

USSR

UDC: 621.396.666

BERESTNEV, P. D. and KOSOVA, A. L.

"Analyzing Nonlinear Distortion in AGC Circuits by the Change in Interstage Coupling"

V sb. Radioelektron. v nar. kh-ve SSSR, Ch. 2 (Radioelectronics in the National Economy of the USSR, Part 2--collection of works) Kuybyshev, 1970, pp 84-90 (from RZh--Radiotekhnika, No. 3, March 71, Abstract No.3D40)

Translation: An examination is made of an amplifier circuit with an automatic gain control system, based on the change in interstage coupling as a result of a change in a semiconductor diode resistance. An equation determining the coefficient of nonlinear distortion of the envelope from the second harmonic is derived.  
N. S.

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USSR

UDC: 621.396.666

BERESTNEV, P. D. and KOSOVA, A. L.

"AGC Circuit With Parallel Controlled Circuits in Interstage Coupling Arrangements"

V sb. Radioelektron. v nar. kn-ve SSSR, Ch. 2 (Radioelectronics in the National Economy of the USSR, Part 2--collection of works)  
Kuybyshev, 1970, pp 77-83 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3D39)

Translation: An amplifier circuit with automatic gain control is examined in which two semiconductor diodes are used in an interstage coupling circuit connected in series for d-c and in parallel for a-c. N. S.

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USSR

UDC 547.241

GRISHINA, O. N., KOSOVA, I. M., and KLYUCHANSKAYA, S. M., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Acad. of Sci. USSR

"Alkylthionophosphine Sulfides. Part XII. Reactions of Alkylthionophosphine Sulfides With Organomagnesium Compounds"

Leningrad, Zhurnal Obshechey Khimii, Sep 71, Vol. 41, No 9, pp 1995-1999

Abstract: The principal reaction products of alkylthionophosphine sulfides with organomagnesium compounds are dialkyldithiophosphinic acids. The reaction in addition the principal product also yields mercaptans, tri-alkylphosphine sulfides and oxygen-containing phosphorus acids. The yield of these byproducts is 40-60%. The reaction losses are considerable (20-30%) and are assumed to be due to the oxygen-containing phosphorus acids which are lost during the hydrolysis of the complex. The formation of trialkylphosphine sulfide is related to the mobility of zinc sulfur in the sulfide which, as shown in an earlier study, splits from phosphorus to form a new sulfur-containing compound, in this case, possibly a mercaptan. Distillation of dialkyldithiophosphinic acids under vacuum, followed by the elimination of hydrogen sulfide, results in the formation of

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GRISHINA, O. N., et al., Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9,  
pp 1995-1999

thioanhydrides of these acids. Identification of the new compounds was  
based on elemental analysis, physicochemical constants and IR spectra.

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USSR

UDC: 547.241+661.725

GRISHINA, O. N., KOSOVA, L. M., LIPATOVA, I. P., and SMAGIDULLIN, R. R.,  
Institute of Organic and Physical Chemistry imeni A. Ya. Arbuzov, Kazan',  
Academy of Sciences USSR

"Alkylthiophosphine Sulfides. 9. Synthesis of Pentaerythrityl 0,0,0,0-Tetra-  
kis (Alkyldithiophosphonates) and Their Derivatives"

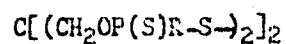
Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 1, Jan. 70, pp 66-69

Abstract: A series of dithiophosphonate derivatives, previously unknown, were synthesized in the pursuit of investigation of alkylthiophosphine sulfides (I). Four partial esters, pentaerythrityl 0,0,0,0-tetrakis(alkyldithiophosphonates) (II), were prepared in 100% yields by mixing I with pentaerythritol in anhydrous dioxane at 90°. II were clear viscous products. Dropping triethylamine slowly into a mixture of I and pentaerythritol in dioxane at room temperature, then heating the mixture to 70° gave corresponding quaternary triethylammonium salts of II (III) (yields 92-97%), clear viscous substances which crystallized on standing. Adding slowly ethyl iodide or ethyl chloroacetate to III in dioxane at 70-80° gave after three hours 60-89% yields of pentaerythrityl 0,0,0,0-tetrakis (S-dialkyldithiophosphonates), extremely viscous substances which crystallized on standing. Similarly III in dioxane  
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GRISHINA, O. N., et al, Zhurnal Obshchey Khimii, Vol 40, No 1, Jan 70, pp 66-69

solution reacted with aqueous iodine at room temperature to give 78.3-94.2% yields of disulfides



where R is butyl, cyclohexyl, or  $C_6H_{13}$ . The disulfides IV were crystalline products, indentified by their melting points. Shaking II, where alkyl is butyl or cyclohexyl, with aqueous nickel sulfate in equimolar amounts gave 100% yields of corresponding nickel salts, gray-greenish powders melting at 145-147° and 230-33°, respectively.

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1/2 024

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--SULFIDES OF ALKYLTHIONOPHOSPHINES. IX. SYNTHESIS OF  
PENTAERYTHRITOL, O,O,O,O, TETRAKIS, ALKYL DITHIOPHOSPHONATES, AND THEIR  
AUTHOR--(04)--GRISHINA, O.N., KOSOVA, L.M., LIPATOVA, I.P., SHAGIDULLIN,  
R.R.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(1), 66-9

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, HETEROCYCLIC OXYGEN COMPOUND, IR SPECTRUM,  
ORGANONICKEL COMPOUND, PHOSPHATE ESTER, HETEROCYCLIC SULFUR COMPOUND,  
HETEROCYCLIC PHOSPHOROUS COMPOUND, THIDL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1739

STEP NO--UR/0079/70/040/C01/0066/0069

CIRC ACCESSION NO--AP0112727

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--J00CT70

CIRC ACCESSION NO--AP0112727

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEATING 5 G (MEETCHPS SUB2) SUB2 WITH 2.24 G C(CH SUB2 OH) SUB4 IN DRY DIOXANE 1 HR AT 90DEGREES GAVE 100PERCENT VISCOUS C(CH SUB2 OP(S)-(SHIR) SUB4 (I) (R EQUALS MEETCH), N PRIME20 SUBD 1.5630. SIMILARLY WERE PREPD. THE ANALOGS WITH: SHOWN ON MICROFICHE. IR SPECTRA ARE REPORTED. FACILITY: INST. ORG. FIZ. KHIM. IM. ARBUZOVA, KAZAN, USSR.

UNCLASSIFIED



Pharmacology and Toxicology

USSR

UDC 577.1:615.7/9

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

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

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

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

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Physical Properties

USSR

UDC: 620.18:539.4.019.2

ATROSHCHENKO, E. S., KOSOVICH, V. A., SEDYKH, V. S., and ISHORSHIDIROV, M. KH., Volgograd, Moscow

"The Physico-Mechanical Properties of Blanks Produced by Explosive Pressing"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 73, pp 123-127

Abstract: The authors study the density, electric conductivity, and hardness of pressings after the explosive, matrixless pressing of iron, nickel, and titanium powder. It is shown that the physico-mechanical properties of pressings obtained by explosive pressing are determined primarily by interparticle contacts with a metallic bond. Simultaneously the inadequate metallic bond of the particles in the briquets is indicated, showing the necessity for the subsequent sintering of the briquets.

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USSR

UDC 539.4.104

ARTROSHCHENKO, E. S., KOSOVICH, V. A., LIPOVATYY, B. N., SEDYKH, V. S., and SHOROSHOV, M. KH., Volograd, Moscow

"Features of Plastic Deformation During Explosive Compression of Metal Powders"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 4, Jul/Aug 72, pp 113-118

Abstract: Plastic deformation, temperature, and some features of the fine structure were studied in relation to the density and compression parameters, using 100-250  $\mu$  iron and titanium powders. It was determined that high-velocity loading leads to a significant heating of the compressed powder due to the adiabatic character of heat exchange between the deformed particles and the surrounding environment.

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USSR

UDC 547.558.1

MINGALEVA, K. S., CHISTOKLETOV, V. N., KOSOVITSEV, V. V., and PETROV, A. A.,  
Leningrad Technological Institute imeni Lenolet

"Dipole Moments and the Structure of Alkenylphosphines and of the Derivatives  
of Phosphonous Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 4, Apr 71, pp 862-865

Abstract: Dipole moments were used in a study analyzing the distribution of electron density in alkenylphosphines and in derivatives of alkenylphosphonous acids. Replacing an ethoxy group in triethyl phosphite by a vinyl group led to a slight drop of the dipole moment, as did the replacement of  $\alpha$  or  $\beta$  hydrogen atoms in  $(C_2H_5O)_2PCH:CH_2$  by methyl groups. Replacement of a  $(C_2H_5)_2P$  group by  $[(CH_3)_2N]_2P$  has practically no effect on the dipole moment. In general the electron state of the phosphorus atom in above compounds depends on the substituents. As the  $p$  character of the unshared pair of electrons of the phosphorus atom increases, its acceptor capacity is decreased.

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USSR

UDC 547.241

KOSOVITSEV, V. V., CHISTOKLETOV, V. N., and PETROV, A. A., Leningr. Techno. Inst.

"1,3-Bipolar Addition to Unsaturated Compounds. XXVI. Reaction of Vinyldiphenylphosphine With C-Carboethoxy-N-Arylnitrilimines"

Leningrad, Zhurnal Obshchey Khimii, Vol XL, No 12, Dec 70, pp 2570-2573

Abstract: The reactions of vinyldiphenylphosphine with five different C-carboethoxy-N-arylnitrilimines were studied; the results showed that they proceeded similarly to the same reactions of diphenylnitrilimine, with formation of cyclic phosphonium salts.

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USSR

UIC 547.558.1

KOSOVTSSEV, V. V., CHISTOKLETOV, V. N., PETROV, A. A., Leningrad  
Technological Institute imeni Lensevet, Leningrad, Ministry of  
Higher and Secondary Specialized Education RSFSR

"Reaction of Triphenylphosphine With Nitrilimines"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70,  
pp 2132-2133

Abstract: It was shown that nitrilimines with electron-accepting groups at the C-atom react with triphenylphosphine yielding stable azo-ylides. The reaction begins by a nucleophilic attack of a phosphine molecule on the nitrilimine carbon atom. The unstable betaine formed converts to the azo-ylide whose stability is due to the electron-accepting group at the ylidy carbon atom.

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USSR

UDC: 621.396.69:621.319.4

ASEYEV, Yu. N., KRYACHKO, V. V., LOBOV, I. Ye., SYNOPOV, V. F., KOSOY, A. Ye.

"A Thin-Film Capacitor"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Ohranay, Tokarnyye Znaki, No 7, Mar 72, Author's Certificate No 329582, Division G, filed 17 Oct 69, published 9 Feb 72, p 205

Translation: This Author's Certificate introduces a thin-film capacitor in the form of metal plates (e. g. comb plates) applied to a dielectric substrate and covered with a layer of dielectric material. As a distinguishing feature of the patent, the capacitance is increased without increasing the area of the plates by applying a layer of metal to the dielectric.

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1/2 018 UNCLASSIFIED PROCESSING DATE--020CT70  
TITLE--GRANULOMETRIC ANALYSIS OF CLAYS AFTER THE ULTRASONIC PREPARATION OF  
SUSPENSION -U-  
AUTHOR--KOSOY, D.E. K  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK TURKM. SSR, SER. FIZ-TEKH. KHIM. GEOL. NAUK 1970,  
(1), 27-32  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--CLAY, WATER, MATERIAL MIXING, ULTRASONIC EFFECT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1989/0533 STEP NO--UR/0202/70/000/001/0027/0032  
CIRC ACCESSION NO--AP0107138  
UNCLASSIFIED



2/2 018

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0107138

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE GRANULOMETRIC ANAL. OF CLAYS BY USING ULTRASONIC WAVES FOR SEPN. OF CLAY FRACTIONS SUSPENDED IN WATER WAS INVESTIGATED. BY USING THIS METHOD, IT IS POSSIBLE TO DET. 5 DIFFERENT FRACTIONS; A 71 MIN INTERVAL OF DISPERSION PRODUCES THE BEST RESULTS.

UNCLASSIFIED

USSR

UDC: 8.74

VASILENKO, V. A., KOSSOV, B. B.

"Recognition Algorithms and Perception Psychology"

Moscow, Izbr. tr. Vses. mezhvuz. simpoz. po prikl. mat. i kibernet., Gor'kiy, 1967 (Selected Works of the All-Union Intercollegiate Symposium on Applied Mathematics and Cybernetics, Gor'kiy, 1967), "Kauka", 1973, pp 242-244 (from RZh-Kibernetika, No 7, Jul 73, abstract No 7V685 by the authors)

Translation: The paper deals with the question of human selection of a system of features and their evaluation in image classification. A new method is proposed for doing psychological experiments on determining the subjective distances between different visual objects. A series of psychological experiments is done on the method of ranking and the method of paired intervals, and the coefficients of rank correlation are computed for these methods.

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USSR

UDC:669.18:621.746

LYUDKOVSKIY, V. M., VOINOV, S. G., KOSOY, L. E., ZOTEYEV, V. S., and FOTAPOVA, V. P.

"Quality of High-Strength Structural Steel Refined in the Ladle With Liquid Synthetic Slag"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 234-239

Translation: Melting of high-strength steel with treatment by synthetic slag allowed the content of sulfur in the metal to be decreased by almost 2 times: from 0.0057 to 0.0034%.

The contamination of the metal by nonmetallic inclusions was decreased, both when estimated by the method of electrolytic separation (from 0.0079 to 0.0062%) and by the method of counting contaminated fields of vision (from 6.8 to 4.2%). The decrease in contamination of the metal with inclusions evaluated as lime oxides and brittle silicates, was particularly noticeable.

The results of tensile testing of smooth specimens and specimens with sharp notches indicated that the steel refined with synthetic slag has greater ductility and structural strength. 1 figure; 4 tables; 4 biblio. refs.

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Welding

USSR

K

~~KOSOV, I. F.~~, SHALEMOV, A. G., LYUBKOVSKIY, V. M., KUSHNIRENKO, B. N., and  
GARELIN, D. N.

"Surface Phenomena and Their Role in Welding High-Strength Steel of Increased Purity"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 7, 1970,  
pp 18-21

Abstract: The proposal that the surface tension of a metal has a significant effect on the depth of fusion during welding was stated earlier. The method of maximum gas pressure in a bubble was used to measure the surface tension of VP-25 steel in various steel-making procedures. VP-25 steel refined by synthetic slag at 1600°C has a surface tension 100-160 ergs/cm<sup>2</sup> higher than the same steel from an ordinary melt. This increased surface tension is connected with a reduction in the content of surface-active elements -- sulfur and oxygen -- as a result of refinement of the steel by synthetic slag. An especially sharp drop in the surface tension of this steel was observed with an increase in the sulfur content to 0.030%. Small additions of sulfur noticeably increased the depth of fusion of VP-25 steel. The nature of the relations obtained confirms the stated proposition for argon-arc welding. The mechanism of the effect of the purity of the metal with respect to the indicated admixtures is obviously the only one, and it does  
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KOSOY, L. F., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 7, 1970, pp 18-21

not depend on the refining procedure. In order to increase the depth of fusion of the metal, special activating fluxes were proposed. Application of these fluxes during argon-arc welding of high-strength steels of increased purity resulted in a good-quality welded joint without increasing the welding current. The results of measuring the surface tension of VP-25 steel made by the two procedures are tabulated in the article, and graphs are presented showing the effect of sulfur on surface tension and on depth of fusion of VP-25 steel.

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USSR

KOSPANOV, E. SH.

"Depth of the Kroneker Product of (0, 1)-Matrices"

Diskretn. Analiz. [Discrete Analysis -- Collection of Works], No 22, Novosibirsk, 1973, pp 34-38 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V351)

Translation:  $l(A)$  is the depth of (0, 1)-matrix  $A$  -- the minimum possible number of rows forming a submatrix without zero columns. The Kroneker product of the  $m \times n$ -matrix  $A = (a_{ij})$  and the  $s \times t$ -matrix  $B = (b_{ij})$  is the matrix  $A \times B = (a_{ij} b_{ij})$ . The behavior of the quantity  $L(m) = \max \frac{l(A)l(B)}{l(A \times B)}$  (maximum with respect to all pairs of matrices with  $l$  rows each) is studied. The main result is:

$$L(m) = \frac{\left\lfloor \frac{m+1}{2} \right\rfloor \left( m+1 - \left\lfloor \frac{m+1}{2} \right\rfloor \right)}{m}$$

Author's view

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USSR

KOSPANOV, E. Sh.

## "The Product of Minimum dnf"

Diskretn. Analiz. [Discrete Analysis -- Collection of Works], No 18, Novosibirsk, 1971, pp 35-40, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V542 by A. Sapozhenko).

Translation: Let  $F(x_1, x_2, \dots, x_n)$  and  $G(y_1, y_2, \dots, y_m)$  be Boolean functions, the sets of arguments of which do not intersect, while  $H(x_1, x_2, \dots, x_n, y_1, \dots, y_m)$  is the logical product of functions  $F$  and  $G$ . The minimum disjunctive normal form (dnf) refers to the dnf containing the minimum number of conjunctions. If  $\alpha(F)$ ,  $\sigma(G)$  are the minimum dnf of functions  $F$  and  $G$  respectively, the product of the minimum dnf is the dnf produced from the formula  $\alpha(F)$  and  $\sigma(G)$  after opening the parentheses. This work presents an example of a function  $F(x_1, x_2, x_3, x_4)$  such that the product of the minimum dnf  $\alpha(F(x_1, x_2, x_3, x_4))$  and  $\sigma(F(y_1, y_2, y_3, y_4))$  is not the minimum dnf of function  $H(x_1, x_2, x_3, x_4, y_1, y_2, y_3, y_4) = F(x_1, x_2, x_3, x_4, y_1, y_2, y_3, y_4)$ .

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Ion Exchange

USSR

UDC 678.742.2:678.029.5:62-278/01

TULUPOV, P. YE., ZHUKOV, M. A., ~~KOSSAYA, A. M.~~, RASHKOV, A. B., GREEN', V. P.  
and KOSTYUKHINA, L. I.

"Preparation and Properties of Heterogeneous Ion-Exchange Membranes"

Moscow, Plasticheskiye Massy, No 2, Feb 72, pp 60-63

**Abstract:** Operational features of ion-exchange membranes depend upon a complex of physico-chemical, electrochemical and mechanical properties, and also upon the stability of such properties during use.

Studied here are high-density polyethylene membranes prepared with the cationite KU-2 and the anionites AV-17 and EDE-10-P, with careful control of moisture content and particle size. These ionites, taken in various proportions and particle sizes, and with both capron and dactron binders, were tested regarding their effect on fusion coefficient, tensile strength and electrical parameters; temperature was also evaluated in this connection.

Electric conductivity for these heterogeneous ion-exchange members was found to follow the laws already established for homogeneous and interpolymer membranes. Tentative optimal values for the variables mentioned are suggested. Graphs illustrating variation in conductivity, etc. accompany the paper.

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USSR

UDC: 621.382.333.33

GREKHOV, I. V., KOSSHINA, L. S., LEBEDEV, A. A.

"Cutout Process of a PNP Structure at High Levels of Injection in the Base Layers"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 4, Apr 72, pp 851-855

Abstract: The paper deals with the process of cutout of a PNP structure under the effect of inverse anode voltage when the injection level is high in both bases. The shape of the current and the voltage across the PNP structure is analyzed for the case where the space charge region during cutout is initially formed near the high-voltage emitter junction. The time for recovery of the blocking capacity of the low-voltage emitter junction is calculated as well as the cutout time constant when the position of the boundary of the space charge region of the P-emitter is fixed. The authors thank A. I. Uvarov for discussion and remarks.

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USSR

UIC 621.348.629.113.004.15

KOSSOV, M. A., Candidate of Technical Sciences, BOKAREVA, A. A., ZVEZDINA, N. S., GREKOV, L. I., SEDINA, G. I., NAMI (Central Scientific Research Institute of Motor Vehicles and Motor-Vehicle Engines)

"The Technical and Economic Effectiveness of Using Gas-Turbine Engines on Trucks Under the Conditions of the North"

Moscow, Avtomobil'naya Promyshlennost', No. 7, 1971, pp 5-10

Abstract: For a piston engine in operation, the problem of change of the parameters of the characteristics with a drop in the air temperature is not as acute as for a gas-turbine engine. However, the starting of a piston engine, particularly of a diesel engine, under low air-temperature conditions is considerably more difficult. It is economically advantageous to use gas-turbine motor-vehicle engines in the northern regions when the maximum cost of these engines is up to 20 rubles per horsepower for engines with a capacity of 1200 horsepower, up to 22 rubles per horsepower for a capacity of 660-720 horsepower, and up to 18 rubles per horsepower for an engine capacity of 240 horsepower. These costs are actual costs, and can be obtained

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KOSSOV, M. A., et al., *Avtomobil'naya Promyshlennost'*, No 7, 1971, pp 5-10

in the series production of gas-turbine engines of the types under consideration. The possibility of obtaining large savings in the national economy is an objective prerequisite for the creation of modern and promising gas-turbine engines with a capacity of 1500-1200, 900-600, and 250-400 horsepower with a specific fuel consumption of 0.170-0.210 kg per horsepower, and the preparation of their series production and operation first of all in the northern and northwestern regions of the USSR.

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KOSSOV, O.A.

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KOSSOV, O.A.

REPORTS

JPRS 51689  
27 Oct 1970

INTERNATIONAL MAGNETIC CONFERENCE

Article by Doctor of Technical Sciences V. V. Kobleev, Candidate of Technical Sciences O. A. Kossov, and Doctor of Physical and Mathematical Sciences Ya. A. Kozlov, Vestnik Akademi Nauk SSSR, Russian, Vol 40, No 8, August 1970, pp 107-108

The International Magnetic Conference ("Intermag"), convened by the Institute of Electrical and Electronics Engineers (USA), was held on 21-24 July in Washington. Participating in it were about 1000 delegates from 11 countries. Working at the conference were sections of discrete and analog circuits, magnetic recording, permanent magnets, microwave materials and equipment, magnetic materials and films, magnetic and semiconductor devices and the Physics of Magnetization. One hundred and seventy reports were heard and there were discussions on urgent problems of science and engineering in that area.

A special place at the conference was occupied by questions connected with magnetic and semiconductor elements of storage devices for computer systems. Considerable attention was given to the recording of information in materials with great uniaxial magnetic anisotropy: orthoferrites, ferroferrites, and ferrite garnets. The possibility of storing information in these materials in the form of cylindrical domains was first discussed at the conference held last year. Now the Bell Telephone Company, which does that work on a large scale, presented about ten reports on the design of equipment and the technology of manufacture of orthoferrites, new magnetic materials -- pure-earth ferrites -- permit obtaining densities of about 2.5 million in diameter and storing information with a density of 106 bits/sq cm. Practical arrangements of storage and logic are being made for telephone exchanges. The first model of a local memory for a telephone set, which permits storing and accomplishing automatically memory dialing in fifty often used numbers will soon be put in production. According to the statement of the company's workers

One should note the large number of reports on the theory and practice of recording information on magnetic surface (type of storage) and also the manufacture of magnetic contact recording are being developed, and also the manufacture of magnetic heads by an integral method (several hundred heads at one time) by the authors including up of magnetic and connecting layers.

KOSSOV, V.

*Kossian*

INTERSECTORIAL BALANCE FOR 1970-75, DISCUSSED

Article by V. Kossian, deputy department head, USSR Gosplan, N. Baryshnikov, department head, USSR Gosplan, and P. Kintavicius, senior chief, Institute for Research Economics Institute, USSR Gosplan, Moscow, Planovoye Khozyaystvo, Russian, No 2, February 1972, pp 62-69.

The twenty-fourth congress of the CPSU made the further 15% record of growing volume of the national product in the successful implementation of the Ninth five-year plan's objectives and -- as an important trend in this field -- called for widespread application of mathematical-economic methods and electronic computing equipment.

The intersectorial balance system is one such method. It represents the logical extension and development of the national economic plan's and affords maximum coordination of the national economy as a plan, together with a more thorough analysis of the national economy's structural interrelations, with the use of electronic computing equipment. It also enables multi-variate dynamic calculations to be made in a short space of time, providing a basis for optimal planning methods and therefore a substantially sounder foundation for the plan.

Considerable work on intersectorial balance is in progress at Gosplan both with a view to introducing the intersectorial balance method into planning practice. The Scientific Research Economic Institute and the Main Computer Center of USSR Gosplan, with the participation of other Gosplan departments, have carried out a series of experimental intersectorial balance calculations and revised methods of calculating intersectorial balances and submitted proposals for their introduction. Lectures, seminars and seminars of a similar nature have been held. The intersectorial balance has been set up within the framework of the computer apparatus for the dynamic plan. All this has made it possible for such systems to calculate an intersectorial physical and value balance for intersectorial year by year and also a summarized intersectorial value balance for five periods (by five-year notes).

*1972 1973 1974 1975 1976*

USSR

UDC: 535.853.36

BLOKH, A. A., GOLYANDIN, N. S., KOSSOVA, N. F., and LOZINSKAYA, S. B.

"The ISK-24 Infrared Spectrophotometer"

Leningrad, Optiko-Mekhanicheskaya Promyshlennost', No 4, Apr 73, pp 32-34

Abstract: The authors study the new ISK-24 two beam spectrophotometer developed by LCMO (Leningrad Optico-Mechanical Society). The unit is designed for obtaining the absorption spectra of various substances in the 400-4000  $\text{cm}^{-1}$  range under conditions of normal and polarized radiation. The unit has high technical characteristics: resolution of 0.5  $\text{cm}^{-1}$  in the 1000  $\text{cm}^{-1}$  range, wave number scale accuracy of  $\pm 1 \text{ cm}^{-1}$ , and a photometric accuracy of  $\pm 1$  percent. The unit is equipped with polarizer gratings developed by the P. M. Gerasimov Laboratory of the State Institute of Optics imeni S. I. Vavilov. The spectrophotometer is based on the null principle.

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USSR

UDC 616-001.34-057

MIKULINSKIY, A. M., SUDONINA, L. T., LASHCHENKO, N. S., KOSSOVSKIY, N. N.,  
and AZOVSKAYA, I. I., Gor'kiy, Institute of Labor Hygiene and Occupational  
Diseases

"Physiological and Clinical Characteristics of Vibration Sickness in  
Individuals Working With High-Frequency Rotational Instruments and Ways  
of Preventing it"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 12, 1971, pp  
15-18

Abstract: Vibration sickness was diagnosed in 19.5% of 296 aviation industry  
workers working with machines producing vibrations of 60-2000 Hz. It was  
characterized by disturbances of the peripheral blood circulation, loss of  
sensitivity to vibration after 1-4 years of work with vibrating instruments,  
neurotrophic abnormalities and angiospasmatic reaction of the peripheral  
blood vessels of the upper limbs. Cardiograms of 11 workers (of 26 tested)  
showed some abnormalities. X-ray studies showed generative-dystrophic changes  
in the hand bones, such as cysts, enostosis, aseptic necrosis, and degenera-  
tive arthrosis. Spinal changes were in a form of degenerative spondylo-  
arthrosis of the neck and chest vertebrae. A pronounced vegetative-sensory  
1/2

USSR

UDC 536.46:533.6

KOSSOY, A. A., OZEROV, Ye. S., SIRKUNEN, G. I.

"Combustion of a Low Boiling-Point Bundle of Particles of a Two-Component Metal-Containing Fuel"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 207-211 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B936)

Translation: The problem of the ignition and combustion of a hydrocarbon bundle of a porous portion of a two-component, metal-containing fuel is discussed. It is assumed that heating of the portion is uniform along the radius; the hydrocarbon is evaporated from the surface that depresses into the portion with time; there are no reactions in the pores of the dry layer; the concentration and temperature fields in the resulting film and the concentration field in the dry layer are quasistationary. It is shown that the combustion limit of the hydrocarbon bundle is somewhat higher than the combustion limit of a drop of pure hydrocarbon: one can assume from approximate calculations of the combustion time of the bundle that the diffusion combustion regime is immediately following the introduction of particles into the heated gas medium. Authors' abstract.

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USSR

UDC 541.12:542.61:541.6:547.1'118

KABACHNIK, N. I., LASKORIN, B. N., BERTINA, L. E., MENUTO, T. YA., KOSSYKH,  
Y. G., YUDIN, K. S., KOBILAN, Z. A., and NEPRYAKHIN, M. N., Institute of  
Hetero-Organic Compounds, USSR Academy of Sciences

"Dependence of the Extraction Ability of the Dioxides of Tetraarylmethylene  
Diphosphines Upon Their Structure"

Moscow, Izvestiya Akad. Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 72, pp 65-70

Abstract: The connection between extraction ability and structure is currently  
being widely studied, but so far only in the case of monodentate neutral  
organophosphorus compounds; the corresponding bidentate compounds, with two  
phosphoryl groups in the molecule, have gone completely unstudied.

Using the extractant dilution method, the authors determined the com-  
position of the extracting complexes of uranyl nitrate with dioxides of the  
tetraarylmethylene diphosphines containing various substituents in the meta-  
and para-positions of the phenyl rings. Effective extraction constants of  
uranyl nitrate for a series of tetra-substituted dioxides of the methylene-  
diphosphines were computed. Effective extraction constants for complexes with  
three molecules of the extractant were found to correlate well with the Hammett  
constant, and with the  $\sigma^{-1}$  constant -- something not observed in the case of  
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.CHNIK, M. I., et al., Izvestiya Akad. Nauk SSSR, Seriya Khimicheskaya,  
1, Jan 72, pp 65-70

complexes with two molecules of the dioxide. Finally, the connection between  
the extraction ability of the diphosphines and their alkalinity was found to  
be a linear one. Various tables and graphs are included in the paper.

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USSR

UDC 620.193.01

K  
KOSSYY, G. G., NOVAKOVSKIY, V. M., and KOLOTYRNIK, YA. M.

"Excess Oxygen in an Oxide Film on Passive Titanium"

Moscow, Zashchita Metallov, Vol 6, No 3, May-Jun 70, pp 317-320

Abstract: The stationary rate of potentiostatic solution of passive titanium is appreciably higher than the mean solution rate of its passivating oxide observed after cessation of polarization. This article contains a discussion of additional information about the properties of the passivating film on titanium obtained as a result of more detailed observations of the process of spontaneous activation of a d-energized electrode in the presence of HF. The experiments were performed in solutions of three normal HCl + xHF on a rotating ( $n = 1,500$  rpm) disk electrode made of VT-1 titanium at  $40^{\circ}$ . The potentials everywhere were given with respect to a saturated calomel comparison electrode at room temperature. The oxygen was not removed from the solution. The experimental data provide a basis for proposing that the oxidizing properties of passive titanium are connected with the presence of an oxide film on its surface. As the oxide film becomes thicker, the process of which begins after cessation of polarization, layers of it closer and closer to the metal come into contact with the electrolyte. The gradual reduction in potential accompanying this process is explained by a drop in the concentration  $1/2$

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KOSSYY, G. G., et al., Zashchita Metallov, Vol 6, No 3, May-Jun 70, pp 317-320

of excess oxygen in the direction from the outer surface of the oxide to its interface with the metal.

It is shown that within the framework of the concepts of the adsorption nature of inertness, the smooth potential drop could be explained by the gradual restoration of oxygen adsorbed in a single layer whose bond energy and reduction potential vary with the degree of filling. However, this proposition is refuted by the experimental data. The forced short-term potential bias of the electrode in the negative direction which should cause partial reduction of the oxygen, contrary to expectations, does not accelerate but inhibits activation. The sooner the cathode pulse is applied after cessation of polarization, the greater the amount of electricity it carries through the electrode and the greater the inhibition of activation.

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USSR

UOC: 533.9...16

BEREZHETSKIY, M. S., GREBENSHCHIKOV, S. Ye., KOSSYI, I. A., SBITNIKOVA, I. S., SHPIGEL', I. S.

"Electrostatic Probe Measurements on the L-1 Stellarator"

Tr. Fiz. in-ta AN SSSR (Works of the Physics Institute, Academy of Sciences of the USSR), 1973, 65, pp 82-99 (from RZh-Fizika, No 6, Jun 73, abstract No 6G356)

Translation: The paper describes methods of using electrostatic probes to measure the parameters of a plasma injected into the L-1 stellarator by a spark source. Isolated Langmuir probes, an emitting probe, a multi-grid electrostatic probe, and double probes were used to measure the plasma potential, electron temperature, ion temperature, ion concentration, fluctuating ion flow to the wall of the chamber, and quasiconstant ion fluxes. The probe designs and electrical measurement setup are described, and the possibilities of the probe method under conditions typical for the L-1 stellarator are discussed. A brief review is given of the principal results of measurements. Bibliography of 22 titles.

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USSR

UDC 547.759.3:542.953.4

MEL'NIKOVA, T. V., KOST, A. N., SAGITULLIN, R. S., AND BORISOV, N. N., Moscow State University imeni M. V. Lomonosov

"Indole Chemistry. XXXVIII. Splitting of the Carbon-Carbon Bond in the Reaction of 2-Aminoindoles with Bifunctional Compounds"

Riga. Khimiya Geterotsiklicheskikh Soyedineniy, No 9, Ser 73, pp 1273-1278

Abstract: Reaction of 2-aminoindole with  $\alpha$ ,  $\beta$ -unsaturated aldehydes and ketones yields  $\alpha$ -carbolines. In this reaction the  $\beta$ -carbon atom of the keto compound attacks the C<sub>3</sub> atom of the indole. The reaction with bifunctional derivatives occurs in many cases with a split of the carbon-carbon bond, leading to the formation of a pentacyclic system of indole[2,3-b]- $\alpha$ -carboline. Identical compounds can be obtained from  $\beta$ -arylidene-2-aminoindole or  $\beta$ -arylideneoxindoles. Substituting one molecule of 2-aminoindole by other acceptors failed to yield nonsymmetric structures.

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- 7 -

UDC 632.95

USSR

KOST, A. N., YUDIN, N. B., CHERNYSHEVA, N. B., TERENIN, V. I., Moscow  
University

"A Method of Making  $\beta$ -Indolyl Carboxylic Acid Amides"

USSR Author's Certificate No 339542, filed 10 Sep 70, published 23 Jun 72  
(from RZh-Khimiya, No 9, May 73, abstract No 9N558 by T. G. Chekareva)

Translation: Amides of  $\beta$ -indolyl carboxylic acids, which may find application as growth regulators for plants and microorganisms or as intermediates for synthesizing medicines, are synthesized by saponification of the corresponding nitriles with concentrated  $H_2SO_4$  while cooling to  $0-5^\circ C$ . Example. 3.12 g of 3-indolyl acetonitrile are added to 25 ml of concentrated  $H_2SO_4$  cooled to  $0^\circ C$  while mixing and cooling. The mixture is allowed to stand for 16 hours at about  $20^\circ C$ , poured over ice, alkalized with a concentrated aqueous solution of  $NH_4OH$ , and the precipitate is isolated, giving 1.74 g of 3-indolyl acetamide, melting point  $153^\circ C$  (water), yield 50%. The following compounds of type I are synthesized by analogous methods (given are the compound, melting point,  $^\circ C$ , and yield, %): 3-(3-indolyl)-propioamide, 134, 53; 3-(2-methyl-3-indolyl)-propioamide, 125-6, 99; 3-(2-methyl-5-chloro-3-indolyl)-propioamide, 145-6, 91.

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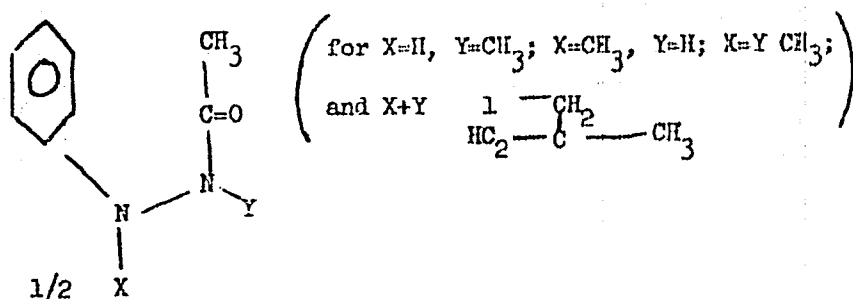
UDC: 547.754.859

PORINOV, YU. N., GOLUBEVA, G. A., KOST, A. N., and VOLKOV, V. B., Moscow State University imeni M. V. Lomonosova

"Indole Chemistry, Part 36. The Rearrangement of 1-Phenyl-2-acetylhydrazines and 1-Phenyl-2-acetylpyrazolidines"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, 5, May 1973, pp 647-652

Abstract: The rearrangement of the arylhydrazides of acetic acid is more complicated than that of the analogous 1-aryl-2-acylhydrazines to 2-amino indole. Temperature, concentration, solvents among other factors influence the yields and products. Starting materials of the form





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PORINOV, YU. N., et al., Khimiya Geterotsiklichenkikh Soedineniy, 5, May 1973, pp 647-652

reacted with  $\text{POCl}_3$  by ring closure to form a variety of indoles. The  $\text{CH}_3$  group influenced the location of the double bond. The  $\beta$ -phenylhydrazinides of acetic acid, having an alkyl group on one of the nitrogen atoms reacting with  $\text{POCl}_3$  formed the 2-aminoindole with no substitution at position 3. The analogous 1-phenyl-2-acetylpyrazolidines formed the 1,2,3,4-tetrahydropyrimido 1,2-a indoles. Structures were confirmed by IR and NMR data. Preparative procedures are given.

a/a

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USSR

UIC: 547.754.07:543.422.25.  
4.6

GOLUBEVA, G. A., PORTNOV, Yu. N., and KOST, A. N., Moscow State University  
imeni M. V. Lomonosov, Moscow

"The Chemistry of Indole. XXXV. The Synthesis of 2-Amino-3-alkylindoles."

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 4, Apr 73, pp 511-515

Abstract: Under the action of  $\text{POCl}_3$ , 1-aryl-2-acylhydrazines in an ether solution underwent an intramolecular rearrangement with the formation of 2-amino-3-alkylindoles, which were isolated in the form of their hydrochlorides. The reaction was found to have general applicability and made it possible to synthesize with good yields 2-aminoindoles with substituents in the amino group as well as in various positions of the indole ring. Hydrochlorides of 2-aminoindoles with  $\text{R}^1=\text{R}^3=\text{Me}$ ;  $\text{R}=\text{Br}$ ,  $\text{R}^1=\text{R}^3=\text{Me}$ ;  $\text{R}^1=\text{R}^2=\text{Me}$ ;  $\text{R}^1=\text{Me}$ ,  $\text{R}^3=\text{Et}$ ;  $\text{R}^1=\text{Me}$ ,  $\text{R}^3=\text{Ph}$ ;  $\text{R}^1=\text{Ph}$ ,  $\text{R}^3=\text{Me}$ ;  $\text{R}^1=\text{CH}_2\text{Ph}$ ,  $\text{R}^3=\text{Me}$ ;  $\text{R}^1=\text{CH}_2\text{Ph}$ ,  $\text{R}^3=\text{Et}$ ;  $\text{R}^2=\text{Me}$ ,  $\text{R}^3=\text{Ph}$ ;  $\text{R}^3=\text{Ph}$  were obtained, where R,  $\text{R}^1$ ,  $\text{R}^2$ , and  $\text{R}^3$  is the substituent in the 5-position, 1-position, 2-amino group, and 3-position, respectively. In alkaline solutions the 3-amino-3-alkylindoles underwent spontaneous oxidation to 3-hydroxy-2-aminoindolenines or 3-hydroxy-2-iminoindolines. The constitution of the compounds synthesized was confirmed by UV, IR, and paramagnetic resonance spectroscopy and also by mass spectrometry.

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USSR

UDC 547.1.3'821

KOST, A. N., YUROVSKAYA, M. M., MEL'NIKOVA, T. V., and POTAPINA, O. I., Moscow State University imeni M. V. Lomonosov

"Chemistry of Indole. XXXIII. Pyridylethylation of the NH Group of Indole Compounds"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 2, Feb 73, pp 207-212

Abstract: Direct pyridylethylation of pyrrole, of a series of indole compounds, of carbazole and carboline was carried out taking advantage of the ability of highly polar aprotic solvents -- such as dimethylsulfoxide [DMSO] -- to activate the anion forming on the NH group to such an extent that even the relatively poorly polarized bond in  $\beta$ -vinylpyridine was adequately activated for the reaction to take place. The activation by DMSO is based on the fact that in absence of protonic solvents, when no hydrogen bonds can form, the anions being formed are solvated to a lesser degree and therefore are more reactive. The reaction goes especially well when excess 2-methyl-5-vinylpyridine is used, and the reaction mixture is heated to 100-200°. Metallic sodium or sodium ethoxide can be used as the alkaline reagents.

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USSR

UDC 547.754:543:422.25.4.6:542.9.44.1

~~KOST, A. N.~~, YUDIN, L. G., and ZINCHENKO, Ye. Ya., Moscow State University  
Imeni M. V. Lomonosov

"Indole Chemistry. XXXIV. Bromination of 5-Substituted Indoles"

Riga, Khimiya Geterotsiklicheskikh Soyedinenii, No 3, Mar 79, pp 332-336

Abstract: Bromination of 1,2-dimethyl-3-carbethoxy-5-hydroxyindole in acetic acid yields 1,2-dimethyl-3-carbethoxy-5-hydroxy-6-bromoindole. Bromination of the position C-4 occurs only when the C-6 position is already occupied. If the hydroxy group at C-5 is replaced by a methyl substituent, then the bromination yields a 6-substituted product; for example, 1,2,5-trimethyl-3-carbethoxyindole yields 1,2,5-trimethyl-3-carbethoxy-6-bromoindole. Dibromodioxane reagent also introduces bromine into the position C-6. 1,2-Dimethyl-3-carbethoxy-5-benzoyloxy-6-bromoindole can be obtained either by bromination of 1,2-dimethyl-3-carbethoxy-5-benzoyloxyindole or by benzylation of 1,2-dimethyl-3-carbethoxy-5-hydroxy-6-bromoindole. The same two reactions can be used to produce 1-phenyl-2-methyl-3-carbethoxy-5-acetoxy-6-bromoindole.

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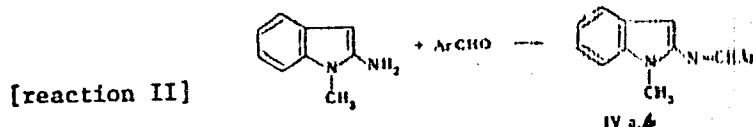
UDC 547.752'759.5:542.953.4

KOST, A. N., SAGITULLIN, R. S., MEL'NIKOVA, T. V., and KAPLUN, G. V., Moscow State University imeni M. V. Lomonosov

"Indole Chemistry. 32. Reaction of 1-Methyl-2-Aminoindole With Aldehydes"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 10, 1971, pp 1368-1373

Abstract: The 1-methyl-2-aminoindole will react with RCHO in alcoholic alkali to form a pentacyclic structure with the elimination of H<sub>2</sub>O, NH<sub>3</sub>, and H<sub>2</sub>. By varying conditions, one mole of the HI salt of the aminoindole will condense with one mole of ArCHO to form a Schiff's base in the presence of base according to the reaction



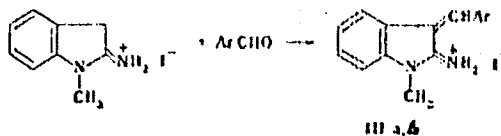
or a salt in its absence by

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KOST, A. N., et al., Khimiya Geterotsiklicheskikh Soyedineniy, No 10, 1972,  
pp 1368-1373

[reaction I]



(a:Ar={-3,4-(CH<sub>3</sub>O)<sub>2</sub>C<sub>6</sub>H<sub>6</sub>}; b:Ar={4-(CH<sub>3</sub>)<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>}) IR spectra confirm the presence of these compounds. Several derivatives of 1,3-dimethyl-2-aminoindole were also prepared and characterized.

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- 23 -

USSR

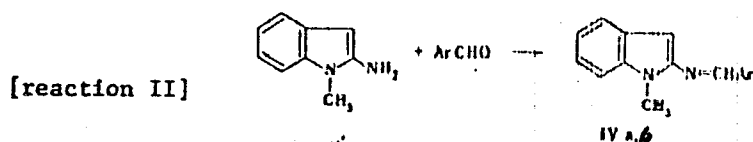
UDC 547.752'759.5:542.953.4

KOST, A. N., SAGITULLIN, R. S., MEL'NIKOVA, T. V., and KAPLUN, G. V., Moscow State University imeni M. V. Lomonosov

"Indole Chemistry. 32. Reaction of 1-Methyl-2-Aminoindole With Aldehydes"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 10, 1972, pp 1368-1373

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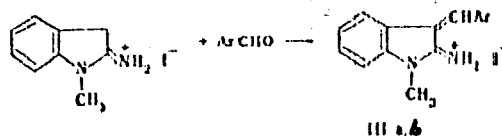
or a salt in its absence by

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USSR

KOST, A. N., et al., Khimiya Geterotsiklicheskikh Soedineniy, No 10, 1972, pp 1368-1373

[reaction I]



(a:Ar={-3,4-(CH<sub>3</sub>O)<sub>2</sub>C<sub>6</sub>H<sub>6</sub>}; b:Ar={4-(CH<sub>3</sub>)<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>}) IR spectra confirm the presence of these compounds. Several derivatives of 1,3-dimethyl-2-aminobenzimidazole were also prepared and characterized.

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USSR

UDC 632.95

NAUMOV, YU. A., DREMOVA, V. P., ~~KOST, A. N.~~ MENIUS, A. N., and SMIRNOVA, S. N.

"Substituted Amides, Esters of Pyromelic Acid, Furfuryl and Tetrahydrofurfuryl Esters of Carboxylic Acids and Their Repellent Activity"

Tr. VNII dezinfektsii i steriliz. (Works of All-Union Scientific Research Institute of Disinfection and Sterilization), 1971, vyp. 21, Vol 2, pp 24-30 (from RZh-Khimiya, No 16, 25 Aug 72, Abstract No 16N103 by T. K. YUDOVSKAYA)

Translation: Repellent properties are possessed by N,N-dialkylamides and esters of pyromelic acid (I acid), furfuryl esters (FE) and tetrahydrofurfuryl esters (TFE) of carboxylic acids. The reaction of furoyl chloride with secondary amines in  $C_5H_5N$  yields the following dialkylamides of I (shown are dialkyls, boiling point in  $^{\circ}C/mm$  or melting point in  $^{\circ}C$ ,  $n^{20}_D$ ): Et<sub>2</sub>, 91-2/0.5, 1.5060; Pr<sub>2</sub>, 97-8/0.5, 1.4972; Bu<sub>2</sub>, 113-4/0.5, 1.4929; (iso-Bu)<sub>2</sub>, 101-2/0.5, 1.4910; (CH<sub>2</sub>)<sub>5</sub>, 57-8, ---; (CH<sub>2</sub>)<sub>6</sub>, 116-7/0.5, 1.5450; BuPh, 83, ---. The following esters of I are synthesized from I and the corresponding alcohol in the presence of H<sub>2</sub>SO<sub>4</sub> or by the reaction of furoyl chloride with alkaline solutions of phenols (given hereinafter are the ester radical, boiling point in  $^{\circ}C/mm$  and  $n^{20}_D$  or melting point in  $^{\circ}C$ ): C<sub>5</sub>H<sub>11</sub>, 91-3/0.5, 1.4719; C<sub>6</sub>H<sub>13</sub>, 104-5/0.5, 1.4720; C<sub>7</sub>H<sub>15</sub>, 118-20/0.5, 1.4711; C<sub>8</sub>H<sub>17</sub>, 125-6/0.5, 1.4713; C<sub>9</sub>H<sub>19</sub>, 1/3

USSR

NAUMOV, YU. A., et al., Tr. VNII dezinfektsii i steriliz., 1971, vyp 21, Vol 2, pp 24-30

119-20/0.5, 1.4688;  $C_{10}H_{21}$ , 136-7/0.5, 1.4665 (24°); cyclohexyl, 95-7/0.5, 1.5026 (30°);  $PhCH_2$ , 136-7/0.5, 1.5552; Ph, 41.2, ---; o- $MeC_6H_4$ , 109-10/0.5, 1.5566, m- $MeC_6H_4$ , 37-8, ---; p- $MeC_6H_4$ , 58-9; o- $MeOC_6H_4$ , 75-6; m- $MeOCH_2C_6H_4$ , 137-8/0.5, 1.5640; p- $MeOC_6H_4$ , 85-6, ---; o- $ClC_6H_4$ , 53-4, ---; p- $ClC_6H_4$ , 81-2, ---; 2,4- $Cl_2C_6H_3$  83-4, ---. FEs and TFEs are synthesized by the reaction of acid chlorides with the corresponding alcohols in a medium of  $C_6H_6N$  (shown are acid, boiling point in °C/mm and  $n^{20}_D$  first for FE, then for TFE): caproic acid, 110-3/0.8, 1.4580; 120-2/0.68, 1.4400; enanthic acid, 118-21/0.8, 1.4585, 135-7/0.8, 1.4428; caprylic acid, 128-30/0.8, 1.4580, 137-40/0.8, 1.4458; pelargonic acid, 118-20/0.5, 1.4590, 150-2/2, 1.4469; capric acid, 150-1/0.8, 1.4569, 138-40/0.8, 1.4480; pyromucic acid, 117-9/0.8, 1.5723, 124-6/0.8, 1.5033; benzoic acid, 146-7/0.8, 1.5423, 147-8/0.8, 1.5251; phenylacetic acid, 120-3/0.8, 1.4627; 135-6/0.8, 1.5129; phenoxyacetic acid, 145-6/0.8, 1.5379, 170-2/0.8, 1.5196; m-toluic acid, 145-7/0.8, 1.5423, 156-7/0.8, 1.5213. The highest repellent activity for fleas *X. cheopis* is possessed by dialkylamides of I in a dose of 40 g/sq m (86-100%, duration of action 8-10 days). FEs of enanthic and benzoic acids showed repellent activity for 4-8 days. Under field

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NAUMOV, YU. A., et al., Tr. VNII dezinfektsii i steriliz., 1971, vyp 21,  
Vol 2, pp 24-30

conditions satisfactory repellence of mosquitos of the genus Aedes is afforded (when applied to the tissue in the proportion of 20 g/m<sup>2</sup>) by dipropylamide, piperidid and hexamethyleneimide of pyromucic acid and by THEs of benzoic, phencsyacetic, enanthic and pelargonic acids [factor of repellent action for the first few days 78-87%, duration of action 6-10 days; activity referred to standard (DETA) was 0.5-0.8].

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USSR

UDC 547.757'759.3:542.958.1:543.544

YUDIN, L. G., PAVLUSHENKO, A. I., BUDYLIN, V. A., MENKIN, V. I., and KOST  
A. N., Moscow State University and N. V. Loznosov, and Rostov State Univer-  
sity at Rostov-na-Donu

"Indole Chemistry. XXI. Nitration of 3-Acylindoles"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 11, Nov 71, pp 1506-1511

Abstract: In nitration of 3-acyl- and 3-carbetoxyindoles with various nitrating agents, relative prominence of hydrogen atom substitution in position 4, and replacement of the acyl radical by a nitro group in position 3, very largely depends on the immediate conditions of the experiment. Here the authors compare available experimental data with reactivity figures obtained with use of the LCAO-MO method (linear combination of atomic and molecular orbitals). It is concluded that hydrogen atom substitution in the benzene ring of the models studied represents an electrolytic attack on the unprotonated molecule of the indole compound.

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USER

UDC 547.831.3

LIJGOVIK, B. A., YUDIN, I. G., BORODIN, P. V., VINOGRADOVA, S. M., and  
KOST, A. H., Moscow State University Imeni M. V. Lomonosov

"Reactions of 1,2-Dihydroquinolines. III. Addition of Benzene and Phenyl  
Halides to the Double Bond of 2,2,4-Trimethyl-1,2-dihydroquinolines"

Riga, Khimiya Geterotsiklicheskikh Soedineniy, No 6, Jan 71, pp 795-797

Abstract: 2,2,4-Trimethyl-1,2-dihydroquinoline (I) does not react with benzene at room temperature, even with excess  $AlCl_3$ . When heated it yields products of di- and polymerization. On the other hand the hydrochloride or N-acetyl derivative of (I) adds benzene at room temperature. When  $AlCl_3$  is replaced by iron or zinc chloride or by strong mineral acids, the reaction does not take place at all. Solvents which are capable of forming stable complexes with  $AlCl_3$  -- such as diethyl ether, nitroethane, dibutyl ether, or nitrobenzene -- hinder the reaction. Substituting a benzyl group in position 4 or a methyl group into the ring has practically no effect on the reaction, while the presence of a methyl group in position 5 hinders the process considerably. Hence, addition of benzene to (I) requires a preliminary protection or isolation of the amino group. Phenyl halides react under similar conditions, yielding only para-substituted 4-aryl-2,2,4-trimethyl-1,2,3,4-tetrahydroquinolines. 1/1

USSR

UDC 547.754.542.944.1

KOST, A. N., YUDIN, L. G., BUDYLIN, V. A., and ABDULLAYEV, M., Moscow State University imeni M. V. Lomonosov

"Indole Chemistry. XXV. Bromination of the Benzene Ring of Alkylindoles"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 11, Nov 71, pp 1512-1516

Abstract: The effect of bromination of the benzene ring of eight alkyl-indoles was studied. The reaction was carried out in concentrated  $H_2SO_4$  (in the presence of  $Ag_2SO_4$ , to assure protonizing of the pyrrole part of the molecule and facilitate formation of the bromine cation). Paramagnetic-resonance, infrared and mass spectra were obtained to determine the structure of the eight substituted compounds. It was found that indoles with alkyl groups in the pyrrole ring are brominated in position 5, while introduction of an alkyl in position 7 may alter the orientation and lead to formation of a 6-isomer.

1/1

- 58 -

USSR

UDC 547.754.756:542.944.1

KOST, A. N., CORBUHOVA, S. M., and BUDYLIN, V. A., Moscow State University  
Imeni M. V. Lomonosov, and the Novokuznetsk Scientific-Research Chemical-  
Pharmaceutical Institute

"Indole Chemistry. XXVII. 2-Halogenacetylindoles"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 11, Nov 9171, pp 1522-1526

Abstract: The halogen ketones of the indole series are important in the synthesis of aminoketones, ketonitrils, oxyketones and various other derivative compounds; but among these compounds, little study has been made of those containing a halogen-acyl radical in position 2 of the indole nucleus. From substituted 2-diazoacetylindoles, was synthesized a series of eight halogenacetylindoles. Direct bromination of 3-methyl-2-acetylindole proceeds around the acetyl group, with formation of 3-methyl-2-bromoacetylindole. In the case of 2-acetylindole, there is simultaneous bromination of the  $\text{CH}_3$  group and of position 3 of the pyrrole ring.

1/1

- 57 -

USSR

UDC 547.752'254.9:542.957.1

YUDIN, L. G., ~~KOST, A. N.~~ and PAVLYUCHENKO, A. I., Moscow State University  
Imeni M. V. Lomonosov

"Indole Chemistry. XXVI. Mercurization of the 1-Methylindoles"

*Izvestiya Akademiya Nauk SSSR Seriya Khimicheskaya*, No 11, Nov 71, pp 1517-1521

Abstract: Among the reactions of electrophilic substitution in indoles, mercurization has been very little studied, owing, probably, to the infusibility and insolubility of many of the polymerization products. The authors avoided this difficulty by the use of 1-methyl-3-iodo-2-chloromercurindole, which has a definite melting point, as well as the usual properties of the arylmercurichlorides. Some physico-chemical properties, and also compositions and empirical formulas of eight mercurized indoles, and of six derivatives of mercury diindolyl, were determined. It was found that hydrogen atom of 1-methylindoles is mercury-substituted in position 3, if that position is occupied -- otherwise in position 2. The 2- and 3-chloromercurindoles are readily symmetrized, the chloromercury group being replaced with iodine and an acyl group; in the presence of a palladium salt, they will react with the esters of acrylic acid, forming the esters of indolylacrylic acid.

1/1



USSR

UDC 547.754.756.759.07

KOST, A. N., SOLOMKO, Z. F., PRIKHOD'KO, N. M., and TERENT'YEV, A. P. (deceased)  
Moscow State University Imeni M. V. LOMONOSOV, Dnepropetrovsk State University

"Chemistry of Indole. XXIV. Synthesis of 1-Acetyl-6-methyl-3-keto-2,3,7,8-tetrahydro-1H,9H-1,4-diazepine-[2,3-f]-indole"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 6, Jun 71, pp 787-788

Abstract: To 1.91 g of 1-acetyl-5,6-diaminoindoline in 50 ml dry xylene, 1.52 ml of acetoacetate in 5 ml xylene is added dropwise with heating. The reaction mixture is heated for one hour with continuous removal of water. After cooling, a solid product -- 1-acetyl-6-methyl-3-keto-2,3,7,8-tetrahydro-1H,9H-1,4-diazepino-[2,3-f]-indole (I) is obtained, which after repeated recrystallization from methanol melts at 223.5-224.5°. Another route to (I) consists of indoline reaction with acetoacetate to form ethyl ester of  $\beta$ -[(1-acetyl-6-aminindolinyl-5)-amino]crotonic acid, which then reacts with sodium ethoxide to yield (I). Heating (I) in 2N sulfuric acid gives 2-methyl-5-acetyl-6,7-dihydroimidazo-[2,3-f]-indole, m.p. 328-329°.

1/1

L/2 009 UNCLASSIFIED PROCESSING DATE--09DCT70  
TITLE--MASS SPECTRA OF PHENYLPYRIDINES -U-  
AUTHOR--(05)-TERENTYEV, P.B., KHMELNITSKIY, R.A., KHRUMOV, I.S., KOST,  
A.N., GLORIOZOV, I.P.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ORG. KHIM. 1970, 6(3) 606-10  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--MASS SPECTRUM, BENZENE DERIVATIVE, PYRIDINE, AZO COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1992/1583 STEP NO--UR/0366/70/006/00370906/0610  
CIRC ACCESSION NO--AP0112577

UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0112577

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MASS SPECTRA WERE OBTAINED OF 2, 3, OR 4, PHENYLPYRIDINES, 2, METHYL, 5, PHENYLPYRIDINE, AND 2, 6, DIPHENYLPYRIDINE. THE POSSIBLE IONIC STRUCTURES OF LARGE IONIC FRAGMENTS WERE DEDUCED BY AN LEAD CALC. METHOD. THE PYRIDINE RING ISOMERIZES, DURING MASS SPECTROSCOPY TO AZO PRISMANE OR AZOBENZOVALONE TRICYCLIC STRUCTURES.

UNCLASSIFIED

USSR

LUGOVIK, B. A., BORODIN, P. V., YUDIN, L. G., ~~KORNILOVA, A. A.~~, Chemistry Department, Moscow University

"A Method for Preparing Substituted 1,2,3,4-Tetrahydroquinolines"

USSR Author's Certificate No 253067, class 12p, 1/10 (0 07 d),  
filed 17 July 68, published 24 Feb 70 (from ~~RZh-Khimiya~~, No 21 (II),  
10 Nov 70, Abstract N579 by I. A. Mel'nikova)

Translation: These compounds, intermediate products for the synthesis of repellents, are prepared by treating substituted 1,2-dihydroquinoline hydrochloride with a mixture of aliphatic or alicyclic hydrocarbons in the presence of  $AlCl_3$ ; 78 g of anhydrous  $AlCl_3$  is added to a suspension of 70 g of 2,2,4-trimethyl-1,2-dihydroquinoline hydrochloride in 120 ml of n-heptane. The mixture is stirred for 30 min at 65-70°, decanted, and the tarry residue treated with 60 g of NaOH solution in 400 ml of ice water and extracted with 150 ml of ether. The organic layer is washed with water, dried with KOH, and fractionated, forming (i) 26 g of 2,2,4-trimethyl-1,2,3,4-tetrahydroquinoline, yield 44.0%, boiling point 172

USSR

LUGOVIK, B. A., et al, USSR Author's Certificate No. 253667, class 12p, 1/10 (C 07 d), filed 17 July 65, published 22 Feb 70 (from RZh-Khimiya, No 21 (II), 10 Nov 70, Abstract N579 by I. A. Mel'nikova)

83-6°/2, melting point 41° (from heptane) and (II) a fraction with a boiling point of 130-50°/2 which is dissolved in the excess n-heptane, treated with 15% HCl, filtered, the mother liquor alkalinized with 10% KOH solution, extracted with ether, the organic layer washed with water, and dried with KOH, forming 6.8 g of 2,2,4-trimethyl-7-heptyl-1,2,3,4-tetrahydroquinoline, yield 8.3%, boiling point 125-30°/2. The following are prepared in a similar fashion (the compounds, yield in %, boiling point in °C are given): 2,2,4-trimethyl-1,2,3,4-tetrahydroquinoline, 50, 83-5/2; 2,2,4-trimethyl-7-cyclohexyl-1,2,3,4-tetrahydroquinoline, 13, 114-6/2; 2,2,4,8-tetramethyl-1,2,3,4-tetrahydroquinoline, 74 95-8/2,  $n_{20D} 1.5394$ ,  $d_4^{20} 0.9838$ .

2/2

USSR

UDC 547.495.9 + 615.717

STANKEVICHUS, A. P., LUEAS, A. A., and KOET, A. N., Kaunas Medical Institute

"Cyclic N-Carboxamides. II. Morpholine and Piperazine Derivatives"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, Vol 5, No 1, Jan 71, pp 13-16

Abstract: A series of title compounds was synthesized in a structure-activity study of benzylguanidines. A mixture of 19 g morpholine, 28 g S-methylisothiourea sulfate and 15 ml water was heated for 3 hrs, cooled, the separated crystals were filtered, washed and dried to yield morpholyl-N-carboxyamidine hemisulfate, m.p. 300°. N-benzyl-N'-(o-chlorobenzyl)guanidine hydroiodide, m.p. 120° was obtained by reacting 43.1 g S-methyl-N-benzylisothiourea hydroiodide, 19.7 g o-chlorobenzylamine and 100 ml water. After heating for 2.5 hrs the mixture was left standing overnight, water layer was decanted, the residual material crystallized from ethanol. To obtain sym-tribenzylguanidine hydrochloride, m.p. 205°, a mixture of 4.13 g S-methyl-N,N'-dibenzyl-

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USSR

STANKEVICHUS, A. P., et al., Khimiko-Farmatsevticheskiy Zhurnal, Vol 5, No 1, Jan 71, pp 13-16

isothiourea hydroiodide, 1.1 g benzylamine and 25 ml water was heated 3 hrs, cooled, the aqueous layer was decanted, residual layer dissolved in dimethylformamide, shaken with 10% NaOH, extracted repeatedly with ether, dried, filtered, and acidified. Analogously *N,N'*-dibenzylguanidine hydrochloride, m.p. 185 was obtained. In another experiment 143 g. benzylamine hydrochloride and 97.2 g potassium thiocyanate in 50 ml water were heated on a steam bath, extracted with hot ethanol, evaporated, the residue was heated for 2 hrs at 155-160°, cooled, and extracted with water. Recrystallization from ethanol gave *N*-benzylthiourea, m.p. 160-161°. The remaining residue after water extraction was *N,N'*-dibenzylthiourea, m.p. 148°. Analogously *N*-*o*-chlorobenzylthiourea, m.p. 126°, and *N,N'*-bis-*o*-chlorobenzylthiourea, m.p. 150° were obtained as well as 1,2,3,4-tetrahydroisoquinoline-*N*-thiocarbonyl amide, m.p. 160-161°. Toxicity and very general biological effects of the compounds synthesized are mentioned.

2/2

USSR

UDC 547.752'83:543.622.4

SAGITULLIN, R. S., BORISOV, N. N., ~~KOST, A. N.~~ and SIMONOVA, K. A., Moscow State University imeni M. V. Lomonosov

"Indole Chemistry. XX. Reaction of 2-Aminoindoles With  $\alpha$ - $\beta$ -Unsaturated Ketones"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 1, Jan 71, pp 61-64

Abstract:  $\alpha$ - $\beta$ -Unsaturated ketones react with 1-alkyl-2-aminoindoles forming  $\alpha$ -carboline: refluxing 1-methyl-2-aminoindole hydroiodide with benzalacetophenone in isopropyl alcohol and equivalent amount of a base yielded 82% of 9-methyl-2,4-diphenyl- $\alpha$ -carboline, m.p. 123-24°. Analogously 2-aminoindole condensed with dibenzoyl methane or benzalacetophenone yields 2,4-diphenyl-pirimidino-[1,2]-indole, m.p. 222-224°. Finally, 1-methyl-2-aminoindole or 1-benzyl-2-aminoindole react with methylacetylacetone forming 2,3,4,9-tetramethyl- $\alpha$ -carboline, m.p. 150-152°, and 2,3,4-trimethyl-9-benzyl- $\alpha$ -carboline, m.p. 217-219° respectively.

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1/2 009 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--INDOLE CHEMISTRY. XV. CONVERSION OF ARYLHYDRAZONES OF DELTA  
OXONITRILES INTO ALPHA CARBOLINES -U-  
AUTHOR--(03)-YUDIN, L.G., KOST, A.N., CHERNYSHOVA, N.D.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (4), 484-8  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--INDOLE, ORGANIC NITRILE COMPOUND, HYDRAZONE, HETEROCYCLIC  
NITROGEN COMPOUND, ORGANIC SYNTHESIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3006/1020 STEP NO--UR/0409/10/000/004/0484/0488  
CIRC ACCESSION NO--APO134732  
UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--13NOV70  
 CIRC ACCESSION NO--AP0134732  
 ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. A MIXT. OF 3.1 G  
 4-METHYL,5-OXOCAPRONITRILE AND 2.7 G PHNMMH SUB2 WAS HEATED 3 HR ON A  
 BOILING WATER BATH, THE SEPD. WATER REMOVED THE MIXT. (EVAPD., 120 ML  
 ACCH ADDED TO THE RESIDUE, AND THE MIXT. REFLUXED 10 HR TO YIELD  
 32.5PERCENT I (R EQUALS R PRIME3 EQUALS H, R PRIME1 EQUALS R PRIME2  
 EQUALS ME), M. 262-30DEGREES (C SUB6 H SUB6); ACETYL DERIV. (R PRIME3) M.  
 132-30DEGREES (ETOH). SIMILARLY WERE OBTAINED I (R, R PRIME1, N PRIME2,  
 R PRIME3, M.P., AND PERCENT YIELD GIVEN): H, ME, H, H, 257-50DEGREES  
 (SIC), 8; ME, ME, H, H, 260-20DEGREES, 7; ME, ME, ME, H, 288-90DEGREES,  
 22.5; H, ME, H, AC, 110-110DEGREES, 93; ME, ME, H, AC, 121-200DEGREES, 85;  
 ME, ME, ME, AC, 152-30DEGREES, 84. FACILITY: MOSK. GOS. UNIV.  
 IN. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--TRANSFER OF SUBSTITUENT EFFECTS ACROSS THE INDOLE RING -U-

AUTHOR--(05)-KOST, A.N., MINKIN, V.I., SAGITULLIN, R.S., GORBUNOV, V.I.,  
SADEKOV, P.D.  
COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(4), 845-53

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--INDOLE DERIVATIVE, CARBOXYLIC ACID, ELECTRON DONOR, CHEMICAL  
SUBSTITUENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--2000/2081

STEP NO--UR/0366/70/006/004/0845/0853

CIRC ACCESSION NO--AP0125668

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--A0125668

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PK VALUES AND SIGMA CONSTS. (TAFT, HAMMETT, WEBSTER, AND DEWAR CONSTS.) WERE DETERM. FOR SUBSTITUTED INDOLE-2-CARBOXYLIC ACIDS (I). THE TRANSFER OF THE ELEC. CHARGES IN THIS RING SYSTEM IS WEAKER THAN IN CARBOCYCLIC SYSTEMS. THE ELECTRON DONATING GROUPS HAVE VERY LITTLE EFFECT. THE RELATION OF STRUCTURE WITH THE PK OF I IS BEST EXPRESSED IN TERMS OF THE DEWAR THEORY.  
FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--INDOLE CHEMISTRY. XIV. FORMATION OF 1,3,AMINO-PROPYL, INDOLES FROM  
1,ARYLPYRAZOLIDINES -U-  
AUTHOR-(02)-PORTNOV, YU.N., KOST, A.N.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (3), 371-6  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--INDOLE, PYRAZOLE, AMINE, NMR SPECTRUM, IR SPECTRUM, UV  
SPECTRUM, CHEMICAL SYNTHESIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3001/0717 STEP NO--UR/0409/70/000700370371/0376  
CIRC ACCESSION NO--AP0126429  
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0126429

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. Y EQUALS 3,AMINOPROPYL,  
 3,AMINOBTYL, OR 3,AMINOBTYL, OR 3,AMINO,2,METHYLPROPYL THROUGH OUT  
 THIS ABSTR. A MIXT. OF 1.15 G MEO SUB2 CO:COO SUB2 ME (I) AND 1.2 G  
 1,PHENYLPYRAZOLIDINE IN ETHER SOLN. WAS KEPT 4-5 HR AT ROOM TEMP. TO  
 YIELD 30PERCENT II, M. 73-40DEGREES (HEXANE). A SOLN. OF 0.22 G II IN 15  
 ML DRY MEOH WAS SATD. WITH DRY HCL AT 0DEGREES AND THE WHOLE KEPT 24 HR  
 AT 0DEGREES TO YIELD 30PERCENT III (R EQUALS H, R PRIME1 EQUALS CO SUB2  
 ME, X EQUALS CL, N EQUALS 3), M. 221DEGREES (ANHYD. MEOH). SIMILARLY,  
 1,ARYLPYRAZOLIDINES AND I GAVE 7 OTHER III (R PRIME1 EQUALS CO SUB2 ME).  
 TO A MIXT. OF A 1,ARYLPYRAZOLIDINE AND A KETONE (0.004 MOLE EACH) WAS  
 ADDED 30 ML ANHYD. C SUB6 H SUB6 AND A SMALL AMT. ANHYD. NA SUB2 SO  
 SUB4, THE MIXT. KEPT 5-6 HR, FILTERED, 5 ML ACOH ADDED, AND THE WHOLE  
 REFLUXED 3 HR TO YIELD IV (5 PREPD.) OR V (3 PREPD.). SATN. WITH DRY  
 HCL OF A SOLN. AN OF ENEHYDRAZINE OF A KETO ESTER IN ANHYD. ETOH GAVE  
 III (R PRIME1 EQUALS ME) (3 PREPD.), NMR, UV AND IR SPECTRA ARE  
 DISCUSSED. FACILITY: MOSK. GOS. UNIV. IN. LOMONOSOVA, MOSCOW;  
 USSR.

UNCLASSIFIED

1/3 010 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--INDOLE CHEMISTRY. XI. SYNTHESIS OF ALPHA CARBOLINES AND  
PYRIMIDO,1,2,A,INDOLES FROM 2,AMINOINDOLES -U-  
AUTHOR-(04)-KOST, A.N., SAGITULLIN, R.S., GORBUNOV, V.I., MODYANOV, N.N.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (3), 359-63 (RUSS).  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--INDOLE DERIVATIVE, CHEMICAL SYNTHESIS, MOLECULAR STRUCTURE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO----FD70/605002/D11 STEP NO--UR/0409/70/000/033/0359/0343  
CIRC ACCESSION NO--AP0139462  
UNCLASSIFIED

2/3 010

UNCLASSIFIED

PROCESSING DATE--0400070

CIRC ACCESSION NO--AP0139462

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO ETONA (FROM 23 G NA IN 210 ML ETOH) WAS ADDED AT 150DEGREES 146 G (ETO SUB2 C) SUB2 AND 137 G O,NITROTOLUENE (I). THE MIXT. WAS REFLUXED 25 MIN, 100 ML H SUB2 O ADDED, ADN REFLUX CONTINUED FOR 1 HR. ETOH AND I WERE STEAM DISTO., THE REMAINING SOLN. WAS TREATED WITH NORIT AT 75-80DEGREES, AND THEN AT 50DEGREES WAS ADDED 49 G NH SUB2 OH.HCL IN 75 ML H SUB2 O TO YIELD 57PERCENT O,NITROPHENYLPYRUVIC ACID OXIME (II), M. 138-60DEGREES. II REFLUXED IN H SUB2 O WITH ACCH GAVE O,NITROBENZYL CYANIDE (III), M. 78-82DEGREES. III, REDUCED IN PROH WITH SN AND HCL GAVE O,AMINOBENZYL CYANIDE (IV) IN 90PERCENT YIELD. IV (16 G) IN 100 ML ISO-PROH WAS ADDED TO ISO-PRONA (FROM 10 G NA IN 200 ML PROH) AND THE MIXT. REFLUXED 1 HR UNDER H TO YIELD 70PERCENT 2,AMINOINDOLE,HCL (V), M. 224-6DEGREES. V WITH MET GAVE 90PERCENT 1,METHYL,2AMINOINDOLE,HI (VI), M. 262-30DEGREES. SIMILARLY WAS OBTAINED IN 65PERCENT YIELD 1,BENZYL,2,AMINO,INDOLE,HCL, M. 256-9DEGREES, AND IN 76PERCENT YIELD 1,CARBETHOXY,2,AMINO,INDOLE,HCL, M. 255-8DEGREES. A MIXT. OF 1 G VI, 0.75 G AC SUB2 CH SUB2 IN 8 ML DRY C SUB5 H SUB5 N WAS REFLUXED 2.5 HR UNDER INERT GAS TO YIELD 100PERCENT VII (R EQUALS ME) M. 110-11DEGREES (DIL. ETOH), PICRATE M. 229-30DEGREES (MEOH). SIMILARLY WAS OBTAINED IN 64PERCENT YIELD V (R EQUALS PRCH SUB2), M. 120.5-1.5DEGREES (MEOH), PICRATE M. 227-9DEGREES (ETOH). A MIXT. OF 1 G VI, 2 G MALONALDEHYDE DIETHYL ACETAL AND 0.7 ML HCL IN 3 ML ETOH WAS KEPT 20 MIN AT ROOM TEMP., 15 ML C SUB5 H SUB5 N ADDED ADN THE MIXT. KEPT OVERNIGHT TO YIELD 8PERCENT 1,METHYL,ALPHA,CARBOLINE N. 53DEGREES (HEXANE), PICRATE M. 225DEGREES (MEOH).

UNCLASSIFIED



3/3 . 010

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0139462

ABSTRACT/EXTRACT--A MIXT. OF 1 G V AND 0.75 G AC SUB2 CH SUB2 IN 10 ML C  
SUBS H SUBS N WAS REFLUXED 1.5 HR IN INERT GAS ATM. TO YIELD 88PERCENT  
VIII, M. 111.5-12.5DEGREES, PICRATE M. 227-90DEGREES (MEOH).  
FACILITY: MOSK. GOS. UNIV., MOSCOW, USSR.

UNCLASSIFIED

UNCLASSIFIED  
 PROCESSING DATE--27NOV70  
 1/2 008  
 TITLE--ADDITION OF DIAZOMETHANE TO BETA ETHYNYLPYRIDINES -U-  
 AUTHOR-(04)-TERENTYEV, P.B., MOSKVINA, T.P., MOSHENTSEVA, L.V., KOST, A.N.  
 COUNTRY OF INFO--USSR  
 SOURCE--KHM. GETEROTSIKL. SOEDIN. 1970, (4), 498-502  
 DATE PUBLISHED-----70  
 SUBJECT AREAS--CHEMISTRY  
 TOPIC TAGS--AZO COMPOUND, METHANE, PYRIDINE, MORPHOLINE, HETEROCYCLIC  
 NITROGEN COMPOUND  
 CONTROL MARKING--NO RESTRICTIONS  
 DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRA--3006/0932  
 STEP NO--UR/0409/70/000/004/0418/0502  
 CIRC ACCESSION NO--A00134561  
 UNCLASSIFIED

K

272 008  
CIRC ACCESSION NO--AP0134601  
ABSTRACT/EXTRACT--(U) GP-0-  
MG AND 32.6 G ETBR) IN 120  
HR, SHOWN ON MICROFICHE.  
LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT. TO A SOLN. OF ETBR (FROM 4.8 G  
ML TETRAHYDROFURAN (THF) WAS ADDED, DURING 1  
FACILITY: MOSK. GOS. UNIV. IN.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--NITROSOPHENOLS AND PRODUCTS OF THEIR REARRANGEMENT, I.  
3-CYANOCINNAMIC ACID -U-  
AUTHOR--(02)-STANKEVICIUS, A., KOST, A.N. **K**  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ORG. KHIM. 1970, 6(5), 1022-6  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--NAPHTHOL, ISOMER, PHENOL, AROMATIC NITRO COMPOUND, MOLECULAR  
STRUCTURE, CYANOGEN COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3006/1353 STEP NO--UR/0366/70/005/005/1022/1026  
CIRC ACCESSION NO--AP0135027  
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0135027

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BECKMANN REARRANGEMENT OF 1,NITROSO,2, NAPHTHOL IN THE PRESENCE OF P-MEC SUB6 H SUB4 SO SUB2 CL IN PHME SOLN. GAVE LESS THAN OR EQUAL TO 90PERCENT 2,CYANO,CIS,CINNAMIC ACID (CIS,I). HEATING CIS,I IN PHND SUB2 AT 150DEGREES GAVE 5-10PERCENT TRANS,I. HEATING I IN ISOQUINOLINE OR PYRIDINE GAVE NEARLY QUANT. YIELDS OF TRANS,I. SIMILARLY, THE 2,RED ANALOG (III), AND THE 5,OR AND 4,OH DERIVS. (III, IV) OF CIS,I WERE PREPD. HEATING II AND III AS ABOVE GAVE THE TRANS ISOMERS; HOWEVER, UNDER THESE CONDITIONS IV DECOMPD. FACILITY: KAUNAS. MED. INST., KAUNAS, USSR.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--POLYTHEM OF SOLUBILITY AND SOLID PHASE CHARACTERISTICS OF THE  
RUBIDIUM SULFATE MAGNESIUM SULFATE WATER SYSTEM -U-  
AUTHOR-(02)-SHEVCHUK, V.G., KOST, L.L.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(6), 1656-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SOLUBILITY, AQUEOUS SOLUTION, CRYSTALLIZATION, MAGNESIUM  
SULFATE, RUBIDIUM COMPOUND, PHASE COMPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3006/1390

STEP NO--UR/0078/70/015/006/1656/1657

CIRC ACCESSION NO--AP0135064

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--13NOV70  
CIRC ACCESSION NO--AP0135064  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLY. ISOTHERMS AT 75 AND  
100DEGREES AND SOLY. POLYTHERM WITHIN 0-100DEGREES OF RB SUB2 SO SUB4  
-MGSO SUB4 -H SUB2 O SYSTEM ARE CONSTRUCTED. AT LESS THAN 50DEGREES,  
ONLY STARTING MATERIALS AND RB SUB2 SO SUB4 .MGSO SUB4 .6H SUB2 O  
(SCHONITE) SEPD. AS SOLIDS. RB SUB2 SO SUB4 .MGSO SUB4 .4H SUB2 O AND  
RBSO SUB4 .2MGSO SUB4 SEPD. AT 75 AND 100DEGREES. FACILITY:  
POLTAV. INZH.-STROIT. INST., POLTAV, USSR.

UNCLASSIFIED

## Conferences

USSR

UDC 541.44:006.3

KOST, M. YE."Conference on Chemistry of Inorganic Hydrides"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 15, No 1, 1970, pp 283-285

Abstract: The Second All-Union Conference on the Chemistry of Inorganic Hydrides was organized by the divisions of Physical Chemistry and Technology of Inorganic Materials and General and Technical Chemistry of the USSR Academy of Sciences, by the USSR Ministry of Chemical Industry and the All-Union Chemical Society imeni D.I. Mendeleev. It was held in Moscow 25-29 October 1968. At the first plenum of the conference L.I. ZAKHARKIN reported on a new class of hydride compounds -- carborans. Several sessions of the conference were devoted to the synthesis of hydrides of light metals. T.N. DYMOBA, S.I. BAKUM, L.I. ZAKHARKIN, V.V. GAVRILENKO, YU.T. STRUCHKOV, L.M. ANTIPIIN, and G.A. YENHOREINKO reported on a new class of aluminum hydride derivatives, hexahydridoaluminates of alkalal metals. L.I. ZAKHARKIN, V.V. GAVRILENKO, and D.N. MASLIN reported obtaining aluminum hydride and its complex compounds from sodium hydridocaluminate. Data on the organic derivatives of hydrides were given in two reports. L.V. TETCOV, V.D. KRASNEPEROVA, M.D. MAKAROVA, and L.A. GAVRILOVA reported on the synthesis and properties of the hydridoborates of guanidine and tetramethyl- and tetraethylammonium I.P. LAVRENT'YEV, L.G. KORABLEV, YE. A. LAVRENT'YEVA, and M.L. KEIDEKEL' studied

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USSR

KOST, M.YE., Moscow, Zhurnal Neorganicheskoy Khimii, Vol 15, No 1, 1970, pp 283-285

the synthesis and reactions of  $AlH_2CN$ ,  $AlH(CN)_2$ , and  $Al_2H_5CN$ . The study of volatile hydrides of periodic groups III and IV and their derivatives were also reported. A.D. ZORIN, I.A. FROLOV, R.P. ROSTUNOV, and P.I. GAIKIN presented data on the reaction of germanium tetrachloride with aluminum diisobutyl hydride and sodium and potassium hydridoborates. There were three reports on the hydrides of transitional metals. YU.G. OLESOV, V.S. USTINOV, A.N. RUBTSOV, and V.P. GLUKHOV reported on "The Practical Development of Hydrogenation of Titanium." A.A. CHERIKOV and V.I. MIKHEYEVA studied the conditions of hydrogenation of titanium alloys with elements of periodic group V and the structure and properties of the hydride compounds obtained therefrom. I.T. BARANOVA and M.M. ANTONOVA reported on the methods of obtaining compact hydrides of titanium and zirconium and measurement of their physical properties. A.N. RUBTSOV, I.I. NARYSHKIN, YU. G. OLESOV, and P. YU. SHUL'DNER MEASURED the heat of solution of titanium alloyed with aluminum (to 15.6 mass%) and hydrogen (to 3.9 mass%). On the basis of the obtained thermochemical data they proposed a new technological treatment of titanium alloys. M.E. KOST studied the synthesis and chemical properties of a series of hydrides of rare earth elements and showed their high chemical activity. I.R. KONENKO, A. NADZEM, M.E. KOST, G.V. SAMSONOV, and A.A. TOLSTOPYATOVA conducted a comparison of catalytic properties of scandium, yttrium, and neodymium and their hydrides in the para-ortho conversion reaction of hydrogen. V.V. GRUSHINA and A.M. TODIN investigated the interaction

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USSR

KOST, M.YE., Moscow, Zhurnal Neorganicheskoy Khimii, Vol 15, No 1, 1970, pp 283-285

of hydrogen and thin layers of some rear earth metals and showed the dependence of hydrogen absorption on the base material. M.M. ANTONOVA, L.H. YEDZHENOVA, I.I. TIMOFEYEVA, and V.V. MOROZOV, with the hydrogenation of carbides of titanium, zirconium, vanadium, and neobium, obtained the carbonyl phases and studied their thermal stability and electrical and magnetic properties. V.V. VOLKOV, K.G. MYAKISHEV, YE.V. SOBOLEV, and G.I. BAGRYANTSEV reported on the physical and chemical properties of the hydridoborates of zirconium and hafnium. Electronographic investigation of the structure of zirconium hydridoborate in gaseous phase was conducted by V.P. SPIRIDONOV and G.I. MAMAYEVA. YE.M. FENNEVOY, V.I. ALPATOVOY, and L.A. GAVRILOVOY, as a result of their study of the reaction of the hydridoborates of lithium, sodium, and potassium with oxychlorides of niobium and tantalum, obtained polymers of oxyborates of the composition  $MeOH$  (where Me = Metal). E.K. STERLYADKIN, N.N. MAL'TSEV, L.S. ALEKSEYEV, and V.I. MINNENEV reported on the heating of the chlorides of nickel, cobalt, and chromium with hydridoborates of sodium, which form corresponding borides of the composition  $MeB_2$ .

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1/2 011 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--MECHANISM OF THE PP YIELDS PI PRIME POSITIVE PN REACTION AT 660 MEV  
-U-  
AUTHOR--(03)-VOVCHENKO, V.G., KOSTANASHVILI, N.I., YARBA, V.A.  
COUNTRY OF INFO--USSR  
SOURCE--YAD. FIZ. 1970, 11(4), 810=13  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--ENERGY SPECTRUM, NUCLEAR REACTION, PI MESON, PION PION  
INTERACTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/1028 STEP NO--UR/0367/70/011/004/0810/0813  
CIRC ACCESSION NO--AP0124687  
UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--23OCT70  
CIRC ACCESSION NO--AP0124687  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTL. DATA ON THE INTEGRAL ENERGY SPECTRUM AND ON THE ANGULAR DEPENDENCE OF THE SHAPE OF THE PI PRIME POSITIVE MESON SPECTRUM IN THE CENTER OF MASS SYSTEM FOR THE TITLE REACTION AT 660 MEV, ARE COMPARED WITH CALCNS. WHICH ARE BASED ON THE RESONANCE MODEL OF THE PION PRODUCTION, DEVELOPED BY MANDELSTAM WHICH IS USED, IN TURN, PRIMARILY FOR DESCRIBING THE MESON FORMATION PROCESS IN PP INTERACTIONS AT THE GIVEN ENERGY. THE SPECTRUM IS REASONABLY WELL DESCRIBED BY MEANS OF THE RESONANCE MODEL, BY TAKING INTO ACCOUNT THE PRIME3 P SUB0,1,2 PRIME1 D. SUB2, AND PRIME2 F SUB2,3 SHAPE IS IN CONTRADICTION TO THE RESONANCE MODEL PREDICTIONS. THE PARTIAL CROSS SECTIONS OF THE PI MESON FORMATIONS FROM THE (J,L) STATE, DEPENDING ON THE MESON ENERGY E SUBPI, ARE GIVEN. FACILITY: OS'EDIN. INST. YAD. ISSLED., MOSCOW, USSR.

UNCLASSIFIED

USSR

TOLUBINSKIY, B. I., KOSTANCHUK, D. M.

"Influence of Pressure on Intensity of Heat Emission During Boiling of Water with Underheating"

Vopr. Tekh. Tellofiz. Vyp. 3, [Problems of Engineering Heat Physics No 3], Kiev, Nauk. Dumka Press, 1971, pp 58-61. (Translated From Referativnyy Zhurnal Mekhanika, No 1, 1972, Abstract No 1B887 by Yu. E. Pokhvalov).

Translation: The influence of pressure  $p=1-10$  bar was experimentally studied during forced flow of water heated to  $(20^\circ)$  less than the saturation temperature. Heat flux  $q$  varied between  $0.14$  at  $1.2 \text{ Mw/m}^2$ , the fluid flow rate was  $0.2 \text{ m/sec}$  ( $p=1$  bar) and  $0.8 \text{ m/sec}$  at high pressures. It was discovered that the mean rate of steam bubble growth  $w^m=d_{mf}$  decreases with increasing pressure (primarily due to  $d_m$ ), while the heat transfer coefficient  $\alpha$  increases ( $p^{0.15}$ ). The decrease in  $w^m$  with the same heat flux corresponds to an increase in the density of vapor formation centers, which has a stronger influence on heat exchange intensity than decreasing  $d_m$ . The results of the experiments are described well by the dimensionless equation of V. I. Tolubinskiy when the experimental values of  $d_m$  and  $f$ , the maximum diameter and frequency of formation of bubbles, are substituted into it.

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USSR

TOLUBINSKIY, V. I., KOSTANCHUK, D. M., OCTROVSKIY, Yu. N.,

"Influence of Smoothness of Heating Surface on Intensity of Heat Transfer During Boiling of Water"

Vopr. Tekh. Tellofiz. Vyp. 3, [Problems of Engineering Heat Physics No 3], Kiev, Nauk. Dumka Press, 1971, pp 12-14. (Translated from Referativnyy Zhurnal Mekhanika, No 1, 1972, Abstract No 1B883 by Yu. E. Pokhivalov).

Translation: An experimental study was performed in a circular channel with internal heating. The internal heated tubes, made of stainless steel, had the following dimensions: Diameter 6 mm, wall thickness 0.25 mm (precise, class 6 smoothness) and 6 mm and 0.25 mm (cold drawn, averaging class 4 smoothness), 5 mm and 0.2mm (polished, class 11 smoothness). The external tube was made of organic glass 28 mm in diameter (wall thickness 4 mm); channel length was 50 mm. The limits of change of the nodes of the parameters were: heat flux  $q=0.2-2 \text{ Mw/m}^2$ , pressure  $P=2-6 \text{ bar}$ , underheating  $\Delta t_H=20^\circ$ , water speed at input to channel  $V=0.2 \text{ m/sec}$ . The divergence in intensity of heat transfer  $\alpha$  on the technical surfaces was found not to be too great, while on the polished surface  $\alpha$  was 25% or more lower, even at high heat fluxes. This effect is related to the impoverishment of the polished surface in vapor formation centers. The experimental data were processed as a criterial dependence, suggested  
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USSR

TOLUBINSKIY, V. I., KOSTANCHUK, D. M.

"Influence of Underheating on Heat Exchange During Boiling of Water"

Vopr. Tekh. Tellofiz. Vyp. 3, [Problems of Engineering Heat Physics No 3], Kiev, Nauk. Dumka, Press, 1971, pp 3-6. (Translated From Referativnyy Zhurnal Mekhanika, No 1, 1972, Abstract No 18882, by Yu. E. Pekhvalov).

Translation: Experiments were performed with forced flow of water in a vertical, circular channel, formed of an external tube 28 mm in diameter (wall thickness 4 mm) and an internal heat-liberating stainless tube 6 mm in diameter. Cold-drawn tubing was used without further treatment (averaging class 4 smoothness), as well as turned tubing (class 6 smoothness) with wall thicknesses of 0.3 and 0.25 mm respectively; the length of the channel was 50 mm. The underheating  $\Delta T_H$  varied from 5 to 60°, heat flux  $q$  -- from 0.1 to 2 Mw/m<sup>2</sup>. Experiments were performed at atmospheric pressure with a water velocity at the input to the working channel 0.2 m/sec. It was discovered that the characteristic relationship of heat transfer coefficient  $\alpha$  and  $q$  depends essentially on the underheating  $\alpha = 4.2 q^{0.7} \Delta T_H^{-0.14}$ . The exponent with the underheating can be assumed constant only approximately. Increasing underheating increases the mean rate of growth of steam bubbles  $\bar{w} = d_m f$  ( $d_m$  and  $f$  are the maximum diameter and frequency of formation of steam bubbles respectively),  $d_m$  dropping more slowly than  $f$  increases. The heat transfer coefficient changes similarly with

USSR

UDC 612.821.2+612.822.3

KOSTANDOV, E. A. and ARZUMANOV, Yu. L., Central Scientific Research Institute of Forensic Psychiatry imeni V. P. Serbakiy, Moscow

"The Role of Association in the Development of Evoked Potentials in the Human Cerebral Cortex"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti, Vol 23, No 3, May/June 73, pp 523-531

Abstract: Fourteen 20-45-year-old adults were used in a study of the characteristics of evoked electrical activity in the cortex in response to pairs of visual stimuli, presented with a 1-second pause between them. The stimuli were representations of (1) an arrow and (2) a word with a neutral or an emotional connotation. The subjects were required to respond differently to each stimulus. It was found that when meaningful visual stimuli were repeatedly presented in succession, the average potential evoked by the second stimulus had a short latent phase and was often registered before the stimulus was presented. The average potentials evoked in the visual cortex by an arrow combined with an "emotional" word developed earlier, with a higher amplitude in the late positive potential, than when the arrow preceded a "neutral" word; no analogous difference in cortical activity was observed in 1/2



USSR

KOSTANDOV, E. A. and ARZUMANOV, Yu. L., Zhurnal Vysshey Nervnoy Deyatel'nosti, Vol 23, No 3, May/June 73, pp 523-531

the area of the vertex. A temporary direct and inverse relationship was observed between changes in potentials that are evoked by stimuli between which an association has been established.

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USSR

UFC 612.822.3

KOSTANDOV, E. A., and ARZUMANOV, YU. L., Central Scientific Research Institute  
of Forensic Psychiatry imeni V. P. Serbskiy, Moscow

"Dependence of Conditioned Slow Negative Potentials of the Human Cerebral Cor-  
tex on Motivation and Emotion"

Moscow, Zhurnal Vyshey Nervoy Dayatel'nosti imeni I. P. Pavlova, Vol 22, No 4,  
Jul/Aug 72, pp 679-687

Abstract: Conditioned slow negative cortical potentials (CNV, identical with  
Walter's contingent negative variations) were recorded from the occiput of  
healthy subjects during 1-sec intervals between two stimuli. The first stimulus  
(a sound) was a warning, while the second stimulus (a "neutral" word flashed  
on the screen) was a command to depress a key. The tests were done under condi-  
tions of different motivations: a) the subject was simply instructed to press  
the key, b) he was emphatically requested to perform this action fast, and  
c) he was promised and subsequently given a piece of chocolate candy for each  
fast action; and in a state of anxiety: he was given an electric shock for each  
slow action. In the presence of motivation, the CNV significantly increased  
and the reaction time diminished. The increase in CNV magnitude was propor-  
tional to the degree of motivation. The smallest CNV were observed in the  
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USSR

KOSTANDOV, E. A. and ARZUMANOV, YU. L., Zhurnal Vysshey Nazvnoy Deyatel'nosti imeni I. P. Pavlova, Vol 22, No 4, Jul/Aug 72, pp 679-687

state of anxiety, indicating that negative emotional experience exerts a depressing effect. No special correlation was found between the magnitude of the CNV and the duration of the reaction time. It is believed that the CNV is associated with the mechanism of short-time memory in which the limbic system activates the thalamic-cortical system of selective attention.

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USSR

UDC 612.822.3+615.5

KOSTANDOV, E. A., and ARZUMANOV, YU. L., Central Scientific Research Institute of Forensic Psychiatry imeni V. P. Serbskiy, Moscow

"Changes in Cortical Evoked Potentials in Response to Emotional Visual Stimuli in Man Under the Influence of Amizil"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlova, Vol 21, Vyp 6, Nov/Dec 71, pp 1,247-1,255

Abstract: In a previous work, the authors discovered that visually presented stimuli having a positive emotional content for the subject caused an increase in the amplitude and a shortening of the latent period of the late positive component of the subject's averaged evoked potentials. In this article they verified their hypothesis that these changes, which were observed in the visual zone of the cortex but not in the vertex, were caused by additional impulsion from the limbic structures of the brain, which integrate emotional reactions. Their hypothesis was confirmed by the fact that the administration of amizil, a drug which inhibits the cholinergic mechanism of the limbic system, temporarily eliminated the difference in the subjects' responses to positive emotional and neutral stimuli.

The authors also investigated the effect of amizil on the psychophysiological recognition thresholds of neutral and emotional stimuli. In all of the subjects tested, the two thresholds differed considerably under normal circumstances. However, in some of the subjects, the administration of amizil eliminated this difference. 1/1

USSR

UDC 612.822.3+621.843.7

KOSTANDOV, E. A., and ARZUMANOV, Yu. L., Central Research Institute of Forensic Psychiatry imeni V. P. Serbskiy, Moscow

"Averaged Evoked Potentials of the Human Cortex in Response to Emotional Visual Stimuli"

Moscow, Zhurnal Vyshey Nervnoy Dayatel'nosti, No 4, 1971, pp 811-819

Abstract: Evoked potentials were studied in 10 adult psychopaths in response to the appearance on a screen of single "neutral" or "emotional" words relating to a severe current conflict situation in their lives. A late positive wave with a latency of about 300 msec ( $P_{300}$ ) proved to be the most regular component of the evoked cortical potentials in response to the verbal stimuli. A late positive wave of greater amplitude was derived from the occipital region in response to emotionally charged words; the latent period was shorter than when neutral stimuli were used. In the region of the vertex, no significant difference was noted in the parameters of the evoked potential regardless of the nature of the verbal stimuli.

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USSR

UDC 612.8

KOSTANDOV, E. A. and SHOSTAKOVICH, G. S., Central Scientific Research Institute of Forensic Psychiatry imeni Prof. V. P. Sarbskiy, Moscow

"Measurement of the Time of Recognition of Verbal Stimuli by the Method of Backward Masking"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlova, Vol 20, No 5, Sep/Oct 70, pp 1,010-1,015

Abstract: The time of recognition of visual verbal signals was studied in normal and psychopathic subjects by means of backward masking. The average time required for recognition of neutral words was found to be 100 msec. A strong foreign stimulus of the same modality (a bright flash) could prevent recognition of the word. The "masking" stimulus thus ceased to exert an essential influence on the recognition and imprinting of the verbal signal. The time of recognition of emotional words differs from that for neutral words. After mental fatigue, the time of recognition is considerably longer. The experiments with backward masking showed that the labile phase during which foreign stimuli may prevent the recognition of words actually coincides with the so-called consolidation phase in the sphere of verbal-logical memory.  
1/1

USSR

UDC 612.8+014.423

KOSTANDOV, E. A., D'YACHKOVA, G. I., and TIMOFIYEVA, L. V., Central Scientific Research Institute of Forensic Psychiatry imeni V. P. Serbskiy, Moscow

"Characteristics of Cortical Potentials Evoked by Weak Soundware Stimuli in Man"

Moscow, Doklady Akademii Nauk SSSR, Vol 196, No 2, 1971, pp 471-474

Abstract: The study of the behavior of cortical potentials induced by sound stimuli has only recently become feasible, through the use of computers for the analysis of weak signals produced by sound. The minimum sound intensity at which a signal is produced in the surface of the cranium is of interest. The mean induced potential was observed in 12 healthy men 20-40 years of age with sound stimuli of threshold or above-threshold intensity. In the occipital region, this potential was deflected in all of the cases studied, but not consistently. A cortical potential was recorded even when the noise stimuli did not reach the threshold level. Considerable differences were found in the latent period and in the potential amplitude. Nevertheless, it is impossible to link shifts in these parameters to the process of stimulus perception.

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Acc. Nr: **№0047169**

Ref. Code: UR 0246

PRIMARY SOURCE: Zhurnal Nevropatologii i Psikhatrii, 1970,  
Vol 70, Nr 2, pp 225-235

THE INFLUENCE OF NEGATIVE EMOTIONS ON PERCEPTION  
IN PSYCHOPATHIC PERSONALITIES

E. A. Kostandov

It was shown that in emotional excitation part of the stimuli from the environment which was prior to that perceived by humans, ceased to become realized, but may influence the organism on a subliminal level. In psychopathic personalities the threshold of recognition «emotional» words, related to their conflict life situation, may be definitely lower or even higher than the threshold of recognition «neutral» words. In cases of a higher threshold, a sub-threshold effect of emotional words was registered in the form of bioelectrical and vegetative reactions. The author discusses the role of elicited changes of perception in the behaviour of psychopathic personalities.

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172 022 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--INVESTIGATION OF SUBSENSORY REACTIONS --U--  
AUTHOR--KOSTANDOV, E. A. K  
COUNTRY OF INFO--USSR  
SOURCE--VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR, VOL 25, NO 1, 1970,  
PAGES 53-59  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--SENSORY PHYSIOLOGY, PSYCHOLOGY, PSYCHIATRY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3003/0962 STEP NO--UR70248710702570017005870059  
CIRC ACCESSION NO--AP0130018  
UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--13NOV70  
CIRC ACCESSION NO--AP0130618  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THIS ARTICLE AN EFFORT IS MADE TO DEMONSTRATE THE METHODOLOGICAL POSSIBILITIES OF PHYSIOLOGICAL AND PSYCHOLOGICAL INVESTIGATION OF SUBSENSORY REACTIONS. JOINT COMPLEX DEVELOPMENT OF THIS PROBLEM FROM DETERMINISTIC POSITIONS IS VERY URGENT AND MANDATORY, SINCE OVERSIGHT ON THE PART OF SOVIET PHYSIOLOGISTS, PSYCHOLOGISTS AND PSYCHIATRISTS OF THE TRUE ROLE OF THE SUBCONSCIOUS IN BEHAVIORAL REACTIONS OF MAN RESULTS IN THAT A ROAD THE PSYCHOANALYTICAL DIRECTION IS THE LEADING IF NOT THE SOLE DIRECTION IN INVESTIGATIONS DEALING WITH SURCONSCIOUS FORMS OF BRAIN ACTIVITY (S. A. SARKISOV ET AL., 1963). PERHAPS THIS OVERSIGHT IS DUE TO THE FACT THAT THE CONCEPT OF SUBCONSCIOUS IS OFTEN EQUATED WITH FREUDIAN PSYCHOLOGY, ALTHOUGH THE HISTORY OF EXPERIMENTAL INVESTIGATION OF DIVERSE REACTIONS TO WEAK, IMPERCEPTIBLE STIMULI DATES BACK TO OVER A CENTURY AGO AND BEGINS WITH THE WORK OF H. SUSLOVA (1863) A DISCIPLE OF I. M. SECHENOV.  
FACILITY: CENTRAL SCIENTIFIC RESEARCH INSTITUTE OF FORENSIC PSYCHIATRY (MENI V. P. SERBSKIY, MOSCOW.

UNCLASSIFIED

USSR

UDC 612.84.014.46:547.262

KOSTANDOV, E. A., and RESHCHIKOVA, T. N., Laboratory of the Pathophysiology of Higher Nervous Activity, Central Scientific Research Institute of Legal Psychiatry imeni V. P. Serbskiy

"Changes in Visual Perception Under the Influence of Alcohol"

Moscow, Zhurnal Nevropatologii i Psikhatrii imeni S. S. Korsakov, Vol. 73, Vyp 2, 1973, pp 230-235

Abstract: Differences in perception time of Russian letters flashed onto a screen were studied for normal individuals and chronic abusers of alcohol who had abstained 1 1/2-2 1/2 weeks prior to the study. Average perception times were about 104 msec for normal individuals and 124 msec for chronic abusers. Perception time did not change significantly for either normal individuals or chronic abusers 15 min after consumption of 60 ml 40% alcohol. After consumption of 200 ml 40% alcohol the perception times increased to about 160 msec for normal individuals and 146 msec for chronic abusers. Significant scatter was noted in perception times for chronic abusers. Thus although the initial perception time of chronic abusers is higher than that of normal individuals, alcohol consumption does not affect them as greatly as the latter. Neurophysiological aspects of such changes are discussed, but no conclusions are  
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