

USSR

SHAGIDULLIN, R. R., et al., Khimiya Geterotsiklicheskikh Soyedineniy, No 12,  
Dec 71, pp 1612-1615

a conclusion was reached that changes in the ring conformation must have taken place: in the trivalent phosphorus compounds the ring is in form of an envelope with a pseudoaxial chlorine atom, while in the tetracoordinated phosphorus compounds an envelope is formed with a axial phosphoryl oxygen atom and an equatorial chlorine atom.

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UDC 546.26'119

USSR

CHERNOKAL'SKIY, B. D., ABALONIN, B. Ye., SHAGIDULLIN, R. R., IZOSIMOVA, S. V.,  
and KAMAY, GIL'M, Kazan' Chemical-Technological Institute imeni S. M. Kirov

"Reaction of the Esters of Arsenious Acids with Alkyl Halides"

Leningrad, Zhurnal Obshchey Khimii, Vol XL, No 12, Dec 70, pp 2645-2648

Abstract: It was demonstrated earlier by several of the authors that during the reaction of the esters of arsenious acids with alkyl halides, instead of the expected alkoxyarsonium salts, quaternary arsonium salts are formed; it was of interest to study the effect of the structure of the starting ester on that of the final product.

A series of esters of several arsenious acids were studied for this purpose; these differed with regard to the nature of the hydrocarbon radical of the ester group. It was shown that the hydrocarbon radical of the alkoxy group in no case enters into the composition of the arsenious salt formed.

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USSR

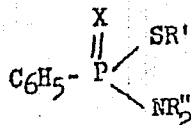
UDC 543.422.4:661.718.1

SHAGIDULLIN, R. R. and LIPATOVA, I. P., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Infrared Spectra and Structure of Certain Organo-thiophosphorus Compounds"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 5, 1971, pp 1024-1027

Abstract: Identification of bands associated with P-S vibrations and quantitative data on the intensities of these bands were obtained for several new thio-organophosphorus compounds of the type:



X = O, Se, S      R' = C<sub>2</sub>H<sub>5</sub>, i- and n-C<sub>3</sub>H<sub>7</sub>, i and n-C<sub>4</sub>H<sub>9</sub>

R'' = C<sub>2</sub>H<sub>5</sub>, n-C<sub>3</sub>H<sub>7</sub>

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SHAGIDULLIN, R. R. and LIPATOVA, I. P., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 5, 1971, pp 1024-1027

Wave numbers of band maxima assigned to the vibrations of P-S, P=S, and P=Se bonds are tabulated, along with integral intensities ( $A_{p-s}$ ) of the doublet P-S bands. It was found that the frequency and integral intensity of vibrations of the P-S bond are sensitive to substituents at the phosphorus atom: for compounds of the type given above, with alkyl radical instead of phenyl,  $\nu_{p-s} = 510-540 \text{ cm}^{-1}$ . Introduction of an aryl radical increases this frequency to  $557-578 \text{ cm}^{-1}$ . Several rotational isomers exist among the compounds studied. Spectra of certain compounds recorded in the temperature range from  $+30$  to  $-130^\circ$  and in solvents of different polarity revealed the existence of rotational isomers. The energy change  $\Delta E$  of rotational isomers were calculated from measurements of infrared spectra at different temperatures. The infrared spectra were recorded on the UR-10 double beams spectrometer in the  $400-4000 \text{ cm}^{-1}$  range.

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UIC 541.62:661.718.1

USSR

RAYEVSKIY, O. A., ~~SHAGIDULLIN, R. R.~~ and PETROVA, I. YE., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Study of Rotational Isomerism of the Acid Dichloride of Methylphosphoric Acid"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, 1971,  
pp 1426-1429

Abstract: Two physical methods were used in assigning geometrical configuration to possible rotational isomers of the acid dichloride of methylphosphoric acid (ADMPA): infrared spectroscopy and dipole moments. Infrared spectra were used to determine the existence of a dynamic equilibrium of isomeric forms and their relative proportions in a nonpolar medium. Experimental dipole moments were compared with calculated values to ascertain which isomeric forms are present in equilibrium. Absorption bands in the infrared spectra were assigned to specific isomers. A well-defined dependence of absorption band intensities on dielectric permeability of solvents led to the determination of the ratio of absolute integral band intensities caused by particular kinds of vibrations of the two isomers found to be present. The assignment of configuration was made by the dipole method. The experimental dipole moment of ADMPA in  $\text{CCl}_4$  at  $298^\circ\text{A}$

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RAYEVSKIY. O. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya,  
No 7, 1971, pp 1426-1429

is  $3.40 \pm 0.03D$ . The moment closest to agreement with the experimental values is observed for the equilibrium composition of 20 percent of the trans and 80 percent of the gauche forms. The low probability of configurations with layering of identically directed dipoles P-C and O-C led to the determination of one of the configurations of ADMPA being the trans-form.

2/2

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USSR

UDC 547.242

ABALONIN, B. YE. CHERNOKALOSKIY, B. D., SHAGIDULLIN, N. R.,  
IZOSIMOVA, S. V., ZIMOVA, T. V., KAMAY GIL'M (DECEASED), Kazan'  
Chemical-Technological Institute imeni S. M. Kirov, Kazan, Ministry  
of Higher and Secondary Specialized Education RSFSR, and Institute  
of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy  
of Sciences USSR

"The Products of the Reaction of Arsinous Acid Esters With Alkyl  
Halides"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 3, Aug 70,  
pp 1812-1817

Abstract: The reactions were carried out by one of two methods:  
a) ethyl ether of diethylarsinous acid and ethyl iodide were kept  
in an ampule under CO<sub>2</sub> atmosphere for 120 hours at room temperature,  
the precipitated tetraethylarsonium iodide was recrystallized  
from an etherealcohol mixture and showed a m.p. of 291°; or b) the  
same mixture was heated to 100° for 2 hours in an ampule under CO<sub>2</sub>  
atmosphere, yielding the same product. By these reactions other  
alkyl halides reacted with esters of dialkyl- and phenylalkylar-  
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USSR

ABALONIN, B. YE., et al, Zhurnal Obshchey Khimii, Vol 40, No 8, Aug 70, pp 1812-1817

sinous acids. Examination of the products by means of IR and PMR spectroscopy showed that no alkoxy groups are present in these products. It was determined that in the above reactions only the tetraalkyl- and trialkylphenylarsonium salts are formed. Tetraethyl arsonium iodide reacted with magnesium perchlorate underwent an exchange reaction yielding tetraethylarsonium perchlorate m.p. 291°.

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USSR

UDC 547.341'139.81+547.391

PUDOVIK, A. N., BATYYEVA, E. S., SHAGIDULLIN, R. R., RAYEVSKIY, O. A.,  
PUDOVIK, M. A., Institute of Organic and Physical Chemistry imeni A. Ye.  
Arbuzov, Academy of Sciences USSR

"Reaction of Amides of Diphenylphosphinous Acid with  $\alpha$ ,  $\beta$ -Unsaturated Acids"

Leningrad, Zhurnal Obshchei Khimii, Vol 40, No 6, Jun 70, pp 1195-1202

Abstract: The mechanism of the reaction of diphenylphosphinous acid amides with  $\alpha$ ,  $\beta$ -unsaturated acids was investigated. Protonation of the nitrogen atom of the amide leads to the formation of an amine and subsequently the amide of the unsaturated acid and diphenylphosphinous acid. Association of the latter leads to the final product, namely  $\beta$ -carbamoyl-alkyl- or alkenyl-diphenylphosphine oxide, depending on whether an  $\alpha$ ,  $\beta$ -unsaturated acid of the ethylene or acetylene series was used. The proposed mechanism was confirmed by IR spectrometry.

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USSR

UDC: 547.241+661.725

GRISHINA, O. N., KOSOVA, L. M., LIPATOVA, I. P., and SHAGIDULLIN, 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"

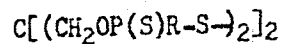
Leningrad, Zhurnal Obshechey Khimii, Vol 40, No 1, Jan 70, pp 66-69

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 66-89% 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 Obshechey Khimii, Vol 40, No 1, Jan 70, pp 66-69

solution reacted with aqueous iodine at room temperature to give 78.8-94.8% yields of disulfides



where R is butyl, cyclohexyl, or C<sub>6</sub>H<sub>13</sub>. 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.

2/2

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USSR

UDC 541.6 + 543.422.6 + 547.558.1/2

SHAGIDULLIN, R. R., and CHERNOVA, A. V., Institute of Organic and  
Physical Chemistry imeni A. Ye. Arbutov, Acad. Sc. USSR

"Structure and UV-Spectra of Some Arylphosphines and -Arsines"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 1,  
Jan 71, pp 183-185

Abstract: UV spectra of aromatic phosphines usually show two bands in the range  $> 200 \text{ m}\mu$ : an intense short-wave band around  $220 \text{ m}\mu$  and a medium band at  $250\text{-}270 \text{ m}\mu$ . The first band resembles the K-band of benzene, the second band had several interpretations but was believed to consist of three bands: K, B, and R. To check this out, studies were carried out on:  $\text{C}_6\text{H}_5\text{CH:CHP}(\text{C}_2\text{H}_5)_2$  (I),  $\text{C}_6\text{H}_5\text{CH:CHPCl}_2$  (II),  $\text{C}_6\text{H}_5\text{P}(\text{C}_2\text{H}_5)_2$  (III),  $\text{C}_6\text{H}_5\text{PCl}_2$  (IV),  $(\text{C}_6\text{H}_5)_2\text{PCl}$  (V),  $p\text{-CH}_3\text{C}_6\text{H}_4\text{As}(\text{C}_2\text{H}_5)_2$  (VI), and  $p\text{-CH}_3\text{OC}_6\text{H}_4\text{As}(\text{C}_2\text{H}_5)_2$  (VII), yielding data which showed that the R-band ( $\rho \rightarrow \pi$  transition) are present in the spectra of arylphosphines and -arsines. For example, (IV) showed three sharp bands at  $225$ ,  $245$ , and  $275 \text{ m}\mu$ , the one at  $245$  being assigned to the R-band.

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SHAGIDULLIN, R. R., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 71, pp 183-185

Introduction of an electron-donor group into the p-position shifts two bands (K and R) in opposite directions, and the B band appears as shown by (VII). Oxidation of the product should lead to disappearance of the R-band, and indeed that's what was observed, as shown by the spectrum of anisyl-diethylarsine. It has been shown that the  $\mu-\pi$  transition occurs in trivalent phosphorus and arsenic compounds in agreement with the observation that in the ground state their unshared electron pairs are localized at the heteroatoms and are not conjugated with the  $\pi$ -electron system.

2/2

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1/2 015 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--PREPARATION OF N,PHOSPHORYLATED 2,OXO,1,3,OXAZOLIDINES AND  
6,METHYL,1,OXO,1,3,TETRAHYDROOXAZINE -U-  
AUTHOR--(03)-LEVKOVA, L.N., ALIMOV, P.I., SHAGIDULLIN, R.R.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK. SSSR, SER. KHIM. 1970, (2), 369-9  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--ORGANIC PHOSPHORUS COMPOUND, KETONE, HETEROCYCLIC BASE  
COMPOUND, TRIETHYLAMINE, ORGAINC OXYGEN COMPOUND, ORGANIC AZOLE COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1997/1183 STEP NO--UR/0062/70/000/002/0396/0399  
CIRC ACCESSION NO--AP0120030  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--A0120030

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO 8.18 G (ETO) SUB2 P(O)N:CCL  
SUB2 IN DIOXANE WAS ADDED WITH ICE COOLIN 2.17 G (CH SUB2 OH) SUB2 AND  
7.07 G ET SUB3 N TO YIELD AFTER 2.5 HR AT ROOM TEMP. 18PERCENT I(R  
EQUALS R PRIME1 EQUALS H), B SUB0.5 121-2DEGREES, N PRIME20 SUB2 1.4520,  
D PRIME20 1.2609. SIMILARLY WERE PREPD. 26.5PERCENT I(R EQUALS H, R  
PRIME1 EQUALS ME), B SUB0.5 108-10DEGREES, 1.4530, 1.2343; 20.5PERCENT I  
(R EQUALS R PRIME1 EQUALS ME), B SUB0.5 140-2DEGREES, 1.4560, 1.1871;  
AND 23PERCENT II, 3 SUB0.5 128-30DEGREES, 1.4565, 1.2031. IR CURVES (2)  
WERE SHOWN AND DISCUSSED. FACILITY: INST. ORG. FIZ. KHIM. IM.  
ARBUZOVA, KAZAN, USSR.

UNCLASSIFIED

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, THIOL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1992/1739 STEP NO--UR/0079/70/040/001/0066/0069  
CIRC ACCESSION NO--AP0112727  
UNCLASSIFIED



2/2 024

UNCLASSIFIED

PROCESSING DATE--30OCT70

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)--(SH)R) 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

USSR

UDC 547.787 + 547.867 + 661.718.1

LEVKOVA, L. N., ALIMOV, P. I., and SHAGIDULLIN, R. R., Institute of Organic and Physical Chemistry imeni A. Ye. Arbutov, Academy of Sciences USSR

"Preparation of N-Phosphorylated 2-Oxo-1,3-oxazolidines and 6-Methyl-2-oxo-1,3-tetrahydrooxazine"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 2, Feb 70, pp 396-399

Abstract: The reaction of N-diethylphosphonoiminocarbonyl chloride with ethylene glycol, 1,2-propylene glycol, 1,3-butylene glycol and 2,3-butylene glycol in the presence of triethylamine in a dioxane medium gives N-phosphorylated 2-oxo-1,3-oxazolidines and 6-methyl-3-diethylphono-2-oxo-1,3-tetrahydrooxazine.

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USSR

UDC 542.91 + 541.2 + 547.242

CHADAYEVA, N. A., MAMAKOV, K. A., SHAGIDULLIN, R. R., and KAMAY, G. Kh.  
(deceased)

"Synthesis and Some Properties of  $\beta$ -Hydroxyethyl Esters of Trivalent Arsenic Thioacids"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 4, Apr 73, pp 824-834

Abstract: New  $\beta$ -hydroxyethyl esters of trivalent arsenic thioacids have been synthesized by the reaction of thiol exchange and exchange of the alkoxy group by the thiol group. The reaction appears to go by the mechanism analogous to transesterification of trivalent phosphorus esters. The products are dense colorless liquids soluble in organic solvents, insoluble in water. They can be distilled in vacuum without decomposition, are stable in air to oxygen but are attacked by strong oxidizers. With acyl halides these compounds form arsenic halides and  $\beta$ -acetoethyl esters of thioacetic acid. Prolonged heating of  $\beta$ -hydroxyethyl esters of alkyl(aryl)thioarsonous and thioarsonic acids yields respective 1,3,2-oxathiaarsolane derivatives. Physical properties and IR spectra of the synthesized materials have been determined.

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USSR

UDC 547.26.119 + 543.422

GAMAYUROVA, V. S., KUZ'MIN, V. K., CHERNOKAL'SKIY, B. D., and SHAGIDULLIN,  
R. R., Kazan' Chemical Technological Institute Imeni S. M. Kirov

"Spirocyclic Esters of Arsonic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, pp 1937-1939

Abstract: New esters of arsonic acids and dihydric aliphatic glycols have been synthesized. The reaction consisted of refluxing a mixture of the appropriate substituted arsonic acid, ethylene glycol and benzene in a system equipped with a Dean-Stark trap. The cyclic structure of these esters has been confirmed by IR spectral data.

1/1

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USSR

UDC 541.67:543.422.4:547.1'118

SHAGIDULLIN, R. R., BEL'SKIY, V. YE., ASHRAFULLINA, L. KH., KUDRYAVTSEVA, L. A.,  
IVANOV, B. YE.

"Study of Dipole-Dipole Interaction of Phosphoryl Compounds with the Environment by the Method of Infrared Spectroscopy"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973,  
pp 2502-2504

Abstract: A study was made of the nature of the variation of the valence phosphoryl oscillation frequency  $\nu_{P=O}$  in different media for phosphoryl compounds differing significantly with respect to dipole moments. The interaction with the environment of organophosphorus ethers, amides, acid chlorides and trialkyl (aryl) phosphine oxides having a phosphoryl group takes place by the same mechanism as the linearity of the variation of the valence oscillation frequency of the P=O bond under the effect of the environment indicates. The interaction of the phosphoryl compounds with the environment is intensified with an increase in their dipole moments which can be caused by an increase in the polarity of the P=O bond. The capacity of the phosphoryl compounds for interaction with the environment depends on the intramolecular effects of the substitutions on the phosphorus determined by the Taft induction constants.

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USSR.

UDC 541.63:547.1'118

SHAGIDULLIN, R. R., SAMITOV, YU. YU., MYKHAMETOV, F. S., and RIZPOLOZHENSKIY, N. I., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR

"Stereochemistry of Organophosphorus Compounds. 1 Communication. Configuration and Conformations of 2-Substituted Oxaphospholans-3"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 72, pp 1604-1612

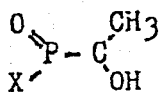
Abstract: In continuation of their studies, the reaction of diacid chlorides of phosphorous, amidophosphorous, and alkyl(aryl)phosphonous acids with diacetone alcohol in presence of triethylamine was investigated. In two cases of the reaction of the diacid chlorides of diethylamidophosphorous and phenylphosphonous acids with diacetone alcohol two pairs of products were isolated with sharp melting points 125-126° and 118-119° for one pair, and 135-136° and 164-165° for the other pair. Analytical data showed these pairs to have identical composition. Analysis of IR and NMR spectra showed them to be configurational isomers of

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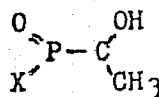
- 38 -

USSR

SHAGIDULLIN, R. R., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 72, pp 1604-1612



and



$\alpha$ -Hydroxyphosphoryl compounds with open chains exist as rotational isomers stabilized by intramolecular H-bond with the oxygen of the phosphoryl group or the heteroatom of the ether group.

2/2

USSR

UDC 541.57:546.11:547.1'113

SHAGIDULLIN, R. R., LIPATOVA, I. P., VACHUGOVA, L. I., CHERKASOV, R. A., and KHAYRUTDINOVA, F. KH., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR, and Kazan State University Imeni V. I. Ul'yanov-Lenin

"Hydrogen Bonding in Dithio Acids of the Pentavalent Phosphorus"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 4, Apr 72, pp 847-851

Abstract: IR spectra of a series of liquid phosphinic, phosphonic and phosphoric dithio acids and their solutions in  $CCl_4$  were studied in temperature range 253-293°K. In pure liquids and in concentrated  $CCl_4$  solutions dimers were found to form via the hydrogen bonding. The SH group acted as the proton donor, the acceptor being the thione sulfur atom in the phosphinic acid, and the oxygen atom of the ether group in phosphonic and phosphoric acids. The hydrogen bonding between the SH group and thiophosphoryl sulfur in the phosphinic acid is stronger than the SH hydrogen bonding with the oxygen of the phosphonic and phosphoric acid derivatives, or of the dioxane. In dilute  $CCl_4$  solutions the noncyclic dithiophosphonic and phosphoric acids exist in form of two rotational isomers; the cyclic and the phosphinic compounds exist in a single form. The stabilization of the isomers is due evidently to intramolecular H-bonding.

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USSR

UDC 541.124.2:546.18:547.1'118

CHERNOVA, A. V., and SHAGIDULLIN, R. R., Institute for Organic and Physical Chemistry imeni A. Ye. Arbuзов, Academy of Sciences USSR

"Conjugation in Systems Containing a Phosphorus Atom"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No3, 1972, pp 722-724

Abstract: The Raman spectra and ultraviolet spectra of compounds with different numbers of phenyl and styryl groups at the phosphorus atom were studied to determine the role of phosphorus in altering the electronic structure. Spectral characteristics for ten phenyl and  $\beta$ -styryl compounds were summarized. From the UV data it was concluded that the preservation of the fine vibrational structure of the B-band and the additive increase in its intensity with increasing numbers of phenyl groups indicates the phosphorus exerts an isolating influence, that is, the phenyl rings do not form a single conjugated system. The Raman spectra also showed that the integrated intensity ( $I_{AR}$ ) of the frequency  $\nu_{AR}$  was a linear function of the number of phenyl groups present.

1/1

## Organometallic Compounds

USSR

UDC 541.6:543.422.4:547.1\*119:547.22

SHAGIDULLIN, R. R., IZOSINOVA, S. V., CHERNOKAL'SKIY, V. D., and VOROB'YEVA, L. A.; Kazan' State University imeni V. I. Ul'yancov-Lenin; Institute for Organic and Physical Chemistry imeni A. Ye. Arbusov, Academy of Sciences USSR; and Kazan' Chemical Technology Institute imeni S. M. Kirov

"The I.R. Study of the Structure of Products Resulting From the Reaction Between Tertiary Arsine Oxides and Alkyl Halides"

Moscow, Izvestiya Akadenii Nauk SSSR, Seriya Khimicheskaya, No 3, 1972, pp 695-697

Abstract: The IR spectra of  $[R_3AsO]_2HX$  do not distinguish between the forms  $R_3 - \underset{\text{OH}}{\underset{|}{As}} - O - \overset{\uparrow}{As} R_3$  (form A) and  $[R_3As \rightarrow O \dots H^+ \dots O \leftarrow AsR_3]$

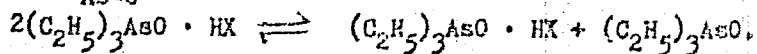
(form B). We attempted to elucidate the correlation between the structure of these compounds and their IR spectra, using the systems  $[ (CH_3)_3AsO ]_2HI$  (compound I);  $[ (C_2H_5)_3AsO ]_2HX$ , for X = I (compound IIa), X = Br (compound IIb), and X = Cl (compound IIc);  $[ (C_3H_7)_3AsO ]_2HI$  (compound III); and

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USSR

SHAGIDULLIN, R. R., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 3, 1972, pp 695-697

$[\text{Ph}_3\text{AsO}]_2\text{HX}$ , for  $X = \text{Br}$  (compound IVa) and  $X = \text{ClO}$  (compound IVb). Wide intense diffuse absorption bands between 550 and 1800  $\text{cm}^{-1}$  are characteristic of these systems. The difference between forms A and B is that in A, proton interaction is possible between the oxygen and the halogen but in B, it is between two oxygen atoms. In spectra made using chloroform and acetophenone the  $\nu_{\text{As=O}}$  ( $850 \text{ cm}^{-1}$ ) was observed, indicating the following dissociation



It was concluded that the wide adsorption in the area 750 - 1800  $\text{cm}^{-1}$  approximately divided into three bands, may be attributed to absorption by the OH group, participating in a strong symmetrical bond.

2/2

UDC 546.26.119

USSR

KAMAY, G. Kh. (deceased), ABALONIN, B. Ye., CHERNOKAL'SKIY, B. D., IZOSIMOVA, S. V., and SHAGIDULLIN, R. R., Kazan' Chemical Technological Institute imeni S. M. Kirov, and Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Acad. Sc. USSR

"Reaction of bis-(Dialkylarsine)-oxides With Alkyl Iodides"

Izvestiya VUZ -- Khimiya i Khimicheskaya Tekhnologiya, Vol 14, No 5, 1971, pp 724-727

Abstract: Bis-diethylarsine)-oxide reacts energetically with benzoic and acetic acyl chlorides yielding in the first case a mixed anhydride of diethylarsinous and benzoic acids, the products of the second reaction being inseparable. Reaction of bis-(diethylarsine)-oxide with alkyl halides is more complex: with ethyl iodide a crystalline product is obtained from which a careful workup yields tetraethylarsonium iodide, ethyl ester of diethylarsinous acid and diethyliodoarsenic. Diethyliodoarsenic in turn can react with ethyl iodide yielding triethylarsine diiodide. Reactions with methyl iodide are so vigorous that a solvent is recommended. Diphenylarsine oxide, however, even after heating for 2 hrs to 100° was recovered unchanged.

1/1

UDC 539.124,547.1'118,541.57,546.11

USSR

SHAGIDULLIN, R. R., CHERNOVA, A. V., MUKHAMEDOV, F. S., RIZFOLOZHENSKIY,  
N. I., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov of  
the USSR Academy of Sciences

"Study of Electron Effects in a Series of 2-substituted oxaphospholanoles-3  
by the H-Bond Method"

Moscow, Izvestiya Akdemii Nauk SSSR- Seriya Khimicheskaya, No 11, 1972,  
pp 2585-2587

Abstract: The studies of the electron structure of phosphorus-containing  
compounds (R. R. Shagidullin, et al., Izv. AN SSSR. Ser. khim. 1123, 1966; Dokl.  
AN SSSR. No 173, 135, 1967; R. R. Shagidullin, et al., Izv. AN SSSR.  
Ser. khim. 183, 1971; R. R. Shagidullin, et al., Izv. AN SSSR. Ser. khim.,  
1168, 1971) are continued by applying the method introduced there to  
2-substituted oxyphospholanoles-3. The proximity of the P atom causes a  
change in the acceptor capacity of the diethylamino group with respect to  
the proton. The variation in the acceptor capacity is connected with  
delocalization of the electron cloud of the substitution on the P atom.  
This phenomenon is explained by partial shifting of the unshared pair of  
electrons of the nitrogen atom to the phosphorus.

1/1

Acc. Nr:

AP0048872

Abstracting Service:  
CHEMICAL ABST.

5-76

Ref. Code

2 R 0 4 6 0

90919v Dependence of the molecular weight of gas-phase polyethylene on particle sizes. Shagilova, A. V.; Shalaeva, L. E. (USSR). *Vysokomol. Soedin., Ser. B* 1970, 12(2), 99 (Russ). Batches of the title polymer, prep'd. by polymn. of C<sub>2</sub>H<sub>4</sub> in the presence of various amts. of Et<sub>3</sub>Al/TiCl<sub>4</sub>, were divided into fractions of different particle size by sifting. The particle size affected the mol. wt. during polymn. with activated Et<sub>3</sub>Al, but not with unactivated Et<sub>3</sub>Al. Migration of the Ti component from the catalyst surface and formation of new active centers during reaction with the Al component (which exceeds by several times the equimolar ratio during activation) apparently explain the results obtained.

DBJR

L-D

REEL/FRA

19800642

USSR

UDC 539.4.1/624.011.1+624.0147

SIL'VESTROV, A. V., and SHAGIMARDANOV, R. M.

"The Influence of Low Temperatures on the Carrying Capacity of Standard Subassemblies of Steel Building Structures"

Irkutsk, Probl. Khladostoykosti Konstrukts. Staley -- Sbornik (Problems of the Cold Resistance of Structural Steels -- Collection of Works), 1971, pp 67-72 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2V1176 by M. Kh. Leybur)

Translation: A study is made of the influence of low temperatures upon the strength and deformation of standard elements of steel structures for a number of objects of power and industrial construction. On the basis of the design criteria of structural incompleteness, the elements were divided into three categories: 1) concentrators in the basic metals, brought about by change in the geometrical shape of the part; 2) concentrators in the form of welded connections (joints) of the elements; 3) concentrators in the form of adjacencies of secondary parts to the main working elements. Used as the material for experimental large-size samples was rolled dead-melt VM St 3 steel; welding was performed by electrodes of the type E42 (OMN-5) in accordance with the material of the examined structures. It is noted that the decisive

1/2

SHAGIMURATOV, G.I.

Microelectronics

MICROELECTRONICS

JPRS 57333  
25 October 1972

Excerpts from Russian-language book edited by P. V. Lukin, Mikroelektronika, No 5, 1972, Sovetskoye Radio Publishing House, Moscow, UDC 621.382:621.396.6-181.5.

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Obituary of Fedor Viktorovich Lukin.....	2
Foreword.....	3
Abstracts.....	5

- A -  
[ X - USSR - F ]



parameters on temperature of the surrounding atmosphere. They give a comparison of the parameters of the photoreceptors during operation in longitudinal and transverse modes.

The article contains 11 figures and 6 bibliographic references.

UDC 621.383.311 + 621.386.6-181.416

Analysis of Several Characteristics of the Operation of a Resonance High-Frequency Hybrid-Film Amplifier Made According to a Circuit with a Common Emitter. Aksenov, A.I., Uysan-Kov, K.I., Korobeynikov, P.V., Shelimurov, G.A., and Xuytulin, Yu.M. in the collection Mikroskopiya, edited by F.V. Lukin, No 5, p 310, Sovetskoye Radio Publishing House, 1972.

The article cites an analysis of the operation of a resonance microminiature high-frequency amplifier, operating in a linear mode. The authors show that with a constant time of the emitter circuit equal to zero, the magnitude of the capacitance of the blocking condenser is found to be the least. They also established that, for contemporary case-tube high-frequency dynamic capacitances on the frequency characteristics of the cascade can be ignored.

The article contains 6 figures, 2 tables, and 6 bibliographic references.

-END-

11.734  
CS01 0702/73-S

3HAGINYAN, S. V.

HYDROMETEOROLOGICAL SERVICE OF ARMENIA ON THE FIFTIETH ANNIVERSARY OF THE

Article by head of the administration of the Hydrometeorological Service of the Armenian SSR S. V. Haginyan, Moscow, Meteorological Institute, No. 12, 1972, submitted 11 August 1972, pp. 106-111.

The history of the development of the hydrometeorological service of the Armenian SSR in 1922, and the varied activity of the hydrometeorologists of the republic is investigated.

The half-century history of Soviet Armenia indicates the passage via a economy of the republic. Its independent development in the fields of engineering and culture -- all are the result of selfless labor and creative activity of the workers, together with all the spheres of the republic. The workers of the Hydrometeorological Service of Armenia are making their contribution to the common goal. The activity of these workers is aimed at the main promotion of the successful development of the national economy.

In pre-revolutionary Armenia there was no hydrometeorological service. The individual meteorological stations and water gauging stations operating at that time in the territory of present Armenia were under different administrations and worked apparently without organizational and methodic unity.

At the beginning of 1919, during the maximum development of the meteorological and hydrologic networks, in Pre-revolutionary Armenia there were 12 meteorological stations, 19 meteorological observatories and 28 hydrologic posts.

The Great October Socialist Revolution established the foundation for the comprehensive utilization of the natural wealth of the country for the national contribution. In solving the problems of economic reconstruction of the entire country, including our republic, a significant role was assigned to studying the climatic and water resources.

One of the first concerns of the Soviet government with respect to organizing the meteorological observation system was combination of the meteorological services of different departments existing at that time. For this

JMS 58133  
2 Feb 73

USSR

UDC 616.89-008.46-053.2-085.356:577.164.1

DERGACHEV, V. V., PIVOVAROVA, G. N., KHAMAGANOVA, T. G., SHAGINYAN, Ye. V.,  
KRASNUSHKINA, N. A., KULIKOVA, N. V., and MOKROVSKIY, V. B., Medico-Biological  
Faculty, Second Moscow Medical Institute imeni N. I. Pirogov and Department of  
Higher Nervous Activity Institute of Hygiene of Children and Adolescents,  
Ministry of Health USSR

"Orotic and Folic Acids and Vitamin B<sub>12</sub> in the Treatment of Children with Memory  
Disorders"

Moscow, Sovetskaya Meditsina, Vol 33, No 7, Jul 70, pp 78-82

Abstract: Since the genetic apparatus contained in all cells preserves not only  
phylogenetic but also ontogenetic information, and since nucleoproteins and nucleic  
acids are essential constituents of the memory mechanism, a study was undertaken  
in which the cofactors and precursors of proteins and nucleic acids -- orotic acid,  
folic acid, and vitamin B<sub>12</sub> -- were administered to a group of children with disturbed  
memory. The results indicated, that even though short-term memory, attention, and  
certain other mental functions were not affected, long-term memory improved signif-  
icantly. Positive results can be obtained only if treatment is begun early, before  
marked organic changes develop in the central nervous system.

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- END -

5915

CSO: 1840

1/2 014 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--MECHANISM OF PRIMARY PROCESSES DURING THE PHOTOLYSIS OF  
TRIS,ETHYLENEDIAMINE,COBALT ,III, CHLORIDE -U-  
AUTHOR-(03)-POZNYAK, A.L., BUDKEVICH, B.A., SHAGISULTANDVA, G.A.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. VYS. ENERG. 1970, 4(3), 286-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY  
TOPIC TAGS--COBALT COMPLEX, ETHYLENEDIAMINE, PHOTOLYSIS, DEUTERIUM  
COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3008/0864 STEP NO--UR/0456/70/004/003/0286/0287  
CIRC ACCESSION NO--AP0137892  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137892

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHOTOLYSIS OF (COEN SUB3)CL  
SUB3 AND ITS DEUTERATED ANALOGS AT 77DEGREEK IN A H SUB2 SO SUB4, H  
SUB3 PO SUB4, OR D SUB3 PO SUB4 MATRIX LEADS TO THE FORMATION OF CH  
SUB2 NH SUB3 PRIME POSITIVE BIRADICAL IONS, H OR D ATOMS, HYDRATED CO  
PRIME2 POSITIVE, AND HYDRATED ELECTRONS. ABS. CONCNS. OF PRODUCTS ARE  
GIVEN AS A FUNCTION OF IRRADN. TIME. FACILITY: BELORUSS. GDS.  
UNIV. IM. LENINA, MINSK, USSR.

UNCLASSIFIED

1/2 CC9

UNCLASSIFIED

PROCESSING DATE--20NOV70

TITLE--COMPLEXES OF GERMANIUM, IV, WITH MANDELIC ACID --U-

AUTHOR--(04)-SFAGISULTANOVA, G.A., KURNEVICH, G.I., VISHNEVSKIY, V.B.,  
BOGDANOVA, I.V.

COUNTRY OF INFO--USSR

S

SOURCE--ZH. NEORG. KHIM. 1970, 15(3), 648-51

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--GERMANIUM COMPOUND, COMPLEX COMPOUND, CESIUM COMPOUND, COBALT  
COMPLEX, PLATINUM COMPLEX, GLYCOLLIC ACID

CONTRL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1705

STEP NO--UR/0078/70/015/003/0648/0651

CIRC ACCESSION NO--AP0125326

UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0125326

ABSTRACT/EXTRACT--(U) GP-U- ABSTRACT. M(GE(BZCO SUB2)SUB2.PHCH(OH)CO  
SUB2.H SUB2 O), WHERE M EQUALS K PRIME POSITIVE, NH SUB4 PRIME POSITIVE,  
CS PRIME POSITIVE, (CG(EN)SUB2CL SUB2)PRIME POSITIVE, (PT(NH  
SUB3)SUB4)PRIME2 POSITIVE, OR (CO (NH SUB3)SUB6)PRIME3 POSITIVE SEPD. AS  
SOLIDS DURING REACTION OF GE(IV) WITH MANDELIC ISOMOLAR SERIES SHOWED  
FORMATION OF COMPLEXES OF DIFFERENT COMPN. STRUCTURES ARE PROPOSED FOR  
THE COMPLEXES OF GE(IV) WITH I.

UNCLASSIFIED

1/2 014

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--SENSITIZED PHOTOOXIDATION OF AMINO ACIDS IN FROZEN SOLUTIONS -U-

AUTHOR--(03)-POZNYAK, A.L., SHAGISULTANOVA, G.A., ARZHANKOV, S.I.

5

COUNTRY OF INFO--USSR

SOURCE--BIOFIZIKA 1970, 15(1), 20-1

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--AMINO ACID, AQUEOUS SOLUTION, UV IRRADIATION, FREE RADICAL,  
ELECTRON SPIN RESONANCE, PHOTOOXIDATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1996/0633

STEP NO--UR/0217/70/015/001/0020/0021

CIRC ACCESSION NO--AP0117859

UNCLASSIFIED



2/2 014

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0117859

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. .CH SUB2 NH SUB3 PRIME POSITIVE  
 (I), .CH(NH SUB3 PRIME POSITIVE)ME, .CH(NH SUB3 PRIME POSITIVE)CHME  
 SUB2, AND .CH(NH SUB3 PRIME POSITIVE)CH SUB2 OH RADICAL IONS WERE  
 OBTAINED BY IRRADIATING AT 77DEGREESK, WITH UV LIGHT, FROZEN Aq. SOLNS.  
 OF GLYCINE, DL,ALPHA,ALANINE, DL VALINE, AND DL SERINE, RESP., IN THE  
 PRESENCE OF NH SUB4 FE(SO SUB4) SUB2 OR CSCO(SO SUB4) SUB2. THE  
 PRODUCTS WERE IDENTIFIED BY ESK SPECTRA. THE RATE OF ACCUMULATION OF I  
 INCREASED WITH INCREASING PH OF THE SOLNS. UP TO PH 8 AND THEN  
 DECREASED. THIS SHOWS THAT THE RADICAL IONS WERE FORMED MAINLY FROM  
 THE ZWITTERIONS OF THE AMINO ACIDS.  
 BVELORUSS, STATE UNIV., MINSK, USSR. FACILITY: V. I. LENIN

UNCLASSIFIED

USSR

UDC 612.6.054.017.4

CHERNYAKHOVSKAYA, I. Yu., ~~SHAGIYAN, F. Sh.~~, and SVET-MOLDAVSKIY, G. Ya.,  
Virology Laboratory, Institute of Experimental and Clinical Oncology, USSR  
Academy of Medical Sciences

"Correlation Between the Degree of *Trichinella spiralis* Invasion of Mice and  
Suppression of Transplantation Immunity"

Moscow, Doklady Akademii Nauk SSSR, Vol 196, No 6, 1971, pp 1,490-1,492

Abstract: This investigation was performed in support of our previously expressed view that certain parasitic helminths produce substances which suppress the host's immunological reactions and thus facilitate their own survival. Skin grafts were transplanted from healthy mice onto mice invaded with *Trichinella spiralis* (experimental group) and onto healthy mice (control group). The survival time of the grafts was determined; after completion of observation, the recipients were sacrificed and the concentration of trichina per 1 gram body weight was determined. In the control group, necrosis of the grafts began on about the 10th day, full necrosis was reached on the 13th day, and healing occurred on the 19th day on the average. In the experimental

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USSR

CHERNYAKHOVSKAYA, I. Yu., et al., Doklady Akademii Nauk SSSR, Vol 196, No 6, 1971, pp 1,490-1,492

group, the corresponding periods were 15, 18 and 24 days. The large individual variations in the experimental group showed a good correlation with trichina concentration: the greater the latter the more delayed were the reaction periods. Thus, the results indicate that the presence of *Trichinella spiralis* suppresses the rejection of skin grafts in direct proportion to the degree of invasion but does not completely inhibit immunoreactivity of the host. The mechanism of the suppression is not yet clear. It may well be that the immunological effectiveness of lymphocytes is diminished by certain substances produced by *Trichinella spiralis*.

2/2

Organ and Tissue Transplantation

USSR

UDC 612.6.054.017.4

SVET-MOLDAVSKIY, G. Ya., SHAGIYAN, G. Sh., MKHEIDZE, D. M., LITOVCHENKO, T. A., OZERETSKOVSKAYA, N. N., KADAGIDZE, Z. G., and CHERNYAKHOVSKAYA, I. Yu., Institute of Experimental and Clinical Oncology, Academy of Medical Sciences USSR, Moscow (Presented by Academician V. V. Parin)

"Inhibition of Transplantation Immunity in Mice Infected With *Trichinella spiralis*"

Moscow, Doklady Akademii Nauk SSSR, Vol 190, No 4, Feb 70, pp 999-1000

Abstract: In this study the authors attempted to get experimental support for the theory proposed by Svet-Moldavskiy that helminths produce substances which drastically inhibit the immunity of the host. Experiments were based on skin transplants. It was determined that in mice infected with *Trichinella spiralis*, the allogenic skin transplant survived much longer, and the detachment of necrotic sections occurred much later than in controls.

1/1

1/2 037 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--CALCULATION OF POLYBUTADIENE AVERAGE EXTENT OF CYCLIZATION  
ACCORDING TO OZONE ABSORPTION CURVES -U-  
AUTHOR--(02)-SHAGOV, V.S., YAKUBCHIK, A.I. S  
COUNTRY OF INFO--USSR  
SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(4), 261-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--POLYBUTADIENE, CYCLIZATION, MOLECULAR STRUCTURE, OZONE,  
MOLECULAR WEIGHT, SORPTION, CHEMICAL BONDING, NUCLEAR MAGNETIC  
RESONANCE, IR SPECTRUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3006/1253 STEP NO--UR/0460/70/012/004/0261/0264  
CIRC ACCESSION NO--AP0134927  
UNCLASSIFIED

2/2 037

CIRC ACCESSION NO--AP0134927  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT. A METHOD WAS DEVELOPED FOR DETG. THE AV. DEGREE OF CYCLIZATION OF HIGH MOL. WT. CIS,1,4,POLYBUTADIENE (97PERCENT UNSATN.) AND LOW MOL. WT. CIS,1,4,POLYBUTADIENE (II) (95PERCENT UNSATN.) FROM D SUB3 ABSORPTION RATE CURVES (Y., ET AL., 1955). THE NO. OF DOUBLE BONDS CAN BE CALCD. FROM THE RATIO OF LINEAR DOUBLE BONDS TO CYCLIZED DOUBLE BONDS PROVIDED THE TOTAL UNSATN. IS KNOWN. THE METHOD DEVELOPED WAS SUPERIOR TO IR AND (OR) NMR SPECTROSCOPIC DETNS. FACILITY: LENINGRAD. GOS. UNIV. IM. ZHDANOVA, LENINGRAD, USSR.

UNCLASSIFIED

The article analyzes the coefficients of voltage trans-  
mission, the coefficient of suppression of the level (voltage-  
noise component), the working mode, and the initial voltage of  
dribble of differential amplifying cascades, done completely  
on MDP transistors.

The expressions obtained may be used for computation and  
planning of such cascades both in the discrete and in the inter-  
grated variations.

The article contains 1 figure and 2 bibliographic refer-  
ences.

UDC 621.382.31

Equivalent Circuits of an Integrated Transistor for Practical  
Computations of the Frequency Characteristics of Semiconductor  
Integrated Circuits. Golubev, A. P. and Kelyshyev, I. V. In the  
Collection Mikroelektronika, edited by F. V. Lukin, No 5, p 201.  
Soyetskoye Radio Publishing House, 1972.

On the basis of the previously suggested undetermined  
matrix of the conductivities of an integrated transistor the  
authors show the limited applicability of the ordinary rec-  
tangular equivalent circuit. A method is given for determin-  
ing the components of a complex rectangular equivalent cir-  
cuit of an integrated transistor through the coefficients of  
its matrix of conductivities. The experimental and computed  
frequency characteristics are cited for amplifiers in which  
the transistors are connected according to the following  
circuits: common collector - common base and common emitter -  
common base.

The article contains 3 figures, 2 tables, and 4 bib-  
liographic references.

UDC 621.382.8

Difference Control Element for Sequential Integrated TTL  
Structures. Aleksenko, A. G., Abramov, V. K., Potinov, S. Y.,  
and Shagurin, I. I. In the Collection Mikroelektronika,  
edited by F. V. Lukin, No 5, p 211. Soyetskoye Radio Publish-  
ing House, 1972.

The article cites the structural circuits of typical  
sequential circuits (triggers, counters, registers), the  
control of which is accomplished on the basis of a differ-  
ence element shaping the impulse by switching of the cyclic  
signal and satisfaction of certain logic conditions on func-  
tional inputs. A variation is suggested for a difference  
control element, made on the basis of a transistor-transistor

SHAGURIN, I. I.

Microelectronics

MICROELECTRONICS

JPRS 17313  
25 October 1972

Abstracts from Russian-language book edited by F. V. Lukin:  
Mikroelektronika, No 5, 1972. Soyetskoye Radio Publishing House,  
Moscow. UDC 621.382:621.396.6-181.5.

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Annotation.....	1
Obituary of Fedor Viktorovich Lukin.....	2
Foreword.....	3
Abstracts.....	5

USSR

UDC: 67.621.374.-181.5

SHAGURIN, I. I. and SERUKOV, V. N.

"Improving the Noise Immunity of Integrated-Circuit Transistor Logic Elements With Emitter Coupling"

Kiev, Izvestiya VUZ--Radioelektronika, Vol. 13, No. 12, 1970, pp 1480-1485

Abstract: The method of improving the noise immunity of transistorized integrated circuits with emitter coupling advocated by the authors is to create a hysteresis condition in the transfer characteristic of the logic element. With constant values of the "0" and "1" logic level voltages, the threshold switching voltage for the "0" increases and the threshold switching voltage for the "1" decreases so that the first exceeds the second. The width of the hysteresis loop is then equal to the difference between the two threshold voltages. To obtain the hysteresis loop, the input voltage must be equal to the "0" logic level voltage with a low potential at all inputs. Expressions are found for the width of the hysteresis loop and for the statistical noise immunity of an

1/2



USSR

SHAGURIN, I. I. and STRUKOV, V. N., Izvestiya VUZ--Radioelektronika, Vol 13, No 12, 1970, pp 1480-1485

element, with the values worked out for typical parameters. The authors conclude that as a result of this hysteresis procedure, the statistical noise immunity of the logic element can be multiplied by a factor of two to three.

2/2

- 64 -

Reliability theory

USSR

UDC: 621.396.6.019.3

SHAGURIN, L. V.

"On the Problem of Ensuring Reliability of Electronic Radio Equipment in the Production Stage"

V sb. Nadezhnost' i kontrol' kachestva (Prilozh. k zh. "Standarty i kachestvo") [Reliability and Quality Control--collection of works (Supplement to the Magazine Standards and Quality)], No 1, Moscow, 1971, pp 33-41 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V221)

Translation: The author formulates the problem of determining the reliability characteristics of a device in terms of those characteristics of the production process which are subject to inspection in order to use this as a basis for meeting conditions of fail-free work on every individual specimen at the time of manufacture. The production process is simulated by a branching structure whose junctions designate operations which characterize the production process on the level of the entire device (junction of rank zero) and on the level of elements, subassemblies, materials, etc. This method can be used to set up quantitative criteria for the quality of operation of the production process and to improve quality control systems. Two tables, bibliography of four titles. R. S.

1/1

USSR

UDC: 681.32.001

5

BURTOV, A. I., PETROV, V. A., SAVUTKIN, V. V., SHAGULIN, V. I., VOLKOV, A. F.,  
SOROKIN, G. K., TRAPEZNIKOV, V. A., CHEGLAKOV, Ye. A., CHEKMAREV, Yu. D.

"A Device for Determining the Region of Operability of a Digital Computer  
With Respect to Supply Voltages"

USSR Author's Certificate No 291206, filed 7 Aug 68, published 29 Mar 71,  
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct  
71, Abstract No 10B146 P)

Translation: There is a well-known device which determines the region of operability of a digital computer with respect to supply voltages. This device contains a control unit, voltage commutation module, an element for controlling the sign of the independent voltage increment, and a device for visual display. However, such devices are incapable of monitoring the changes in digital computer elements which occur as a result of various ambient factors while the computer is in operation. To speed up determination of the limits of the region of operability and improve the reliability of measurements, the signal input of the element for controlling the sign of the independent voltage increment in the device introduced by this Author's Certificate is connected to the output of the voltage commutation module, while the controlling input and the

1/2

USSR

BURIOV, A. I. et al., Soviet Patent No 291206

output of the sign controller are connected to the control unit, the auxiliary output of the control unit being connected to the device for visual display, which is connected in turn to the voltage commutation module. This enables observation of the change in the region of operability of the digital computer with respect to supply voltages during operation, as well as evaluation of various computer characteristics (e.g., the availability factor, operability margin with respect to drift of element parameters, operating stability with respect to random perturbations of the power supply and the ambient medium). One illustration.

2/2

- 72 -

USSR

UDC 681.325.66(088.8)(47):621.3.072.8

LOBACHEV, V. M., MASLOV, B. V., MOTENKO, N. I., and SHAGULIN, V. I.

"A Shaper for Control of Pulse-Potential Cascades"

USSR Author's Certificate No 285970, Filed 7 Apr 69, Published 12 Jan 71  
(from Referativnyy Zhurnal -- Avtomatika, Telemekhanika, i Vychislitel'naya  
Tekhnika, No 8, 1971, Abstract No 8B182 P)

Translation: A shaper which controls pulse-potential cascades is being patented. It contains an emitter-repeater, the transistor of which is shunted by a diode. In order to decrease power consumption and to accelerate the process of discharging the capacitors of the control circuits, the diode indicated above is switched on in a direction opposite the shunted transition of the base-emitter of the transistor of the repeater. The latter, made from electrodes galvanically decoupled from the common line of the power supply, is charged simultaneously at all control resistors of the indicated pulse-potential cascades, each of which is connected with the corresponding output terminals via its own capacitor and an additional diode.

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USSR

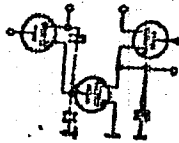
UDC: 581.325.65

KARMAZINSKIY, A. N., NOZDRIN, G. V., SHAGURIN, V. I., Moscow Engineering  
Physics Institute

"A Dynamic Element Based on MDS Transistors"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,  
No 6, Feb 71, Author's Certificate No 294253, Division H, filed 12 Feb 70,  
published 26 Jan 71, p 176

Translation: This Author's Certificate introduces a dynamic element based  
on MDS transistors. The element contains a storage capacitor and circuits  
for charging and discharging it, and also an auxiliary transistor. As a  
distinguishing feature of the patent, speed is increased and the area of the  
semiconductor plate which is used is reduced by basing the discharge circuit  
of the storage capacitor on one transistor with the sink of the auxiliary  
transistor connected to its gate.



1/1

D. Programming and Theory of Mathematical Machines

USSR

SHAIPOV, N. YU. and CHUDIN, A. A.

"Arithmetic in Redundant Codes for an Associative Processor"

Vopr. Kibernet. Odnorod. Mikroelektron. Struktury [Problems of Cybernetics, Homogeneous Microelectronic Structures -- Collection of Works], Moscow, 1973, pp 37-48 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V581)

Translation: It is noted that the time of processing of operands in an associative processor depends essentially on their length. The use of redundant character codes allows operations such as addition to be performed with operands of various length in a fixed number of cycles. However, this redundant coding of numbers causes an increase in the number of associative memory elements by approximately 1.5-2.2 times in comparison to ordinary binary coding of numbers.

O. Belkin

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USSR

UDC: 621.315.616.97

MISURKIN, O. G., VITOL, M. P., SHAPOVA, I. R., MATVEYEVA, I. A.

"A Compound for Potting Semiconductor Devices"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki, No 19, 1970, Author's Certificate No 272437, filed 14 Jan 69, p 60

Abstract: This author's certificate introduces a compound for potting semiconductor devices based on epoxy resin. As a distinguishing feature of the patent, the moisture-resistant properties of the coating are improved by using boric anhydride as the hardener with the following proportion of components (in parts by weight): epoxy resin--100; boric anhydride--5-10; a filler such as titanium dioxide, red lead or zirconium oxide--15-50; silicon powder--1-5; plasticizers and modifiers such as epoxy resin, polyesters and acrylates--1-20; carbon black--1-3.

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1/2 021 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--LIPOLYTIC ENZYMES IN BLOOD LEUKOCYTES OF PATIENTS SUFFERING FROM  
HYPERTENSIVE DISEASE -U-  
AUTHOR--SHAKALIS, D.A. S  
COUNTRY OF INFO--USSR  
SOURCE--SOV MED 33(1): 66-68. 1970  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--BLOOD CHEMISTRY, LEUKOCYTE, ENZYME ACTIVITY, HYPERTENSION,  
ATHEROSCLEROSIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1998/0175 STEP NO--UR/0399/70/033/001/0066/0068  
CIRC ACCESSION NO--AP0120875  
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--A0120875

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD FOR DETECTING THE INTRACELLULAR LIPASE IN THE BLOOD LEUKOCYTES IS PROPOSED. A TOTAL OF 209 PERSONS WERE EXAMINED. IN HEALTHY INDIVIDUALS (102 PERSONS) THE PROPORTION OF CELLS CONTAINING THE ENZYME AMOUNTED TO 6-7PERCENT AND THE LIPASE ACTIVITY IN EACH CELL COMPRISED 22 UNITS OF OPTICAL DENSITY. IN 70 PATIENTS WITH HYPERTENSIVE DISEASE OF THE I AND II STAGES THE NUMBER OF CELLS WITH THE ENZYME AND ACTIVITY OF THE LATTER WERE ELEVATED (12PERCENT AND 27-28 UNITS OF OPTICAL DENSITY, RESPECTIVELY); IN 37 PATIENTS IN THE III STAGE AND WITH ATHEROSCLEROTIC CARDIOSCLEROSIS THEY INCREASED ONLY SLIGHTLY. FACILITY: NOVOSIBIRSK MED. INST., NOVOSIBIRSK, USSR.

UNCLASSIFIED

SHAKALO, V. M.

USE OF AN ELECTROLYTIC MICRO-CURRENT METER FOR MEASURING THE VELOCITY OF MOVEMENT IN SEA WATER

Article by R. M. Yevlidin and V. M. Shakalo, Kiev; Blonka, Russian, No 5, 1971, Izd-vo Naukova Dumka, pp 128-131j

SPRS 55982  
15 May 72

Recently much attention is being devoted to investigations of the locomotor functions of hydrobiontic objects. In particular, the velocity of movement of hydrobiontic objects is being measured. In addition to the usual requirements of objects in terms of accuracy, etc., the velocity gages must meet a number of specific requirements dictated by the peculiarities of the investigated object and the medium in which it moves.

In the investigation of relatively small and weak hydrobiontic objects with a great maneuverability it is very important that the gage be small in size, weight and inertia and also that it have a quite large dynamic range of measured parameters. All these qualities are exhibited to a considerable degree by the micro-current meters which have long been used in measuring the discharge and local velocities of fluid flows.

Among the different methods for obtaining signals carrying information on the velocity of rotation of the current meter the best in one in which modulation of the electric current or voltage is accomplished by a change in conductivity between the electrodes during rotation of the vane placed in the fluid flow being measured. The advantage of such a method is simplicity, absence of mechanical and electrodynamic slowing of the vane by an electrolytic contact and the possibility of making a gage with minimum dimensions. A well-known model of this type in the Kherkhouldze micro-current meter (Ballist Scientific Research Institute of Construction and Water Power Engineering (Imeni Vnter) /3/. Current meters of this type are widely used under laboratory and field conditions in investigating water flows, in this case fresh water. However, the use of micro-current meters with an electrolytic contact in strong

USSR

UDC 539.67

ROZOVSKIY, M. I., POTURAYEV, V. N., KRUSH, I. I., and SHAKALOVA, O. I.

"On the Influence of Relaxation Characteristics on Deformation Properties of Metals"

Sb. "Vnutrenneye treniye v metallicheskih materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka," 1970, pp 120-123

Abstract: The use of weakly singular integral operators for the description of mechanical relaxation of metals at high temperature is considered. The physical meaning of operator parameters taking into account behavioral features of polycrystal materials is elucidated. An integro-operating equation for average stresses in a sample with inhomogeneous structure is obtained. 1 table, 7 references.

1/1

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USSR

UDC 678:539.376

GLUSHKO, V. T., ROZOV'S'KIY, M. I., and SHAKALOVA, O. I., Institute of Geotechnical Mechanics, Academy of Sciences Ukrainian SSR, Dnepropetrovsk Mining Institute

"Study of Plasticity Zone With Strengthening Around a Hole Under Creep"

Kiev, Dopovidi Akademiya Nauk Ukrayins'koyi RSR, Seriya A -- Fizyko-Tekhnichni ta Matematychni Nauky, No 11, Nov 70, pp 1001-1004

Abstract: The article considers an unbounded plane which exists under plane strain, weakened by a round hole, along whose contour a normal force  $p$  is applied, and at infinity the stresses  $\sigma_r^{(\infty)} = \sigma_{\theta}^{(\infty)} = q$  are given. Under the action of a system of external forces a plastic zone arises around the hole, completely encompassing the hole. This zone varies with time as a result of the rheological properties of the material. The problem is to find the radius of the plasticity zone. The relationship between

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USSR

GLUSHKO, V. T., et al., Dopovidi Akademiyi Nauk Ukrayins'koyi RSR, Seriya A -- Fizyko-Tekhnichni ta Matematychni Nauky, No 11, Nov 70, pp 1001-1004

stress and strain in the plastic zone is described by integro-operator equations, the corresponding representation of A. YU. ISHLINSKIY and A. A. IL'YUSHIN for plane elasticoplastic strain with linear strengthening. A nonlinear integral equation in operator form is obtained to determine the law of the time variation of the radius of the plasticity zone with strengthening. The solution of this equation is found by the method of successive approximations. Inequalities limiting the exact solution are established.

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1/2 011 UNCLASSIFIED  
TITLE--RESIDUAL ANTIBIOTICS IN FOODS -U- PROCESSING DATE--13NOV70  
AUTHOR--SHAKARYAN, G.A. S  
COUNTRY OF INFO--USSR  
SOURCE--VETERINARIYA MOSCOW 1970, 46(1), 104-5  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--FOOD CONTAMINATION, ANTIBIOTIC, FOOD ANALYSIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/0376 STEP NO--UR/0346/70/046/001/0104/0105  
CIRC ACCESSION NO--AP0127957  
UNCLASSIFIED

272 011 UNCLASSIFIED PROCESSING DATE--13NOV70  
CIRC ACCESSION NO--AP0127957

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONVENTIONAL HOMOGENIZATION METHOD USED FOR DETN. OF BOUND AND UNBOUND ANTIBIOTICS IN FOODS WAS IMPROVED BY APPLICATION OF HEAT. HOMOGENATE OF THE TISSUES WAS, BEFORE CENTRIFUGING, HEATED 4-5 MIN AT 100DEGREES; OTHER PROCEDURES WERE AS USUAL. ANTIBIOTICS WERE FOUND WITH THE IMPROVED METHOD 1.5-9.7 TIMES MORE FREQUENTLY IN MEAT PRODUCTS THAN WITH THE CONVENTIONAL METHOD. THE METHOD PERMITTED THE DETECTION OF ANTIBIOTICS IN ORGANS IN WHICH THEY WERE NOT FOUND BY PREVIOUS METHODS. BOUND ANTIBIOTICS WERE NOT FULLY DETECTED WITH THE METHOD, BUT THE DIFFERENCES WERE NOT GREAT. RESULTS OF ANAL. OF VARIOUS RESIDUAL ANTIBIOTICS IN THE ORGANS AND MEAT OF CHICKENS AND SHEEP AND IN HONEY WERE PRESENTED. FACILITY: EREVAN. ZOUTEKH. VET. INST., EREVAN, USSR.

UNCLASSIFIED



Acc. Nr: AP0101143

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Ref. Code: URD 297

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 3, pp 279-281

ANTIBIOTICS IN BEES, THEIR LARVAE AND HONEY

Shakaryan, G. A.; Daniyelyan, S. G.; Akopyan, Z. M.

Microbiology Chair of Erevan Zooveterinary Institute, Experiment Station for  
Epiculture

Data on the levels and retention time of neomycin and pasomycin in bees and their larvae, as well as streptomycin, pasomycin, neomycin and monomycin in bee honey are presented. It was found that pasomycin and neomycin in bees and their larvae are retained for more than 48-72 and 12-24 hours respectively. Streptomycin, pasomycin and neomycin are retained in bee honey for more than 210 days and monomycin is retained for more than 60 days. Therefore, in the treatment of bee pest pasomycin should be used at an interval of 2 to 3 days and neomycin should be used every day. It is recommended to treat the bee pest in early spring before the beginning of honey plant. Wide use of antibiotics in bee-keeping and their consequent penetration to honey and prolong retention there may have an undesirable effect on human beings in case of its systematic use.

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REEL/FRAME  
19850769

Feb

6

USSR

UDC 615.779.9

SHAKARYAN, G. A., NAVASARDYAN, A. A., SEDRAKYAN, R. O., and AMBARTSUMYAN, L. A., Yerevan Zooveterinary Institute

"The Effect of Monomycin and Paratyphoid Serum on the Preventive Properties of Blood Serum"

Yerevan, Biologicheskij Zhurnal Armenii, Vol 24, No 11, 1971, pp 109-110

Abstract: Mice were administered blood serum from rabbits infected with *Salm. ent. Gartneri v. dublin* and 1) treated with monomycin, 2) treated with monomycin and paratyphoid serum, 3) treated with paratyphoid serum, and 4) not treated; within 24 hours the mice were infected with  $LD_{50}$  of *Salmonella. dublin*. The survival rates were 80% in the first group, 70% in the second group, and 65% in the third and fourth groups. In the control group, 40% of the mice survived. The nonsurvivors in the fourth and control groups died sooner than the nonsurvivors in the other groups. It is concluded that monomycin and paratyphoid serum do not inhibit increase in the preventive properties of rabbit serum and that monomycin augments these properties.

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1/3 028

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--USE OF FUTUROLOGICAL AND SOCIOLOGICAL METHODS IN WORKING OUT LONG TERM FORECASTS OF SCIENTIFIC RESEARCH IN EPIDEMIOLOGY -U-  
AUTHOR--(03)-SUMAROKOV, A.A., SHAKHANINA, I.L., TKACHEVA, M.N.

COUNTRY OF INFO--USSR

S

SOURCE--MOSCOW, SOVETSKOYE ZDRAVOOKHRANENIYE, RUSSIAN, NO 6, 1970,  
SUBMITTED 13 JANUARY 1970, SIGNED TO PRESS 3 MAY 1970, PP 7-13  
DATE PUBLISHED--13JAN70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--EPIDEMIOLOGY, PUBLIC HEALTH, BASIC SCIENCE PLANNING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3005/1923

STEP NO--UR/0753/70/000/006/0007/0013

CIRC ACCESSION NO--AP0133774

UNCLASSIFIED

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CIRC ACCESSION NO--AP0133774  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT. AT THE PRESENT TIME, WHEN THE ROLE OF SCIENCE AS A PRODUCTIVE FORCE IS GENERALLY RECOGNIZED, SUBSTANTIATED PLANNING OF RESEARCH SERVES AS ONE OF THE MOST IMPORTANT ELEMENTS IN THE UNIFIED STATE POLICY THAT ENSURES NOT ONLY SCIENTIFIC PROGRESS, BUT SOCIAL PROGRESS AS WELL. THE PROPERLY COMPILED PROSPECTIVE PLAN, ONE THAT TAKES SPECIFIC CONDITIONS INTO ACCOUNT, IS A POWERFUL LEVER AFFECTING THE DEVELOPMENT OF ANY BRANCH OF SCIENCE AND DETERMINING ITS TENDENCIES AND RATE OF DEVELOPMENT. IT IS THE PLAN THAT IS EXPECTED TO ENSURE CONCENTRATION OF SCIENTIFIC MANPOWER AND RESOURCES ON THE DECISIVE LINES OF RESEARCH AND, EQUALLY IMPORTANT, TO IMPROVE THE FORMS OF RESEARCH ORGANIZATION SO AS TO GUARANTEE A MAXIMUM RESULT FROM THE SMALLEST POSSIBLE EXPENDITURES IN THE SHORTEST TIME. SHORT TERM PLANNING OF SCIENTIFIC RESEARCH (QUARTERLY AND ANNUAL), WHICH HAS BEEN PRACTICED IN THE SOVIET UNION FOR ALMOST TWO DECADES, DOES NOT MEET TODAY'S REQUIREMENTS. THE RAPID DEVELOPMENT OF PRESENT DAY SCIENCE AND THE VOLUMINOUS DATA, IN A NUMBER OF CASES PASSING THE LEVEL OF RESEARCH THAT HAS BEEN PLANNED, IMPOSE IN THEIR TURN AN IMPERATIVE NEED TO USE INCREASINGLY REFINED METHODOLOGICAL APPROACHES IN LONG TERM PROSPECTIVE PLANNING. IT IS THEREFORE NO ACCIDENT THAT THE DECREE OF THE CC CPSU AND THE COUNCIL OF MINISTERS USSR ENTITLED "MEASURES TO IMPROVE THE EFFICIENCY OF THE WORK OF SCIENTIFIC ORGANIZATIONS AND TO ACCELERATE USE OF THE ACHIEVEMENTS OF SCIENCE AND ENGINEERING IN THE NATIONAL ECONOMY" GIVES AN IMPORTANT PLACE TO THE PROBLEMS OF IMPROVING PLANNING.

UNCLASSIFIED

Epidemiology

USSR

UDC 576.851.71+576.858.73].097.2.077.34

GOL'DIN, R. B., PRUSAKOVA, Z. M., and SHAKHANTINA, K. L., Military Medical Academy imeni S. M. Kirov, Leningrad, and Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR, Moscow

"Detection of Rickettsial and Ornithosis Antigens in Indirect Hemagglutination Test by Means of Erythrocytes Chemically Combined With Polycondensed Immune Globulins. Report I: Use of Sensitized Erythrocytes Prepared With Boron-fluoride Bis-Diphenyldiazonium for Rapid Detection of Agents of Tickborne Rickettsioses

Moscow, Voprosy Virusologii, No 3, May/Jun 70, pp 366-371

Abstract: A new modification of the indirect hemagglutination reaction for rapid detection of rickettsial and ornithosis antigens has been developed. The results of tests and comparative evaluation of red blood cell (RBC) preparations were presented. RBC preparations were made by conjugation of erythrocytes with polycondensed globulins of rabbit sera immune to Dermacentor sibiricus, D. rickettsi and other agents of tickborne rickettsiosis. 4,4-bis-diphenyldiazonium boronfluoride, a pure, highly stable bifunctional compound providing standard conditions for making RBC preparations was used for polycondensation of immune globulins and chemical conjugation with formalized

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USSR

GOL'DIN, R. B., et al, Voprosy Virusologii, No 3, May/June 70, pp 366-371

RBC. All batches of RBC preparations made according to this method were strictly group-specific. No nonspecific reactions were observed with extracts from organs of noninfected animals. The sensitivity of the indirect hemagglutination reaction was 300-500 times higher than that of the complement fixation reaction and 20-30- and 10-50 times higher than that of the indirect hemagglutination inhibition reaction (with RBC sensitized with rickettsial antigen), and fluorescent antibody technique, respectively.

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1/2 022  
TITLE--IMMUNOSORBENTS -U- UNCLASSIFIED PROCESSING DATE--27NOV70  
AUTHOR--(02)-SHAKHANINA, K.L., MANKO, N.I.  
COUNTRY OF INFO--USSR  
SOURCE--U.S.S.R. 235,918  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,  
DATE PUBLISHED--10FEB70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--POLYCONDENSATION, DIAZONIUM SALT, IMMUNOLOGY, ANTIGEN,  
PROTEIN, SORPTION, CHEMICAL PATENT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3006/1583 STEP NO--UR/0482/70/000/000/0000/0000  
CIRC ACCESSION NO--AA0135224  
UNCLASSIFIED

272 022

CIRC ACCESSION NO--AA0135224

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IMMUNOSORBENTS ARE PREPD. BY  
POLYCONDENSATION OF PROTEIN ANTIGENS IN THE PRESENCE OF BISDIAZONIUM  
SALTS. BISDIAZOTIZED AROMATIC DIAMINE BOROFLOURIDES ARE USED AS  
CONDENSING AGENTS.

UNCLASSIFIED



1/2 027 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--DETECTION OF RICKETTSIAL AND ORNITHOSIS ANTIGENS IN INDIRECT HEM  
AGGLUTINATION TEST BY MEANS OF ERYTHROCYTES CHEMICALLY COMBINED WITH  
AUTHOR--(03)-GOLDIN, R.B., PRUSAKOVA, Z.M., SHAKHANINA, K.L.  
COUNTRY OF INFO--USSR  
SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 3, PP 366-371  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--RICKETTSIA, ORNITHOSIS, ANTIGEN, ERYTHROCYTE, TICK,  
HEMAGGLUTINATION INHIBITION TEST, TICK, FLUORESCENT ANTIBODY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3001/0680 STEP NO--UK/0402/70/000/00 3/0366/03?1  
CIRC ACCESSION NO--AP0126401  
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--APG126401

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A NEW MODIFICATION OF INDIRECT HA TEST FOR RAPID DETECTION OF RICKETTSIAL AND ORNITHOSIS ANTIGENS WAS DEVELOPED. THE PAPER PRESENTS THE RESULTS OF TRIALS AND COMPARATIVE EVALUATION OF RED BLOOD CELL (RBC) PREPARATIONS MADE BY CONJUGATION OF ERYTHROCYTES WITH POLYCONDENSED GLOBULINS OF RABBIT SERA IMMUNE FOR D. SIBIRICUS, D. RICKETTSII AND OTHER AGENTS OF TICK BORNE SPOTTED FEVERS. FOR POLYCONDENSATION (CHEMICAL "SEWING") OF IMMUNE GLOBULINS AND THEIR CHEMICAL CONJUGATION WITH FORMALINIZED RBC 4,4-BIS(DIPHENYLDIAZONIUM)BOROFLUORIDE WAS USED WHICH WAS A PURE, HIGHLY STABLE BIFUNCTIONAL COMPOUND PROVIDING STANDARD CONDITIONS FOR MAKING RBC PREPARATIONS. ALL BATCHES OF RBC PREPARATIONS MADE ACCORDING TO THIS METHOD WERE STRICTLY GROUP SPECIFIC. THEY GAVE POSITIVE CROSS REACTIONS WITH ANTIGENS OF RICKETTSIA BELONGING TO THE GROUP OF AGENTS OF TICK BORNE SPOTTED FEVERS AND AT THE SAME TIME DID NOT INTERACT WITH ANY OF HETEROLOGOUS RICKETTSIA OR BACTERIA. NO NONSPECIFIC REACTIONS WERE OBSERVED WITH EXTRACTS FROM THE ORGANS OF UNINFECTED ANIMALS EITHER. AT THE SAME TIME IT WAS SHOWN THAT UTILIZATION OF THESE RBC PREPARATIONS INSURED IN OUR EXPERIMENTS HIGH SENSITIVITY OF INDIRECT HA TEST. ITS SENSITIVITY WAS 300-500 FOLD HIGHER THAN THAT OF CFT AND 20-30 AND 10-50 FOLD HIGHER THAN THAT OF INDIRECT HI TEST (WITH RBS SENSITIZED WITH RICKETTSIAL ANTIGEN) AND FLUORESCENT ANTIBODY TECHNIQUE, RESPECTIVELY.

FACILITY: VOYENNO-MEDITSINSKAYA AKADEMIYA IMENI S. M. KIROVA,  
 LENINGRAD, I INSTITUT EPIDEMIOLOGII I MIKROBIOLOGII IMENI N. F. GAMALEI  
 AMN SSSR, MOSKVA.

UNCLASSIFIED

USSR

UDC: 621.311.016.31.003.1

KUROV, B. N. and ~~SHARIN, V. S.~~

"Sensitivity of Optimal Load Distribution to Information Errors"

Moscow, Izvestiya Akademii Nauk SSSR--Energetika i transport, No. 1, January-February 1971, pp 72-81

Abstract: This paper investigates the effect of errors on the solutions of power problems, a question to which a great deal of attention has recently been given. To develop the results they accumulated in two earlier papers, the authors consider the mathematical model and the results of an investigation of the sensitivity of optimization algorithms for electric power systems based on the Monte Carlo system. This method consists in computing the optimal value of the optimization algorithm goal function for fixed initial information, and then introducing random errors into the initial information in conformity with the specified distribution law. The goal function values and their deviations from the optimal value are again computed from the newly obtained information, and the

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USSR

KUROV, B. N., et al. Izvestiya Akademii Nauk SSSR -- Energetika i transport, No 1, January-February 1971, pp 72-81

mathematical expectation of the goal function deviation, beginning with the specified accuracy values, is estimated through the construction of the constituent intervals. Results of an analysis based on this method are given for the Southern Power Combine, the Donbas Power Combine, and the Uzbek Power Combine, which have 19, 9, and 7 power stations respectively.

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USSR

UDC 669.295:539.214

PERTSOVSKIY, N. Z., SHAKHANOVA, G. V., and BRUN, M. YA., All Union Institute of Light Alloys

"Features of Deformation and Ductility of Two-Phase Titanium Alloys with a Lamellar Structure"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 1, 1973, pp 154-161

abstract: Microstructural features of deformation in (alpha+beta)-titanium alloys with a lamellar structure were investigated in relation to size of the alpha-colonies. Samples of VT3-1 alloy (5.7 Ti, 2.5 Al, 1.7 Cr, and 0.5 Fe) were subjected to pressure treatment by different modes. All samples were annealed by conventional means for this alloy: heated to 870°C for one hour, transferred to a furnace at 650°C for two hours, cooled in air. The microstructural components were measured (initial beta-grain size -- D, Alpha-colony size -- d, alpha-plate thickness -- b) and compared. Five different plate structures were found and it was noted that the larger the initial beta-grain size (D) the greater the tensile strength of the plate provided plate thickness is quite thin (b = 0.5-1.0 microns). At the same time ductility is lost (drops from 17.8 to 3.1%) and reduction in area drops off rapidly. Thus, 1/2

USSR

PERTSOVSKIY, N. Z., et al., Fizika Metallov i Metallovedeniye, Vol 36, No 1, 1973, pp 154-161

optimum properties of good strength and ductility are achieved with small D, moderate size for d and relatively large b. Similar results were produced during investigations of alloys VT9, VT22 and a number of other alloys with a lamellar structure. Five figures, one table, four bibliographic references.

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USSR

UDC 669.295:539.214

PERTSOVSKIY, N. Z., SHAKHANOVA, G. V., BRUN, M. YA., and NOTKIN, A. B.,  
All-Union Institute of Light Metals

"On the Influence of the  $\beta$ -Phase on the Plasticity of Two-Phase Titanium Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 33, No 4, Apr 72,  
pp 887-890

Abstract: The influence of the  $\beta$ -phase on the microstructural deformation of titanium alloys was investigated on hot-rolled bars of VT9 alloys possessing a grained and lamellar  $\alpha$ -phase and an initial fine fibrous structure, very similar to the structure of the previously (Ibid., Vol 30, 1970, p 1047) investigated VTZ-1 alloy. The results of mechanical investigations of both alloys, containing 15-20% of  $\beta$ -phase in the annealed state, are discussed by reference to tabulated data and microstructural deformation pictures of the VT9 alloy. The sharply decreased plasticity of the VT9 alloy in comparison with the VTZ-1 alloy explains the observed plasticity decrease by other authors of two-phase titanium alloys with lamellar-type structure with increased content of stabilizers. The presence of the  $\beta$ -phase increases

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USSR

PERTSOVSKIY, N. Z., et al., Fizika Metallov i Metallovedeniye, Vol 33, No 4,  
Apr 72, pp 887-890

the microinhomogeneity of deformation regardless of the type of the structure, contributing to a plasticity decrease of two-phase titanium alloys at room temperature. Two illustrations, one table, three bibliographic references.

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USSR

UDC: 669.295:539.211.539.42

PERTSOVSKIY, N. Z., and SHAKHANOVA, G. V.

"Fracture of VT3-1 Titanium Alloy"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, Sept 71, no 9,  
pp 73-75

Abstract: A study is described on the effect of the type of structure and phase composition of the two-phase VT3-1 titanium alloy (6.04% Al; 2.45% Mo; 1.90% Cr; 0.40% Fe) on its mechanical properties exhibited in tensile tests. The relationship between the type of fracture and the mechanical properties is also discussed. Specimens with three types of structures are covered. Structure I is of an equiaxial finely granular type with an  $\alpha$ -grain size of about 4 microns obtained by annealing rods in the  $\alpha+\beta$  region at 940-1150°C; structure II is of a coarsely laminar type produced by annealing the same rods (as in structure I) in the  $\beta$  region at 1150°C, its primary  $\beta$ -grain size about 0.7 mm; structure III was obtained by extrusion of rods in the  $\beta$  region, of smaller size with an "interlocking" of  $\alpha$ -bundles with a single texture. Figures in the original article show all three

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USSR

PERTSOVSKIY, N. Z., et al, Metallovedeniye i termicheskaya obrabotka metallov, Sept 71, no 9, pp 73-75

types of structures of the VT3-1 alloy, a diagram of the mechanical properties at 20°C and the phase composition of the specimens, fracture macrostructures I, II, III of the alloy and, finally, electron microfractograms of the specimens of the test alloy. The experimental procedure and results are detailed and illustrated by the above figures. It is shown that the nature of the fracture in the specimens is determined by the type of structure and is unrelated to phase composition. The patterns of the electron microfractograms indicate the ductile nature of the failure of the test alloy irrespective of the type of structure and phase composition. The study fails to find a relationship between the type of fracture and the mechanical properties of VT3-1 alloy at 20°C.

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Titanium

USSR

UDC 536.425

PERTSOVSKIY, N. Z., BRUN, M. Ya., and SHAKHANOVA, G. V., All-Union Institute of Light Alloys

"Nature of Embrittlement of Two-Phase Titanium Alloys With Large Plate Structure"

Moscow, Fizika Metallov i Metallovedeniye, Vol 30, No 5, 1970, pp 1047-1054

Abstract: The microstructural peculiarities of the processes of deformation and rupture of standard VTZ-1 ( $\alpha + \beta$ )-titanium alloy were studied with various types of initial structure. It was established that the basic reason for the decreased plasticity of two-phase alloys with large plate structure in comparison with fine grained equiaxial structure, regardless of the phase composition, is the "coarse" slippage arising as a result of inheritance of the structure of the high-temperature  $\beta$ -phase.

USSR

UDC 531.01

ZEL'TIN, A. I., ~~SHAKHAYDAROVA, P. Sh.~~

"Motion of a Material Point Under the Effect of Continuous Impacts of Particles Radiating From a Center of Attraction"

Nauchn. tr. Tashkent. un-t (Scientific Works. Tashkent University), 1970, vyp. 397, pp 82-87 (from RZh-Mekhanika, No 10, Oct 71, Abstract No 10A128)

Translation: The authors consider the problem of motion of a material point acted on by a central force of attraction toward a fixed center, and by the impacts of particles radiated from the center of attraction at a velocity with constant magnitude. The analysis is done in polar coordinates. It is assumed that the differential equation for the trajectory is a linear equation with constant coefficients derived from Binet's formula, after which a general solution is found for this equation. Ye. N. Berezkin.

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USSR

UDC 581.121.037

TALANOVA, I. M. and SHAKHBAZOV, V. G., Kharkov State University

"Effect of Constant Magnetic Fields in the Respiration Rate of Pure-Strain and Heterosis Corn Seeds"

Moscow, Fiziologiya Rasteniy, No 1, 1973, pp 204-206

Abstract: Exposure to a constant magnetic field (CMF) of 2.2 koe for 4 hours had no significant effect on the respiratory rate of pure-strain VIR-44 and VIR-38 or Slava hybrid corn seeds. However, exposure for 20 hours intensified respiration in the pure-strain seeds (118.4%) but depressed it in the hybrid (74.4%). When the seeds were exposed for 4 hours to stronger magnetic fields (4 and 7 koe), oxygen consumption sharply increased in the VIR-44 seeds (183%) but was depressed in the hybrid (77 to 82%). Thus, a short exposure to a CMF of higher intensity produced the same effect on oxygen consumption by the hybrid seeds as a long exposure to a weaker field.

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USSR

UDC 615.361.419.014.41

PUSHKAR', N. S., OBOZNAYA, E. I., SHAKHBAZOV, V. G., DATSENKO, B. M., and  
ITKIN, Yu. A., Ukrainian Institute of Advanced Training of Physicians,  
Ministry of Health USSR, Kharkov

"The Effect of Polyethylene Oxide on Myelokaryocyte Respiration After the  
Freezing of Bone Marrow to  $-196^{\circ}\text{C}$ "

Moscow, Problemy Gematologii i Perelivaniya Krovi, No 4, 1971, pp 52-54

Abstract: The effect of freezing on the intensity of oxygen uptake by bone marrow cells from cancer patients and healthy persons was studied in relation to the rate of freezing to  $-196^{\circ}\text{C}$  and the type of cryopylactic agent used (glycerin, DMSO, and the newly developed polyethylene oxide). Myelokaryocytes from healthy persons take up oxygen much more rapidly than those from cancer patients. The addition of polyethylene oxide to a suspension of the cells before freezing had little effect on oxygen uptake, whereas the addition of DMSO or glycerin depressed it sharply. Two-stage freezing (at the rate of  $1^{\circ}/\text{min}$  to  $-15^{\circ}$  and then at the rate of either  $300^{\circ}$  or  $10^{\circ}/\text{min}$  to  $-196^{\circ}$ ) was more effective in protecting the cells than single-stage freezing (from 0 to  $-196^{\circ}$  at the rate of either  $300^{\circ}\text{C}/\text{min}$  or  $10^{\circ}\text{C}/\text{min}$ ). Bone marrow frozen with polyethylene oxide has already successfully undergone clinical trails.

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Biophysics

USSR

UDC 575.125-577.372.13.099

SHAKHAZOV, V. G., KOTENKO, L. V., KOPEYKA, Ye. F., and NABOKOV, A. L., Khar'kov State University

"Changes in the Bioelectric Rest Potentials of Cells of Different Genotypes Under the Influence of High Temperatures"

Kiev, Tsitologiya i Genetika, Vol 4, No 4, Jul/Aug 70, pp 352-355

Abstract: It was previously established by the authors that there is a relationship between genetic differences in hybrid and inbred organisms and the bioelectric properties of their cells. It was also found that heterosis hybrid forms exhibited an increased resistance to the effects of high temperatures. In the present study, the effects of temperatures in the 40-50°C range on the cellular and surface bioelectric rest potentials (BERP) of hybrid and inbred corn seedlings were studied. After exposure of the seedlings to such temperatures for 10-20 min, the negative values of cellular and surface BERP decreased on the average from -80 to -20 mV and from -50 to +10 mV, respectively. The BERP values changed less for hybrids than for inbred plants, a fact which confirms the greater resistance of hybrids to high temperatures.

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Biophysics

USSR

UDC 577.37

SHAKHBAZOV, V. G., Khar'kov

"Localization and Biological Value of the Electrical Charge of Live Plant Cell"

Kishinev, Elektronnaya Obrabotka Materialov, No 2, 1970, pp 67-70

Translation: Results are presented of experimental investigations in which the relationship between the kinetic phenomena and bioelectrical properties of the cell is established. Electrical properties of the nucleus and nucleolus have been studied by intracellular microelectrophoresis, one of the reasons that the membrane theory of biopotentials should probably be altered. An attempt was made to depict schematically the cellular distribution of zones with predominantly positive or negative polarization.

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USSR

UDC 613(075.8)

GABOVICH, R. D., POZNAISKIY, S. S., and SHAKHBAZYAN, G. Kh. Gigiyena (Hygiene)

Moscow, "Meditsina," 1971, 432 pp

Translation: Annotation: The second edition of this textbook has been considerably reworked and supplemented with new achievements in the development of the science of hygiene.

It is intended for students in the treatment and pediatrics schools of medical institutes.

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