

USSR

SOLOV'YEV, V. D., Zhurnal Mikrobiologii, Epidemiologii i Immunologii, No 10, 1972, pp 42-46

suffering from gastritis, dysentery, and other gastrointestinal disorders with symptoms resembling those produced by El Tor cholera showed that the hemagglutination reaction was negative in 94% of those over 1 year of age and in 46% of the infants.

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1/2 027 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--RESULTS OF STUDYING HEAT TRANSFER DURING THE BOILING OF SOLUTIONS
IN TUBES UNDER CONDITIONS OF FORCED CONNECTION -U-
AUTHOR-(02)-LEONTYEVA, L.A., GALTISOV, V.YA.
COUNTRY OF INFO--USSR
SOURCE--KHIM. NEFT. MASHINOSTR. 1970, (3), 14-15
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--HEAT TRANSFER, HYDRATION, SODIUM HYDROXIDE, POTASSIUM
HYDROXIDE, BOILING, UREA
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1990/1303 STEP NO--UR/0314/70/000/003/0014/0015
CIRC ACCESSION NO--AP0109387
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--02JCT70

CIRC ACCESSION NO--AP0109387

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEAT TRANSFER STUDIES WERE CONDUCTED ON H SUB2 O, NaOH, KOH, AND UREA SOLN. CONCNS. OF 2.5-40, 2.5-45, AND 2.5-60PERCENT, RESP. AT HEAT FLOWS (Q) OF 50,000-200,000 KCAL-M PRIME2 HR AND FLOW RATES (W) OF 0.8-2.5 M-SEC. EXPTL. DETD. BOILING HEAT TRANSFER COEFFS. (ALPHA) ARE SHOWN FOR H SUB2 O, NaOH 20, KOH 30, AND UREA 50PERCENT AS A FUNCTION OF W FOR A SERIES OF Q VALUES. ALPHA INCREASED WITH INCREASE IN W AND Q; VALUES ARE COMPARED WITH CALCD. ALPHA BASED ON HEAT TRANSFER BY CONVECTION. ALPHA OF NaOH AND KOH DECREASED AT CONCNS. 5-20 AND 5-36PERCENT, RESP., AND INCREASED AT HIGHER CONCNS.; ALPHA FOR UREA DECREASED STEADILY WITH INCREASED CONCNS. THE CONCNS. EFFECT ON ALPHA WAS ATTRIBUTED TO HYDRATED CRYSTAL FORMATION DESCRIBED BY O. YA, SAMOILOV (1957): AN EQUATION WAS DEVELOPED FOR THE CALCN. OF ALPHA CORRECTED FOR CONCNS. EFFECTS.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--X RAY EMISSION K SUBBETA SPECTRA OF SULFUR IN SOME SULFUR
CONTAINING COMPOUNDS AND THEIR RELATION TO THE STRUCTURE OF THESE
AUTHOR--(05)-NIKOLAYEV, A.V., MAZALOV, L.N., SADOVSKIY, A.P., GALTSOYA,
E.A., MURAKHTANOV, V.V.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(5), 113-16, CHEM.
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--X RAY EMISSION, SPECTRUM, SULFUR, CARBON DISULFIDE, MOLECULAR
ORBITAL, MOLECULAR STRUCTURE, PALLADIUM COMPOUND, COORDINATION
CHEMISTRY, CHEMICAL BONDING, SULFIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1995/1588 STEP NO--UR/0020/70/190/005/1113/1116
CIRC ACCESSION NO--AT0116996
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0116996

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE X RAY EMISSION SPECTRA WERE REPORTED FOR CS SUB2 AND R SUB2 S WHERE R WAS SELECTED FROM ME, ET, BU, C SUB6 H SUB13, AND C SUB8 H SUB17. THE ELECTRON DS. WERE CALCD. AT THE S ATOMS IN THESE SUBSTANCES BY USING THE HUECKEL APPROXN. OF THE LCAOMO METHOD. FROM THE TABULATED DATA THE CHARGE ON THE S ATOM DECREASES IN COMPOS. IN WHICH IT IS POSSIBLE TO HAVE A PI BOND BETWEEN S AND THE ATTENDANT RADICAL. THE S CHARGE VALUES WERE AS FOLLOWS FOR R SUB2 S MOLES.: BU 1.975, ET 1.974, ME 1.974, PH 1.913; THE INDICES OF FREE VALENCE OF THE S ATOM WERE, RESP., 1.045, 1.045, 1.043, AND 0.844. SPECTRA WERE ALSO REPORTED FOR THE PRODUCTS OF EXTN. OF PDCL SUB2 BY R SUB2 S WHERE R EQUALS PH OR C SUB6 H SUB13. IN THESE CASES THE PD-S BOND FORMATION CHANGES THE NATURE OF THE EMISSION SPECTRUM DRASTICALLY RELATIVE TO R SUB2 S OWING TO ELECTRON REDISTRIBUTION AND THEIR COORDINATION WITH PD. FACILITY: INST. NEORG. KHIM., NOVOSIBIRSK, USSR.

UNCLASSIFIED

USSR

UDC 541.49

NIKOLAYEV, A. V., YAKOLEVA, N. I., GAL'TSOVA, E. A., and MAZALOV, L. N.

"Correlation of the Extraction Properties of Organophosphorus Compounds with A Charge At the Phosphorus Atom"

Novosibirsk, Izv. Sibirskogo Otdeleniya Akademii Nauk SSSR,
Ser. Khimicheskikh Nauk, No 6, 1972, pp 118-119

Abstract: Organophosphorus compounds are used extensively for extraction of uranyl nitrate, plutonium and americium. The experimental investigation was conducted on the efficiency of extraction and distribution coefficients of organophosphorus compounds as a function of charge on the phosphorus atom. Fitting the newly obtained data, as well as some of the data reported in literature by the method of least squares a linear relationship is found between the logarithm of the effective extraction constants and the charge on the phosphorus atom. A test of the equation shows that for all cases the correlation coefficient is 0.99.

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USSR

UDC 577.472(268.42)

GALTSOVA, V. V., Zoological Institute of the USSR Academy of Sciences, Leningrad

"Quantitative Characteristics of Meiobenthos in the Chipinsky Inlet of the White Sea"

Moscow, Zoologicheskii Zhurnal, Vol 50, No 5, May 71, pp 641-647

Abstract: Fine benthic organisms (meibenthos) of 0.1-2 mm size, as a rule exceed with respect to quantitative and qualitative composition the macrofauna of the corresponding biotope. Meiobenthos assumes an intermediate position between micro- and macrobenthos. Both in fresh and salt water bodies, meiobenthos is an indication of some contamination and participates in the destruction of organic matter and in the self-cleaning process of water. Samples of meiobenthos were collected at the white Sea Biological Station of the Zoological Institute, including samples from the stony-sandy littoral zone, the muddy-sandy littoral zone, and the upper sublittoral zone. The biotope *Ascophyllum nodosum* was found to be most predominant: there were 427,570 specimen per m² of which 294,970 were eumeobenthos and 132,600 were pseudomeiobenthos. The total biomass of meiobenthos is 70.39 g/m² of which 2.78 constitute the biomass of eumeiobenthos and 67.61 the biomass of the pseudomeiobenthos. In the muddy-sandy littoral zone, the eumeiobenthos composition is somewhat different from that of the

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GALTSOVA, V. V., Zoologicheskii Zhurnal, Vol 50, No 5, May 71, pp 641-647

stony-sandy littoral zone: foraminifera, nematodes, copepods and very few specimens of the Tardigrada group were found. The pseudomeiobenthos consisted of oligochaetes and molluscs. Up to 90% of the organisms found belonged to the eumeiobenthos. Within this biotope the nematode group (74.9% of the 470 specimens) predominated. The pseudomeiobenthos made up 10.4% of the total amount. The biomass fluctuates within 2.80 and 9.56 mg per sample. Some 80.2% of the pseudomeiobenthos consisted of Ascophyllum. The number of specimens per m^2 was 319,640, of which 286,030 belonged to the eumeiobenthos and 33,610 to the pseudomeiobenthos. The total biomass of meiobenthos was 3.23, including 0.64 g/m^2 of eumeiobenthos. The data reported from the upper sublittoral zone are similar: 382,430 specimens per m^2 , a biomass of 5.44 g/m^2 , with a predominance of nematodes (229,00 specimens per m^2). The results obtained were compared against similar data reported in the literature. The author suggests that the number of meiobenthos organisms reported depends on the region, the character of the sea bottom, the method of sample collection employed, and the processing of the samples. For these reasons, the author found it difficult to make comparisons with the literature data.

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Genetics

USSR

UDC 03-104

MOVSESYAN, S. N., CALUKYAN, M. G., and OGANESYAN, R. A., Yerevan State University

"Preliminary Data on the Mutagenic Effect of Some New Chemical Compounds"

Yerevan, Biologicheskii Zhurnal Armenii, No 5, 1973, pp 39-44

Abstract: Laboratory and field experiments with *Rudbeckia speciosa* and *Rudbeckia triloba* treated with ethylenimine, its derivative preparation 496, and a nitrogen mustard derivative preparation 190 revealed that the new compounds have the same mutagenic effects as ethylenimine: lagging of individual chromosomes, incompleteness of the chromosome set at the poles, and formation of micronuclei in the dyads and tetrads. In the meta- and anaphases, some of the chromosomes did not form at the equator or poles but remained apart from the division figure. And they continued to remain in the cytoplasm in the telophase. These lagging chromosomes formed in the micronuclei (from 1 to 3 or more in a microspore) and persisted for a long time. They were present in the later stages when young mononuclear pollen grains formed. No correlation was observed between the concentration of the chemical compounds and their mutagenic effect.

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UDC 616.322-002.1-079.4:[616.931+616.931-008.97

FAYERMAN, N. N., GALUNINA, Z. I., BULATOVA, N. I., ZAKHAR'YEVSKAYA, N. S.,
and KULIKOVA, V. V., Gorki Medical Institute and Gorki Institute of
Epidemiology and Microbiology

"Differential Diagnosis of Diphtherial Tonsillitis in Carriers of
Diphtheria Bacilli"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1971,
pp 42-46

Abstract: In order to confirm the correctness of a diagnosis of "tonsillitis + diphtheria carrier state" and differentiate such tonsillitis from the atypical forms of diphtheria prevalent today, 521 hospitalized patients were kept under clinical observation. The dynamics of the titer of diphtheria antitoxin in the blood were studied and the titers of agglutinins and anti-O-streptolysin were studied. Low antitoxin titers in the acute period of the disease and 30- to 50-fold increase in antitoxin titers during convalescence confirmed the diagnosis of diphtheria. An increase in anti-O-streptolysin in the absence of shifts in the antitoxin titer implied a streptococcal etiology of the tonsillitis. The isolation of diphtheria
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FAYERMAN, N. N., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1971, pp 42-46

bacilli at this time suggested an accompanying bacteria carrier state. Bacteriological diagnosis of diphtheria can be hastened by the use of human embryo fibroblasts. Diphtheria toxin in nasopharyngeal washings can be detected in such cultures within 24 to 48 hours.

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USSR

UDC: 681.327.12

FRIDMAN, G. Kh., TSVETOV, Ye. R., KARANNOV, V. I., Galushchenko, V. V.,
LOS', V. F.

"An Optical-Electronic Device for Pattern Recognition"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki,
No 32, Nov 71, Author's Certificate No 318967, Division G, filed 13 Apr 70,
published 28 Oct 71, p 151

Translation: This Author's Certificate introduces an optical-electronic device for pattern recognition which contains a coherent light source, collimator, transparency with recognition and reference patterns, Fourier transform lens, spatial light modulator, and photomultiplier, all located along an optical axis. The photomultiplier is connected to the signal input of a high-frequency filter. The device also contains an electronic oscilloscope. As a distinguishing feature of the patent, speed is increased and interference suppression is improved by using a synchropulse light pickup, a control voltage oscillator, and a series circuit comprised of a wide-band amplifier and a signal envelope detector. The spatial light modulator is made in the form of a photographic film carrying a hologram of a variable-period lattice wrapped around a transparent thin-walled cylinder rotated by an
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FRIDMAN, G. Kh., et al., Soviet Patent No 318967

electric motor. The photomultiplier is fastened on a fixed base inside the rotating cylinder. In the base of the cylinder is an opening for the synchro-pulse light pickup, which is connected to the input of the control voltage oscillator and to one of the inputs of the oscilloscope. The output of the controlling voltage oscillator is connected to the controlling input of the high-frequency filter. The output of this filter is connected to the input of the wide-band amplifier, and the signal envelope detector output is connected to the other input of the oscilloscope.

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USSR

UDC 546.48'22:548:537.311.31

GALUSHKA, A. P., DAVIDYUK, G. YE., DUBOVOY, V. K., and KONOZENKO, I. D.,
Institute of Nuclear Research of the Academy of Sciences Ukrainian SSR

"Investigation of Nonuniformity of Specific Electrical Conductivity of
Single CdS Crystals"

Moscow, Neorganicheskiye Materialy, vol. 9, No 5, May 73, pp 750-754

Abstract: This article considers the nature of nonuniform distribution of the specific electrical conductivity of single CdS crystals and the effect of nonuniformity on the Hall mobility of electrons. Single CdS crystals, obtained by the method of zone sublimation, were used in the investigation. A nonuniform distribution of fast recombination s-centers is evident in single CdS crystals which leads to nonuniform distribution of the specific electrical conductivity over the length of the specimen. The mobility of conductors determined in such specimens from the data of Hall effect can be significantly different from that of actual Hall mobility μ_x . In determining the mobility of conductors in single CdS crystals from the experimental data

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GALUSHKA, A. P., et al, Neorganicheskiye Materialy, Vol. 9, No 5, May 73, pp 750-754

according to the Hall effect, it is always necessary to take into account the nonuniformity of distribution of the specific electrical conductivity in the specimen. In specimens with nonuniform distribution of the recombination centers over the entire length of the specimen the dependence of nonuniformities of the distribution of specific electrical conductivity and of μ_p on the intensity of short exposure will be higher at high temperatures (200-350°K) than at lower ones. The lowering of temperature results in decreased nonuniformity.

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USSR

UDC 537.311.33:546.48.221

GALUSHKA, A. P., DAVYDYUK, G. YE., and KONOZENKO, N. D., Institute of Nuclear Research, Academy of Sciences Ukrainian SSR

"Influence of Heterogeneities σ on Certain Properties of CdS Single Crystals"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, No 9, Sep 73, pp 1506-1510

Abstract: The technology used today for growing binary compounds A_2B_6 does not permit producing large ideal single crystals of these semiconductors. The experiments conducted by the authors involved use of CdS single crystals grown by the method of zone sublimation. The authors found that the heterogeneous distributions of conductivity in the CdS single crystals grown by this method are due to the heterogeneous distribution throughout the mass of the crystal of fine traps associated with the natural defects in the lattice. They studied the influence of intensity of exposure on the mobility of carriers and the distribution of conductivity. The article contains 4 figures and 11 bibliographic references.

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USSR

UDC 53.07/.08+53.001.89

KOPAS', N. F., GALUSHKA, A. P., KONOZENKO, I. D.

"Radiation Resistant Gamma Dosimeters based on CdS Single Crystals with Compensated Admixtures"

Moscow, Pribery i Tekhnika Eksperimenta, No 5, 1972, pp 59-60

Abstract: Gamma-dosimeters based on single CdS crystals with compensated admixtures are described which permit measurement of the γ -radiation intensity of ^{60}Co from 0.1 to several thousands r/sec with an error not exceeding +5% to an integral dose of 10^8 r. The increase in radiation stability of the γ -sensitivity of the CdS single crystals is achieved by alloying them during the growth process with admixtures: 0.05% Ag and 0.1% Ga (by weight). The admixtures are added to the initial CdS powder. The structural design and the basic characteristics of the γ -dosimeters are presented.

The sensitivity of the γ -dosimeters as a function of temperature is plotted for three different intensities of the γ -radiation (70, 420 and 1,600 r/sec) with a crystal voltage of 0.1 volts. By comparison with the CdS crystals without admixtures these single crystals have several times less dependence on temperature.

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1/2 008 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--DIAMIDE BASED COMPLEX SALT -U-

AUTHOR--(05)-GORBONS, YE.P., YEGOROV, V.P., SMALIY, N.I., GALUSHKA, V.P.,
MASTEROV, A.P.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,377

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, 47(9)

DATE PUBLISHED--03MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL PATENT, NITRATE, NITRITE, UREA, COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/1448

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0126979

UNCLASSIFIED

2/2 008
CIRC ACCESSION NO--AA0126979
ABSTRACT/EXTRACT--(U) GP-0-
E.G. CA NITRITE, AND UREA.
CA NITRITE IS 4-1:1.

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT. COMPLEX SALTS BASED ON A DIAMIDE,
THE MOLAR RATIO OF UREA TO CA NITRATE PLUS

UNCLASSIFIED

USSR

UDC 8.74

GALUSHKIN, A. I.

"Selection of Criteria for Initial Optimization and the Construction of an Optimal Model of Recognition Systems for K Classes of Patterns in a Teaching Mode"

V sb. Avtomat. upr. i vchisl. tekhn. (Automatic Control and Computer Technology -- Collection of Works), No. 10, Moscow, "Mashinostroyeniye", 1972, pp 104-115 (from RZh-Matematika, No 9, Sep 72, Abstract No 9V662)

Translation: The construction of optimal models of pattern recognition systems for various optimization criteria is considered. Expressions are given for optimal separating surfaces and optimal values of the average risk function. Methods for achieving an output unit of recognition systems for K classes of patterns on a network of linear threshold elements are described. Authors abstract.

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USSR

UDC: 519.2

GALUSHKIN, A. I., ZOTOV, Yu. Ya., and SHIKUNOV, Yu. A.

"On-Line Processing of Experimental Data"

Moscow, "Energiya," 1972, 360 pp, illustrated (from RZh--Matematika, No 6, 1972, Abstract No 6V190K)

Translation: The book considers problems in the on-line processing of experimental data. The coding of samples of stationary and nonstationary random processes is investigated, and methods are given for constructing rapidly coding devices. An examination is made of problems and methods of operative statistical processing of unidimensional and multidimensional samples of random processes on a digital computer and with the use of special apparatus. A detailed investigation is made of methods of accelerating correlational analysis of random processes. Problems of the recognition of forms, based on statistical algorithms, are examined.

The book is designed for specialists in automation, cybernetics, communications, and electronics.

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USSR

UDC: 51:155.001.57:681.3.06

PUPKOV, K. A., VYALOV, A. P., GALUSHKIN, A. I.

"Geometric Recognition of Sets With Various Structures. I"

Tr. Mosk. in-ta elektron. mashinostr. (Works of the Moscow Institute of Electronic Machine Building), 1971, vyp. 14, pp 95-108 (from RZh-Matematika, No 11, Nov 71, Abstract No 11V876)

Translation: The authors consider problems of constructing systems for geometric recognition of types of sets in which the number of points is limited from above. The authors propose an algorithm for preparing a space of distinctive features as well as an algorithm for estimating the accuracy of the coordinates of singular points in the set and an algorithm of a system for recognizing the type of set. Authors' resumé.

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USSR

UDC: 8.74

GALUSHKIN, A. I.

"Realization of Criteria of Primary Optimization in Open-Cycle Adaptive Pattern Recognition Systems in the Instruction Mode"

Tr. Mosk. in-ta elektron. mashinostr. (Works of the Moscow Institute of Electronic Machine Building), 1971, vyp. 23, pp 191-204 (from RZh-Kiber-netika, No 4, Apr 72, Abstract No 4V585)

Translation: Methods are considered for realization of primary optimization criteria related to the average risk function in closed-cycle adaptive pattern recognition systems with various structures. The instruction mode of the pattern recognition system is considered. Author's abstract.

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USSR

UDC: 8.74

GALUSHKIN, A. I., VASIL'KOVA, T. F., SLOBODENYUK, V. I., TYUKHOV, B. P.

"Analysis of the Dynamics of Systems for Recognition of Nonstationary Patterns"

Tr. Mosk. in-ta elektron. mashinostr. (Works of the Moscow Institute of Electronic Machine Building), 1971, vyp. 23, pp 210-227 (from RZh-Kiber-netika, No 4, Apr 72, Abstract No 4V584)

Translation: The article is devoted to analysis of the dynamics of closed-cycle and open-cycle adaptive systems for recognition of nonstationary patterns. The use of nonstationary pattern recognition systems enables consideration of modes of operation which are fundamentally new for recognition systems, including anticipation of a decision in a recognition system with finite memory. Authors' resumé.

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USSR

UDC: 8.74

PUPKOV, K. A., NARIMANOV, V. Kh., GALUSHKIN, A. I.

"A Specialized Recognition Device"

Tr. Mosk. in-ta elektron. mashinostr. (Works of the Moscow Institute of Electronic Machine Building), 1971, vyp. 23, pp 156-165 (from RZh-Kiber-netika, No 4, Apr 72, Abstract No 4V586)

Translation: Principles of design of specialized recognition devices are considered. One of such devices having a variable structure is described. Authors' abstract.

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GALUSHKIN, A. I., YUMASHEV, S. G.

"The Use of Piecewise-linear Dividing Surfaces in a Problem of Pattern Recognition"

Tr. Mosk. In-ta Elektron. Mashinostr. [Works of Moscow Institute of Electronic Machine Building], No 6, 1970, pp 238-254, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V740 by M. Chel'shev).

Translation: Three algorithms are suggested for the construction of piecewise-linear dividing surfaces. A statistical algorithm calls for division of the space of characteristics and its subspaces by planes passing through the middle of a straight line connecting the ends of the vectors which are the mathematical expectations of the vectors of stimuli of the teaching sequence in the space or subspace of characteristics. An iterational algorithm is basically similar to the statistical algorithm, and differs from it only in that the normal vectors of the separating hypersurfaces are calculated by an iterational method based on the method of learning with error correction. A combined statistical and iterational algorithm consists
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GALUSHKIN, A. I., YUMASHEV, S. G., Tr. Mosk. In-ta Elektron. Mashinostr., No 6, 1970, pp 238-254.

of a combination of the two algorithms just described. At each step, the normal vector of the dividing plane is determined first using the statistical method, then is refined using the iterational method. The results of modeling of the algorithms on the MIR computer are presented. The advantages of the algorithms suggested are: 1) relative simplicity of calculations and apparatus required for realization; 2) possibility of constructing dividing surfaces of rather complex form; 3) gradual complication of dividing surface; 4) absence of apriori knowledge on the structure of the actual areas of the classes. 9 Biblio. Refs.

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USSR

GALUSHKIN, A. I.

"Methods of Synthesis of Pattern Recognition Systems"

Tr. Mosk. In-ta Elektron. Mashinostr. [Works of Moscow Institute of Electronic Machine Building], No 6, 1970, pp 133-171, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V741 by S. Yumashev).

Translation: It is demonstrated that pattern recognition systems can be looked upon as a particular case of analytic self-tuning systems. A classification is presented of teaching and self-teaching recognition systems. It is stated that the most promising systems are those with the international method of training. Several problems are listed which arise in the analysis of the dynamics of recognition systems, looked upon as extreme systems of automatic control with random actions. A method is presented for synthesis of pattern recognition systems as analytic self-tuning systems. Tuning both in closed and open cycles is studied and the two types are compared. 47
Biblio. Refs.

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GALUSHKIN, A. I.

"Synthesis of Recognition Systems for Unstable Patterns, Learning in Open Cycle"

Tr. Mosk. In-ta Elektron. Mashinostr. [Works of Moscow Institute of Electronic Machine Building], No 6, 1970, pp 172-237, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V745 by S. Yumashev).

Translation: The problem of recognition of unstable patterns, i.e., patterns, the probability distribution of characteristics of which depends on time, is studied. The system for recognition of unstable patterns can be represented as an extreme system with a quality functional which depends on time (minimum mean risk at each moment in time). A particular case is studied when only the mean values change with time, while all higher order moments are constant. An expression is produced for the dividing surface in the case of normal input signals, and it is demonstrated that the problem of synthesis consists of optimal determination of estimates of the vectors of mathematical expectations. The estimates can be found for the current moment in time or for the future. These problems are solved in the work using the results of optimal discrete filtration. The accuracy of the recognition systems suggested is estimated.

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USSR

GALUSHKIN, A. I.

"A Single Approach to the Solution of Recognition Problems and Self-Teaching Problems in Pattern Recognition Systems"

Tr. Mosk. In-ta Elektron. Mashinostr. [Works of Moscow Institute of Electronic Machine Building], No 6, 1970, pp 104-120, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V744 by S. Yumashev).

Translation: The problem of teaching of recognition is studied as the generation of a dividing surface in the space of characteristics. It is assumed that membership of representatives of the teaching sample in one class or the other is known with probability $a = 1$. In the self-teaching mode, $a = 0.5$. This interpretation allows a general approach to analysis of methods of teaching and self-teaching of pattern recognition systems, and also investigation of teaching with an unqualified teacher ($0.5 < a < 1$). Expressions are produced for the joint probability density of the signal at the input, formed by patterns from the learning sample and the teachers signals, and these expressions are analyzed. The "teachers opinion of his own qualifications" is introduced as a parameter and its influence on the operation of the recognition system is analyzed. An expression for the mean risk is produced.

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USSR

GALUSHKIN, A. I.

"Dividing Surfaces of Arbitrary Order in Pattern Recognition Systems"

Tr. Mosk. In-ta Elektron. Mashinostr. [Works of Moscow Institute of Electronic Machine Building], No 6, 1970, pp 261-270; (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V743 by S. Yumashev).

Translation: A method is presented for construction of dividing surfaces, described by equations of arbitrary order. This method is a variant of a method suggested by Sebastian in his well-known monograph. The case of two classes and non-correlated characteristics is studied. Methods of minimization of the functional selected (mean measure of rth order of distance between representatives of one class) are studied with various limitations and considering mutual correlation between characteristics.

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GALUSHKIN, A. I.

"Nonlinear Methods of Solution of Pattern Recognition Problems"

Tr. Mosk. In-ta Elektron. Mashinostr. [Works of Moscow Institute of Electronic Machine Building], No 6, 1970, pp 121-132, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V742 by S. Yumashev).

Translation: It is stated that the construction of a nonlinear dividing surface in a space of characteristics is equivalent to a nonlinear transform of the initial space of characteristics into a new space and drawing of a nonlinear dividing surface in the new space. Methods of nonlinear transformation of characteristics known in the literature at present are analyzed. It is pointed out that it is most expedient to use piecewise-linear dividing surfaces, which combine good dividing properties and simplicity of realization. 15 Biblio. Refs.

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USSR

UDC: 51:155.001.57:681.3.06

PUPKOV, K. A., VYALOV, A. F., GALUSHKIN, A. I.

"Geometric Recognition of Sets of Various Structure"

Tr. Mosk. in-ta elektron. mashinostr. (Works of the Moscow Institute of Electronic Machine Building), 1971, vyp. 14, pp 95-108 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V876)

Translation: The paper deals with problems of constructing systems of geometric recognition of types of sets in which the number of points is bounded from above. An algorithm is proposed for preparing a space of characteristics as well as an algorithm for estimating the accuracy of the coordinates of singular points of a set and an algorithm for a system of recognition of the type of sets. Authors' resumé.

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USSR

UDC: 51:155.001.57:681.3.06

GALUSHKIN, A. I., SSORIN, V. G.

"On Constructing Signal Recognition Systems on the Basis of Septrons With Split Photoelements"

Tr. Mosk. in-ta elektron. mashinostr. (Works of the Moscow Institute of Electronic Machine Building), 1971, vyp. 14, pp 173-178 (from RZh-Kibernetika, No 9, Sep 71, Abstract No 9V630)

Translation: The authors consider a model of a septron with split photoelements. A method is presented for determining the "spacing" between signals by means of a septron with a split photocell utilizing a static mask. It is proposed that this septron model be used for forming a space of signal characteristics. V. Mikheyev.

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USSR

UDC: 51:155.001.57:681.3.06

GALUSHKIN, A. I., SSORIN, V. G.

"Determining the 'Spaces' Between Signals With the Aid of Septrons"

V sb. Materialy 4-oy Resp. nauchn. konferentsii molodykh issledovateley po sistemotekhnike, 1969. T. 3 (Materials of the Fourth Republic Scientific Conference of Young Researchers on Systemotechnics, 1969. Vol. 3), Kiev, 1970, pp 61-67 (from RZh-Kibernetika, No 1, Jan 71, Abstract No 1V648)

Translation: It follows from the operating principle of the septron that the septron performs comparison of the amplitudes of the corresponding harmonics of the signal to be recognized and the reference signal, and the results of these comparisons are then added for all fibers. The characteristic of proximity which permits comparison of signals with the aid of septrons is defined as the septron current

$$I = I^D - I^B,$$

where I^D and I^B are the septron currents with installation of the passing and blocking masks on the septron for the reference signal, and applying the signal to be recognized across the septron input. The characteristic of proximity approaches a maximum when the signal to be recognized coincides

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GALUSHKIN, A. I., SSORIN, V. G., Materialy 4-oy Resp. nauchn. konferentsii molodykh issledovateley po sistemotekhnike, 1969. T. 3, Kiev, 1970, pp 61-67

with the reference signal. An appreciable disadvantage of the characteristic of proximity when it is used for comparing one signal to be recognized with several reference signals is the fact that the characteristic may have the same value for all different reference signals. The concept of an idealized "space" between signals is introduced, which is defined as the sum of the absolute values of the difference in amplitudes of the corresponding harmonics of the signal to be recognized and the reference signal. In practice it is possible to determine the actual "space" which differs little from the idealized "space". Analysis shows that the actual "space" does not strictly satisfy a single axiom of the metric space, which is its disadvantage. In order to avoid errors in using the characteristics of "spacing", it is necessary to normalize the reference signals and those to be recognized in a special way. E. Vagner.

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E. Mathematical Modeling of
Thought Processes

USSR

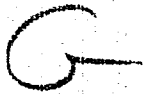
GALUSHKIN, O. I.

"Adaptation Algorithms in Multilayer Pattern Recognition Systems"

Dopovidi AN URSR [Ukrainian], 1973, Vol A, No 1, pp 15-20 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V729, by the author).

Translation: A regular method is presented for synthesis of adaptation algorithms in multilayer pattern recognition systems. Multilayer systems of arbitrary structure are studied (arbitrary number of layers, elements per layer, systems with reverse couplings and cross couplings). Algorithms are presented for the modes of learning, self-teaching and learning with a reinforcer with finite "qualifications" in the case of two or k classes of patterns and the general cases.

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1/2 046 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ELECTRODYNAMIC SPECTRAL LINE BROADENING WITH A LINEAR STARK EFFECT
-U-
AUTHOR--GALUSHKIN, YU.I. 
COUNTRY OF INFO--USSR
SOURCE--ASTRONOMICHESKII ZHURNAL, VOL. 47, NO. 2, 1970, P. 375-383
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS
TOPIC TAGS--LINE BROADENING, EMISSION SPECTRUM, ZEEMAN EFFECT, DOPPLER
EFFECT, QUANTUM ELECTRODYNAMICS, HYDROGEN, LINE INTENSITY, STARK
EFFECT/(U) TOKAMAK 3 THERMONUCLEAR DEVICE

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1345 STEP NO--UR/0033/70/047/002/0375/0363
CIRC ACCESSION NO--AP0124995
UNCLASSIFIED

Graphite

USSR

UDC 621.785.377

KHUDOKORMOV, D. N. and GALUSHKO, A. M., Belorussian Polytechnic Institute

"Effect of Magnesium, Cerium, and Aluminum on Electroconductivity of Graphite in Synthetic Cast Iron"

Minsk, Doklady Akademii Nauk BSSR, Vol 15, No 5, 1971, pp 425-427

Abstract: For certain amounts of Mg and Ce added to the pure alloy Fe-C containing 5 wt. % carbon, specific electroconductivity ρ of the alloy can be reduced down to practically the values for pure iron. This low ρ value of the alloy can be obtained only by alloying graphite inclusions with elements leading to a sharp increase in impurity conductivity of the graphite. When 0.1-0.2 % Mg relative to alloy weight is added, a very low ρ value is obtained along the axis of load application during pressing. The anisotropy of the electroconductivity of pressings of graphite extracted from the cerium alloy varies just as for the case of graphite pressings made of the magnesium alloy. Aluminum used in the experiments as a "neutral" additive does not introduce marked changes in the ratio ρ_c/ρ_a (ρ_c is the specific electroconductivity parallel to the axis along which the load is applied during pressing, while ρ_a is the specific electroconductivity perpendicular to this axis). Results showed that when the amount of cerium added is increased to 0.1-0.2%, the intensity of the decrease in ρ compared with the graphite of the initial

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USSR.

KHUDOKORMOV, D. N., etal, Minsk, Doklady Akademii Nauk BSSR, Vol 15, No 5, 1971, pp 425-427

alloy becomes steeper. This effect is associated with the increased number of current carriers in the graphite. Thus, the effect of variation in the anisotropy of electroconductivity of crystalizing free carbon under the action of magnesium and cerium must not be neglected when describing the mechanism of action of globulizing elements on the shape of graphite inclusions and cast iron.

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USSR

UDC 621.785.377

KHUDOKORMOV, D. N., and GALUSHKO, A. M., Belorussian Polytechnic Institute

"Effect of Magnesium, Cerium, and Aluminum on the Electric Conductivity of Synthetic Cast Iron Graphite"

Minsk, Doklady Akademii Nauk BSSR, Vol 15, No 5, May 71, pp 425-427

Translation of Abstract: The effect of microadditions of magnesium, cerium, and aluminum on the electric resistivity ρ of pure Fe-C alloy containing 5 wt. percent carbon was studied. It was found that additions of Mg and Ce reduce ρ to practically pure iron values. The sharp drop in the resistivity of the alloy is due to the change in the anisotropy of the electric conductivity of the crystallizing free carbon under the action of the magnesium and cerium. Additions of aluminum cause no substantial decrease in ρ . The results obtained in ρ measurements for Fe-C alloy are confirmed by data obtained from measuring ρ and the temperature dependence of the resistivity of specimens pressed from graphite extracted from the alloy.

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USSR

UDC 669.295.015.3:543.42

GRIKIT, I. A., GALUSHKO, Ye. G., MAKARENKO, V. S., and PETRUN'KO, M. N.

"Spectrographic Determination of Controlled and Uncontrolled Impurities in Metallic Titanium"

Moscow, Metallurgiya i Khimiya Titana (Institut Titana), Metallurgiya Publishing House, Vol 6, 1970, pp 160-165

Translation: A description is given of an analysis of a sample of metallic titanium in the forged state using the ISP-30 or ISP-28 spectrographs. The spectrum is excited by an alternating current arc of ten amperes (DG-2). The time of preliminary sintering is five seconds to establish the iron, silicon, vanadium, chromium, tin, manganese, copper, nickel, aluminum, and zirconium, and 80 seconds to determine the molybdenum and tungsten. The analytic interval is 1.5 mm. Graduated charts were constructed on the coordinates (Delta S, lg C) according to the three-stage method. The method ensures testing within a range of the concentrations that follow: 0.01-0.2% Fe; 0.002-0.1% Si; 0.002-0.2% V; 0.04-0.2% Cr; 0.003-0.15% Sn; 0.005-0.15% Mn; 0.0009-0.25% Cu; 0.01-0.23% Ni; 0.004-0.2% Al; 0.002-0.17% Zr; 0.006-0.18% Mo; and 0.02-0.1% W. The reproducibility of results from analysis according to this method is characterized by a variation

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USSR

GRIKIT, I. A., et al., Metallurgiya i Khimiya Titana (Institut Titana), Metallurgiya Publishing House, Vol 6, 1970, pp 160-165

coefficient of 10-20% depending on the element being tested and its concentration. It was established that the mass of the specimen has a considerable influence on the results of spectral analysis. For the purpose of eliminating the possibility of distorting the results of spectral analysis, it is essential that the specimens of metallic titanium being analyzed correspond in mass and structure to the standard test pieces. Four illustrations, two tables, and five bibliographic entries.

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USSR

UDC 669.295.015.3:543.42

GRIKIT, I. A., GALUSHKO, Ye. G., POLONIK, V. V., OGNEV, P. K., KOLOMOYETS, G. G., and PEREVYAZKO, A. I.

"Spectral Determination of Oxygen in Hydrided Titanium Powders"

Moscow, Metallurgiya i Khimiya Titana (Institut Titana, Metallurgiya Publishing House, Vol 6, 1970, pp 155-159

Translation: A description is given of the method, based on the principle of full dehydrogenation of briquetted suspended matter, which is analyzed, in an anode state of the direct current arc and exciting the hydrogen from the mixture of gases in an argon environment by the same discharge. Recording of the analytic lines H 6,562.85 Å/Ar 6,965.43 Å was done on an ISP-51 spectrograph with a chamber with a focusing distance of 270 mm on Infra-760 photoplates. Graduated charts for determining hydrogen were constructed on coordinates (ΔS ; lg G). The reproducibility of results from spectral determination of hydrogen in hydrogenated titanium powders is characterized by a variation coefficient of 5-6% with a hydrogen concentration interval between 1.5 and 4%. Three illustrations, two tables, and one bibliographic entry.

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USSR

UDC: 612.765.2

KOVALENKO, Ye. A., POPKOV, V. L., KONDRAT'YEV, Yu. I., MAILYAN, E. S., GALUSHEKO, Yu. S., PROKHONCHUKOV, A. A., KAZARYAN, V. A., MOROZOVA, R. S., SEROVA, L. V., ~~POTAPOV, A. N., ROMANOV, V. S., and PISHCHIK, V. B.~~

"Shifts in the Functions of the Organism During Prolonged Hypolinesia"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol 14, No 6, Nov/Dec 70, pp 3-9

Abstract: Rats kept immobilized for up to 170 days in special cages showed an increase in general gas exchange and rate of oxygen utilization in the muscles, and a slowing of the rate of tissue metabolism in the liver and myocardium. The level of phosphorylation in the myocardium and, to some extent, in the skeletal muscles and liver dropped. Prolonged hypokinesia also stunted the animals' growth, prevented them from gaining weight, and in some cases caused them to lose weight. Besides disturbing mineral and protein metabolism, immobilization resulted in exhaustion of the hypothalamus - pituitary - adrenal cortex system.

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GALUSHKO, Yu. S.

Space Physiology

ORIGINAL ARTICLES

SPACE BIOLOGY

SO: JPRS 54396
03 NOV 1971

UMC 612.2-06:612.766.2

EFFECT OF HYPODYNAMIA ON GAS EXCHANGE IN ANIMALS (Air-space physiology)

Article by Ye. A. Kovalenko, V. L. Popov, F. S. Mal'vin, Yu. S. Galushko, M. V. Gerasimova, Yu. I. Kondrat'yev, A. A. Galushko, N. N. Kabanov, V. A. Galushko, and V. A. Galushko, *Izv. Akad. Nauk SSSR, Kazakhskaya Biologiya i Meditsina, Russian, Vol 5, No 4, pp 3-8, 1971, submitted for publication 8 December 1969*

Abstract: This paper reports on investigations of the pathogenesis of prolonged hypokinesia (up to 100 days), including total gas exchange, gas homeostasis in tissues, rate of in vivo oxygen consumption in muscles (polarographic method), tissue respiration and activation phase phosphorylation in the skeletal muscle, myocardium, brain and liver, as well as oxidative processes in liver mitochondria. The weight of the animals and individual skeletal muscles of the limbs was also examined. On the 120th day of hypokinesia functional (static and dynamic) tests were performed to determine work capacity and acute hypoxia tolerance of animals. During an exposure to 60-day hypokinesia the dogs showed a decrease in gas exchange which was most clearly pronounced by the 30th day. By the end of the experiment gas exchange increased and immediately returned to a normal level after the experiment. Rats exposed to a longer hypokinesia exhibited noticeable changes in total gas exchange at early stages of the experiment and a distinct acceleration of gas exchange and regional oxygen consumption in muscles by the 90th-100th day. Changes in the oxidative processes in tissues were also found during the 30th-60th day of hypokinesia. The rats also revealed substantial weight losses due to a decrease

USSR

UDC 612.2+612.76

POPKOV, V. L., MAILYAN, E. S., GALUSHKO, Yu. S., KOVALENKO, Ye. A., ZAYTSEVA, Ye. I., NITCCHKINA, I. A., STULOVA, L. V., and RYAZHSKIY, A. V., Institute for Biomedical Problems

"Shifts in Gas Exchange, Gas Homeostasis, and Tissue Respiration In Rats During Prolonged Hypokinesia"

Leningrad, Fiziologicheskii Zhurnal USSR imeni I. M. Sechenov, Vol 41, No 12, 1970, pp 1,808-1,812

Abstract: General gas exchange, pO_2 , and pCO_2 did not change significantly in the tissues of rats kept immobilized in special cages for 60 days. However, during the second month of the experiment, there were periods when the intensity of respiration increased in the liver and decreased in the myocardium. After two months of hypokinesia, the weight of experimental rats was substantially less than that of the control (273±10 g and 392±18 g, respectively). Also the physical fitness of the experimental animals declined sharply with respect to both dynamic and static work. The duration of maximum dynamic work decreased more than 2.5-fold while the capacity for static work decreased 9-fold.

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USSR

UDC 539.376.532.135

GALUSTOV, K. Z., and GVOZDEV, A. A.

"Linear Theory of the Creep of Concrete with Linear Compression"

Moscow, Mekhanika Tverdogo Tela, No 1, Jan-Feb 72, pp 85-91

Abstract: The basic working hypotheses of the linear theory of the creep of concrete are formulated; in this theory, deformations developing in time are subdivided into components, namely the residual effect, and irreversible deformation of the first kind. Elastic-instantaneous deformations depend linearly upon the acting stresses all the way to values that are close to the static strength of the concrete. Deformations due to the residual effect depend linearly upon the stresses caused by them, are subject to the principle of superposition, and include that part of the irreversible deformations that is due to the aging of the concrete. Irreversible deformations of the first kind are the cause for nonadherence of the superposition principle; they depend nonlinearly upon the stresses caused by them. The basic equations of the theory are written out, and possible methods of segregating the components of deformation are considered. The equations of the two-component theory of the creep of concrete were verified experimentally on the basis of complex stepwise-changing regimes of the loading of experimental samples. It is shown that the theory

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- USSR

GALUSTOV, K. Z., and GVOZDEV, A. A., Mekhanika Tverdogo Tela, No 1, Jan-Feb 72, pp 85-91

of an elastically creeping solid yields exaggerated values in the case of stepwise increasing stress; this is linked to errors of the principle of influence imposition. Deformations computed according to the theory of an elastically creeping solid and according to the two-component theory of the creep of concrete under stepwise-increasing loads are in satisfactory agreement with the experimental data. In the case of load removals and repeated loading, the theoretical curves on the basis of the theory of an elastically creeping solid diverge considerably from the experimental values, whereas curves on the basis of the two-component theory of the creep of concrete are in good agreement with the experimental values. The conclusion is drawn that an application of the nonlinear theory of an elastically creeping solid, when describing periodically changing loading regimes, leads to substantial errors. The basic hypotheses of the two-component nonlinear theory of an elastically creeping solid, and the basic equations based upon these hypotheses, make it possible to describe correctly the experimental data obtained for variable applications of compression stresses by taking into account irreversible creep deformations of the first kind. 14 references,

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USSR

UDC 621.374.32

SHUSHKOV, YE. I., GALUST'YAN, S.G., and TSODIKOV, M.B.

"Multichannel Pulse Counters"

Mnogokanal'nyye schetchiki impul'sov (cf. English above), Leningrad, "Energiya," 1971, 64 pp, ill., 25 k. (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 1, Jan 72, Abstract No LA357K)

Translation: The book considers ways of pulse counting simultaneously over several channels by means of a single electronic counter using an internal storage. An analysis is given of the principal characteristics and parameters of the multichannel counter. Its application in various technical devices is considered; viz., multichannel frequency meters, time-interval indicators, statistical analyzers, monitoring and accounting devices. A description is given of the design and operation of various versions of multichannel counters, and schematic diagrams and calculations are given for the principal components.

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USSR

UDC 621.391.65

GALUTIN, V.Z., SENKEVICH, S.S., SKIBARKO, A.P.

"Some Features Of The Operation Of A FM Range Finder With The Use Of A Gas Laser"

Izv. VUZ:Radioelektronika, Vol XV, No 12, Dec 1972, pp 1421-1427

Abstract: The paper studies the peculiarities and possible uses of laser radiation for measurement of distances with the aid of frequency modulation. The effect was experimentally observed of the "unevenness" of change of the medium frequency of the output signal of a laser FM range finder with a change of the distance being measured. A study of the output signal showed that this effect is connected with a quasi-periodicity originating because of the recurrence period of the laser radiation during a change of frequency of the modes which are generated at an intermode distance. The results of a calculation confirm that the effect of "unevenness" is connected with the quasi-periodicity of the radiation. During the calculation, subdivision of the modulation period into individual elementary cycles was employed, which made it possible to obtain an analytical expression for the medium frequency of the output signal. It is concluded that it is impossible with the aid of a laser FM range finder to measure distance more precisely than the doubled length of the resonator. 4 fig. Received by editors, 21 December 1971.

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USSR

UDC 632.95

GOL'DINOV, A. L., PANSIN, Yu. A., ZIL'BERMINTS, G. S., SHAPKIN, L. G., and GALUTSKIY, G. M.

"Synthesis of Trichloroacetic Acid"

USSR Author's Certificate No 284781, Filed 11 Jun 69, Published 12 Jun 72 (from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom, (I, L-S), No 1(II), 1973, Abstract No IN499P by T. A. Belyayeva)

Translation: Trichloroacetic acid is synthesized by oxidation of CCl_3CHO (I) at $45-65^\circ\text{C}$ in the presence of HNO_3 by passing oxygen through the reaction mixture, followed by a final oxidation with HNO_3 at $80-100^\circ\text{C}$. Example. Synthesis is carried out continuously in a sequence consisting of three glass reactors (Rc). The first Rc is supplied with I, as well as with HNO_3 and O_2 in amounts 0.2-0.5 and 0.4-0.8 mole per 1 mole of I, respectively. In some cases the second Rc is also supplied with O_2 . The reaction mixture stays in each Rc for 6 hrs. Temperature in the first, second, and third Rc is maintained at $45-65$, $80-90$, and $90-95^\circ\text{C}$, respectively. The concentration of HNO_3 is kept at 85-98%, and of I at 83-98%. The yield of CCl_3COOH is 97.5-100%.

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USSR

UDC 681.332.4

PUKHOV, G. Ye., GALUZINSKIY, G. P., KATKOV, A. F., BAKUMENKO, V. D., Institute of Cybernetics, Academy of Sciences of the UkrSSR

"Reversible Models for Solving Systems of Algebraic Equations"

USSR Author's Certificate No 318037, filed 23 Mar 70, published 24 Jan 72 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 7, Jul 72, Abstract No 7B467 P)

Translation: Reversible models for solving systems of algebraic equations are known which contain operational amplifiers whose inputs and outputs are connected through main and auxiliary conductance matrices to the outer terminals of the model. The conventional devices have low-level working voltages. As a distinguishing feature of the proposed device, it contains controllable current sources with a positive amplification factor whose outputs are connected to the outside terminals and to the lines for the main and auxiliary conductance matrices which correspond to these terminals, and the controlling inputs of these current sources are connected through the auxiliary conductance matrix to the inputs of the operational amplifiers. This increases the working voltage level.

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USSR

UDC 8.74

BORKOVSKIY, B. A., GALUZINSKIY, G. P., KATKOV, A. F., ROMANTSOV, V. P.

"Algorithmic Hybrid Systems"

Kiev, Algoritmicheskiye gibridnyye sistemy (cf. English above), "Nauk. dumka", 1972, 116 pp, ill. 68 k. (from RZh-Matematika, No 1, Jan 73, abstract No 1V783K)

Translation: Algorithmic hybrid computer systems are systems in which the method of representing the information is hybrid i. e., in continuous quantities and codes and the method of solution is algorithmic. This monograph deals with theoretical and practical questions of constructing computer systems made up of a digital automaton, or a digital computer, and analog circuits which model the operator of numerical integration with regard to boundary conditions which play the part of standard sub-programs of a special type.

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USSR

BORKOVEKIY, B. A., GALUZINSKIY, G. P., KATKOV, A. I., ROMANTSOV, V. P.

"Algorithmic Hybrid Systems"

Algoritmicheskiye Gibridnye Sistemy [English Version Above], Kiev, Nauk. Dumka Press, 1972, 116 pages (Translated from Referativnyy Zhurnal, No 1, 1973, Abstract No 1 V783 K).

Translation: Algorithmic hybrid computer systems are systems in which the method of representation of information is hybrid, i.e., both in analog and digital representations, while the method of solution is algorithmic. This monograph studies theoretical and practical problems of the construction of computer systems consisting of a digital automaton or digital computer and analog circuits modeling the numerical integration operator considering boundary conditions, acting as standard subroutines of a special type.

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USSR

UDC: 681.332.6

PUKHOV, G. Ye., GALUZINSKIY, G. P., KATKOV, A. F., ROMANTSOV, V. P., Institute of Cybernetics, Academy of Sciences of the Ukrainian SSR

"An Analog with Automatic Data Input for Solving Systems of Differential Equations"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 25, Soviet Patent No 278239, class 42, filed 12 May 69, published 5 Aug 70, p 137

Translation: This Author's Certificate introduces an analog with automatic data input for solving systems of differential equations. The device contains interconnected integrating capacitors, digital controlled resistors, an amplifier for generating null-potential points, controlled switches, and a digital automaton. As a distinguishing feature of the patent, the required number of digital controlled resistors is reduced by including prediction devices in the analog which are connected through the switches to the outputs of the amplifier for generating null-potential points. The outputs of the prediction devices are connected to the resistors controlled from the digital automaton and to the integrating capacitors, which are connected through two-position switches to the amplifier input and to a zero-potential line.

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USSR

GALUZINSKAYA, V., Special Correspondent of Nauka i Zhizn'

"Man Protects the Biosphere"

Moscow, Nauka i Zhizn', No 10, 1972, pp 7-10

Abstract: Thirty scientific institutions and enterprises in the Ukrainian SSR are engaged in work on the protection of nature. The author of the article interviewed authorities in this field in regard to the problems involved. K. M. Sytnik, Academician-Secretary of the Department of General Biology, Academy of Sciences UkrSSR, the Corresponding Member of this academy, stated that within 30-50 yrs the technology of the production of materials, power, and foodstuffs will change in such a way that contamination of the environment will cease. In the meantime improved methods for the purification of the air and water from contaminants must be developed and industrial enterprises that bring about contamination placed in more suitable locations. Attempts are being made by the Academy of Sciences UkrSSR to coordinate efforts in different fields aimed at decontamination and to organize a special scientific center for that purpose. A. V. Topachevskiy, Member of the Academy of Sciences UkrSSR and Director of the Institute of Hydrobiology of this academy, discussed maintenance of the purity of water in large artificial reservoirs. He recommended that the

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USSR

GALUZINSKAYA, V., Nauka i Zhizn', No 10, 1972, pp 7-10

water in these reservoirs be replaced no more than five times per year, that the purity of water draining into these reservoirs be controlled, that tributaries used by fish be prevented from getting too shallow, that the level of water in the reservoirs be lowered gradually in the spring and summer (at a particularly low rate during the spawning and hatching of fish), and that the decrease in this level in the winter be reduced to the maximum possible extent. Topachevskiy added that aeration of stagnant water should be carried out. To control blue-green algae that cause "blooming", self-propelled barges equipped with powerful pulsation filters will be applied. In the future, viruses which destroy blue-green algae selectively will be used. New methods for the purification of water with activated SiO_2 have been developed and are being applied. K. M. Sytnik stated that to prevent contamination of Black Sea water near the shore the release of effluents into the sea should be carried out at a sufficient distance from the shore and at an adequate depth. In regard to decontamination of the air, Sytnik stated that a group headed by V. F. Kopytov, Member of the Academy of Sciences UkrSSR, has developed vortex ignition furnaces for the purification of waste air and of ventilation outflow. At the Institute of Physical Chemistry imeni L. V. Pisarzhevskiy, a method is being developed for the simultaneous purification of waste air from CO and nitrogen oxides by a catalytic process.

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USSR

GALUZHINSKAYA, V., Nauka i Zhizn', No 10, 1972, pp 7-10

According to A. V. Primak, Senior Scientific Associate at the Institute of Technical Thermophysics, Academy of Sciences UkrSSR, an automated system for the determination and control of the purity of the air was developed at this institute. As had been stated earlier by Sytnik, the operation of a system of this type is based on continuous measurements by a network of indicators and computer treatment of the data obtained. A system of the type that has been developed will be put into operation on a trial basis at Leningrad in the first half of 1973 to determine the quality of the city air and will also be installed at the Novolipetsk Metallurgical Plant and the Chemical Plant imeni V. V. Kuybyshev at Kazan'. V. I. Vol'tovskiy, Chairman of the State Committee on the Protection of Nature at the Council of Ministers UkrSSR, said that protection of animals is within the range of activity of this committee. While some species are on the verge of extinction on earth, many species undergo regeneration in the USSR and the UkrSSR because of measures taken for their protection. At present, the number of moose has increased by several times in the UkrSSR and there are 15,000 deer in the Ukraine. The fauna of the UkrSSR has been enriched by species of animals that are new there, to wit muskrats and racoon-dogs.

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USSR

UDC: 681.332.6

PUKHOV, G. Ye., GALUZINSKIY, G. P., ROMANTSOV, V. P., Institute of Cybernetics, Academy of Sciences of the Ukrainian SSR

"A Device for Solving Differential Equations With Boundary Conditions"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 25, Soviet Patent No 278241, class 42, filed 12 May 69, published 5 Aug 70, p 138

Translation: This Author's Certificate introduces a device for solving differential equations with boundary conditions. The unit contains a reversible point analog based on integrators and an adder. Connected to the inputs of the analog are modules for simulating the boundary conditions and the vector of the right-hand members of the equations to be solved. As a distinguishing feature of the patent, accuracy is improved by including a differential analyzer and a boundary-condition converter in the device. The differential analyzer and converter are connected in series in the circuit between the outputs and inputs of the reversible point analog to the modules for simulating the vector of the right-hand members and boundary conditions respectively.

1/1

Molecular Physics

USSR

UDC 537.212.546.23:772.93

ABDULLAYEV, G. B., Corresponding Member of the Academy of Sciences of the USSR
Gal'VIDENE, V. I., GAL'VIDIS, N. M., Institute of Physics, Academy of Sciences
of the Azerbaydzhan SSR

"Influence of a Constant Electric Field on the Formation of Selenium Electro-
trophotographic Films"

Baku, Doklady Akademii Nauk AzerbSSR, Vol 28, No 11-12, 1972, pp 15-19

Abstract: A study is made of the effect of a constant electric field on the conditions of formation of selenium electrophotographic films during deposition. The change in the parameters of selenium films under the influence of an electric field shows the part played by the crystallization process, thermal velocities of molecules, and processes of change in the molecular forms in molecular complexes of selenium vapor. An electric field can be used in the process of formation of selenium electrophotographic films to control the properties of these films over wide limits. The field has a decelerating action which reduces the thickness of the deposited film, and an orienting effect which lines up the molecules in the direction normal to the film surface.

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Molecular Physics

USSR

UDC 537.212:546.23:772.93

ABDULLAYEV, G. B., Corresponding Member of the Academy of Sciences of the USSR
Gal'VIDENE, V. I., GAL'VIDIS, N. M., Institute of Physics, Academy of Sciences
of the Azerbaydzhan SSR

"Influence of a Constant Electric Field on the Formation of Selenium Electro-
trophotographic Films"

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Abstract: A study is made of the effect of a constant electric field on the conditions of formation of selenium electrophotographic films during deposition. The change in the parameters of selenium films under the influence of an electric field shows the part played by the crystallization process, thermal velocities of molecules, and processes of change in the molecular forms in molecular complexes of selenium vapor. An electric field can be used in the process of formation of selenium electrophotographic films to control the properties of these films over wide limits. The field has a decelerating action which reduces the thickness of the deposited film, and an orienting effect which lines up the molecules in the direction normal to the film surface.

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1/2 024 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--ALL PURPOSE APPARATUS FOR DIFFERENTIAL THERMAL ANALYSIS -U-
AUTHOR--(03)-GALVIDIS, N.M., STRONGIN, B.G., PARASINCHUK, N.S.
COUNTRY OF INFO--USSR
SOURCE--ZH. FIZ. KHIM. 1970, 44(1), 280-3
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--THERMAL ANALYSIS, LABORATORY FURNACE, EXPLOSIVE, THERMOGRAM,
SELENIUM, PHASE COMPOSITION, TOXICITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1992/0369 STEP NO--UR/0076/70/044/001/0280/0283
CIRC ACCESSION NO--AP0111562
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0111562

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DTA APP. IS DESCRIBED. THE FURNACE CAN BE USED FOR DETG. THE APPROPRIATE THERMAL TREATMENT AND (OR) FOR DTA OF THE COMPD. THE APP. IS USED FOR EXPLOSIVE AND TOXIC SUBSTANCES. THE THERMOGRAPH OF SE, WATER QUENCHED AT 400DEGREES, ILLUSTRATES ITS STRUCTURAL CHANGES IN THE AMORPHOUS, CRYST., AND LIQ. PHASE. FACILITY: CHERNOVITS. GOS. UNIV., CHERNOVTSY, USSR.

UNCLASSIFIED

USSR

UDC 576.858.9

GAL'VYDIS, Y. Yu., RUBIKAS, Y. P., and GIRDZIYAUSKAS, V. I., Institute of Biochemistry, Academy of Sciences Lithuanian SSR

"Action of Alkylating Compounds on Bacteriophages in Vitro"

Vil'nyus, Trudy Akademii Nauk Litovskoy SSR, Seriya Biologicheskaya, No 1, 1970, pp 15-23

Abstract: In vitro bacteriophages (T4, T40₃, C_d, lambda) were subjected to the mutagenic and inactivating action of 16 bifunctional alkylating compounds of the di(2-chloroethyl)amine type with various substituents. In all of the experiments, 0.005M concentrations of the compounds were used. Survival of the bacteriophages was reduced to 1% by all compounds. Bacteriophage lambda was most unstable with respect to the compounds studied. The effects of the various substituents in the compounds were compared. The hydrolysis rate of the Cl atom in some of the compounds could not be related to the toxicity of these compounds.

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CZECHOSLOVAKIA

UDC 615.334(PENICILLINUM).012.6.002.62

FUSKA, YA., YAKUBOVA, A., GALYAMA, D. V., and BUCHKO, M., Chair of Technical Microbiology and Biochemistry, Chemico-Technological Faculty, Slovak Technological Institute, Bratislava, and Biotika, Slovenska Lyupcha

"Production of 6-Aminopenicillanic Acid"

Moscow, Antibiotiki, Vol 17, No 9, Sep 72, pp 775-778

Abstract: The possibility of producing 6-aminopenicillanic acid (I) directly in connection with the production of penicillin was studied. A filtrate of a production culture synthesizing benzylpenicillin was extracted with butyl acetate. The butyl acetate extract was stirred with an aqueous suspension of cells of E. coli, strain ATCC 9637, at pH 7.2-7.4. As a result of enzymatic hydrolysis of benzylpenicillin, I formed. On separation of the E. coli cells by centrifuging and changing the pH to 2.0-2.2, unconverted penicillin (benzylpenicillin) and the phenylacetic acid that formed were transferred from the aqueous into the butyl acetate phase, while I remained in the aqueous phase. I crystallized from the aqueous solution after $(\text{NH}_4)_2\text{SO}_4$ had been added to it, the pH brought to 4.2-4.3, and the solution kept 1/2

USSR

FUSKA, YA., et al., Antibiotiki, Vol 17, No 9, Sep 72, pp 775-778

at 0-5°. The yield of I in the two solvents system depended on the volume ratio of the solvents. A yield of 85% was reached at the optimum ratio after 6 hrs of conversion. I with a purity of 92-95% was obtained. The advantage of the method described is that I, which is used in the synthesis of new penicillins, is obtained directly from the production culture without isolating penicillin.

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USSR

UDC 547.242

GEL'FOND, A. S., GALYAMETDINOV, YU. G., MIRONOVA, V. G., GATAULLINA, R. KH.,
and CHERNOKAL'SKIY, B. D., Kazan' Chemical-Technological Institute Imeni
S. M. Kirov

"Synthesis of Some Tertiary Arsines and Their Sulfides"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 9, Sep 72, pp 1962-1963

Abstract: A series of p- and m-substituted oxides and sulfides of aryldiethyl-
and aryldiphenylarsines has been synthesized by known methods. Yields and
melting points are tabulated.

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USSR

UDC 541.13:541.515:543.422.27

IL'YASOV, A. V., KARGIN, YU. M., MOROZOVA, I. D., CHERNOKAL'SKIY, B. D., VAFINA, A. A., MEL'NIKOV, B. V., CEL'FOND, A. S., MUKHTAROV, A. SH., and GALYAMETDINOV, YU. G., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR, and Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Electrochemically Generated Free Radicals. 9 Communication. Reduction of Some Nitrophenylarsine Derivatives and EPR Spectra of Their Anion Radicals"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 72, pp 2174-2178

Abstract: The mechanism of polarographic reduction of nitrophenyldiethylarsines and their oxides and sulfides in an aprotic medium was studied. These compounds exhibit two reduction waves, the first one corresponding to a one-electron wave, the process being reversible. The second wave is typical of a 3e-process. A diagram for the sequential chemical processes of these compounds after the capture of second electron has been proposed. Both waves represent a stepwise oxidation of the unstable dianion of the substituted nitrobenzene; the phenyl ring -- arsenic system remains untouched in this process. Novel organoarsine anion radicals have been obtained by electrochemical reduction and studied by the EPR method. Delocalization of the unpaired electron in these anion

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USSR

(5)

IL'YASOV, A. V., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 72, pp 2174-2178

radicals has been investigated analyzing possible reasons for a considerable decrease of the spin density on the arsenic atom during the transition from tetraordinated arsenic atom of the anion radicals to a tri-coordinated one.

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AA0040652

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UR 0482

1-70

Soviet Inventions Illustrated, Section I Chemical, Derwent,

240888 REMOVING OF BURRS IN ELECTRICAL RESISTANCE WELDING OF PLATES, involves using knives 7 which cut off burrs on the two sides of the plates after completing the upsetting stroke. The two welded plates 12 are held in clamping blocks 1', 1, and 2, 2' which in welding operation are driven one against the other till the clearances δ between the blocks and central welding unit (parts 3 and 4) become zero. At that instant the knives which are electrically insulated from the rest of the machine are pushed forward, remove the burrs and also plastically deform the weld which considerably improves its quality.

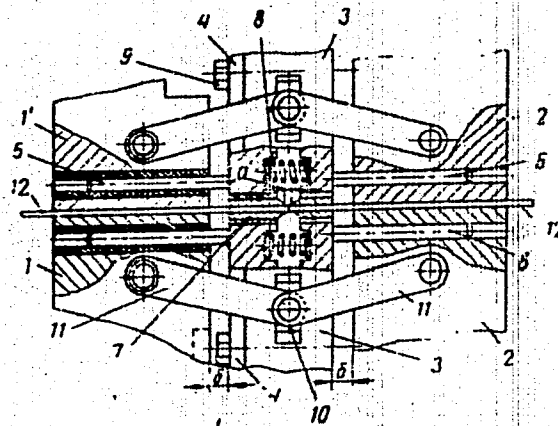
AUTHORS: Tishura, V. I.; Sakharnov, V. A.; Galyan, B. A.;
Yavorskiy, Yu. D.; and Sakhatskiy, G. P.

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AA0040652



3.4.67 as 1144854/25-27 Add to 217556. V.I. TISHURA
et alia. E.O. PATON'S ELECTRICAL WELDING INST.
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Institut Elektrosvarki imeni E. O. Patona

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USSR

UBS 621.596.6--101.5 (023.8)

BARANOV, A.I., BATERIAUR, V.D., VSEKROVNIKOV, I.I., GAVRINOV, R.A., GILYAKIN, V.P., GOLUBTSOV, M.S., KAMNEVSKIY, M.B., ZALIPSKIY, A.I., ZLOTIN, V.A., KAZATSKER, L.I., LAGUTIN, G.V., LAMUDOV, YU. S., FROLOVSKIY, S.P., KALKIN, D.L., RYBENSKIY, I.V., SIMONOVA, I.S., TIKHONOV, B.G., FICHEL', I.SH., SHUBERT, M.M.

"Device For Deposition Of Multilayer Coverings In A Vacuum"

USSR Author's Certificate No 275201, filed 16 June 65, published 30 Nov 70 (from RZh--Radiotekhnika, No 9, Sep 1971, Abstract No 9V272P)

Translation: A device proposed for deposition of multilayer coverings in a vacuum is fulfilled in the form of a number of successively mounted independent operating chambers supplied with evaporators, heaters, and an exhaust system. The device contains a mechanism for transporting substrates, a mechanism for loading and unloading, and a drive mechanism. With the object of increasing the reliability of the device and improving the quality and reproducibility of the coverings deposited, outside of the area of the arrangement of operating chambers and parallel to it a supplementary vacuum chamber is installed, which serves for the deposition in it of the transporting mechanism, and which communicates with each of the operating chambers by means of vacuum-overlapping transfer windows located on the side wall

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USSR

BARANOV, A. I., et al., USSR Author's Certificate No 279291, filed 16 June 68, published 30 Nov 70 (from RZh--Radiotekhnika, No 9, Sep 1971, Abstract No 9V272P)

of the supplementary chamber at places for connection to it of the operating chambers. Each of the operating chambers or a group of them is provided with an individual system of high-vacuum pumping.

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USSR

UDC: 543.422.08

IVANOV, V. P., FISHMAN, I. I., GALYAUDINOV, N. G.

"Alternating-Current Arc as an Atomizer for Atomic-Absorption Analysis"

Tr. Metrol. In-tov SSSR [Works of Institutes of Metrology, USSR], 1972, No 136(196), pp 29-32 (Translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 12, 1972, Abstract No 12.32.1074, by V. S. K.).

Translation: In order to increase the accuracy of attestation of standard specimens as to content of impurities in petroleum and petroleum products, the most accurate and sensitive methods of analysis must be used, for example spectral atomic absorption analysis. One pressing problem of atomic absorption analysis is the creation of flameless atomizers. This article reports on a newly developed atomizer using an alternating current arc and a stroboscope to filter the natural radiation of the arc. Diagrams and a description of the installation are presented. The device was used with metal and carbon electrodes (E). When carbon E were used, a solution of the element being studied was placed on the end of the lower E, preliminarily saturated with a solution of polystyrene in benzene and dried. Repeated measurements showed good reproducibility of the absorption signal and stability of the

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USSR

Ivanov, V. P., Fishman, I. I., Galyautdinov, N. G., Tr. Metrol. In-tov SSSR, 1972, No 136(196), pp 29-32.

absorption signal and stability of the installation against electrical interference. When carbon E are used, interference results from the molecular bands of NO, which is intensively formed in the arc. When the E are placed in a quartz tube with two leads for a neutral gas (such as argon), no interference to the analysis is observed. The use of metal E in atomizers did not yield positive results. 4 figures, 1 table, 3 biblio. refs.

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USSR

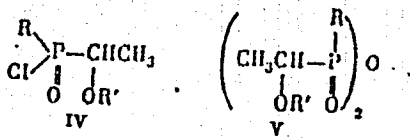
UDC 547.26*118+547.1926 (1)

GAZIZOV, M. B., SULTANOVA, D. B., RAZUNOV, A. I., OSTANIHA, L. P., and
 GALYAUDINOVA, A. A.

"Interaction of the Dichlorides of Trivalent Phosphorus with Acetic Anhydride
 in the Presence of α -Chloroethers"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, p 213

Abstract: Dialkylchloro phosphites react with the anhydrides of carboxylic acid (I) with the formation of α -ketophosphonic esters (M. B. Gazizov, et al., ZhOKh, No 39, 2600, 1969). The compounds (I) and the dichlorides of trivalent phosphorus (II) react slowly with each other at room temperature and more intensely at 50° with the formation of polymer products. However, in the presence of α -chloroethers (III) at 50° for 10 hours, the compounds (I) and (II) form the corresponding acid chlorides (IV) and anhydrides (V) of α -alkoxyethyl phosphonic and phosphonous acids.



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USSR

GAZIZOV, M. B., et al., Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, p 213

The yields of the products (IV) and (V) depend strongly on the ratio of the initial compounds (I) and (II). Some physical-chemical properties of the compounds and the schematic for obtaining compound (IV) are presented.

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USSR

UDC 621.384.664

GALYAYEV, N. A., GOLOVINA, N. I., GRACHEV, M. I., GRIDASOV, V. I., GUBRIYENKO, K. I., YEREMENKO, Ye. V., ZAPOL'SKIY, V. N., ZELENOV, B. A., KOTOV, V. I., KUZNETSOV, V. S., MERKER, E. A., MYZNIKOV, K. P., PUCHUGIN, V. A., PRILEPIN, A. A., SELEZNEV, V. S., SEREBRYAKOV, B. A., KHODYREV, Yu. S., and CHEPEGIN, V. N.

"Proton Beam With an Impulse of Up to 70 Gev/s Elastically Dispersed Inside a Target"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 42, No 7, 1972, pp 1437-1445

Abstract: This paper discusses the operation of a channel built into the French liquid-hydrogen Mirabelle chamber for the accelerator of the Institute of High-Energy Physics (IFVE). The function of the channel is to form pure beams of pi and k mesons, and antiprotons, in a broad range of impulse magnitudes under the action of a high-frequency separator. The secondary particles are generated on the inside of a target placed in the path of a proton beam diverted from the accelerator with an energy of 70 Gev. By using a fast system for aiming the proton beam at the target, together with a kicker magnet in the channel, the required number of particles passing through the chamber can be provided. The optical system of the channel is described with the
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USSR

GALYAYEV, N. A., et al., Zhurnal Tekhnicheskoy Fiziki, Vol 42, No 7, 1972, pp 1437-1445

aid of diagrams of two possible variants; the beam aiming system and the particle dosage for the bubble chamber are also explained. The authors thank R. M. Sulyayev, P. F. Yermolov, A. M. Moiseyev, M. I. Solov'yev, I. A. Danil'chenko, Ye. A. Parshin, V. M. Kolesnik, A. N. Aleyev, V. D. Rudko, and V. M. Gorshkov for their assistance.

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1/2 012 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--EFFECTS OF FIBER COMPOSITION, STRUCTURE, AND FINISH ON CAPILLARY
PROPERTIES OF OVERCOATINGS -U-
AUTHOR-(03)-GALYK, I.S., SEMAK, B.D., KHARKHAROV, A.A.
COUNTRY OF INFO--USSR
SOURCE--PRZEGL. WLOK. 1970, 24(2), 92-8
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--CLOTHING, POLYESTER RESIN, FABRIC, NATURAL FIBER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0750 STEP NO--PO/0134/70/024/002/0092/0098
CIRC ACCESSION NO--AP0136187
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136187

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CAPILLARITY WAS DETD. OF 100PERCENT POLYESTER FABRICS AND FABRICS OF VARIOUS BLENDS OF POLYESTERS AND COTTON. ALL FABRICS WERE BLEACHED, DYED, AND THERMALLY STABILIZED UNDER THE SAME CONDITIONS. THE MAX. CAPILLARITY, I.E. THE MAX. HEIGHT OF WATER RISE IN THE FABIRCS WAS OBTAINED WITH 67:33 POLYESTER-COTTON BLENDS. THIS BLEND ALSO HAD THE FASTEST WATER ABSORPTION RATE. THE SLOWEST ABSORPTION RATE AND LOWEST CAPILLARY WERE OBTAINED WITH 100PERCENT POLYESTER FABRICS. FABRICS WITH CLOSE WEAVE STRUCTURE ABSORBED LESS WATER. FACILITY: INST. EKON.-HANDLOWY, LVOV, USSR.

UNCLASSIFIED

Physical Properties

USSR

UDC 532.526

GIN
VINITSKIY, A. G., and G~~ALYKO~~, A. V., Kirovograd Institute of Agricultural Machinery

"Effect of the Structure and the State of the Surface on the Coefficient of Friction of Al-alloys"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 6, No 4, 1970, pp 25-28

Abstract: Binary aluminum alloys containing 2, 5, 10, 15, and 20% of tin were studied during the process of friction by means of steel and aluminum balls rolling without lubricants. At low concentrations of the tin, the coefficient of friction was found to be high, decreasing with an increase of the tin content. In general, the structural components of the aluminum-tin alloys exhibited a gradient of physico-chemical properties. The contours formed due to plastic deformation during the friction process and the capture process depend on quantitative relationship of the phases and exhibit an effect on the antifrictional properties of these alloys. It is concluded that, in order to improve the mechanical properties and at the same time preserve their antifrictional characteristics, aluminum alloys with high tin content should be subjected to preliminary plastic deformation followed by annealing.

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USSR

UDC: 550.834

ALABUZHEV, P. M., GALYNIN, N. A., GERNER, I. I., GRITCHIN, A. A., ZUYEV, A. K., NIKITIN, A. A., KHON, V. F., Novosibirsk Electrical Engineering Institute

"A Seismic Receiver"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzny, Tovarnyye Znaki, No 36, Dec 71, Author's Certificate No 322742, Division G, filed 8 Apr 70, published 30 Nov 71, p 154

Translation: This Author's Certificate introduces a seismic receiver which contains a housing, an inertial mass and a displacement registering device. As a distinguishing feature of the patent, the sensitivity of the receiver is improved and the measurement range is extended by suspending the inertial mass on two preformed flat elastic strips which are securely fastened by their ends to the housing. The strips are securely fastened in the middle above and below to the inertial mass, and regulating screws press against the end faces of the strips.

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USSR

UDC 669.292.053.24

SUKHARNIKOV, YU. I., GALYUTIN, V. K., POBOKTSEV, M. E., and KUNAYEV, A. M.

"Effect of Certain Factors on the Process of Pellet Production During Electrothermic Production of Phosphorus"

O vliyanií nekotorykh faktorov na protsess polucheniya okatyshey pri elektrotermicheskom proizvodstve fosfora (cf. English above), Institute of Metallurgy and Beneficiation of the Kazakh Academy of Sciences, Alma-Ata, 1970, 15 pp, ill., bibliogr., 1 nazv. (from RZH-Metallurgiya, No 11, Nov 70, Abstract No 11G166 DEP)

Translation: In connection with the development of a new flow chart for combined processing of V ore, which contains 70% SiO₂ and 0.85% V₂O₅, with phosphite in the process of their electrothermic smelting, a question arises regarding the utilization of V ore and phosphorite fines, derived during the preparation of the charge for smelting. A possibility of obtaining pellets (O) from the mixture of V ore and phosphorite fines is considered and the effect of different factors on the O strength is studied. The positive effect of the grain size of the material, the quantity of the binder, and the temperature and the time of sintering on the O strength are shown and a mathematical dependence of the O strength on the above cited factors is obtained. The sintering temperature has the most significant effect on the O strength. 5 ill., 5 tables.
1/1 Authors' abstract

USSR

UDC 547.574+547.26'118

KOZLOV, N. S., PACK, V. D., GMALET, V. G., Perm Agricultural Institute

"Synthesis of Organophosphorus Compounds Based on Azomethynes"

XI. Study of the Reactions of Schiff's Bases with Phenyl Phosphate

Leningrad, Zhurnal Obsheei Khimii, Vol 40, No 6, Jun 70, pp 1217-1219

Abstract: Phenyl phosphate was made to react with various alkylidenearylamines, such as butylideneaniline, heptylideneaniline. The following products of the type $(RCH=NHR')^+O^-P(:O)(OH)OC_6H_5$ were obtained (R and R' given): C_6H_5 , C_6H_5 ; C_6H_5 , p- $C_6H_4CH_3$; C_6H_5 , m- $C_6H_4CH_3$; C_6H_5 , o- $C_6H_4CH_3$; C_6H_5 , p- C_6H_4COOH ; C_6H_5 , o- C_6H_4COOH ; C_6H_5 , m- C_6H_4COOH ; C_6H_5 , p- $C_6H_4COOCH_3$; C_6H_5 , p- $C_6H_4COOC_2H_5$; C_6H_5 , o- C_6H_4Cl ; p- $CH_3OC_6H_4$, C_6H_5 ; p- $NO_2C_6H_4$, C_6H_5 ; p- $NO_2C_6H_4$, p- $C_6H_4CH_3$; p- $CH_3OC_6H_4$, p- $C_6H_4CH_3$; C_3H_7 , C_6H_5 , $CH_3(CH_2)_5$, C_6H_5 . These compounds are white, crystalline, soluble in water, alcohol, dioxane, and dimethylformamide. They dissolve partially in benzene, but they are insoluble in diethyl ether or petroleum ether. Their IR spectra have a broad band at 2600 cm^{-1} , which is characteristic for the $>N\ddot{H}$ group. As is the case with all amine salts, these compounds are hydrolyzed in alkali to the corresponding azomethynes and the metal phenyl phosphate. The temperature dependence of the hydrolysis constant of

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USSR

KOZLOV, N. S., et al, Zhurnal Obshchei Khimii, Vol 40, No 6, Jun 70, pp 1217-1219

these compounds was studied. It was found also that electronegative substituents at the benzene ring of the amine moiety increase the hydrolysis rate, whereas electropositive substituents decrease it. Substituents at the benzene group of the aldehyde moiety do not exhibit such an effect on the hydrolysis rate.

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- 35 -

USSR

UDC 612.821-06:[612.825.261-039+615.21

URYBAYEV, Yu. V. and GAMALEYA, A. A., First Moscow Medical Institute imeni I. M. Sechenov

"Pharmacologic Analysis of Disturbances of Purposeful Behavior in Intact and Lobectomized Dogs"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 2, 1973, pp 14-16

Abstract: In experiments on dogs with stable conditioned reflexes in a situation involving a choice between either of two different reinforcements (bread and water), chlorpromazine administered to intact animals disrupted their reaction to the stimuli, whereas in lobectomized animals it resulted in more organized and purposeful behavior, i.e., they responded more "logically" to which influence, thirst or hunger, was dominant. In another series of experiments, amphetamine administered to intact dogs elicited a type of behavior comparable to that observed after lobectomy. The reaction to amphetamine was similar but more pronounced in the lobectomized animals. It would appear, therefore, that the frontal lobes exert an inhibitory effect on the adrenergic and especially reticular subcortical structures in the establishment of purposeful behavior.

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2/2 014
CIRC ACCESSION NO--AP0125591

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NARROW AND BROAD SPECTRUM SEMISYNTHETIC PENICILLINS WERE STUDIED WITH RESPECT TO THEIR EFFECT ON STAPHYLOCOCCI CAUSING SURGICAL INFECTIONS. IT WAS SHOWN THAT MOST OF THE ISOLATES WERE MAINLY RESISTANT TO THE WIDELY USED ANTIBIOTICS (BENZYL PENICILLIN 87 PER CENT, TETRACYCLINES 56 TO 70 PER CENT). IN VITRO STUDIES ON THE EFFECT OF SEMISYNTHETIC PENICILLINS DEMONSTRATED THAT IN SPITE OF A SHORT PERIOD OF THEIR USE IN MEDICAL PRACTICE, STRAINS RESISTANT TO THE ANTIBIOTIC CONCENTRATIONS IN THE HOST OCCURRED ALONG WITH SENSITIVE CULTURES (NARROW SPECTRUM SEMI SYNTHETIC PENICILLINS 19.2 TO 28.4 PER CENT, PYOPEN 18 PER CENT, AMPICILLIN 39.5 PER CENT). FACILITY: INSTITUTE FOR CLINICAL AND EXPERIMENTAL SURGERY, CENTRAL POST GRADUATE MEDICAL INSTITUTE, MOSCOW.

UNCLASSIFIED

Therapy

USSR

KAVETSKIY, R., Academician, Academy of Sciences Ukrainian SSR and ~~GAMALEYA~~
N., Chief, Division of the Biological Action of Lasers, Institute of Pro-
blems of Oncology, Academy of Sciences Ukrainian SSR

"A Beam Instead of a Scalpel"

Moscow, Pravda, 19 Mar 72, p 3

Abstract: Soviet medical scientists are just beginning to exploit the possi-
bilities of using lasers in medical treatment. The Odessa Institute of
Eye Disease and Tissue Therapy imeni V. P. Filatov and certain others
have employed lasers in treating an exfoliated retina and destroying tumors
inside the eye, while the Institute of Surgery imeni Academician A. V.
Vishnevskiy uses lasers to remove spots and tatoos from the skin. One of the
most interesting and significant developments in the medical use of lasers
has taken place at the Ukrainian Institute of Problems of Oncology. Research
work was begun in 1965 on removing surface tumors by destroying the contaminated
tissue with laser light. Research was favorable, so in 1969 the country's
first clinical division for laser treatment of surface benign and malignant
tumors was opened at the Institute. The laser operating room is striking in
its simplicity -- just the table and a metal mechanism with a tubular pro-
jection hanging over it; no scalpel, no anesthetics, no racks of surgical tools,
and even no surgeon. By now 250 operations have been performed here and,
1/2

USSR

KAVETSKIY, R., and GAMALEYA, N., Pravda, 19 Mar 72, p 3

although it is early to draw conclusions (especially for malignant tumors), the general outlook is good and laser treatment appears to be better for certain surface tumors. It might be noted in conclusion that numerous other promising applications of the laser beam, for example affecting individual parts of a cell through the subcellular action of the microray device designed by N. D. Devyatkov or using a continuous-beam laser to cut tissue (which has already been tested experimentally in Moscow, Leningrad, and Kiev), are now being developed and there is every reason to suppose that lasers will have an important place in the medicine and biomedical science of the future.

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GAMALEYA, N. F.

JPRS 55478
- 2/17/70
UDC 616-006-085.849.19

ORGANIZATION OF THE ONCOLOGICAL DIVISION OF LASER THERAPY

Article by N. F. Gamaleya, I. R. Lazarev, and Kh. A. Baratov, Scientific-Research Institute for Experimental and Clinical Oncology, Kiev; Moscow, Meditsinskaya Tekhnika, Russian, No 5, 1971, submitted 16 November 1970, pp 40-42

During the 10 years of their existence, lasers have begun to be more widely adapted in various fields of science and technology. With each year the use of lasers expands also in medico-biological research. In a number of branches of medicine (oncology, dermatology and, possibly surgery) attempts at clinical adaptation of laser radiation are being undertaken. Laser ophthalmoscopes have already been in use for several years in the ophthalmological clinic.

The clinical use of lasers requires the presence of special operating personnel whose assignment consists of adapting themselves to laser technology for solving therapeutic problems by means of appropriate devices (light guides, protective shields, etc.) under conditions assuring the safety of personnel and patients. Safety technology must be the central thought in organizing and equipping laser operations. The eyes, because of their natural focusing ability, are the most sensitive of human organs to laser radiation.

The danger to human life from laser radiation can be the result of direct action from radiation or its indirect effect on the surrounding media. Taking into account these two aspects of the injurious action of laser radiation on the human organism, safety technology in work with lasers should include individual as well as general measures of protection. Individual measures of protection include wearing special tightly-fitting goggles and opaque material for the protection of the skin. General safety measures include correct planning of laser operating facilities and placing in them the instruments, outfitting the rooms with the proper equipment, etc.

During irradiation of patients by laser the air becomes contaminated by the scattered particles of irradiated skin of, for example, tumor

USSR

UDC 547.26'118

GUBNITSKAYA, YE. S., GAMALEYA, V. F., and SHOKOL, V. A., Institute of Organic Chemistry, Academy of Sciences, Ukrainian SSR

"O,O-Dialkyl S- β -isocyanatoethyl dithiophosphates"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 9, Sep 72, p 2112

Abstract: The title compound can be obtained by intramolecular thermal isomerization of O,O-dialkyl S-(N-ethylenecarbonyl) dithiophosphates or by the Curtius reaction from O,O-dialkyl S-(β -azidocarbonyl) dithiophosphates.

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USSR

UDC 546.185

SLYUSARENKO, Ye. I., MAKHAYLIK, S. K., GANALEYA, V. F., and SHOKOL, V. A.,
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"Derivatives of Isocyanatophosphoryl Dichloride and Diisocyanatophosphoryl
Chloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,383-2,386

Abstract: The dialkyl esters of alkoxy-carbonylamido- and ureidophosphoric acids have contributed a number of substances with insecticidal and complexing properties; this suggested the synthesis the monoalkyl esters of these acids. Alcohols and aniline, and also alcohols in the presence of triethylamine and water, and triethylamine alone, react with isocyanatophosphoryl dichloride; this produced the monoalkyl esters of alkoxy-carbonylamido- and 3-phenylureidophosphoric acids. Alcohols, mercaptans, thiophenols, and aniline react with diisocyanatophosphoryl chloride to form the acid chlorides of bis(alkoxy-carbonylamido)-, bis[(alkylthio)carbonylamido]-, bis[(phenylthio)carbonylamido]- and bis(3-phenylureido)phosphoric acids. The hydrolysis of these substances yields free acids. Sixteen compounds were synthesized. Procedures of synthesis are given, along with some physical data on the esters.

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UDC 547.26'118

GAMALEYA, V. F., SLYUSARENKO, Ye. I., and DERKACH, G. I., (deceased)

"Derivatives of Isocyanates of Dialkylphosphoric Acid"

Leningrad, Zhurnal Obshechey Khimii, Vol 41, No 5, May 1971, pp 992-995

Abstract: Di- and triurethanes were synthesized by the reaction of diesters of isocyanatophosphoric acid with glycols and glycerines. This same group of diesters react with aminoalcohols to give the corresponding phosphorylated urethane ureas. Various specific compounds were synthesized by these reaction series; physical data are given.

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1/2 014 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--CHLOROMETHYL AND DICHLOROMETHYLDICHLOROPHOSPHAZO ACYLS -U-
AUTHOR--(03)-SHOKOL, V.A., GAMALEYA, V.F., KUKHAR, V.P.
COUNTRY OF INFO--USSR
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 554-7
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHLORINATED ORGANIC COMPOUND, ORGANIC PHOSPHORUS COMPOUND, AZO
COMPOUND, CHLORIDE, NITRILE, PYROLYSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1380 STEP NO--UR/0079/70/040/003/0554/0557
CIRC ACCESSION NO--AP0128780
UNCLASSIFIED