore promotes rearrangement of dislocation locations into interlocks bordering the cell boundaries.

ZHISLIN, B.I.

IPRS 59008
6-73

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XIV-16. GROWTH AND DEFECT STRUCTURE OF HETEROEPITAXIAL CdTe FILMS

Article by Yu. Sh. Teplov, G. P. Kuznetsov, B. I. Zhislina, S. Z. Avdeykin, Institute of Radiophysics and Electronics of the USSR Academy of Sciences, Moscow; Novosibirsk, III Simpozium po Prolegamam Rozta i Sinteza Polimerov i Kovykh Kristallov i Plinov, Krasnoy, 12-17 June 1972, p 208

The sublimation method in a hydrogen current was used to obtain CdTe films on synthetic mica - fluorophosphate. MonocrySTALLINE CdTe films were grown with two different temperatures of the deposition zone. It was demonstrated metallographically that in both cases there are growth configurations on the film surface. The increase in temperature of the substrate zone leads to an increase in the linear dimensions of the growth configurations and is accompanied by an increase in the surface relief. The defect structure of the heteroepitaxial CdTe films was studied by the Fujiwara method without separation of the film from the substrate. It was discovered that the dimensions and angles of disorientation of the substrate depend on the temperature of the deposition zone.

USSR

UDC 615.616.24-003.656.6

ZHISLIN, L. E., LAGUTIN, A. A.

"Problem of the Fibrogenic Effect of Manganese-Zinc Ferritic Powder"

V sb. Materialy XXI-XXII plenumov Resp. komis. po bor'be s sili-kozom (Materials of the Twenty-first to Twenty-second Plenums of the Republic Commission for Controlling Silicosis--Collection of Works), Kiev, Naukova dumka, 1972, pp 159-161 (from RZh--Farmakologiya, Khimioterapevticheskiye Sredstva. Toksikologiya, No 3, Mar 73, Abstract No 3.54.896)

Translation: Male rats were subjected to inhalation poisoning by manganese-zinc ferritic powder for 12 months (70 percent Fe oxide, 20 percent Mn oxide and 10 percent Zn oxide) in a concentration of 50 mg/m³. In the first month, changes in the morphologic picture of the red blood, the albumen concentration and its fractions and the SH-group content in the blood were noted. Phagocytosis was suppressed, and the agglutinin activity was reduced. Lymphoid infiltration and hyperemia was detected in the trachea; induration and loss of elasticity of tissue in the lungs, thickening of the alveolar septa, catarrhal-desquamative bronchitis, hyperplasia of 1/2

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ZHISLIN, L. E., LAGUTIN, A. A., Materialy XXI-XXII plenumov Resp. komis. po bor'be s silikozom, 1972, pp 159-161

the peribronchial pulmonary follicles with deposition in them of dust -- all are noted. At the points of deposition of the dust there is proliferation of the connective tissue, and perivascular and peribronchial sclerosis were observed. USSR, Donets, Medical Institute.

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Pharmacology and Toxicology

USSR

UDC 577.1:615.7/9

ZHISLIN, L. E., OVETSKAYA, N. M., and KOSOVA, L. V.

"Comparative Toxicological Characteristics of Thiourea and Its Dioxide With Different Modes of Uptake by the Organism"

Tr. VIII S"yezda gigiyenistov USSR, 1970 (Works of Eighth Congress of Ukrainian SSR Hygienists, 1970), Kiev, "Zdorov'ya," 1971, pp 230-233, discussion pp 250-251 (from RZh-Biologicheskaya Khimiya, No 10, 25 May 1972, Abstract No 10F2186 by M. Sh.)

Translation: Thiourea (I) or its dioxide (II) was administered to rats intraperitoneally, in the form of skin applications, or the animals underwent inhalation inoculation. The authors present data on weight changes of the lungs, thyroid and spleen, as well as data on the morphological composition of the blood and the iodine-accumulation capacity of the thyroid. According to the authors' conclusion, acute toxicity and accumulation capacity are more pronounced for II than for I. I and II can have an adverse effect on the organism both in the event of intake via the respiratory tract and via the intact skin. Therefore, in the authors' opinion measures must be taken during production to prevent the atmospheric environment from being contaminated with aerosols of I and II or workers from coming into direct contact with these compounds, especially from getting solutions thereof on the skin.

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USSR

ZHITARU, R. P., KLYAVIN, O. V., SMIRNOV, B. I.

"Effect of Gamma Irradiation on the Mechanical Characteristics and Dislocation Structure of LiF Crystals Deformed at 4.2-300°K. Part II. Dislocation Structure"

Kishinev, Izvestiya Akademii Nauk Moldavskoy SSR, Seriya Fiziko-Tekhnicheskikh i Matematicheskikh Nauk, No 3, 1972, pp 15-21

Abstract: Dislocation structures are studied in deformed and gamma-irradiated lithium fluoride crystals at 4.2-300°K. The crystals were selectively etched in a weak solution of ferric chloride. Initial dislocation density was approximately 10^4 per sq. cm. The results showed that the displacement of the slip bands increases linearly with yield stress in irradiated crystals. The rate of increase in displacement is the same at 78 and 4.2°K. and increases considerably at 300°K. The density N of dislocation pits in the slip bands also increases, \sqrt{N} being a linear function of yield stress. As the deformation temperature is reduced, the slope of the lines for \sqrt{N} decreases for both screw dislocations and edge dislocations, except that the relation for screw dislocations shows no difference at 4.2 and 78°K. The free run of

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ZHITARU, R. P. et al., Izv. AN MoldSSR, Ser. Fiz.-Tekhn. i Mat. Nauk, No 3, 1972, pp 15-21

screw dislocations decreases with an increase in radiation dose and with a reduction in temperature. The reciprocal of the free run is a linear function of yield stress. The slopes of the lines for the latter relation are constant for all temperatures. Irradiating the crystals increases the probability of primary and secondary transverse slip at all temperatures. The change in parameters of the dislocation structure of slip bands is apparently due to an increase in the number of "stoppers", which oppose the motion of the dislocations themselves, and change the parameters of transverse slip of the dislocations. Coagulation of defects with larger doses of radiation is the most probable cause of the reduction in rates of change of these parameters with increased dose. Qualitatively, the irradiation of lithium fluoride crystals influences the parameters of the dislocation structure in the same way as does doping the crystal with magnesium. The authors thank T. V. Samoylova for consultation, and P. O. Barabtarlo for assisting with the electron microscope measurements of dislocation density.

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1/2 032

UNCLASSIFIED

PROCESSING DATE--02OCT70

TITLE--THERMODYNAMIC PROPERTIES OF THE HYDROGEN BONDING OF SOME ALCOHOLS
WITH TERTIARY AMINES -U-

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2/2 032

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PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0107346

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ASSOCN. CONSTS. OF SOME TERTIARY AMINES (PYRIDINE, 4-METHYLMORPHOLINE, DIAZABICYCLOOCTANE AND TRIETHYLAMINE) WITH BUTANOL, PHENOL, AND P-CHLOROPHENOL IN CCL SUB4 SOLN. WERE ESTD. BY USING IR SPECTROSCOPY. THE VALUES OF DELTA H, DELTA F AND DELTA S WERE CALCD. FROM THE TEMP. DEPENDENCE OF THE ASSOCN. CONSTS.

UNCLASSIFIED

USSR

UDC: 51:155.001.57:681.3.06

ROMANOV, V. P., ZHITKOV, G. N.

"Elements of the Statistical Theory of Pattern Recognition. I. Recognition of Images of Fixed Shape"

Elementy statisticheskoy teorii opoznavaniya izobrazheniy. I. Opoznavaniye izobrazheniy fiksirovannoy formy (cf. English above), All-Union Institute of Scientific and Technical Information, Moscow, 1971, 61 pp, ill. bibliography of 12 titles (No 2638-71 Dep.) (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V789)

Translation: The paper considers a statistical approach to the recognition of images whose shape is predetermined. It is shown that an image can be described by means of a system of characteristic features whose determination reduces to calculating a linear functional. The authors consider groups of permissible conversions on the plane, the characteristic features being absolutely invariant with respect to these conversions. Problems of selecting resolving rules and the effectiveness of resolving rules are illuminated by the theory of solutions. It is shown

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ROMANOV, V. P., ZHITKOV, G. N., Elementy statisticheskoy teorii opoznaniya izobrazheniy. I. Opoznavaniye izobrazheniy fiksirovannoy formy. Moscow, 1971

that the optimum Bayes strategem and criterion of minimum error in recognition are equivalent to the criterion of maximum a posteriori probability. The resolving rule for minimum probability of recognition error divides the multidimensional space into regions. Various modifications of separating functions (discriminative functions) are presented as related to the form of covariation matrices. An optimum recognition procedure is derived from a dimensionless relation. It is shown that such a procedure leads to the necessity of inverting the matrices of covariants in the case of correlated components. Methods are presented for analytical inversion of covariation matrices of a certain special type. Kul'bak's divergence is used for distinguishing two distributions. The difference between classes with regard to permissible conversions is defined as the difference between distributions in the sense of Kul'bak's divergence. Author's abstract.

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USSR

UDC 681.3.06:51

ZHITKOV, G. N.

"The Classification of Structural Elements in Analysis of Complex Patterns"

Nauchno-Tekhn. Inform. Sb. Vses. In-t Nauchn. I Tekhn. Inform., [Scientific and Technical Information, Collection of All-Union Institute of Scientific and Technical Information], Series 2, No 10, 1970, pp 14-18, 49, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V634 by the author).

Translation: In creating an information retrieval system, the task arises of coding graphic information in terms of a certain language. This article states the problem of production of elements of this language by the grouping method. Two algorithms are studied for classification of structural elements making up the initial pattern and corresponding to the term set of the language. Various measures of similarity and criteria for subdivision of the set of objects into groups are presented.

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USSR

UDC 669.187.2.083

GOTIN, V. N., ZAYTSEV, B. YE., SHCHERBAKOV, A. I., ZHITKOV, N. K., OKOROKOV,
G. N., BOYARASHINOV, V. A., VOYNOVSKIY, YE. B., TOPILIN, V. V., SHALIMOV,
AL. G., OSIPOVA, L. M., CHERNOV, YU. V., ROZANOVA, T. S., and LARTIONOV, V. S.

"Influence of Wall Thickness of Crystallizer and Consumption of Cooling Water on
Conditions of Formation of Ingot During Vacuum Arc Remelting"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of
Works], No 75, Metallurgiya Press, 1970, pp 178-180

Translation: In a vacuum arc furnace in a crystallizer (C) 160 mm in diameter
with a current of 2.0-3.7 ka, the influence of wall thickness of C and tempera-
ture of cooling water on conditions of formation of ingot of complexly alloyed
nickel-based alloys is studied. C with wall thicknesses of 30 and 18 mm were
studied, the temperature on the outer surface of the C reaching 75°C in the first
case, 105°C in the second. The temperature of the internal surface of the C was
identical, 140-150°C. Neither a change in C thickness nor a change in water
consumption from 11 to 22 m³/hr influenced the depth of the liquid metal bath,
i.e., both repeated rolling of the C and reduced water consumption were permis-
sible. 2 figures.

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USSR

UDC:669.187.5

ZAYTSEV, B. Ye., GOTIN, V. N., SHCHERBAKOV, A. I., SERGYEV, A. B., ZHITKOV, N. K., OKOROKOV, G. N., BOYARSHINOV, V. A., TULIN, N. A., VOYNOVSKIY, Ye. V., TOPILIN, V. V., POZDEYEV, N. P., SHALIMOV, A. G., OSIPOVA, L. A., CHERNOV, Yu. V., and RAZANOV, T. S.

"Specifics of Vacuum Arc Remelting of Nickel-Based Alloys and Stainless Steels With Reverse Arc Polarity"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 181-183

Translation: Results are presented from a study of vacuum arc remelting of nickel alloys in a crystallizer 380-480 mm in diameter with thermocouples calked in length and height. The rate of melting with reverse polarity is 20% higher with identical bath depth of liquid metal. This is a result of more intensive heat transfer from the walls of the crystallizer during melting with reverse polarity. The macrostructure, chemical composition N, O, H and mechanical properties of the metal produced by melting with forward and reverse polarity are identical. The ingot produced with reverse polarity had no corona. 2 figures; 1 table; 1 biblio. ref.

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