

2/2 025

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116381

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF THE PROBLEM OF THE STRESSED STATE INDUCED AN INFINITE PLATE WITH A CIRCULAR HOLE BY A DISCONTINUITY OF THE DISPLACEMENT VECTOR DERIVATIVE OVER ONE DIAMETER. AN INTEGRAL EQUATION FOR DETERMINING THE DISPLACEMENT DISCONTINUITY IS DERIVED, AND AN APPROXIMATE SOLUTION OF THIS EQUATION IS OBTAINED FOR A DISCONTINUITY IN THE FORM OF TWO IDENTICAL CRACKS EXTENDING FROM THE HOLE. FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, FIZIKO MEKHANICHESKII INSTITUT, LVOV, UKRAINIAN SSR.

UNCLASSIFIED

USSR

UDC 661.183.123

PAPUKOVA, K. P., KUZNETSOVA, N. N., and LITEL', A. N.

"Synthesis of Phenoxyalkylphosphonic Acids and Ion Exchange Resins Derived from Them"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 45, No 8, Aug 72, pp 1808-1813

Abstract: Phenoxyalkylphosphonic acids with the general formula  $C_6H_5O(CH_2)_nPO_3H_2$  were synthesized, where  $n = 1, 2, 3$  and  $6$ . The products are dibasic acids; they are colorless crystalline compounds, soluble in ethanol, dimethylformamide and with heating, in nitromethane, water, dichloromethane, and acetone; they are insoluble in acetone. Their melting points and acid strengths decrease with increasing length of the alkyl chain. Polycondensation of these acids with formaline in presence of HCl leads to the production of ion exchange resins containing phosphonic acid groups in the aliphatic side chains of varying length. The exchange capacity ranged from  $8.9$  to  $6.6$  mg-eq/g. The kinetic properties of these resins were inversely proportional to the length of aliphatic chains containing the phosphine group.

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BOYKO, Yu. I., and LIBENSON, A. A.

"Thermal Self-Focusing of Laser Radiation in Single Alkaline-Halide Crystals"

Leningrad, Fizika Tverdogo Tela, Vol 13, No 2, February 1971, pp 656-658

Abstract: The experimental procedure and results of measuring the value of  $(dn/dT)_0$  (the increase in index of refraction with an increase in temperature) in a wide temperature range for a number of single alkaline-halide crystals are presented in this paper. These measurements are compared with the corresponding values of  $\Delta$ , with the self-focusing condition assumed to have the form

$$\frac{dn}{dT} = \left(\frac{dn}{dT}\right)_0 + \Delta > 0: \quad (1)$$

where  $dn/dT$  is the resultant value of the derivative of the index of refraction with respect to temperature,  $(dn/dT)_0$  is the derivative of the index of refraction with respect to temperature measured under equilibrium conditions, and

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$$\Delta = \frac{2}{3} \alpha [1 - 2\nu / (1 - \nu)] \cdot (\rho (\partial n / \partial p)_T$$

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BOYKO, Yu. I., and LIBENSON, A. A., Fizika Tverdogo Tela, Vol 13, No 2, February 1971, pp 656-658

( $\alpha$  is the coefficient of thermal expansion,  $\rho$  is the density of the medium,  $\nu$  is the Poisson coefficient). Conditions are discovered under which relation (1) is satisfied: that is, the occurrence of the thermal self-focusing effect is possible. Data are presented for KCl, NaCl, and KBr crystals, and an equation is derived which characterizes the efficiency of occurrence of the self-focusing effect. It is pointed out that explanation of the behavior of  $(dn/dT)_0$  as a function of temperature requires consideration not only of the thermal expansion but also the variation with temperature of the molar polarizability.

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Powder Metallurgy

USSR

KIPARISOV, S. S., and LIBENSON, G. A.

Poroshkovaya Metallurgiya (Powder Metallurgy), Izdatel'stvo Metallurgiya  
Moscow, 1972, 527 pp

Translation of Annotation: Powder metallurgy is the branch of industry which produces metal items from compressed or molded powders by sintering without melting (or partial melting of the high melting component of the powder mixture).

According to the figurative statement of one of the outstanding Soviet metalloceramicists M. Yu. Bal'shin, powder metallurgy is as old as Egyptian pyramids and at the same time it is as contemporary as jet planes. In fact, Indians made iron columns by the metalloceramic method several centuries BC, although they did not know how to produce either cast iron or steel. Several centuries later powder metallurgy was again in use, then it was abandoned again.

Contemporary powder metallurgy originated during the first quarter of the 19th century (1826) when P. G. Sobolevskiy developed the production method of coins from platinum powder on instruction of the Russian mint [1].

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KIPARISOV, S. S., and LIBENSON, G. A., Izdatel'stvo Metallurgiya, 1972, 527 pp

Basic directions in the development of powder metallurgy are related to solutions of many difficulties encountered in the casting of high-melting metals (tungsten, molybdenum, tantalum), as well as to possibilities of producing materials and items with specific properties by the metalloceramic method, which could not be produced by any other industrial methods (for example, production of castings with successive machining). Production of pseudoalloys (W + Cu, W + Ag), hard carbide alloys, porous bearings, filters, and others requires the use of metalloceramic methods.

New types of items (for example, automobile parts, shaped castings, gauges, and others) can be produced by powder metallurgy methods from common materials but with specific properties and at low cost compared with casting, which requires further machining. In particular, the powder metallurgy method makes it possible to decrease the consumption of materials needed for the production of certain items.

Finally, the production of metallic powders for direct use in paints, pyrotechnics, explosives, catalysts, cementing mixtures in the hydrometallurgy of nonferrous metals, welding industry, and others is also an important branch of powder metallurgy.

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KIPARISOV, S. S., and LIBENSON, G. A., Izdatel'stvo Metallurgiya, 1972, 527 pp

The directives of the 23d Congress of the CPSU state the need "to secure and facilitate a further development of powder metallurgy and to introduce metalloceramic products into the machine-building and other industries."

Powder metallurgy has been developing rapidly not only in the Soviet Union and other socialist countries, but also in such capitalistic countries as the U.S., England, Austria, the FRG, and Japan. With the increase of products produced by powder metallurgy methods, there is a growing demand for specialists in this branch of industry.

Powder metallurgy methods have been used widely in all branches of science and industry and it is impossible to list all places of their application.

It is impossible to name any single branch of industry where some items and materials produced by powder industry methods are not used. Hard cutting tools are used in the machining industry, hard alloys and diamondmetal compositions are used in the mining and petroleum industries, and metal powder additives and ferroalloys (modifiers) are used in the metallurgical industry for precision rolling and drawing. In the welding industry the powders are used for built-up welding and for preparation of the welding pastes. In

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USSR

KIPARISOV, S. S., and LIBENSON, G. A., Izdatel'stvo Metallurgiya, 1972, 527 pp

machine-building, the instrument industry, the automobile industry, and aviation, powder metallurgy methods are used for the production of different wear-resistant machine parts and mechanisms, as well as parts with high antifriction and friction properties.

It is difficult to name any single instrument or a device in the contemporary electrical industry where some of the metalloceramic items are not used. This concerns high precision electronic instruments as well as bulky equipment at power stations and that of industrial ovens.

Metalloceramic products are also used in the food and textile industries, for building of sewing and washing machines, tape recorders, electric shavers, house locks, and others.

The technological production of items by powder metallurgy methods consists of the following operations: Preparation of the metallic powder or a mixture of powders → pressing of powders (molding) → sintering (heat treatment) → finishing treatment (final heat treatment, calibration, annealing, heat treatment).

Some deviations from these steps are frequently encountered in industrial and experimental works. Thus, for example, the pressing and sintering processes

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KIPARISOV, S. S., and LIBENSON, G. A., Izdatel'stvo Metallurgiya, 1972, 527 pp

can be combined into one operation, and the preliminary sintered porous briquets can be impregnated with molten metal. Some other deviations can be found. However, the use of powders and sintering them at temperatures below the melting temperature of the basic element always remains unchanged.

As was mentioned before, the main advantage of metalloceramic production methods is a considerable decrease of the material losses during the entire production process up to the finished product.

Losses during the production of machine parts and devices by casting process followed by machining reaches 60% and sometimes higher compared with only 7-10% in the case of the powder metallurgy methods.

The number of technological operations amounts to two-three at one plant during production of items from metallic powders, even if items are of complex shape and configuration. At the same time there is no need to have machine shops and skilled operators because the machining is excluded.

On the other hand, production of identical items from castings requires ten or more industrial operations carried out at different shops and departments which require skilled labor. However, it can be said that there are some difficulties in powder metallurgy which limit to some extent the areas of applicability of metalloceramic methods.

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KIPARISOV, S. S., and LIBENSON, G. A., Izdatel'stvo Metallurgiya. 1972, 527 pp

First of all can be mentioned the high price for powders and pressing equipment. The economy of the metalloceramic industry in this case is motivated by the industrial scale (if production of many thousands of items is required). This is justified in the case of machine parts produced from the iron powder. In many other cases the unique properties of the metalloceramic items secure the economical advantages of powder metallurgy methods even if the scale of production is much smaller.

Nevertheless, one of the most important problems of powder metallurgy is the development of production methods which would secure the production of high-quality inexpensive metallic powders, first of all iron powder. One of the most difficult problems for metallurgists, machine builders and users is the elimination of defects in metals during its solidification, that is, the phenomenon related to the crystallization processes.

The crystallization process determines basically the characteristics of the metal structure, including the development of defects which show up when the produced part is used during the machine assembly or during its performance. In the case of the powder metallurgy methods the crystallization stage is absent, and as a result there are lesser number of defects related to crystallization.

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LIBENSON, G. A.

STUDY OF CONDITIONS OF HEATING TITANIUM AND CHROMIUM BORIDES BY HIGH-CURRENT METAL

UDC 621.762

ЖРС 53:42  
9 МАИ 72

Article by S. S. Kiparev, Yu. K. Kur'eva, G. A. Libenson, Moscow Steel and Alloy Institute, Department of Heat, Refractory Metals and Powder Metallurgy, Otdel'nyy Zavod "Metallurgiya" im. G. I. Zhukova, Leninskyy Rayon, Leningrad, Russia, No 5, 1971, submitted 10 February 1971, pp 22-33.

In connection with the development of new branches of engineering, a demand has arisen for materials having high-temperature strength, high heat-resistance, high hardness, strength, wear resistance, and so on. These materials include refractory metallic compounds, including borides the manufacture of products from which by casting methods is complicated as a result of their high melting points, and in a number of cases is impossible as a result of the tendency of many refractory compounds toward decomposition on melting. Accordingly, the methods of powder metallurgy have become widespread for the manufacture of products from refractory compounds.

When creating heat-resistant materials, a quantity of metallic binder is added to the borides which increases the ductility and heat-resistance of the compositions. It is expedient to use metals of the iron group as the binder. Here, the brittleness of the refractory component (the boride) is reduced, and the creep strength of the metal cement is increased without significant embrittlement. The addition of metallic cement is in this case useful also because it permits intensification of the sintering process as a result of the liquid phase formed which accelerates the diffusion processes and penetrates into the pores and spaces between the particles. At the same time, a great deal of volumetric shrinkage is insured along with obtaining high density and low residual porosity and also significant reduction in the sintering temperature of the materials connected with the formation of low-melting eutectics.

The investigation of the conditions of performing the sintering process with the formation of a liquid phase shows that for prevention of its swaging the marginal wetting angle must be less than 90 degrees. At the same time, data has been gathered on the variability of refractory compounds by liquid metal [1, 2].

However, for a number of borides of refractory metals, which are acquiring greater and significance in modern engineering, the marginal wetting angles

1/2 044 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--NATURE OF THE BREAKDOWN OF THIN METALLIC LAYERS BY LASER RADIATION  
-U-  
AUTHOR--(04)-BENCHBRLYEVICH, A.M., IMAS, YA.A., LIBENSON, M.N., SPIRIDONOV,  
B.N.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL TEKHNIЧЕСКОИ ФИЗИКИ, VOL. 40, MAR. 1970, P. 658, 659  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS, MATERIALS  
TOPIC TAGS--METAL FILM, ALUMINUM, LASER RADIATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1994/1255 STEP NO--UR/0057/70/040/000/0658/0659  
CIRC ACCESSION NO--AP0115272  
UNCLASSIFIED

2/2 044

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0115272

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS OF THEORETICAL AND EXPERIMENTAL STUDIES OF THE THRESHOLD VALUES OF BREAKDOWN INDUCING LIGHT FLUX DENSITIES DURING THE ACTION OF LASER RADIATION ON THIN METALLIC FILMS. AN EQUATION IS DERIVED FOR THE THRESHOLD DENSITY CORRESPONDING TO THE INITIATION OF BREAKDOWN, I.E., HEATING OF THE SURFACE TO MATERIAL'S BOILING POINT AT ATMOSPHERIC PRESSURE. AT THIS TEMPERATURE, THIN LAYERS ARE TOTALLY DESTROYED AND THICK LAYERS IRREVERSIBLY LOSE THEIR REFLECTIVE PROPERTIES. CALCULATIONS ARE COMPARED WITH MEASURED DATA FOR AN ALUMINUM LAYER DEPOSITED ON A GLAS SUBSTRATE.

UNCLASSIFIED

USSR

UDC: 551.596+534-143

YEMEL'YANENKO, I. V., LIBENSON, Ye. B., PALIY, A. P., and PAPERNO, A. I.

"Some Results of Experimental Investigations Into Sea Reverberation in the Radiation of Complex Signals"

Moscow, V sb. Tezisy dokl. 3-y Vses. shkoly--seminara po stat. gidroakustike, 1971 (Theses of Reports, Third All-Union School--Seminar on Statistical Hydroacoustics, 1971 -- collection of works) 1972, pp 343-347 (from RZh--Fizika, No 4, 1973, Abstract No 42h650)

Translation: Results are given of an experimental investigation into the degree of correlation of sea reverberation (R) and complex probing signals in mutual correlation processing. The presence of correlated components of sea R is detected in the near zone as well as in the far zone of the acoustical field. The experiments were conducted in the sea area at a depth of 3000-3500 m. The hydro-acoustical conditions of the experiments and the equipment used for recording and processing the signals are described. Examples are \_

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YEMEL'YANENKO, I. V., et al., Tezisy dokl. 3-y Vses. shkoly--seminara po stat. gidroakustike, 1971, (from RZh--Fizika, No 4, 1973, Abstract No 4Zh650)

given of the recorded envelopes and samples of received R. The correlograms obtained are analyzed in detail. The general idea here is the following: with an increase in frequency deviation, the level of the uncorrelated component of R is reduced and the level of the correlated components comparable with the maximum autocorrelation function of the probing signal is also reduced. It is noted that the expression for the correlated components of R varied only slightly although the number of responses with a relatively high correlation level dropped noticeably. On the basis of a comparison of the moments of appearance of correlation maxima with the depth of the locale and the radiation picture, it can be assumed that they are the result of reflections not only from the floor and surface but also from the scattering objects, the distance between which is small compared with the wavelength of the sound. I. V. Tikhomirova

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USSR

UDC 669.295.053.2

GASIK, M. I., KLIMKOVICH, N. S., PORADA, A. N., LIBERANT, G. I.

"Problem of Solid Solution of Oxygen Compounds of Titanium in Electrocorundum"

Metallurgiya i koksokhimiya. Mezhd. resp. nauchno-tekhn. sb. (Metallurgy and Coal-Tar Chemistry. Interdepartmental Republic Scientific and Technical Collection), 197, vyp. 21, pp 43-46 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G229)

Translation: The temperature dependence of the solubility of  $Ti_2O_3$  (in mole %) in solid electrocorundum  $\lg N_{Ti_2O_3} = -4,320/t + 2.56$  is obtained, and it is demonstrated that the limiting possible concentration of  $Ti_2O_3$  in  $\alpha-Al_2O_3$  near the melting point of  $Al_2O_3$  is doubly high according to the data of previous experiments. The x-ray method was used to determine the variation of the interplane spacing in the lattice of electrocorundum as a function of the gross content of Ti oxides in it recalculated as  $TiO_2$ . The decomposition of the supersaturated solid solution of  $Ti_2O_3$  in electrocorundum determines the magnitude of anomalous expansion of the normal electrocorundum grain. The article contains 1 illustration, 1 table, and a 9-entry bibliography.

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USSR

RUTES, V. S., ASKOL'DOV, V. I., LIEBERMAN, A. L., SEMENOV, Y. I., GAGAROV, N. A.,  
Central Scientific Research Institute for Ferrous Metallurgy, "Amurskiy" Plant

"Economic Effectiveness in the Casting of Ship Steels Beneath a Level in a  
Continuous Steel Casting Unit"

Moscow, Metallurg, No 10, Oct 70, pp 20-21

Abstract: Methods of protecting metal in a crystallizer from secondary oxidation during casting of type 10KSNB, 09G2S, 09G2, and other ship steels were studied. The investigations showed that when casting was performed beneath a level of a graphite-based mixture so that the surface of the metal was protected by the heat-insulating mixture, the volume of cleaning of cast billets and of sheets after rolling was reduced, and the rate of final rejection of sheets was decreased. The economic effectiveness of this method is 4.7 rubles per ton of steel.

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1/2 011 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--PREPARATION AND ATTEMPTED SEPARATION OF EXO AND  
ENDO,1,3,DIMETHYLBICYCLO,2.2.1,HEPTANES -U-  
AUTHOR-(04)-KOVALENKO, L.I., FURMAN, D.B., BELIKOVA, N.A., LIBERMAN, A.L.  
COUNTRY OF INFO--USSR  
SOURCE--NEFTEKHIMIYA 1970, 10(2), 161-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CYCLOALKANE HYDROCARBON, HEPTANE, KETONE, ALKYL RADICAL,  
ISOMER, THIUREA, CHEMICAL SEPARATION, MOLECULAR STRUCTURE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3006/0906 STEP NO--UR/0204/70/010/002/0161/0164  
CIRC ACCESSION NO--AP0134635

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--27NOV70  
CIRC ACCESSION NO--AP0134635  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPODS. WERE SYNTHESIZED FROM THE CORRESPONDING HEPTANONES BY TREATMENT WITH N SUB2 H SUB4 .H SUB2 O, DIETHYLENE GLYCOL, KOH, REFLUXING THE MIXT., AND DISTG. THE HYDROCARBON AND H SUB2 O FORMED. A MIXT. OF EXO AND ENDO,2,METHYLBICYCLO(2.2.1) HEPTANE WAS METHYLENATED. TO DECIDE WHETHER THE HIGHER OR LOWER BOILING COMPOD. WAS EXO. THE LOW BOILING COMPODS. OBTAINED HAD THE EXO CONFIGURATION. THE STEREO ISOMERS WERE SEPD. BY FRONTAL METHOD WITH THIUREA. FACILITY: KHIM. FAK., MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--PRECALCULATION OF THE DIFFERENCES IN THE BOILING POINTS OF  
STEREoisomeric 1,4,dialkylcyclohexanes -U-  
AUTHOR-(03)-LIBERMAN, A.L., TYUNKINA, N.I., VASINA, T.V.  
COUNTRY OF INFO--USSR  
SOURCE--NEFTEKHIMIYA 1970, 10(1), 158-60  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CALCULATION, CYCLOHEXANE, ALKYL RADICAL, ORGANIC SYNTHESIS,  
DISTILLATION, ISOMER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3006/0907 STEP NO--UR/0204/70/010/002/0158/0160  
CIRC ACCESSION NO--AP0134636  
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0134636

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PRECALCN. WAS CARRIED OUT BY A SEMIEMPIRICAL EQUATION BASED ON THE RELATION BETWEEN THE B.P. OF THE COMPS. AND THEIR INTERNAL MOL. STRAIN, INCREASING WITH EACH SUCCESSION OF A ALPHA-H ATOM. THE DIFFERENCE AND SUCCESSION WAS CALCD. FOR TITLE COMPS., CONTG. NO TERT, ALKYL GROUPS, THUS, PRIOR TO SYNTHESIS OF THE COMPS., IT WAS FORECASTED WHETHER THEY COULD BE SEPD. BY RECTIFICATION AND THE EFFICIENCY OF THE REQUIRED COLUMN.  
FACILITY: INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW, USSR.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--PRECALCULATION OF THE DIFFERENCES IN THE BOILING POINTS OF  
STEREoisomeric 1,4,dialkylcyclohexanes -U-  
AUTHOR--(03)-LIBERMAN, A.L., TYUNKINA, N.I., VASINA, T.V.  
COUNTRY OF INFO--USSR  
SOURCE--NEFTEKHIMIYA 1970, 10(1), 158-60  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CALCULATION, CYCLOHEXANE, ALKYL RADICAL, ORGANIC SYNTHESIS,  
DISTILLATION, ISOMER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3006/0907 STEP NO--UR/0204/70/010/002/0158/0160  
CIRC ACCESSION NO--AP0134636  
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0134636

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PRECALC. WAS CARRIED OUT BY A SEMIEMPIRICAL EQUATION BASED ON THE RELATION BETWEEN THE B.P. OF THE COMPOS. AND THEIR INTERNAL MOL. STRAIN, INCREASING WITH EACH SUCCESSIVE SUBSTITUTION OF A ALPHA-H ATOM. THE DIFFERENCE AND SUCCESSION WAS CALCD. FOR TITLE COMPOS., CONTG. NO TERT. ALKYL GROUPS. THUS, PRIOR TO SYNTHESIS OF THE COMPOS., IT WAS FORECASTED WHETHER THEY COULD BE SEPD. BY RECTIFICATION AND THE EFFICIENCY OF THE REQUIRED COLUMN.  
FACILITY: INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW, USSR.

UNCLASSIFIED

1/2 - 014 UNCLASSIFIED PROCESSING DATE--27NGV70  
TITLE--RELIABILITY CRITERION OF CYTOPHOTOMETRIC DATA -U-  
AUTHOR--(02)-LIBERMAN, L.I., MALYUK, V.I.  
COUNTRY OF INFO--USSR  
SOURCE--TSITOLOGIYA 12(2): 264-267. ILLUS. 1970  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--NUCLEUS, DNA, BIOLOGIC CELL, PHOTOMETRY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3006/0285 STEP NO--UR/9053/70/012/002/0264/0267  
CIRC ACCESSION NO--AP0134090  
UNCLASSIFIED



2/2 014  
CIRC ACCESSION NO--AP0134090

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AS A RELIABILITY CRITERION OF CYTOPHOTOMETRIC MEASUREMENTS IT IS POSSIBLE TO USE THE PRINCIPLE OF NORMAL DISTRIBUTION OF FILL UP FACTOR BETA AND RELATION OF EFFECTIVE OPTICAL DENSITIES Q. EXPERIMENTAL VERIFICATION OF THE CRITERION IN CYTOPHOTOMETRY OF DNA IN VARIOUS TEST OBJECTS SHOWED THAT PARAMETERS BETA AND Q HAD NORMAL DISTRIBUTION IRRESPECTIVE OF THE DISTRIBUTION PATTERN OF M, THE DEGREE OF NON HOMOGENEITY AND CORRELATIVE SIZES OF LUMINOUS PROBE AND NUCLEI. THE CRITERION REDUCES THE INFLUENCE OF UNCONTROLLABLE ERRORS ON THE RESULTS OF CYTOPHOTOMETRIC STUDIES.  
FACILITY: INST. ZOOL., ACAD. SCI. KUR. SSR, KIEV, USSR.

UNCLASSIFIED

172 016 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--USE OF FINELY DIVIDED METAL POWDERS AS SUPPORTS IN GAS  
CHROMATOGRAPHY -U-  
AUTHOR--(05)--YANGVSKIY, S.M., ALKSNIS, O., LIBERMAN, I.I., SAZONOV, M.L.,  
ZHUKHOVITSKIY, A.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZAVOD. LAB. 1970, 36(2), 136-8  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--GAS CHROMATOGRAPHY, STAINLESS STEEL, PARTICLE SIZE, CHEMICAL  
LABORATORY APPARATUS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3001/0135 STEP NO--UR/0032/70/036/002/0136/0138  
CIRC ACCESSION NO--AP0125951  
UNCLASSIFIED

272 016

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125951

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. STAINLESS STEEL POWDER OF PARTICLE SIZE 40-45 MU WAS USED AS A SUPPORT FOR GAS-LIQ. CHROMATOG. THE COLUMNS WERE PACKED WITH DRY POWDER, AND A LIQ. PHASE (HEXADECANE) WAS APPLIED BY PASSING ITS SOLN. IN CCL SUB4 (1:5) THROUGH THE COLUMN UNDER VACUUM (WATER PUMP). THE PERMEABILITY OF THE POWDER FOR CARRIER GAS WAS PROPORTIONAL TO SQUARE OF THE DIAM. OF THE PARTICLE. APPLICATION OF SMALL SIZE PARTICLES WITH GOOD GAS FLOW ALLOWED A DECREASE OF THE HETP (HEIGHT EV. TO A THEORETICAL PLATE) DOWN TO 1 MM. AN INCREASE OF COLUMN DIAM. DID NOT DECREASE ITS EFFECTIVENESS, I.E. SUCH COLUMNS WERE PARTICULARLY USEFUL FOR PREPARATIVE WORK. USE OF H AS CARRIER GAS GAVE BETTER SEPN. THAN N. THE RELATIONS BETWEEN HETP AND GAS FLOW ACCORDING TO PARTICLE SIZE AND COLUMN DIAM. ARE GIVEN. FACILITY: VSES. NAUCH.-ISSLED. GEOLUGORAZVED. NEFT. INST., MOSCOW, USSR.

UNCLASSIFIED

1/3 014 UNCLASSIFIED  
TITLE--GENETICS OF DIABETES MELLITUS -U-

PROCESSING DATE--13NOV70

AUTHOR--(02)--DAVIDENKOVA, YE.F., LIBERMAN, I.S.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR, VOL 25, NO 1, 1970,  
PAGES 78-83  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DIABETES-MELLITUS, HUMAN GENETICS, STATISTICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3003/0948

STEP NO--UR/0248/70/025/001/0078/0083

CIRC ACCESSION NO--AP0130011

UNCLASSIFIED

2/3 014

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0130011

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SINCE ANCIENT TIMES RESEARCHERS WERE DRAWN TO HEREDITARY FACTORS IN DEVELOPMENT OF DIABETES MELLITUS. AS FAR BACK AS THE 16TH AND 17TH CENTURIES, FAMILIES WERE DESCRIBED WHERE MULTIPLE CASES OF DIABETES HAD BEEN OBSERVED. TO DATE A SIGNIFICANT QUANTITY OF FACTS HAS BEEN ACCUMULATED INDICATING THE IMPORTANT ROLE OF GENETIC MECHANISMS IN THE DEVELOPMENT OF THIS DISEASE: HIGHER INCIDENCE OF DIABETES MELLITUS AND LOWER GLUCOSE TOLERANCE DEMONSTRABLE WITH A GLUCOSE LOAD AMONG THE RELATIVES OF DIABETICS, HIGH DEGREE OF CONCORDANCE FOR DIABETES MELLITUS AMONG MONOZYGOTIC TWINS AS COMPARED TO DIZYGOTES. IN 1966-1968 WE CONDUCTED TWO CONSECUTIVE SURVEYS OF DIABETICS ON RECORD IN ENDOCRINOLOGICAL OFFICES IN THE POLYCLINICS OF LENINGRAD. IN THE FIRST SURVEY A QUESTIONNAIRE WAS FILLED BY 4,959 PEOPLE ON RECORD AT TEN POLYCLINICS. THE REST OF THE DIABETICS (11,577 PEOPLE) WERE COVERED BY A SECOND AND CONSIDERABLY EXPANDED QUESTIONNAIRE. THUS, A TOTAL OF 16,536 ADULT (OF AGE) DIABETICS RESIDING IN LENINGRAD WERE COVERED BY THE QUESTIONNAIRE SURVEY. THE FIRST QUESTIONNAIRE WAS FILLED AND RETURNED TO THE LABORATORY BY 3,414 PEOPLE (68.8PERCENT), 3,147 OF WHOM ANSWERED EVERY QUESTION. THE SECOND, MORE COMPLICATED FORM WAS FILLED AND RETURNED BY 6,705 PEOPLE ACCORDING TO THE ORIGINAL COUNT (52.9PERCENT). IN THIS ARTICLE WE SUBMIT THE DATA FROM THE FIRST SURVEY ANALYZED BY PROCESSING THE INITIAL DATA ON A URAL-2 ELECTRONIC COMPUTER, AND SAMPLES FROM THE SECOND QUESTIONNAIRE REFLECTING DATA ON DIABETICS WHO CONTRACTED THE DISEASE IN CHILDHOOD AND YOUTH. THE LATTER DATA WERE PROCESSED MANUALLY.

UNCLASSIFIED

3/3 014  
CIRC ACCESSION NO--AP0130011

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--THE RESULTS OF BOTH ANALYSES WERE TOTALLED.

UNCLASSIFIED

USSR

UDC 621.382.23

LIBERMAN, I.S., SESTRORETSKIY, B.V., SHPIRT, V.A., YAKUBEN', L.M. [Members  
Scientific-Technical Society Of Radio Engineering, Electronics, And  
Communications imeni A.S. Popov]

"Semiconductor Diodes For Control Of Microwave Power"

Radiotekhnika, Vol 27, No 5, May 1972, pp 9-24

Abstract: The paper discusses the thermal and electrical effects in switching and limiter diodes at high and low levels of microwave power, the system of parameters of the diodes, and the methods for their measurement. The principal statements of the theory of devices for control of microwave power are discussed. Planning of one- and multichannel regulator units based on switching and limiter devices is described. It is concluded that use of switching and limiter diodes in microwave technology makes it possible to reduce the dimensions and weight of apparatus, to increase its speed of response, to reduce the power with respect to control goals, and to increase the reliability. 15 fig. 22 ref. Received 3 Jan 1972.

1/1

Turbine and Engine Design

USSR

UDC: 621.165.018

LAVENBERG, V. D., ROMANOVSKIY, G. F., RIBLIN, E. P., and LIEBERMAN, M. A.

"Evaluating the Effect of Blade Height of the Flow-Through Section on the Efficiency of Three-Ring Active Stages"

Tr. Nikolayev korablestroit. in-ta (Works of the Nikolayev Ship-Building Institute), 1972, vyp 64, pp 129-132 (from RZh-Turbostroeniye, No 5, 1973, Abstract No 5.49.33)

Translation: The authors present the results of a theoretical study on the effect of the blade height of the flow-through section on the economy of three-ring, low-consumption turbine stages operating at low velocity ratios. Graphic and analytic relationships are presented which make it possible to estimate the degree of effect of blade height on the coefficient of efficiency of a three-ring turbine in the design stage. Original article: 4 illus., 2 bibl. entries.

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USSR

UDC 669.721.042.6

ALEKSANDROVSKIY, S. V., VLASOV, V. A., LIBERMAN, M. D., POSKANENKOV, V. V.

"Experience in Production of Castings of Magnesium Alloys by Casting Under Pressure for Various Machine-Building Products"

Tr. Vses. N-i. i Projektn. In-ta. Alyumin., Magn. i Elektrodn. Prom-sti [Works of All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry], 1970, No. 72, pp. 155-162. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G194 by the authors).

Translated: A description is presented of the manufacture of various products (hand and portable tools, motorcycles, motor vehicles) with Mg alloy parts. The parts were produced by casting under pressure. The results of testing have shown the possibility of industrial application of Mg alloys in place of aluminum alloys. 5 figs, 1 table.

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USSR

UDC 616.31-002-02-057:615.732.6:66.013(479.34)

LIBERMAN, R. V., Scientific Research Institute of Labor Hygiene and Occupational Diseases imeni M. M. Efendizade (Director Professor I. I. Alekperov)

"Effect of Mercury on the Condition and Incidence of Disease of the Oral Cavities of Workers at the Sumgaitsk Chemical Plant"

Baku, Azerbaydzhanskiy Meditsinskiy Zhurnal, Vol 47, No 7, Jul 70, pp 55-58

Abstract: Mercury and its compounds are among the most widely used poisonous materials and are highly toxic. To determine the condition of their oral cavities and to develop various prophylactic measures, workers in a mercury electrolysis plant for chlorine were examined. The maximum mercury concentration prevailing in the plant was  $0.12 \text{ mg/m}^3$ , a level which exceeds the permissible concentration by a factor of 5-10. Of the 319 workers studied, 103 had gingivitis (63 of the catarrhal form, 36 of the atrophic form, and 4 of the hypertrophic form). Parodontosis was found in 34 workers. There were 51 cases of tooth erosion and 158 cases of tooth incrustation. No cases of parodontosis or tooth erosion were found among workers under 20 years old. All workers were given periodic medical check-ups. One case of chronic mercury intoxication, 10 cases of neurasthenia, 3 cases of hypotension, 9 cases of hypertension, and 5 cases of

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USSR

LIBERMAN, R. V., Azerbaydzhanskiy Meditsinskiy Zhurnal, Vol 47, No 7, Jul 70.  
pp 56-58

chronic gastritis and other diseases were found. No cases of mercury stomatitis were found, a fact which is attributed to sanitary measures taken. A dispensary approach to medical care is recommended which will detect early signs of intoxication and permit immediate initiation of medical and prophylactic measures.

2/2

USSR

UDC 615.31:547.75

PREOBRAZHenskAYA, M. N., ORLOVA, L. M., ~~LIBERMAN, S. S.~~ MOSINA, G. S.,  
AVRAMENKO, V. G., SOROKINA, N. P., and SUVOROV, N. N., All Union Scientific  
Chemical-Pharmaceutical Research Institute imeni S. Ordzhonikidze, Moscow

"Synthesis and Investigation of Pharmacological Activity of the Indole  
Series Hydroxyketones"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, Vol 6, No 1, Jan 72, pp 32-38

Abstract: 10 g of 3-chloroacetylindole (I) in 300 ml dimethylformamide is added to 18.3 g molten potassium acetate, the mixture is stirred at 60-70°, filtered, and evaporated. The residue is recrystallized from water yielding 44% of 3-acetoxyacetylindole (II), m.p. 139-140°. Analogously a series of other 3- $\alpha$ -acetoxyacetylindoles is obtained. To synthesize 3-benzoylhydroxyacetylindole (III), m.p. 187-189°, an analogous procedure was used employing potassium benzoate instead of the acetate. When (II) was heated with 2% NaOH solution, it hydrolyzed easily yielding 3-hydroxyacetylindole (IV), m.p. 167-169°. 5-Acetoxyacetylindole, m.p. 123-124.5° was obtained similarly to (II) starting from 5-hydroxyacetylindole, m.p. 177-179°. In each group several representative compounds were synthesized using reported reactions. 3-Hydroxyacetylindole was found to have neurotropic activity; modifications in its structure as a rule led to a lower biological activity.

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USSR

UDC 615.31:547.751].012.1

PREOBRAZHENSKAYA, M. N., ORLOVA, Z. G., STAROSTINA, Z. G., LIHBERMAN, S. S.,  
SUKHININA, G. P., and SUVOROV, N. N., All Union Scientific Research Institute  
of Pharmaceutical Chemistry imeni S. Ordzhonikidze, Moscow

"Synthesis and Investigation of the Pharmacological Activity of 1-(Indolyl-3')-  
2-alkylaminoethanols"

Moscow, Khimiko-farmatsevticheskiy zhurnal, Vol 4, No 10, Oct 70, pp 5-9

Abstract: 1-(Indolyl-3')-2-alkylaminoethanols were synthesized by hydrogenating the corresponding N- substituted 3-aminoacetylindoles, using Raney nickel as a catalyst. The resultant amino alcohols were converted to salts (chlorohydrates or adipinates) which were pharmacologically studied. The initial 3-alkylaminoacetylindoles were produced by interacting 3-chloroacetylindole or 3-bromoacetylindole with primary or secondary amines. The physicochemical properties of the 3-alkylaminoacetylindoles and 1-(indolyl-3')-2-alkylaminoethanols are tabulated. It was found that all amino alcohols containing the secondary amino group have sympathomimetic properties: they increase arterial blood pressure in rats and cats under anesthesia, cause contraction of the nictitating membrane, and constrict the peripheral vessels. This effect is  
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USSR

PREOBRAZHENSKAYA, M. N., et al, Khimiko-farmatsevticheskiy zhurnal, Vol 4,  
No 10, Oct 70, pp 5-9

attributed to excitation of the  $\alpha$ -adrenoreactive systems. The most active of all compounds studied was 1-(indolyl-3')-2-methylaminoethanol. This alcohol has only 1/10-1/20 the activity of adrenalin, but its effect is longer-acting. Amino alcohols containing the tertiary amino group did not cause contraction of the nictitating membrane, they reduced blood pressure and relaxed the peripheral vessels.

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- 71 -

1/2 008 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--STIMULANT 3 HYDROXYACETYL INDOLES -U-  
AUTHOR--(05)--HASHKOVSKIY, M.D., SUVOROV, N.N., PREOBRAZHENSKAYA, M.N.,  
LIBERMAN, S.S., ORLOVA, L.M.  
COUNTRY OF INFO--USSR  
SOURCE--BRIT. 1,183,919  
DATE PUBLISHED--11MAR70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--CENTRAL NERVOUS SYSTEM STIMULANT, PATENT, INDOLE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3002/0070 STEP NO--UK/0000/70/000/000/0000/0000  
CIRC ACCESSION NO--AA0127698  
UNCLASSIFIED

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008

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AA0127698

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPOS. (I), CENTRAL NERVOUS SYSTEM STIMULANTS, ARE USED IN MENTAL PATIENTS WITH ASTHENIC, ASTHENIC DEPRESSIVE, AND NEUROTIC STATES AND WITH NEUROLEPTICS IN THE TREATMENT OF SLUGGISH APATHETIC AND APATHETIC ABOLIC STATES. DOSES OF 0.1-0.8 ARE GIVEN FOR LESS THAN OR EQUAL TO 3 MONTHS. SHOWN ON MICROFICHE.

UNCLASSIFIED



1/2 013 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--NON STEROID ANTIPHLOGISTIC DRUGS -U-  
AUTHOR-(03)-GLUSHKOV, R.G., LIBERMAN, S.S., YAKHONTOV, L.N.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. VSES. KHIM. OBSHCHEST. 1970, 15(2), 185-92  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--ANTIINFLAMMATORY DRUG, INDOLE, DRUG EFFECT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3009/0121 STEP NO--UR/0063/70/015/002/0185/0192  
CIRC ACCESSION NO--AP0138986  
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0138986

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVIEW COVERING AROM. AND  
HETEROCYCLIC DERIVS. OF ORG. ACIDS WITH ANTIPHLOGISTIC PROPERTIES, AND  
INCLUDING DERIVS. OF INDOLE, TRIAZOLE AND RELATED RING SYSTEMS, WITH A  
BRIEF DISCUSSION OF THE MODE OF ACTION OF THESE DRUGS.

UNCLASSIFIED

USSR

UDC: 681.332.65

CHERNIKHOV, Yu. V., IGNATENKO, A. D., ~~LIFERMAN, H. I.~~, LOBACHEVSKIY, O. V.,  
Scientific Research and Experimental Design Institute of Automation in Fer-  
rous Metallurgy

"A Method of Shaping Multiphase Pulse Supply Voltage for Combination Logic  
Circuits Based on Thyristors"

USSR Author's Certificate No 287119, filed 17 Mar 69, published 21 Jan 71  
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct  
71, Abstract No 10B227 P)

Translation: This Author's Certificate introduces a method of shaping a  
multiphase pulse supply voltage for combination logic circuits based on  
thyristors by isolating a unipolar half-wave of sinusoidal voltage, shifting  
it in phase by 120 degrees, and adding the initial and shifted half-waves.  
In order to improve the reliability and noise suppression of the combination  
logic circuits, the aggregate pulse voltage of each phase is shifted by  
120 degrees with respect to the same voltage of the preceding phase.

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USSR

UDC 681.327.67

CHERNIKHOV, YU. V., ~~LIBERMAN~~ V. L., Scientific Research and Experimental Design  
Institute of Automation in Ferrous Metallurgy

"A Memory Cell Based on Thyristors"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 5,  
1970, p 37, patent No 262180, filed 14 Nov 68

Abstract: This Author's Certificate introduces a memory cell based on thyristors with cathode loads connected to the neutral bus of a three-phase network. The unit contains a recording thyristor whose anode is connected to the three phases of the network through rectifier diodes. Also incorporated in the device is a reset thyristor. As a distinguishing feature of the patent, energy demands between reset and record are eliminated and the device is simplified by connecting the reset thyristor in series with one of the rectifier diodes, and connecting its controlling electrode through a resistor to the cathode of the recording thyristor.

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1/2 014 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--CONCERNING SOME STATISTICAL CHARACTERISTICS OF THE PATHOKINESIS OF  
SCHIZOPHRENIA, PROCEEDING WITH ATTACKS AND ACCOMPANIED BY MANIC STATES  
AUTHOR--(02)-STOYANOV, S., LIBERMAN, YA.I.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL NEVROPATOLOGII I PSIKHIATRII IMENI S. S. KORSAKOVA, 1970,  
VOL 70, NR 3, PP 418-424  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SCHIZOPHRENIA, PSYCHOSIS, STATISTICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1982/0820

STEP NO--UR/0246/70/070/003/0419/0424

CIRC ACCESSION NO--AP0052256

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0052256

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS BY CLINICO STATISTICAL METHODS, STUDIED 126 SCHIZOPHRENIC PATIENTS SELECTED AMONG 1429 PATIENTS, WHO HAD PSYCHOTIC ATTACKS, WITH MANIC DISORDERS. IT WAS ESTABLISHED THAT IN THIS GROUP, EXCEPT MANIC STATES OTHER TYPES OF ATTACKS WERE ALSO SEEN: DEPRESSIVE ATTACKS, (29PERCENT), ONEIROID, (11PERCENT), ACUTE DELUSIONAL, (5PERCENT), DOUBLE AFFECTIVE, (3PERCENT). IN THE DEBUTS OF THE DISEASE AFFECTIVE ATTACKS PREVAILED (93,8PERCENT). AS THE DISEASE DEVELOPED THE SPECIFIC WEIGHT OF CATATONIC, HEBEPHRENIC AND HALLUCINATORY, DELUSIONAL DISORDERS INCREASED, WHILE AS THE DEPTH OF AFFECTIVE DISTURBANCES BECAME LESS. THE ONEIROID SYNDROME OCCURS TWICE AS FREQUENTLY IN INDIVIDUALS UP TO 20 YEARS, THAN IN THOSE WITH AN ONSET IN LATER AGE. IN FEMALES THERE WAS A RELATIVELY MORE AMOUNT OF ATTACKS THAN IN MALES (MAINLY DUE TO MORE FREQUENT DEPRESSIVE, PARANOID ATTACKS). THE MALES DISPLAYED A MORE AMOUNT OF REMISSIONS WITH MILDLY EXPRESSED PERSONALITY CHANGES. IN FEMALES THE REMISSIONS WERE CHARACTERIZED BY AFFECTIVE FLUCTUATIONS AND PSUEDONEUROTIC STATES.

UNCLASSIFIED

USSR

LIBERMAN, YE. A. and MENASHEV, V. A., Institute of Biophysics, Academy of Sciences USSR, Pushchino

"Modeling of Changes in Permeability of Bimolecular Phospholipid Membranes"

Moscow, Biofizika, No 6, 1972, pp 1017-1023

Abstract: Bimolecular phospholipid membranes made from a solution of ox brain lipids, swine liver mitochondria lipids, or a mixture of ox brain lipids and cytochrome c in a heptane were fused in aqueous solutions of KCl,  $\text{CaCl}_2$ ,  $\text{MgCl}_2$ , nystatin, amphotericin B, and gramicidin A. The resistance of the area of contact between two bimolecular bubbles was high when nystatin alone was inside the bubbles. When amphotericin B was present, membrane resistance decreased considerably. In solutions containing the polyene antibiotics, resistance of the contact area also decreased sharply after a phospholipid membrane fused with one containing cholesterol. During fusion there was an exchange of cholesterol between the membranes. Contact resistance increased after the membranes fused in a solution with gramicidin A. However, the presence of Ca ions (in the solution between bubbles) reduced the resistance of the con-

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USSR

LIBERMAN, YE. A. and NENASIEV, V. A., Biofizika, No 6, 1972, pp 1017-1023

contact area. The experimental results suggest that a hydrophobic contact between cell membranes is sufficient to ensure cell communication. A specific contact substance (e.g., nystatin, amphotericin B, or gramicidin A) may produce electric communication and permit the passage of comparatively small molecules from cell to cell.

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USSR

BLIOKH, ZH. L., and LIBERMAN, YE. A. Institute of Problems of Information Transmission, Academy of Sciences, USSR, Moscow

"The Influence of Beryllium Ions on the End Plate Potential and Frequency of Miniature End Plate Potentials at Myoneural Junctions in the Frog"

Moscow, Biofizika, Vol 15, No 3, May/Jun 70, pp 447-452

Abstract: The addition of 0.05-0.1mM of beryllium to Ringer's solution, containing a muscle-nerve preparation from a frog, results in a block at the myoneural junction caused by inhibition of the release of mediator quanta. Analysis of end plate potential amplitudes during Be-block indicates that  $\text{Be}^{++}$  reduces the probability of release of mediator quantum in response to a nerve impulse. There is evidence that  $\text{Be}^{++}$  is a competitive antagonist to  $\text{Ca}^{++}$  in this process. The mechanism of this competition correlates with the decrease of Ca-influx into the nerve endings in response to nerve impulse.

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Biophysics

USSR

BERESTOVSKIY, G. N., LIBERMAN, Ye. A., LUNEVSKIY, V. Z., and FRANK, G. M.,  
Institute of Biological Physics, Academy of Sciences USSR

"Optical Studies on Changes in the Structure of the Nerve Membrane During the  
Conduction of Nerve Impulses"

Moscow, Biofizika, No 1, 1970, pp 62-68

Abstract: During action potential there is a change in the birefringence of the nerve fiber membrane due to change in the electric field in the membrane. At the peak of action potential, the birefringence of the membrane increases by  $1.5 \cdot 10^{-4}$  and the value of the optical effect recorded is inversely proportional to the diameter of the axon. Changes in birefringence of phospholipid membranes are due to changes in their structure following displacement of the fat-soluble ions by the electric field and not to the direct action of the field on the lipid or protein part of the membrane. The mechanism of change in permeability of a nerve membrane may be similar to the mechanism of ion migration across these phospholipid membranes.

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USSR

LIBERMAN, Ye. A., TOPALY, V. P., and TSOFINA, L. M., Institute of Problems in Information Transmission, Academy of Sciences USSR

"Comparison of the Properties of Bimolecular Membranes of Brain Phospholipids, Mitochondria, and Bacteria"

Moscow, Biofizika, No 1, 1970, pp 69-75

Abstract: The conductivity of bimolecular membranes of brain phospholipids, mitochondria, and *Micrococcus lysodeikticus* in the presence of various uncouplers of oxidative phosphorylation was compared. Trinitrophenol, 2,4-dichlorophenol, carbonylcyanide-2,4,5-trichlorophenyl-hydrazone, and other such agents produced virtually the same increase in conductivity of brain lipid and mitochondrial membranes. Dicoumarol had almost no effect on brain lipid membranes, but at concentrations of  $2.5 \cdot 10^{-6}$  or higher it increased the conductivity of mitochondrial lipid membranes. Tetrachloro-2-trifluoromethylbenzimidazole, 2,4-dinitrophenol, 2,4,5-trichlorophenol, and pentachlorophenol had a greater effect on mitochondrial lipid membranes than on brain lipid membranes.

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1/2 012  
UNCLASSIFIED  
TITLE--CHARGED AND NEUTRAL ION CARRIERS THROUGH BIMOLECULAR PHOSOLIPID  
MEMBRANES -U-  
PROCESSING DATE--18SEP70  
AUTHOR--(03)-LIBERMAN, YE.A., TOPALY, V.P., SILBERSTEYN, A.Y.  
COUNTRY OF INFO--USSR  
SOURCE--BIOCHIM. BIOPHYS. ACTA 1970, 196(2), 221-34  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--PHOSPHOLIPID, PHOSPHORYLATION, PHOSPHORUS, SODIUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FAME--1984/1088  
STEP NO--NE/0000/70/196/002/0221/0234  
CIRC ACCESSION NO--AP0055774  
UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--18SEP70  
CIRC ACCESSION NO--AP0055774  
ABSTRACT/EXTRACT--(U) GP-0- ABSTCT. TO CLARIFY THE INFLUENCE OF  
CONFIGURATION OF MOLS. ON THEIR MOTION WITHIN BIMOL. PHOSPHOLIPID  
MEMBRANES, THE ELEC. PROPERTIES OF THESE MEMBRANES IN THE PRESENCE OF  
SPHERICAL LIPID SOL. MOLS. OF 1,2, DICARBADODECABORANE (BARENE) DERIVS.  
WERE INVESTIGATED. DECACHLOROBARENE IN THE PH REGION 2-13 IS AN  
EFFECTIVE CARRIER OF H PRIME POSITIVE THROUGH BIMOL. MEMBRANES, AND IS  
AN UNCOUPLER OF OXIDATIVE PHOSPHORYLATION. THE HG DERIVS. OF BARENE ARE  
CARRIERS OF THE HALOGEN AND RHODANIDE ANIONS. PHENYLOICARBAUNDECABORANE  
ANIONS ON THE NATURE OF THE CARRIERS WHICH CAN BE RESPONSIBLE FOR THE  
PROPERTIES OF EXCITABLE CELL MEMBRANES. AN ASSUMPTION IS MADE THAT K  
PRIME POSITIVE AND NA PRIME POSITIVE CARRIERS OF THE VALINOMUCIN OR  
GRAMICIDIN TYPE CAN SERVE AS EXCITABILITY INDUCING SUBSTANCES IF THE  
MOLS. OF THESE CARRIERS CONTAIN ONE POS. OR TWO NEG. CHEM. LINKED  
CHARGES, OR IF TWO OR MORE SIMILAR MOLS. ARE LINKED TOGETHER BY FLEXIBLE  
BONDS WHICH DO NOT HINDER THE COMPLEXING WITH CATIONS. SUCH AN EFFECT  
SHOULD ALSO BE OBSERVED IF THE MOBILE LIPID SOLS. MOLS. COMPLEX WITH TWO  
OR MORE CATIONS.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--EFFECT OF OXIDATIVE PHOSPHORYLATION UNCOUPLERS ON THE RELEASE OF  
ACETYLCHOLINE FROM NERVE ENDINGS -U-  
AUTHOR--GLAGOLEVA, I.M., LIBERMAN, YE.A., KHASHAYEV, Z.M.  
COUNTRY OF INFO--USSR  
SOURCE--BIOFIZIKA 1970, 15(1), 76-83  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--ACETYLCHOLINE, PHOSPHORYLATION, NERVE ENDING  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1985/0362 STEP NO--UR/0217/70/015/001/0076/0083  
CIRC ACCESSION NO--AP0100849  
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0100849

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS OF VARIOUS OXIDATIVE PHOSPHORYLATION UNCOUPLERS WERE STUDIED ON THE MINIATURE END PLATE POTENTIALS IN FROG NEUROMUSCULAR JUNCTIONS. IN THE PRESENCE OF THESE COMPS. THE FREQUENCY INCREASED 2-3 ORDERS OF MAGNITUDE AND THE AMPLITUDE 2-3 FOLD. INCREASED CONC. OF EACH UNCOUPLER DECREASED THE TIME REQUIRED FOR THE FREQUENCY TO REACH A MAX. AND THE TIME FOR THE SUBSEQUENT FALL IN FREQUENCY. THE EFFECTIVENESS OF THESE COMPS. ON THE MINIATURE END PLATE POTENTIAL DECREASED IN THE FOLLOWING ORDER: CARBONYL CYANIDE P-TRIFLUOROMETHOXYPHENYLHYDRAZONE, CARBONYL CYANIDE M-CHLOROPHENYLHYDRAZONE, TETRACHLORO-2,TRIFLUOROMETHYLBENZIMIDAZOLE, DICOUMAROL, 2,4-DINITROPHENOL, AND M-NITROPHENOL. THIS SERIES CORRESPONDED TO THE SEQUENCES OBTAINED DURING STUDY OF THE EFFECT OF THESE COMPS. ON MITOCHONDRIAL RESPIRATION AND ON THE MOBILITY OF ARTIFICIAL MEMBRANE PHOSPHOLIPIDS. THE DATA VERIFY A PREVIOUS HYPOTHESIS THAT THE RELEASE OF ACETYLCHOLINE FROM THE NERVE ENDINGS IS CONNECTED WITH ADHESION OF THE SYNAPTIC VACUOLES WITH THE NERVE ENDING MEMBRANE UNDER THE ACTION OF VAN DER WAALS FORCES. INCREASED CONC. OF CA<sup>2+</sup> POSITIVE IN THE PROTOPLASM IS DUE TO LIBERATION FROM THE MITOCHONDRIA DURING THE ACTION OF THE UNCOUPLERS AND LEADS TO SHIELDING OF THE SURFACE NEG. CHARGE OF THE MEMBRANE AND TO INCREASED ACETYLCHOLINE SECRETION.

UNCLASSIFIED

USSR

LIBERMAN, YE.A., Institute of Information Transmission Problems, Academy of Sciences USSR

"Membranes (Ionic Permeability, Excitation, Control)"

Moscow, Biofizika, Vol 15, No 2, Mar/Apr 70, pp 278-296

Abstract: The mechanism of the ionic permeability displayed by bimolecular phospholipid membranes, and the mechanism by which this permeability changes in the electrical field, are analyzed. The "design" of the penetrating ions and a method of obtaining various ion carriers, including carriers in whose presence ion transfer can be controlled by the electrical field on the membrane, are described. The mechanism of action of oxidative phosphorylation uncouplers and a method of measuring the electrical potential across membranes of mitochondria and photophosphorylating particles are examined. The system carrying electrons across mitochondrial membranes and electron transport across phospholipid membranes are discussed. A hypothesis about the role of membranes in the control systems of cells is proposed. The mechanism by which acetylcholine quanta are secreted during synaptic transmission and a method of modeling secretion and other interactions of cell membranes by means of bimolecular phospholipid membranes are discussed.

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1/2 023 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--OPTICAL STUDIES OF THE CHANGE IN THE STRUCTURE OF NERVE MEMBRANE  
DURING NERVE IMPULSE TRANSMISSION -U-  
AUTHOR--(04)-BERESTOVSKIY, G.N., LIBERMAN, YE.A., LUNEVSKIY, V.Z., FRANK,  
G.M.  
COUNTRY OF INFO--USSR  
SOURCE--BIOFIZIKA 1970, 15(1), 62-8  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CRAYFISH, NEURON, CELL MEMBRANE, PHOSPHOLIPID, LIGHT  
REFRACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1996/0625

STEP NO--UR/0217/70/015/001/0062/0068

CIRC ACCESSION NO--AP0117851

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0117851

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN ISOLATED ABDOMINAL AND FOOT NERVE FIBERS AND GIANT AXONS OF ASTACUS ASTACUS (CRAYFISH), THE ACTION POTENTIAL PEAK INCREASED BIREFRINGENCE OF THE NERVE FIBER MEMBRANE. IN EXPTS. IN WHICH A BOVINE BRAIN BIMOL. PHOSPHOLIPID MEMBRANE WAS USED ALONE, THE BIREFRINGENCE CHANGES CAN BE EXPLAINED AS THE ACTION OF AN ELEC. FIELD ON IONS DISSOLVED IN MEMBRANE LIPIDS BUT NOT AS THE ACTION OF ELEC. CURRENT ON THE LIPID OR PROTEIN PART OF THE MEMBRANE. IT IS SUPPOSED THAT THE MECHANISM OF BIREFRINGENCE CHANGES IS SIMILAR TO THE MECHANISM OF ION TRANSPORT ACROSS THESE MEMBRANES. FACILITY:  
INST. BIOL. PHYS., PUSCHINO, USSR.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--COMPARISON OF THE PROPERTIES OF PHOSPHOLIPID BIMOLECULAR MEMBRANES  
OF BRAIN, MITOCHONDRIA, AND BACTERIA -U-  
AUTHOR-(03)-LIBERMAN, YE.A., TOPALY, V.P., TSOFINA, L.M.

COUNTRY OF INFO--USSR

SOURCE--BIOFIZIKA 1970, 15(1), 69-75

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CELL MEMBRANE, PHOSPHOLIPID, BRAIN, HEART, MITOCHONDRION,  
OXIDATION, PHOSPHORYLATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1996/0629

STEP NO--UR/0217/70/015/001/0069/0075

CIRC ACCESSION NO--AP0117855

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0117855

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONDS. OF BIMOL. MEMBRANES ARTIFICIALLY PREPD. FROM PHOSPHOLIPIDS OF BRAIN, BULL HEART MITOCHONDRIA, AND MICROCOCCUS LYSDDEIKTICUS BIOMASS WERE MEASURED IN THE PRESENCE OF SELECTED UNCOUPLERS OF OXIDATIVE PHOSPHORYLATION. THE CONDS. OF BRAIN AND MITOCHONDRIAL MEMBRANES INCREASED SIMILARLY ON USING 2,4,DICHLOROPHENOL (I), TRINITROPHENOL, CARBONYLCYANIDE, 2,4,5,TRICHLOROPHENYLHYDRAZONE, CARBONYLCYANIDE,P,TRIFLUOROMETHOXYPHENYLHYDRAZONE, TETRAPHENYLBORON ANION, PHENYLDICARBOUNDECABORANE ANION, N,N,DIMETHYL,N,N,DIBENZYLAMMONIUM CATION, RESP. DICUMAROL, WHICH HAD PRACTICALLY NO INFLUENCE ON BRAIN MEMBRANE, INCREASED THE COND. OF MITOCHONDRIAL MEMBRANES; 2.5 TIMES TO PRIME NEGATIVE6 M I, TETRACHLORO,2,TRIFLUOROMETHYLBENZIMIDAZOLE, 2,4,5,TRICHLOROPHENOL, AND PENTACHLOROPHENOL HAD A GREATER INFLUENCE ON MITOCHONDRIAL MEMBRANES THAN ON THOSE OF THE BRAIN. ALL TESTED UNCOUPLERS INCREASED THE COND. OF BACTERIAL MEMBRANES. IT WAS OBSD. THAT THIS KIND OF MEMBRANE IS PENETRABLE FOR THE CATIONS OF GROUP I. THE PRESENCE OF ALK. CATION CARRIERS IN BACTERIAL MEMBRANES IS ASSUMED. ON THE BASIS OF OBSD. HIGH COEFFS. OF ANION DISTRIBUTION IN MEMBRANES, THE PRESENCE OF A LARGE POS. CHARGE IN MEMBRANES IS ASSUMED. FACILITY: INST. PROBL. INFORM, TRANSM., MOSCOW, USSR.

UNCLASSIFIED

LIBERMAN, Yu. I.

50:JPAS 53378

16 JUNE 71

UDC: 616.895.8-037

CLINICAL AND OCCUPATIONAL PROGNOSIS OF SCHIZOPHRENIA (ACCORDING TO THE FINDINGS OF AN EPIDEMIOLOGICAL SURVEY)

Article by N.N. Zhurkov, Z.N. Serbryakova, Yu.I. Liberman, Institute of Psychiatry, USSR Academy of Medical Sciences, Moscow; Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 3, May 1971, pp 31-34

There is an enormous quantity of works in the psychiatric literature which deal with clinical and occupational prognosis on schizophrenia. However, as a rule these studies were pursued on the basis of samples, and those that could be representative do not contain sufficiently differentiated clinical information about the patients and are performed in the statistical aspect. The use of the epidemiological method in psychiatry discloses new prospects in development of problems dealing with clinical and occupational prognosis. However, the existing discrepancies in diagnostic positions among psychiatrists and differences in clinical interpretation of the content of schizophrenia present great difficulties in evaluating the actual significance of epidemiological data. For this reason, specialists of different nations are currently engaged in a persistent attempt to develop methods of evaluating and classifying mental patients without the diagnostic work of the researcher, and to render the results thus obtained accessible for quantitative evaluation.

In view of the distinctive features of mental diseases, for the purposes of epidemiological studies, of special importance is the development of special scales reflecting psychopathological structure and severity of the different symptoms. In view of the present status of clinical psychiatry, more adequate for a unified evaluation of mental patients should be a scale based on the syndrome levels.

On the basis of many years of clinical investigation of schizophrenia at the Institute of Psychiatry USSR AMN, different syndromes of schizophrenia were isolated and described. Using them it is possible not only to identify any condition of the patients at the time of examination, but also to describe the stage of development of the disease. The practice of using a roster of syndromes to evaluate patients and make diagnoses by representative of different psychiatric schools has shown that there is sufficient agreement with respect to syndromological (as opposed to diagnostic) evaluation.

AA0040736

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 170

240248 FABRICATION OF ARTICLES FROM POWDERED METAL  
by compacting, sintering and final pressing  
to size is characterized in that in order to  
centralise the objects during final pressing to  
size projections and dents (equal in volume) are  
formed on the non-working parts of the objects  
during compacting. These projections and dents are  
then levelled out during the final pressing. The  
method involves compacting blanks at pressure of 2 -  
3 tons/cm<sup>2</sup> when projections and dents are made on  
the non-working parts of the surface. Next the  
blanks are sintered then subjected to final pressing  
to size at 8 - 10 tons/cm<sup>2</sup>. During this stage the  
projections and dents are pressed out flat.  
4.5.67 as 1155821/22-1. YU.M.LIBERMAN. SPECIAL DES.  
OFFICE No.10. (24.9.69.) ~~INT 12/21.3.69.~~ Class  
40b, 31b, 49h, 49i. Int.Cl.B 22f, B23k, B 23l.

Spetsial'noye Konstruktorskoye Byuro - 10

19750397

2

USSR

UDC: 621.317.335.3.029.64

YEPIFANTSEV, Yu. F., ZHUKOV, O. K., KLEMENT'YEV, F. M., KULIKOV, V. M.,  
LIBERMAN, Z. A., OGURTSOV, S. I.

"Measurement of the Permittivity of  $(\text{Ba},\text{Zn})\text{TiO}_3$  Ceramic in the 3-cm Micro-wave Band, and Evaluation of the Effect Which Destabilizing Factors Have on Measurement Accuracy"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1 (Re-ports of the All-Union Scientific and Technical Conference on Radio Engineer-ing Measurements. Vol. 1), Novosibirsk, 1970, pp 92-94 (from RZh-Radiotekh-nika, No 1, Jan 71, Abstract No 1A357)

Translation: The authors investigate the dispersion of permittivity of type  $(\text{Ba}_{1-x}\text{Zn}_x)\text{TiO}_3$  ferroelectric crystals in the 3-cm frequency band using a measurement installation whose block diagram is given. Permittivity is calculated from the results of measurement of the microwave signal amplitude and phase determined when specimens of various thicknesses are introduced into the feedback circuit. The results of measurements made on three fre-quencies (8,900, 10,000 and 10,800 MHz) are presented for four types with

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USSR

YEPIFANISEV, Yu. F., et al., Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1, 1970, pp 92-94

various values of  $x$ . The results show that barium titanate ceramic with 4 percent zinc has the least dispersion. The effect which destabilizing factors have on measurement precision is examined. Three illustrations. E. L.

2/2



USSR

UDC: 681.333:53

ANISKOV, V. V., LIBEROV, A. B.

"Specialized Analog Computer 'Segraf-1' and Experience in Operating It"

Analogo-vychisl. tekhnika v organizatsii proiz-va i issled. bol'shikh sistem (Analog Computers in the Organization of Production and Investigation of Large Systems), Moscow, 1970, pp 137-145 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 6, Jun 70, Abstract No 6891)

Translation: The "Segraf-1" specialized analog computer is described. It is designed for operative calculation, analysis, and optimization of PERT charts of small and medium volume containing up to 500-600 operations of which <300 are active (that is, operations the length of which is nonzero). Experimental operation of the computer showed that when solving optimization problems, the "Segraf-1" analog computer has greater advantages than the all-purpose digital computer (for example, the Ural-11 type), since it permits rapid "playback" of the various versions, significantly improving the dynamics and quality of control. There are two illustrations, one table, and a three-entry bibliography.

1/1

USSR

UDC 621.396.6:621.318

PETROVA, I. I., LIBEROVA, T. V.

"Properties of Ferroplanes With Various Types of Porosity"

Elektron. tekhnika. Nauchno-tekhn. sb. Ferrit. tekhn. (Electronic Technology. Scientific and Technical Collection. Ferrite Technology), 1970, vyp. 1 (23), pp 78-85 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12V444)

Translation: The authors investigate the properties of Ferroplanes having Y- and W-structure with various densities and various types of porosity. It is shown that the loss tangent increases abruptly in all ferrites beginning with a certain density. A comparison of the properties of solid solutions  $\text{Co}_2\text{Y-Mg}_2\text{Y}$  and  $\text{Co}_2\text{Y-Zn}_2\text{Y}$  revealed a number of advantages of the latter from the standpoint of use at high frequencies. Resumé.

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STAROBINSKIY, N.M., et al. Nauch. tr. vuzov Povolzh'ya, 1971, Issue 6, pp 71-80

studies of MAI operating in an auto-modulation regime, the effective frequency range of the given type of circuits (0.5--100) kHz is determined. An expression is derived for determination of the percentage modulation as a function of the magnitude of the capacitance and control current. Oscillograms are presented of voltage curves at the output of the inverter and at the output of the frequency discriminator. It is shown that the MAI makes it possible to obtain in discrete form, in the form of frequency dependence, the control current of practically all functional dependences characteristic of MA. 8 ill. 6 ref. A.M.

2/2

- 3 -

UDC 621.314.1:621.382.5

APPROVED FOR RELEASE: 09/19/2001

CIA-RDP86-00513R002201810010-6"

USSR STAROBINSKIY, N.M., LIBERZON, K.SH., KAPITONOVA, L.M.

"Magnetic-Amplifier Inverters"

Nauch. tr. vuzov Povolzh'ya (Scientific Works Of Higher Educational Institutions Of Povolzh'ye [Land Along The Volga]), 1971, Issue 6, pp 71-80 (from RZh:Elektronika i yeye primeneniye, No 7, July 1972, Abstract No 7B574)

Translation: The circuits of a magnetic amplifier (MA) with an inverter transistorized power supply (MAI) are considered. A classification is presented of MAI circuits with respect to the form of the MA, which makes it possible to obtain the characteristics: load current, frequency--current controls, which reveal new possibilities for the use of MA making it possible to change from ordinary control characteristics in an analogous form to discrete control characteristics. Circuits are considered of MAI on the base of an ordinary MA with an exterior feedback, with self-saturation, in an auto-modulation regime. Analytical expressions are derived for the control characteristics (dependence of frequency on input signal), and an analysis is made of the operation of MAI in a circuit with exterior feedback with various feedback factors. During an analysis of MAI with self-saturation, recommendations are made for a shunting semiconductor diode MA with effective resistances. In order to assure a stable relay regime, the introduction of a supplementary feedback is recommended. As a result of experimental

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1/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--INCREASE IN THE EFFICIENCY OF PLANTS FOR PRODUCING ALKYL PHENOLS  
USING A KU2 CATION EXCHANGER, OPERATING EXPERIENCE -U-  
AUTHOR--(03)-BELVO, P.S., LIBINSHTEYN, I.YE., YEGOROV, N.M.

COUNTRY OF INFO--USSR

SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(4), 17-20

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--ALKYLPHENOL, CHEMICAL PRODUCT PRODUCTION, LUBRICANT ADDITIVE,  
ION EXCHANGE RESIN, AUTOMATIC CHEMICAL PROCESS CONTROL/(U)KU2 ION  
EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--2000/1977

STEP NO--UR/0065/70/015/004/0017/0020

CIRC ACCESSION NO--AP0125566

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70  
CIRC ACCESSION NO--AP0125566  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ALKYL PHENOLS WERE USED TO  
PREP. OIL ADDITIVES. THE PLANT WAS RECONSTRUCTED FOR OPERATING  
CONTINUOUSLY. THE PROCESS WAS AUTOMATED, INCREASING THE EFFICIENCY BY  
2.5 TIMES AND OBTAINING ALKYL PHENOLS OF CONST. QUALITY. A FLOW SHEET  
IS PRESENTED. FACILITY: MINKHGP, MOSCOW, USSR.

UNCLASSIFIED

USSR

UTC 661.12:661.183.12

DONSKAYA, N. G., MIKHALEV, A. V., and LIBINSON, G. S., All Union Scientific Research Institute of Antibiotics, Moscow

"Study of the Relationship between the Structure and Sorption Characteristics of Ion Exchange Resins Used in Chemical-Pharmaceutical Industry"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, Vol 5, No 10, Oct 71, pp 43-48

Abstract: A study was carried out on the effect of ion exchange resin characteristics, such as the type of matrix or functional groups on the selectivity of sorption. As far as the functional groups were concerned -- whether they were on the resin or on the experimental material -- the amine substituent groups had no effect whatsoever; when the sulfo groups were replaced by carboxy groups, however, the selectivity was lowered considerably. Absorption of aromatic compounds by an ion exchange resin is mostly due to van der Waals' type of interactions between the sorbent and sorbate. Therefore, the selectivity of aromatic compounds should increase in the order of the following matrix type: aliphatic-phenyl-naphtyl. Experimental data showed that selectivity indeed does increase going from an aliphatic matrix sorbent to a phenyl matrix; the selectivity of phenyl and naphtyl matrices, however, is identical.

1/1

- 10 -

USSR

UDC 617-001.28-036.11-092.9-035.272.6:547.563.32

ROGACHEVA, S. A., LUZANOVA, O. V., KLYZHUK, K. N., RUSINOVA, G. G., SHAROVA, E. G.,  
and LIBERZON, R. Ya., Institute of Biophysics, Ministry of Health USSR, Moscow

"The Therapeutic Effectiveness of High-Polymer Heterologous DNA in Dogs with Acute Radiation Sickness"

Moscow, Meditsinskaya Radiologiya, Vol 15, No 3, 1970, pp 44-48

Abstract: A study was made of the effect of high-polymer, heterologous, calf thymus DNA preparations on the course and outcome of acute radiation sickness in dogs. In the experiments, 52 dogs of both sexes, one to four years old, weighing 5-24 kilograms, were subjected to cesium-137 gamma-ray irradiation at a rate of 6 r per minute in doses of 700 and 750 r. The animals were divided into four groups: group one received injections of DNA 30-60 minutes after irradiation, groups two and three received injections 24 and 72 hours after irradiation, respectively, and group four served as the control. The animals were distributed evenly among the groups by sex, weight and initial peripheral blood index. The therapeutic effect was evaluated according to 60-day survival, the average life of nonsurvivors, the clinical picture of acute radiation sickness, and the results of peripheral blood studies. Results of the investigations revealed that intravenous administration of calf thymus DNA increased survival in all experimental groups. Of the 18

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USSR

ROGACHEVA, S. A., et al., Meditsinskaya Radiologiya, Vol 15, No 3, 1970, pp 44-48

dogs in the control group, only two (11%) survived, while four of the 12 dogs in group one survived, eight of 11 dogs survived in group two, and six of 11 dogs survived in group three. These results indicate that the optimum time of DNA administration is 24 hours after irradiation. It was determined that the therapeutic effect of DNA, introduced intravenously, depended on the period between irradiation and injection of the preparation.

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USSR

UDC 576.851.31.097.22:615.33

PODOSINNIKOVA, L. S., DOMARADSKIY, I. V., LIBINZON, A. YE., IEBEDEVA, S. A.,  
and BOGDANOVA, M. I., Rostov-on-Don Antiplague Institute

"Multiple Resistance of El Tor Cholera Vibrios to Antibiotics"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 4, 1973,  
pp 9-13

Abstract: Fresh isolates of El Tor vibrios from patients with cholera were tested for resistance to a number of antibiotics, and several strains were found to show multiple resistance. Resistance was found to decrease on in vitro passage and, since it is known that the El Tor vibrios readily take up resistance transfer factors from intestinal bacteria, studies were undertaken to pass the putative resistance factor from the vibrios to Pasteurella pestis strains EV and 556/106, and to cure the vibrios with acriflavine. Exposure of the vibrios to 0.1-5  $\mu$ g/ml of acriflavine in Marten's broth for 18-20 hrs at 37°C resulted in loss or decrease of resistance. Exconjugate P. pestis cells were found to acquire resistance to tetracycline, levomycetin, and streptomycin from the resistant vibrios; the resistance factor was transferred with a frequency of  $2 \times 10^{-4}$  to  $2 \times 10^{-5}$ . In summary, the results showed that one strain of El Tor vibrios was cured by acriflavine and transferred resistance to  
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USSR

PODOSINNIKOVA, L. S., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 4, 1973, pp 9-13

*P. pestis*, four other strains transferred resistance to *P. pestis* but exposure to acriflavine only decreased their antibiotic resistance, and one strain, which was resistant to tetracycline, oxytetracycline, penicillin, and ampicillin, did not transfer resistance to *P. pestis* but was cured of resistance to tetracycline and oxytetracycline by acriflavine. The data suggest the extra-chromosomal nature of the resistance factor. The failure of one strain to transfer the plasmid to *P. pestis* may have been due to the latter's inability to accept the plasmid, or the factor could have been defective or integrated into the chromosome.

2/2

1/2 006 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--COMPARATIVE INVESTIGATION OF SOME SPECIES OF DIGITALIS TO DETERMINE  
THE CONTENT OF LANATOSIDES A, B, AND C -U-  
AUTHOR--(03)-SMIRNOVA, N.D., BEZUKLAONIKOVA, N.F., LIBIZOV, N.I.

COUNTRY OF INFO--USSR

SOURCE--FARMATISYA, MOSCOW 1970, 19(2), 36-9

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PROCESSED PLANT PRODUCT, CARDIOVASCULAR DRUG, CHEMICAL  
ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3004/0652

STEP NO--UR/0486/70/019/002/0036/0039

CIRC ACCESSION NO--AP0131257

UNCLASSIFIED

2/2 006

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0131257

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OF 13 SPECIES OF FOXGLOVE (DIGITALIS), LAMARCK (CONTG. MAINLY A) AND ASH GREY (MAINLY C) WERE THE BEST AS RAW MATERIAL FOR DIGITOXIN, ACETYLDIGITOXIN, AND LANATOSIDE C. ALL 13 WERE POS. FOR LANATOSIDES (0.112-0.624PERCENT). THE RANGE FOR A WAS 0.065-0.601PERCENT, WITH HIGHEST IN LAMARCK; FOR B, 0.005-0.114, HIGHEST IN SMALL FLOWERED; AND FOR C, 0.003-0.150PERCENT, HIGHEST IN ASH GREY. AS COMPARED WITH BIENNIAL AND PERENNIAL, ANNUAL SPECIES CONTAINED THE LARGEST AMT. OF TOTAL A,B,C, WHICH DECREASED WITH AGE.  
FACILITY: VSES. NAUCH.-ISSLED. INST. LEK. RAST., BITTSA, USSR.

UNCLASSIFIED

AA0036246-

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent,

238379 THERMAL TREATMENT OF REINFORCED CONCRETE

is first carried out with a hot gas at 50-90°C for 1-1.5 hr. and then with live steam at 90-95°C for 1-1.5 hr. The process can be carried out continuously which the articles are formed, e.g. in a rolling machine of the Kozlov's type. A more uniform heating is achieved. 6.1.64. as 874894/29-14. ~~B. 1. 1964~~ (10.7.69.) Class 9/20.2.69. Class 80a. Int.Cl. B28c.

19721075

USSR

UDC 621.391:51

LIBKIND, L. M., Deceased

"A Covering Theorem"

Moscow, Problemy Peredachi Informatsii, Vol 7, No 2, 1971, pp 112-114

Abstract: Evaluations are produced for the least volume of alpha nets in a unit sphere in an N-dimensional Euclidean space. The first terms of the asymptotic expansions (where  $N \rightarrow \infty$ ) of the logarithms of these evaluations correspond.

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USSR

UDC 621.313.322:621.316.719.2(084.8)

LIBKIND, M. S., MIKHNEVICH, G. V.

"Device for Electric Braking of the Synchronous Generator"

USSR Author's Certificate No 266035, filed 26 Feb 68, published 10 Aug 70,  
(from RZh-Elektrotehnika i Energetika, No 2, Feb 71, Abstract No 2 Yell7 P)

Translation: A patent is described for a device to increase the stability of parallel operation of synchronous generators in the presence of a short circuit in the network, current limiting, and short circuiting of the synchronous generators. The proposed device is distinguished by the fact that a second winding inductively connected to the first winding is installed in the reactor, and a resistance is connected to its leads. This execution provides for electric braking of the synchronous generators immediately after occurrence of short circuit currents. The braking time is several seconds. Therefore, the power and overall dimensions of the reactor are determined not by the thermal mode but by the necessity of obtaining corresponding electromagnetic characteristics for the rated mode of operation and short circuit mode. There is 1 illustration.

1/1

UDC 632.95

USSR

BLIZNYUK, N. K., KVASHA, Z. N., VARSHAVSKIY, S. L., BARANOV, Yu. I.,  
LIBMAN, B. Ya., STREL'TSOV, R. V., PROTASOVA, L. D., MARKOVA, L. I.,  
KHOKHLOV, P. S., MADZHARA, G. A., KIRILINA, L. E., All-Union Scientific  
Research Institute of Phytopathology

"A Method of Making Thiophosphonyl Dihalides"

USSR Author's Certificate No 337384, filed 31 Oct 69, published 2 Jun 72  
(from RZh-Khimiya, No 9, May 73, abstract No 9N500 by T. G. Chekareva)

Translation: Compounds of the general formula  $RP(S)X_2$  (I) ( $R = C_1-C_{12}$ -alkyl, cycloalkyl, aryl, unsubstituted alkyl or alkyl containing substituents, Cl or Br;  $X = Cl, Br$ ) are synthesized by reacting  $(RS)_3P$  (II) with a 2-10-fold excess of  $PX_3$  with heating to 250-330°C in an autoclave. Example. A mixture of 0.07 mole of II ( $R = Me$ ) and 0.7 mole of  $PCl_3$  is heated in an autoclave test tube of stainless steel at 290-320°C for 5 hours. The excess  $PCl_3$  is driven off at atmospheric pressure and distillation of the residue in a vacuum gives I ( $R=Me, X=Cl$ ), boiling point 70-3°/80,  $n_{20}^D$  1.5510,  $d_4^{20}$  1.4421, yield 52%. Similar methods are used to produce other compounds of type I (given are R, X, boiling point in °C/mm,  $n_{20}^D$ ,  $d_4^{20}$ , yield in %): Et, Cl, 64-8/15, 1.5418, 1.3527, 58; Pr, Cl, 85-8/15, 1.5285, 1.2942, 40; Iso-Pr, Cl, 72-5/15, 1.5290, 1.3017, 47.5; Bu, Cl, 111-13/25, 1.5269, --, 65;

1/2



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USSR

SUKHOMLINOV, B. P., Vopr. tekhnol. ulavlivaniya i pererab. produktov  
koksovaniya, Kharkov, 1972, pp 50-56

sulfur with a sufficient amount of powdered SL. A SN screw mixer is recommended for bringing the components into contact under pressure and pulverizing them at the same time.

(8)

USSR

UDC 632.95

BLIZNYUK, N. K., KHOKHLOV, P. S., KVASHA, Z. N., MARKOVA, L. I., LEVSKAYA, G. S., PROTASOVA, L. D., SOLNTSEVA, L. M., MATYUKHINA, Ye. N., VARSHAVSKIY, S. A., BARANOV, Yu. I., LIBMAN, B. Ya., ZHEMCHUZHIN, S. G.

"Method of Production of Dichlorides or Dibromides of Thiophosphonic Acids or Their Bis Analog"

USSR Author's Certificate No 332095, filed 19/08/69, published 17/04/72  
(Translated from Referativnyy Zhurnal Khimii, No 24(II), 1972, Abstract No 24N591, by T. A. Belyayeva)

Translation: Compounds of the formula  $RP(X)X_2$  (I) (R=alkyl, aryl, aralkyl; X=Cl or Br) and  $X_2P(S)A(S)PX_2$  (II) (A=bivalent hydrocarbon radical) were produced by the reaction of mono- or dihalo hydrocarbons with S, P and  $PX_3$  with heating to 250-400° in an autoclave of stainless steel or nickel in the presence of catalytic quantities of  $I_2$  or its compounds. Example. A mixture of 0.24 mole  $PhCl$ , 0.24 g-atom S, 0.16 g-atom white P, 35 ml  $PCl_3$  and 0.05 g  $I_2$  is heated at 290-330° for seven hours in an autoclave of stainless steel, the  $PCl_3$  is distilled, then vacuum distillation is used to separate I (R=Ph, X=Cl), yield 60%, B. T. 109-112°/3,  $n^{20}_D$  1.6241. Similarly, I were produced (given R, X, yield in %, B. P. in °C/mm,  $n^{20}_D$ ): 4- $ClC_6H_4$ ,

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BLIZNYUK, N. K., et al., USSR Author's Certificate No 332095, filed 10/08/69, published 17/04/72

Cl, 53.5; 124-3/1.5-2, 1.6229; p-MeC<sub>6</sub>H<sub>4</sub>, Cl, 54.5, 125-7/1, 1.6120; 4-FC<sub>6</sub>H<sub>4</sub>, Cl, 72.2, 95-7/0.5, 1.6028; Ph, Br, 61, 127-130/2, 1.6850; 4-FC<sub>6</sub>H<sub>4</sub>, Br, 55, 135-8/1, 1.6758; PhCH<sub>2</sub>, Cl, 76.4, 120-3/2, 1.6150; 3-FC<sub>6</sub>H<sub>4</sub>, Cl, 108-110/1.5, 1.5908; 4-MeC<sub>6</sub>H<sub>4</sub>CH<sub>2</sub>, Cl, 53.3, 126-9/2, 1.6035; 4-ClC<sub>6</sub>H<sub>4</sub>CH<sub>2</sub>, Cl, 61.6, 129-133.2, m. p. 74-6°, --; 2-FC<sub>6</sub>H<sub>4</sub>CH<sub>2</sub>, Cl, 61.6, 129-133.2, m. p. 48-9°, --; 2.4-Me<sub>2</sub>C<sub>6</sub>H<sub>3</sub>CH<sub>2</sub>, Cl, 47.5, 140-1.6045; 2.4-Cl<sub>2</sub>C<sub>6</sub>H<sub>3</sub>CH<sub>2</sub>, Cl, 43.4, 147-9/2, m. p. 100-1°, --. Also produced were II (X=Cl, A=CH<sub>2</sub>CH<sub>2</sub>), yield 61.5%, m. p. 92-3°. I and II are intermediate products for the production of insecticides, acarocides, fungicides and herbicides.

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UDC 547.241.07

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USSR

BLIZNYUK, N. K., KVASHA, Z. N., PROTASOVA, L. D., MADZHARA, G. A., VARSHAVSKIY, S. L., LIBMAN, B. Ya., and BARANOV, Yu. I., All-Union Scientific Research Institute of Phytopathology

"A Method of Making Dihalophosphines"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obrabotsy, tovarnyye znaki, No 5, Feb 71, Author's Certificate No 292988, Division C, filed 10 Nov 69, published 15 Jan 71, p 102

Translation: This Author's Certificate introduces: 1. A method of making dihalophosphines by interacting a hydrocarbon halide or polyhalide with white phosphorus or a phosphorus trihalide with the application of heat and in the presence of a catalyst, with subsequent isolation of the goal product by conventional methods. As a distinguishing feature of the patent, the yield of the goal product is increased by using selenium, selenium anhydride or phosphorus selenide as the catalyst. 2. A modification of this method distinguished by the fact that the process is done at a temperature of 250-380°C.

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1/2 010 UNCLASSIFIED  
TITLE--UNSATURATED DIAMINES -U-

PROCESSING DATE--23OCT70

AUTHOR--(02)-KUZNETSOV, S.G., LIBMAN, N.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(3), 442-6

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CONDENSATION REACTION, AMINE DERIVATIVE, ETHYLENE, ACETYLENE,  
TERTIARY AMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1992/1665

STEP NO--UR/0366/70/006/003/0442/0446

CIRC ACCESSION NO--AP0112659

UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0112659

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONDENSATION OF HNME SUB2 WITH  
DIYNES GAVE THE FOLLOWING MANDAMINES R SUB2 NCH SUB2 C TRIPLE BOND C(CH  
SUB2) SUBN C TRIPLE BOND CH OR DIAMINES R SUB2 NCH SUB2 C TRIPLE BOND  
C(CH SUB2) SUBN C TRIPLE BOND CCH SUB2 NR SUB2 IN 54-89PERCENT YIELDS.  
HNET SUB2 OR HN(PR-ISO) SUB2 ALSO REACTED WITH DIYNES, BUT THE YIELDS  
WERE LOW (4.5-36PERCENT). ALSO, ME SUB2 NCH SUB2 C TRIPLE BOND C(CH  
SUB2) SUB4 C TRIPLE BOND CCH SUB2 N(PR-ISO) SUB2 WAS PREPD.

UNCLASSIFIED

USSR

UDC: 621.73.042

GENERSON, I. G., KHINSKIY, P. D., TOKAREV, V. N., LIBMAN, P. M., KRYLOV, V. N.

"New Technology for Production of Forgings of Large Turbine Wheels"

Kuznechno-Shtampovochnoye Proizvodstvo, No 1, Jan 73, pp 3-7.

Abstract: The Neva Machine Building Plant imeni V. I. Lenin has developed a new technology for the production of forgings of large turbine discs, assuring high metal quality. The technological features of the new process are as follows: 1. The discs are made of steel melted in an arc electric furnace by the method of deep decarburization. 2. During pouring of the steel into ingots of relatively small size, designed to yield one disc per ingot, the steel is evacuated. 3. An increased volume of metal is removed from the axial zone of the ingot. The primary stages of experimental work in production of turbine discs by the new technological process and results of their examination are presented.

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AAO 044264

LIBOV I. Ye.

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

243039 CONTACTLESS TWO-POLE SYNCHRONOUS ELECTRICAL MACHINE is simplified and its active materials are better Utilized. The machine housing (1) carries the three-sectioned stator core (2) and its distributed winding (3). The exciter winding (4) is placed between the outer sections of the stator. The magnetic core of the rotor (9) is built from ellipse-shaped laminations which are embedded in aluminium casting in a position which is tilted to the axis of rotation. The rotor (8) is then mounted on a non-magnetic shaft (5). Damping or starting winding (10) is obtained by casting aluminium bars in the apertures of laminations. The construction reduces rotor losses and increases the flux density under the outer core sections of the stator, it also reduces magnetic leakage.

9.12.66 as 1118945/24-7. I.F. ZASLAVSKII et al (30.9.69)  
Bul 16/5.5.69. Class 21d<sup>2</sup>. Int.Cl. H 02k.

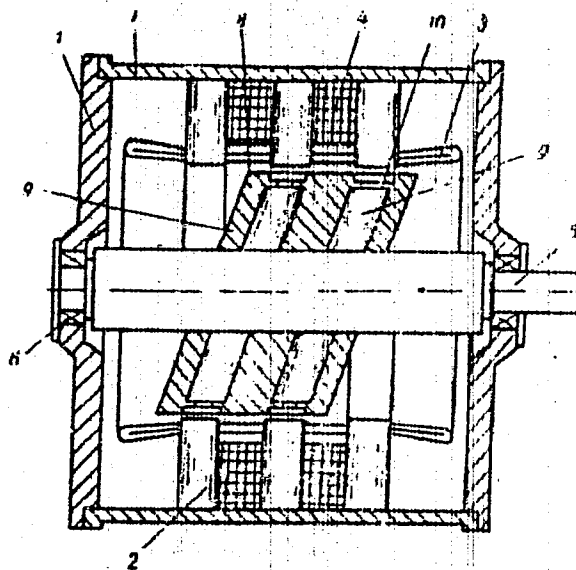
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AUTHORS: Zaslavskiy, I. F., Korotkiy, M. G., Libov, I. Ye.  
1/2 Vays, A. M.

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USSR

UDC 621.382.2:535.376

BRONSHTEYN, I. K., DOIGINOV, L. M., ZHITKOV, Yu. A., LIBOV, L. D., SHARIN, A. I., SHLENSKIY, A. A.

"Some Characteristics of Electroluminescent Diodes Based on Hetero PN Junctions in  $\text{Al}_x\text{Ga}_{1-x}\text{As}$ "

Moscow, Radiotekhnika i Elektronika, vol 16, No 12, Dec 71, pp 2330-2332

**Abstract:** The authors investigate electroluminescent diodes based on the epitaxial heterostructure  $\text{P-GaAs}-\text{P-Al}_x\text{Ga}_{1-x}\text{As}-\text{N-Al}_y\text{Ga}_{1-y}\text{As}$  ( $x \approx 0.05$ ,  $y \approx 0.1$ ). The radiation from the  $\text{P-Al}_x\text{Ga}_{1-x}\text{As}$  layer propagates in a direction perpendicular to the PN junction through the transparent N-region. The emitting layer is doped with germanium to a hole concentration of about  $5 \cdot 10^{18}/\text{cc}$ , and the N-layer is tellurium-doped to an electron concentration of about  $10^{18}/\text{cc}$ . The area of the PN junction is about  $0.01 \text{ cm}^2$ . The electrical parameters of the diodes at room temperature: specific zero-bias capacitance of the PN junction about  $10^5 \text{ pF/cm}^2$ , current cutoff voltage 1.3-1.4 V depending on the mole fraction of aluminum arsenide in the solid solution, breakdown voltage 7 V, residual resistance 0.5 ohm or less.

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USSR

BRONSHTEYN, I. K. et al., Radiotekhnika i Elektronika, vol 16, No 12,  
Dec 71, pp 2330-2332

An investigation of the principal electroluminescence characteristics of the diodes shows that they satisfy all the requirements for use as emitters in high-speed electron-optical devices. One figure, one table, bibliography of eight titles.

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USSR

UDC 621.382.2

DOMANEVSKIY, D.S., LIBOV, L.D., LITVINOV, V.L., LOMAKO, V.M., NOVCSELOV, A.M.,  
RAVICH, V.N., TRACHEV, V.D., UKHIN, N.A.

"Effect Of Radiation On Gallium Phosphide P-N Junctions"

V sb. Radiats. fiz. nemet. kristallov. T.3. Ch.2. (Radiation Physics Of Non-metallic Crystals. Vol. 3, Part 2--Collection Of Works), Kiev, "Nauk.dumka," 1971, pp 50-53 (from RZh--Elektronika i yeye primeneniye, No 12, Dec 1971, Abstract No 12B534)

Translation: The p-n junctions were obtained by the method of liquid epitaxy with n-GaP. The epitaxial p-region was doped with  $O_2$  and Zn. Irradiation was done with reactor neutrons and also electrons with 28 Mev energy at temperatures above  $50^\circ C$ . The current-voltage characteristics and the electroluminescent spectra were investigated at room and nitrogen temperatures. After irradiation, the forward branch of the current-voltage characteristics is shifted to the region of smaller voltages (the lifetime of minority carriers is decreased) and subsequently with an increase of the flux -- to the side of the larger voltages (increase of the resistivity of the initial material). After irradiation the intensity of all the spectral bands of electroluminescence are decreased. The

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USSR

DOMANEVSKIY, D. S., et al., Radiats. fiz. nemet. kristallov, T.3. Ch.2.  
(Radiation Physics Of Nonmetallic Crystals. Vol. 3, Part 2--Collection Of  
Works), Kiev, "Nauk. dumka," 1971, pp 50-53 (from RZh--Elektronika i yeye  
primeneniye, No 12, Dec 1971, Abstract No 12B534)

intensity of the red band with a flux decreased approximately 1.5 times more  
slowly than the green. The spectral composition of the radiation changed after  
irradiation. The results presented indicate that the change of the electrical  
and optical characteristics of GaP p-n junctions after irradiation have the same  
character as in the case of GaAs p-n junctions. 3 ill. 1 tab. 4 ref. I.M.

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1/2 026 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--RELATION BETWEEN OBSERVED AND TRUE ABSORPTION SPECTRA OF MOLECULES  
IN A CONDENSED MEDIUM. VIII. CASE OF ANISOTROPICALLY POLARIZABLE  
AUTHOR--(03)-GIRIN, O.P., LIBOV, V.S., BAKHSHYEV, N.G.

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(2), 273-7

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ABSORPTION SPECTRUM, LIGHT ABSORPTION, MOLECULAR SPECTROSCOPY,  
ANISOTROPY, CHARGED PARTICLE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1984/0370

STEP NO--UR/0051/70/028/002/0273/0277

CIRC ACCESSION NO--AP0055155

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0055155

ABSTRACT/EXTRACT--(U) GP-U- ABSTRACT. EQUATIONS FOR THE EVALUATION OF CORRECTION FACTORS FOR THE INDIVIDUAL ABSORPTION BANDS IN THE SPECTRA OF ANISOTROPICALLY POLARIZED MOLES. IN A CONDENSED MEDIUM (FROM THE EXPTL. DETD. OPTICAL CONSTS. OF THE LIQ.) HAVE BEEN DERIVED. THESE CORRECTIONS ARE NECESSARY FOR THE DETN. OF THE SPECTRA OF EINSTEIN COEFF. FROM THE EXPTL. FOUND SPECTRA.

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UNCLASSIFIED

1/2 043 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--OCCURRENCE OF A DETONATION IN A NONUNIFORMLY HEATED GAS -U-  
AUTHOR--(04)-ZELDOVICH, YA.B., LIBROVICH, V.B., MAKHVILADZE, G.M.,  
SIVASHINSKIY, G.I.  
CCOUNTRY OF INFO--USSR  
SOURCE--PMTF, ZHURNAL PRILADNOI MEKHANIKI I TEKHNIЧЕСKOI FIZIKI,  
MAR.-APR. 1970, P. 76-84  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS, ORDNANCE  
TOPIC TAGS--DETONATION, SHOCK WAVE, CHEMICAL REACTION, THERMAL EFFECT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3005/1402 STEP NO--UR/0207/70/000/000/0076/0084  
CIRC ACCESSION NO--AP0133354  
UNCLASSIFIED



2/2 043

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0133354

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. NUMERICAL SOLUTION OF THE PROBLEM OF THE OCCURRENCE OF A DETONATION IN A NONUNIFORMLY HEATED GAS CAPABLE OF CHEMICAL REACTION. IT IS SHOWN THAT THREE DIFFERENT REACTION REGIMES ARE POSSIBLE IN THIS CASE. IF THE TEMPERATURE DISTRIBUTION GIVEN AT THE INITIAL MOMENT IS SUCH THAT THE GAS IS HEATED ALMOST UNIFORMLY, THE REACTION OCCURS IN A THERMAL EXPLOSION REGIME. IN THE CASE OF A VERY STEEP INITIAL TEMPERATURE PROFILE A SHOCK WAVE WHICH SEPARATES FROM THE REACTION WAVE ARISES. FINALLY, THERE IS A TEMPERATURE DISTRIBUTION SUCH THAT THE SHOCK WAVE WHICH FORMS IS CAPABLE OF CAUSING A REACTION, AND A SWITCHOVER TO A STEADY DETONATION REGIME OCCURS.

UNCLASSIFIED

USSR

UDC 536.46

ASSOVSKIY, I. G., ISTRATOV, A. G., LIBROVICH, V. B., Moscow

"Necessary Conditions for Gradual Changes in Combustion Rates of Condensed Systems"

Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 6, 1971, pp 57-64.

ABSTRACT: The ordinary statement of the problem for the theory of the combustion of condensed systems consists in that the combustion rate  $u$  must be determined on the basis of fixed external actions on the system (pressure  $p$ , light flux  $q$ , erosion gas flow rate  $g$ , etc.). The solution of this problem (the direct problem) must be interpreted as determination of sufficient conditions for achievement of a fixed change in combustion rate. Along with the direct problem, there is interest in the reverse problem: determination of conditions necessary to achieve a fixed rate of change of combustion with time  $u(t)$ . In this work, using the combustion model of Ye. B. Zel'dovich, a precise solution is achieved to the reverse problem in the case when the change in combustion rate  $u$  with time  $t$  is fixed as a stepped change in rate from stable quantity  $u_0$  where  $t < t_0$  to stable quantity  $u_1$  where  $t > t_0$ .

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USSR

LIBSHITS, E. M., RUBLINETSKIY, V. I.

"Comparative Complexity of Certain Problems of Discrete Optimization"

Vychisl. Mat. i Vychisl. Tekhn. [Computer Mathematics and Computer Technology -- Collection of Works], No 3, Khar'kov, 1972, pp 78-85 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V535, by the authors).

Translation: Several known problems from the theory of schedules are studied and it is established that their solution requires solution of one complex problems. Thus, a difficulty common for all such problems is noted.

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USSR

UDC 615.277.3.038

KAREV, N. I., LICHINITSER, M. R. et al., Institute of Experimental and Clinical Oncology, Academy of Medical Sciences USSR

"Results of Clinical Trials of Asaphan"

Moscow, Voprosy Onkologii, No 5, 1970, pp 41-45

Abstract: Asaphan is a sarcolysin (DL-phenylalanine mustard) derivative with antineoplastic activity in a number of experimental tumors. It was administered (1967-1969) to 184 patients with advanced forms of cancer (ovarian, breast, liver, stomach, kidney, and some others) in 17 hospitals and clinics. Asaphan was mildly effective in the treatment of only ovarian and breast cancer. Its low selectivity of action, severe depression of hematopoiesis, frequency of other side effects, and difficulty in determining optimum doses make the drug undesirable for clinical use.

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